WhatsApp as a Space

A virtual ethnography of user practices in Sierra Leone

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Abstract

In this research, human-technology-world relationships were re-examined by looking at the interplay between micro and macro processes in a postcolonial context. To do so, there was a close examination of WhatsApp, a specific type of technology that creates spaces for user interaction in virtual spaces. By engaging in a virtual ethnographic study of user practices in virtual spaces, there is a greater understanding of how mobile technologies mediate the experience of reality in a postcolonial context. The empirical data suggest that WhatsApp in Sierra Leone becomes a dominant information platform in which information necessary for users to navigate their lives are existing as potentialities to be actualised through user engagement. Furthermore, the WhatsApp Space (capitalised) consists of multiple sub-spaces, that in turn are created by, and affected by user practices and relational networks that define the qualities of these spaces.

Keywords: postphenomenology, virtuality, WhatsApp, postcolonial context

Table of Contents

1. Introduction

1.1 Understanding virtual spaces in postcolonial contexts

On the 11th of May 2020, a Sierra Leonean citizen living in the Netherlands released a video on his Facebook page captioned "latest development on the hunt of Adebayor." In the video, members of the Dutch branch of the ruling Sierra Leonean Peoples Party (SLPP) walked around the Dutch city of Eindhoven as they looked for Adebayor, a Sierra Leonean refugee residing in the Netherlands. In the video they claim that the man behind the alias Adebayor cannot remain hidden for much longer, that justice will prevail, and that no refugee can expect protection from the Dutch government when they engage in acts of terrorism and enticement of war crimes. Despite some debates on national news platforms, little is known about the international hunt for Adebayor, whose political activities have merely sparked some short pieces on freedom of speech and political propaganda. That is, in official media outlets. On Sierra Leonean WhatsApp groups however, the topic of Adebayor is hot. Not only as a place for seeing the responses of the ruling party to Adebayor, but also for accessing the voice notes in which Adebayor voices his political critique, causing the man to be labelled a war-enticing terrorist.

The extent to which content existing in the virtual causes disruptions in the non-virtual, raises questions about the role virtual technologies such as WhatsApp play in societies. This understanding becomes more pressing as the Government of Sierra Leone aims to leverage mobile technologies (which have the potential to embed WhatsApp as an application) as drivers of positive societal change. Stating in its 2019-2029 National Innovation and Digital Strategy, mobile technologies are the "singular technology that connects all Sierra Leoneans" (Directory of Science Technology & Innovation, 2019, p. 8).

In recent academic postcolonial debates on the role technologies play in societies, much attention is paid to the narratives surrounding the usage of technologies in postcolonial contexts (Adam, 2019; Alzouma, 2005; Arewa, 2019a, 2019b). According to Arewa (2019b) and Alzouma (2005), the conviction that technologies in postcolonial African contexts are

drivers of positive change on a macro level is problematic, especially when this conviction is based on examples of technological disruption in non-African (western) contexts. Arewa (2019b) and Adam (2019) point towards differences in the social, economic and historical contexts of African nations, and call for a recognition of these differences when attempting to understand and effectively use the transformative potentials of technologies in African contexts.

Such differences are not nation dependent. According to these authors, the colonial history of African nations continues to affect macro processes, and how they are at interplay with technologies (Adam, 2019; Alzouma, 2005; Arewa, 2019a, 2019b). From this perspective, technologies are considered as functioning in-between societies and socio-economic processes, and the dynamics between the two must be studied in order to decolonialise and deconstruct power structures embedded in the technologies. As such, technologies are considered to be tools that either undo or reveal colonialist power structures, or reinstate and enforce new forms of colonialism. The concept of *digital neocolonialism*, which is the usage of ICTs by hegemonic powers as a means of "indirect control or influence over a marginalised group or country" (Adam, 2009, p. 370), is used to describe the role technologies play in African postcolonial contexts.

Although these studies illuminate some of the underlying dynamics between technologies and socio-economic (macro) processes, there is no specification on how technologies that create virtual spaces may affect these dynamics. Furthermore, there is little consideration of user practices to inform theoretical assumptions. As the Adebayor case demonstrates, there is an interplay between the micro dimension of technologies in-use and the virtual spaces where users interact. What role does a technology such as WhatsApp play on the micro level, and how does it affect the socio-economic macro dynamics in African postcolonial contexts?

According to Verbeek (2011), technologies in-use are not neutral tools. They mediate human experience, interpretations of reality, and human action through a process of technological mediation (Verbeek, 2011, p. 365). Postphenomenology studies human-world relations and consider digital technologies as mediators and co-constructors of our experience of reality (Ihde, 1991; Verbeek, 2001; Verbeek, 2006; Verbeek, 2017). By a process of *reduction* and *amplification*, technologies enable interpretation and engagement with the world that differ from non-technologically mediated experiences (Ihde, 1991; 1993).

Although studying human-technology-world relations from a postphenomenological

approach can aid towards understanding how technologies affect the experience of reality, it proves problematic when regarding the virtual space technologies create when in-use (Søraker, 2012). Theories on virtualities explore the changing boundaries between virtual and non-virtual spaces (Hine, 2000; Champion, 2018; Friesen, 2014; Kozel, 2008, 1994; Lonsway, 2002, Chalmers, 2017, De Souza e Silva, 2011), in which the virtual can serve as a space for enquiry. Concepts such as potentiality and actualisation (De Souza e Silva) can aid in understanding the relationship between the virtual and the non-virtual, the material and the immaterial, thereby providing insights into world-technology-human relations on a micro level. What has not been studied, however, is whether and how a postcolonial context relates to a virtual space.

Jandrić's and Kuzmanić's (2015) tentative approach towards establishing the research field of *digital postcolonialism*, serves as a foundation for combining the interdisciplinary approach of postcolonial theory with theories on virtualities. They define digital postcolonialism as a research approach where, "migration into the digital cannot be thought of without geographical thinking, relationships between the digital settlers and the digital territories cannot be understood without anthropological method, and the current state of (post)colonial development cannot be placed in a wider context without historical thinking" (pp. 36- 38). Therefore, this approach does allow for a consideration of the postcolonial context whilst studying virtualities as digital spaces where socio-economic processes take place (Jandrić & Kuzmanić, 2015, p. 37). As their study marks the establishment of this new field, no empirical studies of user practices have informed their approach. Furthermore, they point towards methodological challenges due to our limited understanding of the relation between the virtual and the non-virtual (p. 48).

As such, there are two overlapping knowledge gaps this research contributes to. One, in postcolonial studies on the role technologies play in societies, the micro dimension of technological mediation and user practices are overlooked. Furthermore, there is no study of how technologies that create virtual spaces affect these relations. Two, whereas theories on virtualities and digital technologies do consider this micro level, there is limited consideration for alternative postcolonial contexts. Therefore, my research question is: how do mobile technologies affect the experience of reality in a postcolonial context? By looking at user practices of mobile technologies in a postcolonial context, this study builds on Jandrić's and Kuzmanić's (2015) argument that expansions into new, virtual territories can aid us in reconsidering our understandings of the virtual and the non-virtual. The research field of

digital postcolonialism serves as a starting point to look at the interplay between postcolonial and virtual spaces. It is a theoretical understanding of complex macro dynamics, in which the study of user practices of a virtual technology can reveal how the micro and macro dynamics are at interplay.

1.2 Thesis structure

In order to answer my question on how mobile technologies affect the experience of reality whilst considering the postcolonial context, I will start with looking at how technologies affect macro practices in African postcolonial contexts in chapter two. This will include an outline of the debate on the role technologies play in socio-economic processes, and an enquiry into the rationale behind looking at postcolonial African contexts as new spaces for enquiry.

To better understand technological mediation on a micro level, I will look at Verbeek's (2011) and Ihde's (1990; 1993) postphenomenological theory of technological mediation in chapter 3. With this foundation, I will build a theoretical framework to study mobile technologies in postcolonial contexts considering theories on virtuality from De Souza e Silva and Sutko (2011) and Hine (2000, 2017). Following Kozel (1994, 2008), I will argue that studying the experience of users can reveal the material and performative features of the technologies that transform micro perceptions.

After combining the postphenomenological theory of technological mediation with concepts from theories on virtuality, I will follow with creating a method for studying user practices in a postcolonial context in chapter 4. By using a mixed-method approach of virtual ethnography and qualitative interviewing, I can gain insights into user practices in a postcolonial context. To do so, I will develop an approach in which the interplay between studying the empirical data sources can enrich my interpretations. This includes an elaboration on the affordances of the WhatsApp platform and a strategy for gaining access to virtual spaces in which user practices can be observed. Chapter 4 will also show the ethical considerations, limitations and challenges of the research.

In chapter 5, I will analyse my findings by using thick descriptions and a selection of empirical data samples. The analysis is divided into two sub-chapters. Sub-chapter 1, WhatsApp information relations, deals with the way WhatsApp in Sierra Leone becomes a dominant information structure in which users interacting with information function as foundations of this structure. In sub-chapter 2, WhatsApp as a Space, I will delve into notions

of virtuality and the experience of reality to describe the characteristics of this space and how it relates to the non-virtual.

This will be followed by a brief conclusion in chapter 6, in which the core findings of my research are summarised and my research question on how mobile technologies mediate the experience of reality will be answered.

Finally, in chapter 7, I will discuss my findings in relation to the academic debates mentioned in the literature review and in my theoretical framework. By showing that mobile technologies and postcolonial contexts engage in a structure of amplification and thereby cause an implosion of the virtual into the non-virtual, I call for further study on mobile technologies in postcolonial context to gain better understanding of the phenomena.

2. Literature review: Postcolonial contexts and virtualities

2.1 New technologies and new spaces

In 1997, Ghanaian philosopher Kwame Gyekye argued in his chapter "Philosophy, Culture and Technology in the Postcolonial" of the *Postcolonial African Philosophy: A Critical Reader* that for African countries to benefit from technological change, we must consider that these technologies will be embedded in a local space with unique social and cultural developments (Gyekye, 1997). Furthermore, he argued that in the case of technology transfers from developing countries, the locals must have the capacity to appropriate the technologies. Bearing in mind that these technologies of foreign origin have culturality embedded in their designs, and that the appropriation of these technologies requires knowledge and interpretation of the locals, they must be interpreted differently from other cultural imports (Gyekye, 1997, p. 36-43). Core to his statement is the theoretically informed assumption that technologies have the potential to transform societies; including poverty, economic inequality, oppression and exploitation (p. 42). As Gyekye states, steering these transformations towards positive developments for postcolonial contexts requires the application of (African) moral values (Gyekye, 1997, p. 42).

The emergence of a variety of information communications technologies (ICTs) including social media platforms, the Internet of Things and compound mobile technologies, in which hardware and software operate on different levels in a single device, show that the contemporary global and postcolonial technological landscape differs significantly from that of 1997. Whereas Gyekye (1997) depicts the process of technology transfer as technologies originating from the West being used in postcolonial African contexts, our current global economy depicts a different movement of technologies from one place to another. For example, a mobile phone used in Africa may have been produced in China, bear traces of African minerals, been bought in Europe, and containing software originating from various countries. Nevertheless, despite the differences in the current technological landscape and that of Gyekye's context in 1997, I chose to start my literature review with his approach on technologies in a postcolonial African context because he inspires academic inquiries into the

interplay between technologies and postcolonial contexts, especially African postcolonial contexts. Gyekye (1997) recognises the disruptive effects of technologies on societies, whilst he outlines factors unique to the postcolonial context. From this perspective, Gyekye's argument can be regarded as one of the earlier calls for (postcolonial) scholars to study these relations, wherein technologies have the potential to aid in further decolonising African nations and studying the interplay between societies and technologies can aid towards furthering African epistemologies.

Gyekye's argument that when used effectively, technologies can aid in decolonisation is reflected in non-academic debates on technology imports in African postcolonial contexts (‘6 African Technology Innovations That Change Lives’, 2013; ‘What Technology Can Do for Africa’, 2017; Chigozie, 2014; Draper, 2017; Smith, 2015). This includes the argument for technologies that leapfrog development, as stated in an article by the Economist, "a cluster of new technologies promise to have a huge impact on Africa, not least because they can help solve some of Africa's biggest and longest-standing problems," (‘What Technology Can Do for Africa’, 2017). The usage of technologies to *leapfrog development*, or the adoption of advanced technologies in spaces devoid of such technologies, has gained popularity in developing countries (Fong, 2009)

In recent postcolonial academic debates, it is this sentiment of regarding technologies as tools for positive movements away from colonial power structures, from poverty and inequality, and towards economic and societal prosperity, that point towards a new form of colonialism. Authors such as Arewa, Adam, Alzouma, Shringapure, Fong, and Ya'u argue that the incorporation of technologies in postcolonial societies are digital forms of colonialism, where data has become the new resource to extract, and the growing digital divide causes the enforcement of (colonial) power imbalances (Adam, 2019; Alzouma, 2005; Arewa, 2019a, 2019b; Fong, 2009; Shringarpure, 2018; Ya’u, 2004). Such debates focus on the macro level, where socio-economic processes are in interplay with technologies. What happens at the micro level, the level at which users engage with technologies through user practices, remains largely unconsidered. What can the study of the micro level reveal about the effect of technologies in such macro processes?

In this chapter, I will outline the core of the debate on the interplay between technologies and societies on macro and micro levels and link it to our contemporary understanding of technologies in (African) postcolonial societies. I will start by taking a closer look at postcolonialism and elaborate on whether the postcolonial context can provide a

relevant alternative space for enquiry. This is followed by a review on the scholarly debates surrounding postcolonial contexts and technological disruption. Finally, I will point out that these debates overlook the specifics of technological mediation, especially that of technologies that create virtual spaces. Following Jandrić's and Kuzmanić's (2015) tentative approach of establishing a research field in which virtual and postcolonial spaces are considered as novel spaces for enquiry, I argue that a thorough study of micro practices occurring in these new spaces can aid towards new understandings of our non-virtual environments.

2.2 The postcolonial as an alternative space for enquiry

Before highlighting aspects of the contemporary debates on the relationship between technologies and postcolonial societies, it must be explored whether the postcolonial can be considered as an alternative context for enquiry. In postcolonial theory, socio-economic phenomena in formerly colonised nations are understood through studying the historical events that occurred during the colonial era. According to Lazarus (2011), the field of post-colonialism (with hyphen) began to emerge to (historically) describe the time period after colonisation (Lazarus, 2011, p. 6). According to several postcolonial scholars, the issue with this perspective lies in the assumption that colonialism has ended, which fails to reflect the contemporary effects of economic, cultural, and political dominance of formerly colonising nations (Ashcroft et al., 2007, p. 169; Loomba, 1998, p. 7; McLeod, 2007, pp. 4-9). Thus, 'the postcolonial' (without the hyphen) indicates a context in which contemporary social-economic phenomena are still being affected by colonialism, even as the imperialist era has ended. This means that the postcolonial refers to a temporal quality; in that formerly colonised nations, such as Sierra Leone, still witness the effects of colonialism to date.

When it comes to defining a postcolonial space, one issue that arises lies in the trying to pinpoint an exact location of study (Ashcroft et al., 2007; Loomba, 1998). The geographic locations previously colonised by imperialist nations had different- if not non-existent- borders and territorial boundaries. Furthermore, colonialism lasted several centuries and across various continents, which makes it difficult to construct an overarching 'postcolonial context'. Still, using postcolonialism as an approach for understanding the diverse effects of colonialism on formerly colonised nations can aid in revealing the way technologies affect (postcolonial) societies. Not only as allowing for the consideration of historical events to understand contemporary power structures, but also by considering alternative spaces for

enquiry to reveal and understand (colonialist) epistemologies in contexts with unique technological and socio-cultural landscapes.

Following this tradition therefore means a consideration of the postcolonial context as different from a non-postcolonial context; that is, formerly colonised nations continue to deal with the adverse effects of colonialism, such as political instability, economic underdevelopment, and social challenges including poverty and health issues. What would be the rationale for deploying a postcolonial lens? As it allows for inclusion of history into contemporary understandings of phenomena, where the power structures embedded in socio-economic structured can be studied as such, the postcolonial therefore functions as a means to reconsidering the space for enquiry. As such, it allows for enquiries in which alternative epistemologies can be included and combined across disciplines and fields. Therefore, I argue that it serves as an interdisciplinary approach with space for alternative epistemologies.

2.3 The African postcolonial context as exceptional?

On the African continent 51 out of 54 sovereign states were colonial territories of European nations between 1881 and 1980. As Shanguhyia and Falola (2018) argue, African nations have gone through significant transformations after gaining independence, of which some are consonant with systemic power imbalances from its colonial past (Shanguhyia & Falola, 2018, p. 17). Therefore, the African postcolonial context can be considered a unique space of enquiry to understand contemporary socio-economic phenomena.

According to Wasserman, *African Exceptionalism* refers to treating Africa as an isolated place of study to either confirm western theories, or as a point of departure for new theory formation (Wasserman, 2018, p. 221). How can an African postcolonial context be studied within recognition of its unique postcolonial power structures whilst avoiding African Exceptionalism? Mutsvairo (2018) aims to resolve this issue by delinking discourse (from such spaces) to engage with and create new epistemologies. As a response to the reduction of African scholarship to area studies, he states, "the largely Cartesian approach eliminates the nature of observer-observed relationship [...] It assumes that local conditions and experiences can be best understood via unreconstructed imported theories" (Mutsvairo, 2018, p. viii). Instead, as Mano and Willems (2016) suggest, by de-linking discourse from a geographic location scholars have the opportunity "to consider the African continent as a set of vantage points onto the wider world, as an epistemological location that can help problematize and provincialize the largely Anglo-American canon of audience studies and internet studies"

(Willems & Mano, 2016, p. 4). In other words, treating an African postcolonial context as an important space for enquiry can aid in finding (and filling) the theoretical blind spots where local conditions and experiences are 'overlooked' by deploying dominant epistemologies.

2.4 Postcolonial African contexts and technologies

How can the study of postcolonial African contexts help gain new understandings of the role of technologies in societies? Several postcolonial scholars have studied the relation between technologies, societies in postcolonial context. Authors such as Arewa (2019), Adam (2019), and Alzouma (2005) focus on technology-state macro dynamics, where technologies are placed as functioning in-between societies and socio-economic processes affected by colonial history (Adam, 2019; Alzouma, 2005; Arewa, 2019a, 2019b). In Adam's study of technology in educational contexts, she argues that Massive Open Online Courses reinstate colonial epistemologies and knowledge structures through what she terms *digital neocolonialism* (Adam, 2019, pp. 376- 377). According to Adam (2019), digital neocolonialism is the deployment of ICTs by hegemonic powers (institutions, nations, corporations) as "a means of indirect control or influence over a marginalised group or country" (p. 370). Technologies therefore function as amplifiers of colonialist power and knowledge structures, not only through the commodification of education, but also because the technologies used originate from the West (p. 365).

Whereas Adam also recognises the potential of technologies to aid in decolonisation as their study can reveal the colonial epistemologies are embedded in them, Arewa focuses more on the legal and institutional frameworks steering technological disruption (Adam, 2019; Arewa, 2019a, 2019b). She argues that during colonial rule, such frameworks were imposed not only imposed on African nations as a non-native, 'external' force, but also served these external political and economic interests (Arewa, 2019a, p. 66). She argues that post-independence decolonialisation has not sufficiently disrupted these frameworks to support tech transfers. Meaning that the importing and borrowing of non-native (often western) technologies do not necessarily cause the disruptive potentials of technologies to further the positive development of African nations (p. 67). As a result, similar to Adam's conceptualisation of digital neocolonialism, Arewa describes *digital colonialism* as state-technology dynamics that replicate the effects of legal and institutional frameworks from the colonial era, serving external political and economic interest at the expense of the local population (Arewa 2019a, 2019b).

In addition, Arewa (2019b) argues that the disruptive effects of technologies as drivers of change in African society are 'Technology Uplift' narratives, which are technological deterministic and utopianist assumptions that digital technologies and trends are an opportunity for African nations to participate in a global digital economy and leapfrog development(Arewa, 2019b). Both Arewa and Alzouma problematise these assumptions, pointing towards essential differences in the socio-economic and historical contexts of African nations as compared to the western nations where these technologies have/are caused/causing favourable disruptive effects (Alzouma, 2005; Arewa, 2019a, 2019b)(Alzouma, 2005; Arewa, 2019a). Alzouma relates these narratives to colonial history; since independence, technology has been regarded as the solution to overcome the socio-economic challenges with the aim to 'catch up' with western developments (Alzouma, 2005, p. 338). His concern is that external socio-economic conditions affect the way technologies are used, causing the designed functions of these technologies to have different effects in different (postcolonial) contexts (p. 351).

Alzouma, Arewa and Adam problematise the relation between societies and technologies in similar, albeit slightly different manners. Whereas Arewa emphasises the material socio-economic frameworks in which technologies operate as affecting the potential outcome of technological disruption, Adam focuses on the dynamic between the socio-economic conditions and the epistemologies embedded in the design and application of technologies(Adam, 2019; Arewa, 2019a, 2019b). Alzouma challenges dominant epistemologies of technological progress and emphasises the socio-economic context as affecting the outcome of technological change, thereby unveiling these epistemologies as western, tech-utopianist discourses (Alzouma, 2005). Whether this process is defined as digital colonialism (Arewa 2019a, 2019b), or as digital neocolonialism (Adam, 2019) the core assumption both authors share they position technologies as functioning as amplifiers in-between (postcolonial) societies on one side, and socio-economic power structures on the other side.

Although these conceptualisations of technological-societal relations consider postcolonial context as relevant objects of enquiry, there is limited attention paid to the way these technologies operate in-usage. In other words, the micro dimension of technological disruption when used by people is not examined. The focus on the macro, or the technology-society relations, reduces the effects of technologies on society as either aiding towards economic development, decolonialisation, democratisation, etcetera, or by amplifying or

reinstating colonialist power structures and power imbalances.

Alternatively, an example of research approaches that do consider user practices are presented in Willem's and Mano's (2016) *Everyday Media Culture in Africa: Audiences and Users* anthology. The authors call for studying the *experience* of users as they interact with various media to give us insights into how users relate to society and the technologies they use (Willems & Mano, 2016). Their approach of combining audience studies with internet studies (using reception analysis and virtual ethnography) therefore emphasises the user experience-technology dimension as essential to understanding the way technologies and societies co-construct each other (Willems & Mano, 2016, pp. 3-6). Pype's (2016) article on audiences responding to digital texts serves as an example of this approach, resulting in user-practice based knowledge production with the aim to decolonise the scholarly practices of media, communication and internet studies(see Pype, 2016). Although this approach is useful for revealing the effects technologies have on sociality in postcolonial African contexts whilst considering the affordances of such technologies, there is limited attention paid to the co-constitutive dynamic of technologies. In other words, it may reveal how users experience society and its socio-economic macro processes when using technologies, the way digital technologies create alternative virtual spaces and how these in turn affect user experience and socio-economic macro processes are not studied.

The increase in usage and availability of compound digital technologies, or technologies that have software applications embedded in their hardware, such as mobile phones, underlines the importance of considering the dimension of virtualities as digital spaces. In these spaces, interactions between communities, economic processes, political movements, etc. occur *alongside and or/ independent of* its material counterparts. Jandrić's & Kuzmanić's (2015) tentative approach towards establishing the research field of *digital postcolonialism* deals exactly with the increasingly complex relations between societies and technologies whilst considering a postcolonial context and regarding the virtual as essential for understanding these relations. They argue that the migration of the colonial power dynamics into the virtual realm is a novel development that distinguishes the imperialism of the 18th and 19th century from what is happening today (Jandrić & Kuzmanić, 2015). Rather than extracting material resources through mining of minerals, or physical labour, extraction practices now include the mining of digital resources such as data bodies. Therefore, the virtual, disembodied space creates unprecedented opportunities for interactions. Still, they recognise that the perceived detachment of the virtual from the material only exists on the

surface ((Jandrić & Kuzmanić, 2015, p. 36). As such, they define *digital postcolonialism* as a research approach where, "migration into the digital cannot be thought of without geographical thinking, relationships between the digital settles and the digital territories cannot be understood without anthropological method, and the current state of (post)colonial development cannot be placed in a wider context without historical thinking" (Jandrić & Kuzmanić, 2015, p. 37). This 'geographical thinking' refers to digital and postcolonial spaces, where new worlds can exist, new challenges occur, and from which we can gain new understandings of the non-virtual (p. 39). To answer my earlier question of what the study of technologies in postcolonial contexts could reveal, I follow Jandrić's & Kuzmanić 's argument that these expansions into new, virtual territories can aid us in reconsidering our current understanding on the relationship between the virtual, the non-virtual, and the postcolonial. As the research field is yet to be further established, they foresee methodological challenges due to our limited understandings of the relation between the virtual, and the non-virtual (p. 48).

2.5 Summary: a literature review of technologies in postcolonial contexts

In essence, this study is an attempt to further Jandrić's & Kuzmanić 's establishment of the research field of digital postcolonialism. Building upon the argumentation of postcolonial authors such as Gyekye (1994), Arewa (2019a, 2019b), Adam (2019), Alzouma (2005) and Mutsvairo (2018), whom argue that the we must understand technological disruption in relation to the local (socio-economic) realities of its users, I argue that we must consider the micro dimension of user practices alongside these macro dimensions. As it is the usage of mobile technologies that prevail in postcolonial African contexts, the virtuality of such technologies should be in examined as well. Therefore, a closer (micro) examination of virtual dimensions can aid towards a better understanding of the macro dimension of our non-virtual world.

3. Technological mediation and the experience of reality

3.1 Introduction

In this chapter I will construct a theoretical framework to aid in studying the way mobile technologies affect the experience of reality in a postcolonial context by evaluating various concepts that relate to technological mediation. First, I will elaborate on Verbeek's postphenomenological theory of the mediation of technology as a foundation for understanding World-Human-Technology relations. Secondly, following Søraker's critique on this approach, I will elaborate on the notion of virtuality to better understand how technologies that create virtual spaces require different conceptualisations of technological mediation.

Thirdly, the concepts of potentiality and actualisation by de Souza e Silva and Sutko (2011) combined with Lonsway's (2002) reference to the sociality of virtual spaces will serve as key concepts to access notions of materiality and immateriality and how they relate to the interplay between humans, the world, and technologies. Combined with Hine's (2000) understanding of boundaries in relation to the virtual, my theoretical framework of the concepts of spatiality, materiality, potentiality, actuality and temporality will serve as analytical tools for understanding how virtual social technologies affect the experience of reality in a postcolonial context.

3.2 Studying technologies and reality- amplification and reduction

According to Verbeek (2011) the postphenomenological approach suggests that human-world relations should be understood considering *intentionality;* the way humans direct their intention to their reality (pp. 15- 16). The concept of intentionality allows for the revelation of the relationship between subject (Human) and object (World) (Verbeek 2011, p. 55). As Verbeek argues, technologies mediate this intentionality, as they reveal to us

perceptions different from our interaction with the world without using technologies. It is through the *experiencing* of reality that humans realise their existence (Verbeek, 2011, p. 5).

Moving beyond the dichotomy of object and subject, Verbeek (2011) argues that in order to understand the relation between humans and reality, technologies should be considered as intertwined with humans. Secondly, he argues that it is the interplay between humans and their world that constitutes the subject and the world (Verbeek, 2006, p. 15; 2011, p. 5). When mediated by technologies, intentionality is not a "bridge between subject and object but a fountain from with the two of them emerge" (Rosenberger & Verbeek, 2015, p. 12). As technologies affect the *experience* of reality, studying the experience of users and their technologies gives us access to human-technology-world relations. To analyse how these technologies mediate our experience of reality, Verbeek (2006) elaborated on Ihde's (1990) philosophy of technology with concepts from Bruno Latour's Actor Network Theory (see figure 1). The concepts on the left serve as a vocabulary to understand how technologies mediate the *perception* of reality, whereas the concepts on the right are useful to describe how technologies mediate our *actions* in the world.

perception	**praxis**
mediation of perception	mediation of action
technological intentionality	script
transformation of perception	translation of action
amplification and reduction	invitation and inhibition
delegation: *deliberate inscription of scripts and intentionalities*	
multistability: *context-dependency of scripts and intentionalities*	

Figure 2: A vocabulary for technological mediation

Figure 1: *Verbeek's vocabulary for technological mediation (Verbeek, 2006, p.18)*

When combining these concepts, this *vocabulary of technological mediation* can be used to analyse the way technologies affect and are affected by their use-contexts. (Verbeek, 2006, p. 10). In the mediation of *action,* technologies *invite* and *inhibit* specific actions, which are in turn the result of a combination of personal intentions, social structures, and material environments (p. 10-11). Whereas the mediation of *action* is useful for understanding how technologies as material objects steer intentionality, Ihde's (1990, 1993) concepts relating to the technological mediation of *perception* are better suited to study how technologies affect the *experience* of reality.

In the technological mediation of perception, the concepts *amplification* and reduction signify a *transformation of perception*, as technologies affect our "sensory relationship with reality" (Ihde, 1993, p. 8)". Since technological mediation amplifies or reduces aspects of reality, it is this transformation, or the *technological intentionality,* that renders technologies as non-neutral (Verbeek, 2001, p. 128; 2006, p. 8). According to Verbeek (2006) this technological intentionality is dependent on the use-context of the technology, causing differences in context to result in different outcomes (pp. 8-9). This *multistability* therefore explains how technologies can cause various, co-existing interpretations, even when unintended by the designers of the technology (Ihde, 1990, pp. 116-118; 1993, pp. 140-151). As such, it is within the use-context, which consists of material conditions (technologies, physical situatedness), personal intentions, and social structures, that the *experience* of phenomena can be accessed.

According to Ihde (1993) the amplification and reduction of specific elements of the world occur in *embodiment* and *hermeneutic* relations between humans and technologies. He argues that in the embodiment relation, technologies transform our sensory experience of reality. For example, looking at the world through magnifying glasses amplifies smaller structures and objects, whilst reducing the visibility of that which lies outside of its magnifying scope. Furthermore, Ihde argues that within the hermeneutic relation, technologies reveal to us aspects of the world that requires an act of reading by the user (p. (Ihde, 1993, 111-113). Verbeek's (2008) analysis of the sonogram is an example of how technologies realise a representation of reality in which it reveals information that, upon interpreting, affects how we understand our reality (Verbeek, 2008, p. 15). In other words, how technologies mediate our micro perceptions affects our macro perceptions, or how we see and interpret our world (Verbeek, 2001, p. 128). Technologies have specific function, and its performative features can have multiple (intended and unintended) outcomes due to its

multistable state affected by the use-context. It is within the experience of the user that we find the material, performative features of the technology-in use, and see how this transforms micro perceptions. Relating this back to the technological *mediation of action*, the *transformations in perception* can *inhibit* or *invite* users to perform certain actions, thereby affecting not only our macro perceptions, but also the world in which we are physically situated.

3.3 Virtualities

Although the postphenomenological theory of technological mediation offers useful insights into human-technology-world relations, it proves problematic when applied on technologies that create a space in virtuality where users can interact. In Søraker's (2012) critique on Verbeek and Ihde's approach, he argues that there are multiple challenges when interpreting the unique characteristics of virtual worlds (Søraker, 2012, pp. 502-504). According to Søraker, virtual worlds are "computer-simulated, interactive, multi-user, three-dimensional environments where users can interact with each other by means of graphical representations of themselves ("avatars")" (Søraker, 2012, p. 500). According to this definition, WhatsApp, the case study of this research, has properties that would render it as (creating) a virtual world; users interact in a computer-simulated, multi-user environment through a graphical representation in the form of a profile. Søraker defines virtual worlds as functioning like a membrane between the real and the virtual due to their ability to maintain and create relationships with that have no prior attachment to the offline lives of the users (p. 501). This applies to WhatsApp as well, where users can find contact numbers through group inclusion and embark on a new relationship despite having no physical counterpart of that relationship. Therefore, Søraker's critique on the distinction between world and technology when applied to virtual should be considered when dealing with technologies such as WhatsApp, that enable the creation of a virtual world. According to Søraker (2012), virtual worlds require an unique approach as they complicate our understanding of human-technology-world relations. He therefore asks the following questions. Does 'human' refer to the user as physically situated, or as a profile active on the software through a mobile phone connection? Does 'technology' relate to the mobile technology, the application software, or the internet connection? Does 'world' refer to the virtual, or the physically situated world? (Søraker, 2012, pp. 503-504).

Søraker recognises that the categories used in Verbeek's theory of technological mediation may be useful for specific technologies yet are inapplicable to describe and interpret the characteristics of virtual worlds. Instead, he suggests deploying the concepts *intravirtual* and *extravirtual*. Based on Searle's (1995) conceptualisation of intentionality and the conditions of satisfaction, virtual and physical actions cause intravirtual (within the virtual world) and extravirtual (in the physical, non-virtual world) changes (Søraker, 2012, pp. 505-509). The relevance of these concepts lies in the establishment of a relationship between the virtual world and the physical world, in which the virtual cannot be detached from the non-virtual. Although these concepts may be useful for analysing the type of virtual worlds in Søraker's article (such as a multi-player online role-playing game), the focus on intentionality and satisfaction in an interpersonal mediation of relationships between intravirtual, and extravirtual actors may be problematic when considering the unique characteristics of WhatsApp.

Notwithstanding that WhatsApp can be considered as creating virtual worlds, it is not a standalone software when in-use. Based on Aunger's (2010) classification of technology levels, WhatsApp in fact operates on three levels of technology (Aunger, 2010). First, WhatsApp requires a *mobile* technology as a carrier and therefore, it has the material functionality of mobility. Second, as WhatsApp runs as software on a mobile technology, it requires an electricity charge and internet connectivity to run. Third, WhatsApp is a software application with its own functions and properties. These three technological levels also affect each other in ways unique to the use-context of the technology. A phone with WhatsApp may have a variety of software applications installed on it, which in turn depends on the stability and strength of the internet connections. Furthermore, each phone brand has unique factory settings and material features, affecting the capacity of the mobile carrier to install and run other software applications.

As there are several layers of technological functionality in WhatsApp, the concepts of intra and extravirtual, which focus on interpersonal mediation of relationships, do not reflect the complexity of, and to what extent, this compound technology interplays between the virtual and the non virtual. Although Søraker's (2012) critique on Verbeek's theory of technological mediation highlights some important consideration when regarding virtual worlds, the characteristics of WhatsApp render his conceptualisation of virtual worlds unsuitable for the analysis of WhatsApp when in-use.

3.4. Defining the virtual

3.4.1 Defining the virtual: space, reality, worlds

Søraker describes virtual worlds as a membrane between the virtual and the real. What is the virtual, and how does it relate to 'the real' the concept of the virtual refers to? Chalmers (2017) describes two readings of the virtual. In the first reading, Chalmers argues that the virtual is defined as an 'as-if'; a virtual space as a not entirely 'real' space. In the second reading, he argues that the virtual is related differently to the real, not by being a 'not-entirely real', or 'as-if real', but by pertaining to a computer-based version of the real (Chalmers, 2017). In this second example, a virtual space would therefore be a computer-generated version of a physical space.

What the relation between the virtual (space/reality/world) and its counterpart (the real space/reality/world) entails is an ongoing debate, in which the understanding of the prefix 'virtual' in relation to what follows 'world/reality/space' differs. There are two main access points to this relation; either through conceptualising meaning created in and through the virtual and the non virtual (Malpas, 2009), or through analysing the experience of the virtual (Champion, 2018; Friesen, 2014; Kozel, 2008, 1994; Lonsway, 2002). In the first approach, the virtual relates to the non-virtual by manner of contentual dependence, where the meaning (or narratives) embedded in the content that exists in the virtual affects the way the user interpret the non-virtual (Malpas, 2009). This is similar to Ihde's technological mediation of perception. If I read a text message that informs me of the state of a loved one, my interpretation of that content will affect how I make sense of my non-virtual reality. Or, how the technology affects my *perception* of reality. The second approach addresses *the experience* of the virtual; notions of space, reality, and worlds are reinterpreted to gain better understanding of these phenomena. Kozel (1994) reinterprets the materiality of the virtual by a phenomenological study of her body in virtual space. As such, the understanding of the experience (virtual) space gives access to better understand how the virtual relates to the non-virtual. The two approaches, perception versus experience are not oppositional, they reveal and emphasise different aspects of technological mediation.

Similar to how Verbeek (2006) combines *perception* and *action* to explain the dynamic between technologies, users, and the world, the same dynamic may apply to *perception* and *experience*. Whether this is indeed the case is beyond the scope of this research, nevertheless, it is important to understand that with both approaches the virtual is

not considered to be autonomous from the non-virtual, and that it is within the relation between the virtual and the non-virtual that we can gain better understanding of the phenomena (realities, spaces, worlds) it relates to (Kozel, 1994; Lonsway, 2002; Malpas, 2009). In this research, the main reason for focusing on the *experience* of reality is that it emphasises the engagement with a phenomenon prior to the interpretative action of perception. As Kozel (1994) demonstrated, it was through her experience of her body in virtual space that she could, in turn, create a reflexive space to reinterpret how she perceived notions such as materiality and immateriality.

3.4.2 Defining the virtual: boundaries

How then, does one define the virtual space as an object of study to better understand the relation between the virtual and the non-virtual? By reinterpreting the conceptualisation of boundaries in the virtual, Hine (2000) was able to describe various principles relating to the virtual. Similar to Kozel (1994), Lonsway (2002) and Malpas (2009), she sees virtual space as an interactive space that is not detached from "real life". In addition, she considers virtual space as being mobile and in flux, in which the making and remaking of space provides opportunities for researchers to engage in ethnography (Hine, 2000, pp. 63-75.)

This conceptualisation of boundaries permeates throughout discussions on the virtual and the non-virtual: does the virtual create the boundary between the virtual and the non-virtual? Do the boundaries of space apply to the virtual boundaries of space? What Hine (2000) brings to the discussion is that virtual spaces are constantly being shaped and created as users interact with it, in which information flow and connectivity shape the boundaries of the virtual space. The relation between the virtual and the non-virtual is not static but is constantly being affected by and through user interaction, which is mediated by the performative characteristics of the technology. Rather than speaking of virtual worlds, thinking in terms of spatiality can function as a beacon to analyse the characteristics of virtualities and its fluctuating boundaries.

3.4.3 Defining the virtual: potentiality and actualisation

The relation between the technological, the virtual, and the non-virtual now have two access points that serve as a foundation of this research. One, the change in information flow and connectivity as the users interact with the technology (as described by Hine, 2000) and accessing the notion of space as a point of comparison between the virtual and the non-virtual.

Two, the virtual space is created through a technological carrier, in which the type of technology determines whether we are speaking of virtuality, or not (as described by Søraker, 2012). Therefore, it is important to take a closer look how the performative characteristics of technologies relate to the extent to which a virtual space is created.

According to de Souza e Silva and Sutko (2011), understanding the relation between virtual and non-virtual spaces requires the consideration of temporality as that which causes changes between the two spaces. In their analysis they argue that l*ocative media*, including location-aware mobile phones that use GPS, have unique characteristics that allow for the creation of novel experiences of space (pp. 23-24). Using the concepts of *potentiality* and *actualisation,* they establish a relationship between the information existing as a potentiality in a virtual space, and the actions of the users that allow for their location aware technology to actualise this information into their sensory experience (de Souza e Silva & Sutko, 2011).

To understand what this movement from the potential to the actual entails, it is important to consider de Souza e Silva and Sutko's base their interpretation of virtuality on Aristotle's understanding of this concept. Rather than deploying the Platonian object-subject division, in which the represented (the mediated, the virtual) is a *reflection* of the real, they argue that Aristotle's reading of the potential (the virtual) moving into the actual (the real) conveys a non-dualistic state of multiplicity (de Souza e Silva & Sutko, 2011). This is similar to the first reading of virtuality that Chalmers (2017) describes, where the virtual serves as an 'as-if real'. As such, the relationship between the material and the immaterial allow for the virtual to affect the non-virtual. De Souza e Silva and Sutko (2011) argue that the unique characteristics of *locative media* exemplify this.

Locative media, such as mobile phones that give access to reviews on Yelp, affect the non-virtual by actualising information existing as potentialities in the virtual into the non-virtual (de Souza e Silva & Sutko, 2011). This dynamic between the real; the materiality of the space inhabited by the user, the virtual; reviews existing in a virtual space, and the user; engaging with the technology to cause movement from potential to actual, show that the interface of the technology functions as a relation that enables changes between the two spaces. As a result, these transformations in micro-perceptions change the users' experience of the non-virtual space, causing changes in macro-perceptions as well.

De Souza e Silva and Sutko (2011) consider these effects to be unique properties of locative media, where the relation between the material, or physical space, and the digital (virtual) information can be attained by studying the interface and its function of the

technology. The technology operates in a temporal and spatial aspect; where movement of the user's body changes the information existing in virtuality (spatial), and the actualisation of information at different times can allow for the existence of multiple possibilities of actualised outcomes (temporal).

Relating this to the unique properties of WhatsApp, the performative functions of the technology that enable location sharing would indeed classify it as being location-aware. However, this is a minor function of the technology, where the creation of virtual groups and one-to-one communication is foregrounded. Still, the technology shows a similar spatial-temporal dynamic of information existing as potentialities in virtual space, in which the actions of the users cause the actualisation of this information at different points in time.

3.5 Developing a framework to conceptualise virtualities in a postcolonial context

Using De Souza e Silva and Sutko's (2011) conceptualisation of the virtual provides a foundation for understanding how the material and the virtual co-constitute each other, and how movement causes a change from the potential to the actual. Although the material and the virtual are conceptualised separately, they are not considered dualistic, and therefore not conceptualised according to the Platonic division between the ideal and the real. Meaning that there is a relationship of co-dependence between the material and the immaterial, and changes in one affect the state of the other. This does not mean that when the virtual ceases to exist, the material disappears as well. Instead, it means that the material and the virtual should be analysed in relation to each other.

It is in the material realm that the postcolonial context becomes meaningful. If the material (non-virtual spaces) and the virtual mutually affect each other, then the power structures embedded in postcolonial contexts follow a similar dynamic. Therefore, it is important to understand the socio-technological relations between the material and the immaterial dimensions of the postcolonial context.

Lonsway (2002) regards virtuality in a socio-technological aspect by following Morse's (1998) notion of virtuality; where the spatiality of the virtual is linked to social engagement of the users. In this respect, the virtual constructs digital-human relations located in in a material world, where socio-economic and political processes affect and co-constitute a virtual relationship between humans and the material (Lonsway, 2002). Considering this, the postcolonial condition affecting socio-economic and political processes are existing in the virtual as well. Which brings me back to my question relating to the characteristics of

technologies, and whether the same dynamic de Souza e Silva and Sutko (2011) describe, applies to other mobile technologies as well. In the postcolonial context of Sierra Leone, the dominant mobile technology is WhatsApp; which operates differently from the locative media analysed by de Souza e Silva and Sutko. WhatsApp is a technology that does not only ascribe a certain aspect of location (through mobility of the phone) but also adheres to the social dimension of the virtual. By looking at how this technology co-constitutes reality, we can gain a better understanding of the role such virtual technologies with social dimensions affect changes in virtual and the non-virtual.

3.6 Summary: accessing the co-constitutive of the technological through the user experience of social/virtual/mobile technologies

In this chapter I have constructed a theoretical framework for analysing the way virtual technologies affect the experience of realities in a specific a postcolonial context. Starting with the Verbeek's (2011) phenomenological theory of technological mediation provided a baseline for positioning the concepts of virtuality, potentiality, materiality, physicality, and actualisation to understand human-technology-world relations. Considering Søraker's critique on this approach, it requires alterations in order to be applicable to technologies that create virtual spaces. As such, I looked at theories on virtualities so that I could create a theoretical framework which allowed for the analysis of human-technology-world relations whilst adhering to the virtual dimension of mobile technologies:

World > Virtual
> Non-virtual (physical/material)

Technology > Virtual (software)
> Non-virtual (physical/material)

Human > Virtual (immaterial identity/profile)
> Non-virtual (physical/material)

The relation between the virtual and the non-virtual is a boundary in which a multitude of outcomes exist in potentiality; where the change from potential to the actual is initiated by the interpretative engagement of the user with the technology. This provides the foundation for creating a method to study these relations. Hine's (2000) conceptualisation of virtuality shows that the boundaries of virtual spaces are in constant flux as they consist of information flows and connections, steered by users interacting with the technology. The

users therefore function as nodes in these networks and provide entry points for studying these relations. Following the phenomenological approach of Kozel (1994), studying the experience of virtual space gives us insights into how the virtual relates to the non-virtual, which allows us to reassess how we understand concepts such as materiality and spatiality. In addition, conceptualising the virtual as enabling virtual relationships of sociality between users through technologies brings in the possibility of adhering to the material and immaterial postcolonial dimension. De Souza e Silva and Sutko (2011) have argued for understanding virtuality through the concepts of potentiality and actualisation by considering the specific functionalities of locative media.

What remains unclear is how non-locative media relate to the non-virtual (material/physical) space. Does the postcolonial context affect the virtual as well as the non-virtual, thereby affecting the (virtual) human- (virtual) technology- (virtual) world relations in non-locative technologies that mediate sociality? Although WhatsApp can be considered a locative technology, the different technological levels it operates on and the multiple functions the technology has renders it unsuitable for De Souza e Silva and Sutko's (2011) analysis to hold. Therefore, I argue that to understand how mobile technologies such as WhatsApp affect the experience of reality whilst considering the postcolonial dimension, we must look at user practices as the place where we can observe human-technology-world relations.

4. A methodology for studying non-locative virtual media: WhatsApp

4.1 Introduction

In this chapter I will elaborate on the concepts discussed in the theoretical framework to inform my methodology. First, I will introduce my case study and explain the rationale behind looking at WhatsApp user practices in Sierra Leone by showing that unique virtual-non-virtual dynamics are likely to occur in Sierra Leone. Second, I will explain my motivation behind choosing virtual ethnography and elaborate on the specific practices I engaged in to study the effect of mobile technologies on the experience of reality. Furthermore, I will demonstrate how I altered the virtual ethnographic approach to adhere to the postcolonial dimension and the unique characteristics of WhatsApp as a technology. Finally, I will provide a short explanation on the ethical considerations, practical challenges,

and the limitations of the research.

4.2 Introducing the case study: mobile technologies in Sierra Leone

Sierra Leone is a country located on the west coast of Africa, bordering Liberia and Guinea. It is a fast-developing country with ongoing population and urbanisation growth. The current population is estimated at 7.9 million (urban population 43.3%), and with yearly growth rate of around 2%, it is forecasted that by 2030 the population will have increased to 9.6 million (urban population 48.1%) (*Sierra Leone Population 2020*, 2020). Alongside these trends, Sierra Leone has witnessed an increase in mobile and internet technology usage. Internet penetration has risen from 6% to 25% in the last four years. (*Digital 2017*, n.d.; *Digital 2020*, n.d.). Mobile phone usage dominates the media landscape, with 87% of Sierra Leoneans having mobile connectivity. (BBC Media Action, 2019), and approximately 24% of the population has a mobile internet subscription (GSMA Association, 2019, p. 15).

The dominance of mobile technologies and the growing internet literacy of the population is leveraged by the Government of Sierra Leone. In the recognition that mobile technologies are the "singular technology that connects all Sierra Leoneans" (Directory of Science Technology & Innovation, 2019), the Sierra Leonean government is actively using these technologies to push digital innovation and national development. Whereas the government's stance towards mobile technologies is positive, concerns on the effects of technologies such as WhatsApp, which can be carried on mobile technologies, have emerged in the Sierra Leonean news in the past few years.

WhatsApp is a mobile phone application used globally to send and receive media, including images, video, audio, documents, locations, texts, and used to call with video and audio over an internet connection (*About WhatsApp*, n.d.). Despite the lack of reliable data on WhatsApp usage in Sierra Leone, it is known that WhatsApp is the most dominant messaging platform in the majority of Africa, including Sierra Leone (Boyd, 2019). It is also known that the majority of social media users (83%) are living in urban areas and are between 15-35 years of age (Wittels & Maybanks, 2016, pp. 21-23). Considering these statistics, I will look at urban youth between the age of 15-35 that use WhatsApp as a starting point for my empirical research.

4.3 Virtual worlds and WhatsApp in Sierra Leone- concerns

The wide-spread usage of WhatsApp in Sierra Leone has raised concerns regarding the effects of the platform on Sierra Leonean society. Since 2016, several news articles have appeared in which the adverse effects of WhatsApp have been brought to the attention of the public. These include the arrest of a student after sharing a WhatsApp message, fake news circulation that is rumoured to have affected the 2018 national elections, and debates on free speech relating to the sharing of information on WhatsApp (Awoko, 2019; Hitchen, 2018; Inveen, 2016; Thomas, 2016). These concerns seem to relate to the functions of the platform, however, academic studies on exactly how WhatsApp relates to these (adverse) effects are currently lacking. Instead, the focus is on WhatsApp as a technology that affects social structures and as a platform to facilitate information dissemination (see Jackson, 2020; Sam, 2015). Although the purpose of this research is not to study how the affordances of WhatsApp affects its users, I will aim to look at the material dimensions of the platform, including its features and functions, whilst looking at user practices in which the immaterial dimensions are studied as well.

4.4 Virtual ethnography

To study WhatsApp, and in particular user practices, I applied principles from virtual ethnography to observe behaviours in a digital environment. According to Marres (2017), virtual ethnography is a digital and Internet-based method that allows for the study of virtual and digital communities (2017, p. 48). Hine (2017), describes ethnographic methodology as the immersion of the researcher into the setting of the studied object to obtain insights. During this process, the lived experience of the researcher becomes empirical data in the form of thick descriptions (Hine, 2017). Furthermore, Hine argues that when applying ethnography to digital spaces such as the internet, the researcher immerses him or herself in the online environment (p. 316). In her earlier work, Hine (2000) provides several practical guidelines for doing virtual ethnography. As a research approach, she argues, the researcher becomes part of the fluid virtual environment in which face-to-face interaction can become obsolete. Furthermore, interaction can occur asynchronous and across multiple virtual sites. These virtual sites do not have pre-defined or fixed boundaries, which requires the researcher to adjust the approach on how to engage with these sites as the ethnographic study progresses (Hine, 2000, pp. 63- 75).

The key considerations of these guidelines are the recognition of a virtual space as

something that is constantly being shaped and created as users interact with it. The physical field sites, where practices and traditions occurred, are now replaced by a virtual space in which the boundaries and practices are in continuous flux. The embodied emplacement of the self into this space, in the form of participant observation can thus occur entirely virtual. (Boellstorff et al., 2012, p. 65)

Therefore, a virtual ethnography of WhatsApp spaces requires the researcher to adopt an equally flexible attitude for interacting with the research space. Although the boundaries of the research space are not fixed in the traditional sense - users can simultaneously and asynchronously occupy a virtual space from different material locations - the platform can function as a relatively contained space (Hine, 2017, p. 318). WhatsApp as a software platform can therefore function as the space where the researcher immerses him or herself. According to Hine (2015), immersion is core to being in close proximity to observe the group subjects. This may consist of engaging in the same activities as the studied subjects and requires a constant reflection on the ethnographer's observations and interpretations (Hine, 2015, pp. 19- 20). Thus, as the core features of WhatsApp include group chats and peer-to-peer communication, immersion into the WhatsApp space would require the researcher to gain access to these groups and chats to co-experience and engage with the platform.

4.5 Access and Inclusion

Gaining access to the research space is one of the first steps in (virtual) ethnographic research. Hammersley and Atkinson (2007) describe the process of *negotiating access* not only as a practical process, but also as a means to generate important knowledge. This includes discoveries of the obstacles to gaining access, being sensitive to what the researcher presumes as being (in)accessible, and complying to ethical considerations of whose permission, and what type of permission needs to be granted to gain access (Hammersley & Atkinson, 2007, pp. 41- 42).

Translating this to my own research, I started the negotiating process of gaining access to WhatsApp user practices by reaching out to potential respondents through my personal network. This method, known as snowball, network, chain-referral, or link-tracing sampling, is an effective method of gaining access to hard-to-reach networks (Baltar & Brunet, 2012). Due to the affordances of WhatsApp, users can only gain access to the WhatsApp space by having a WhatsApp account (on a registered sim-card). To gain access to specific WhatsApp spaces, however, is more challenging. For personal chats, the researcher needs the

(WhatsApp) phone number of the user, and for groups, access can only be provided if group administrators manually add the researcher's number to the group chat. Due to the fact that I was physically absent in Sierra Leone, I was unable to construct new relations with people that allowed me to start negotiating access. Furthermore, there was no opportunity for me to confirm my personal identity through face-to-face contact, which may impact trust building. As Boellstorff et al. (2012) state, establishing "rapport and trust can shape an entire research project" (Boellstorff et al., 2012, p. 77). This is especially significant in Sierra Leone, where cultural norms such as reputation and knowledge of face and family are important pillars of establishing a trusting relationship. Therefore, as a first step to gain access to WhatsApp users, I drew upon my personal network among people living in Sierra Leone.

A potential drawback of the snowball sampling method is the possibility of engaging with a homogenous cluster of respondents, since the network of retrieved respondents may only refer to actors within a specific network and are therefore not random (Illenberger & Flötteröd, 2012, p. 702). However, the topological relations of such networks are similar to how WhatsApp operates as a communication platform; one where a first network can, through group inclusion, lead to access into second and third network circles. Virtual networks consist of such random elements, and thereby *virtual snowball* sampling leads to a representative form of this digital network (Baltar & Brunet, 2012, p. 69).

In virtual snowballing, the researcher's online profile remains visible. In my case, I made my private details publicly available on my WhatsApp account, so that respondents could confirm my integrity as soon as they received my phone number. It was a virtual attempt to 'show face' and build trust with potential respondents.

The topological network structure of WhatsApp relations played a key role in gaining access to WhatsApp user practices throughout the initial phase of finding respondents. Being of Sierra Leonean nationality and having lived there for nearly four years, I had a number of personal WhatsApp contacts that were living in Sierra Leone. To test out the waters, I posted a WhatsApp status (see figure 2 below). Within 24 hours, one of my Sierra Leonean contacts

shared my status by posting it on her own status. She created a WhatsApp group called 'Esther's Thesis', to which she added me and all those whom responded to her status.

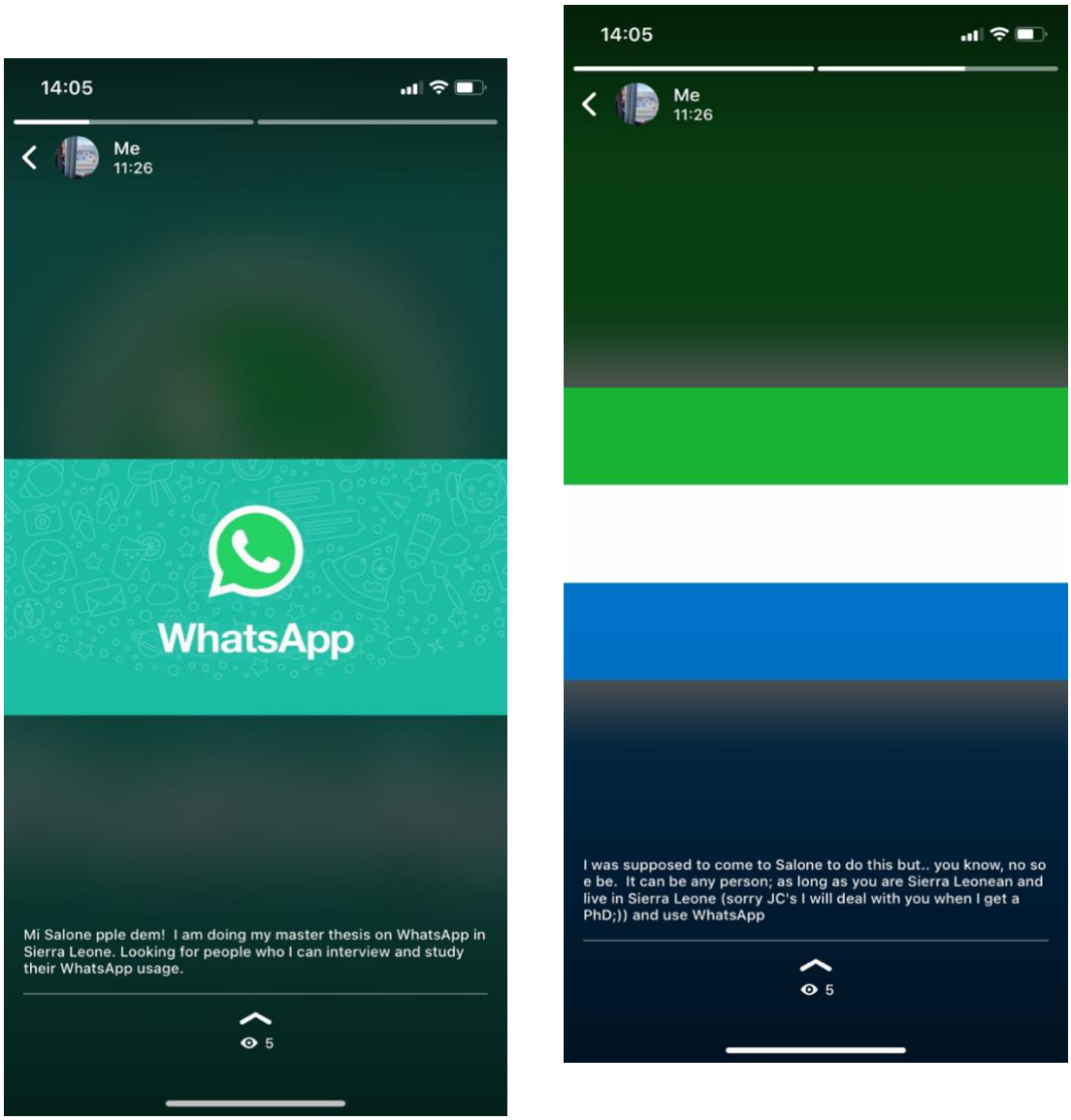


Figure 2: *Screenshot of my WhatsApp status, posted on the 26th of March 2020 at 11:26, statuses can be viewed by people in a WhatsApp contact list for 24 hours.*

My presence in this group provided me with the opportunity to address those interested in the research. To start the process of finding out whom of the group participants were truly interested in participating, I gave a brief explanation on the nature of my study and requested participants to message me privately with their name, location and age. Of the 45 participants, 31 sent me their details, whom in turn received an elaborate brief. After reading the brief respondents had to confirm their participation. If they confirmed, I sent a research

agreement to receive informed content, and set up an appointment via WhatsApp audio call to discuss the agreement and answer questions. After this final step, I had a remainder of twelve respondents whom consented to participating in my study.

4.6 Respondents

Participating in my research consisted of two aspects: conducting recurrent interviews, and participant observation of WhatsApp conversations. Whereas availability for interviewing was a requirement for participation, giving me access to WhatsApp conversation was optional. Although this did restrict access to some groups, I purposely chose to respect the respondents' decisions.

The first reason was that I could retrieve important information from (failing to) gain access to these groups. The second reason was an ethical consideration of announcing my presence prior to being added to a chat. Choosing this over *lurking*, where the researcher does not announce presence to unobtrusively observe group activities (Hine, 2017, pp. 321- 323), meant that I could risk affecting the natural course of events (Janetzko, 2008, pp. 161- 162). Arguably, the affordances of WhatsApp mitigated this risk. Participating in a group does not require sending messages; reading and viewing messages constitutes a form of participation as well. Although researchers affect the research space by their presence, as Boellstorff et al. argue, "ethnographers are simply one of a multitude of actors within the space of a culture" (Boellstorff et al., 2012, p. 45).

In table 1, I have provided an overview of my respondents, the WhatsApp groups I gained access to, and the total number of members in each group. When combined, the number of WhatsApp users active in the observed groups were 1.256. As such, my unobtrusive accessing of the field became a mediated form of participated (Boellstorff et al., 2012). Also, because I inadvertently observed 1.256 WhatsApp users, I had to provide the opportunity for those whom were included in my official pool of respondents to opt out of being included in the research field site.

Name	Gender	Age	# Active in groups	# Total members	Group 1: name	Group 1: #members	Group 2: name	Group 2: #members
1. Désirée	F	22	8	640	LOCK DOWN (we nr fr bored)	15	IA Reunion	39
2. Ibrahim	M	27	5	343				
3. Aisha	F	22	8	990	Real Friends	144		
4. Augustine	M	23	36	>2.000				
5. Benjamin	M	25	55	+-5.500	#COP National Forum	198	SOWK Class of 2019	192
6. Issa	M	24	42	5662	ILM GLOBAL	102	National Youths Assembly	181
7. Osman	M	23	Not provided	Not provided	W_JBORN (POIKOUN)	40		
8. Memuna	F	24	37	1.116	Haja Fatu Grand Kids	20	Esther's Thesis	45
9. Abubakar	M	30	27	4.840	Class of 2017	103	Njala University Corner	177
10. Mary	F	25	2	450				
11. Mariama	F	29	Not provided	Not provided				
12. Hamid	M	27	Not provided	Not provided	THE POET VILLAGE	Unknown		

Table 1: *Table of respondents and their corresponding WhatsApp groups in which I was included for participant observation*[1]

Twelve respondents gave me access to the user practices of more than 1.200 WhatsApp users. In turn, each respondent belonged to an average of 24 WhatsApp groups, whom combined had more than an estimated 20.000 participants.

4.7 Qualitative interviews

To supplement my participant observation and gain better understanding of the user practices in WhatsApp groups, I conducted three 'waves' of consecutive interviews with the respondents. Each interview was followed by an analysis of my observations so that I could

1 Hamid provided me a .txt archive file of his WhatsApp group since he joined the group. Therefore, some data could not be accessed, and I was unable to engage in participant observation for this particular group

ask pre-determined questions on more generic WhatsApp user practices, and specific questions based on their behaviours observed during participant observation. The results informed the direction of the interview that followed to create a synergy between the observations and the interviews, resulting in a fluid method in which the empirical data informed the qualitative interview approach.

To communicate and co-inhabit in the virtual space of WhatsApp, it was important to learn the virtual language of WhatsApp. The information structure of WhatsApp became the mode of interaction. Emoji's, stickers, audio notes and status updates become a mode of expression, response time and 'forwarded' content modes of communication. As such, my interviews had different formats. The majority were conducted over 20-40 minutes long WhatsApp voice calls, in which I recorded the conversation after receiving consent. Some interviews occurred over voice notes, and one virtual focus group was set up to observe the flow and interaction of group members when responding to my questions. As a result, the interviews were not only a means of synergising with the participant observation, but also as a more active form of ethnography to gain access to different experiences of WhatsApp user practices.

4.8 Data collection

4.8.1 WhatsApp affordances

Due to the mixed-method approach of qualitative interviewing and virtual ethnography, I had two sources of empirical data. Table 2 shows the various methods of data collection. All interviews were conducted via WhatsApp call, where I asked for permission to record the conversations using the Voice Memo software from iOs. Due to privacy considerations, I chose not to backup my WhatsApp chats in the cloud due to increased risk of data breaches.

Table 2: *Table of data collection for qualitative interviews*

Interview	**Wave 1**		**Wave 2**		**Wave 3**	
Respondent	**Topic**	**Length**	**Topic**	**Length**	**Topic**	**Length**
1. Désirée	Generic usage	19:25	Fake news, information flow, group purpose	12:57	Experience of time, space, potentialities	25:52
2. Ibrahim	Generic usage	18:12	x	x	Experience of time, space, potentialities, reason no inclusion to group	24:19
3. Aisha	Generic usage	10:45	x	x	x	x
4. Augustine	Generic usage	19:18	x	x	Experience of time, space, potentialities	09:29
5. Benjamin	Generic usage, privacy issues research	19:34	Fake news, information flow, reason removal group	13:59	Experience of time, space, potentialities	36:02
6. Issa	Generic usage	10:29	Fake news, information flow, group purpose	23:32	Experience of time, space, potentialities	24:32
7. Osman	Generic usage	29:12	x	x	Experience of time, space, potentialities	4:12
8. Memuna	Generic usage	29:50	Fake news, information flow, group purpose. Adebayor	28:53	Experience of time, space, potentialities	37:58
9. Abubakar	Generic usage	09:42	Fake news, information flow, group purpose	16:33	Experience of time, space, potentialities	29:19
10. Mary	Generic usage	14:09	x	x	Experience of time, space, potentialities, reason no inclusion to group	21:21
11. Mariama	Generic usage	19:38	x	x	Experience of time, space, potentialities, reason no inclusion to group	22:40
12. Hamid	Generic usage	22:29	Fake news, information flow, group purpose	44:41	Experience of time, space, potentialities	39:26
Groups	**Observations**		**Data storage**		**Coding**	
	Group dynamics, message content, interaction of		Weekly exports of WhatsApp chats from phone to .txt files and stored on local backup device.		WhatsApp chats in .txt uploaded into Atlas.ti software. Coded and grouped per respondent.	

	participants with content		

The qualitative interviews and the observations from my immersion into the WhatsApp space became (more) meaningful when observed in relation to each other. As such, I tailored my approach so that the interplay between the two empirical data sources resulted in enriched interpretations.

Core to this was recognising WhatsApp's unique affordances when engaging in participant observation. WhatsApp as a platform has a myriad of data formats; including statuses, profile information, texts, videos, and pictures. As users engage with this content, it yields yet another set of data. For example, users can choose to forward content, delete their messages, or read the content without responding to it. To better understand these user practices, I steered my qualitative interviews so that the respondents could reveal some of the reasons behind specific behaviours. This way I could create an interrelation between the observations and the interviews, as reflected in figure 3 below. Using this method, I also gained limited insights into user practices I had no access to. Personal chats, for example, could not be included in my participant observation.

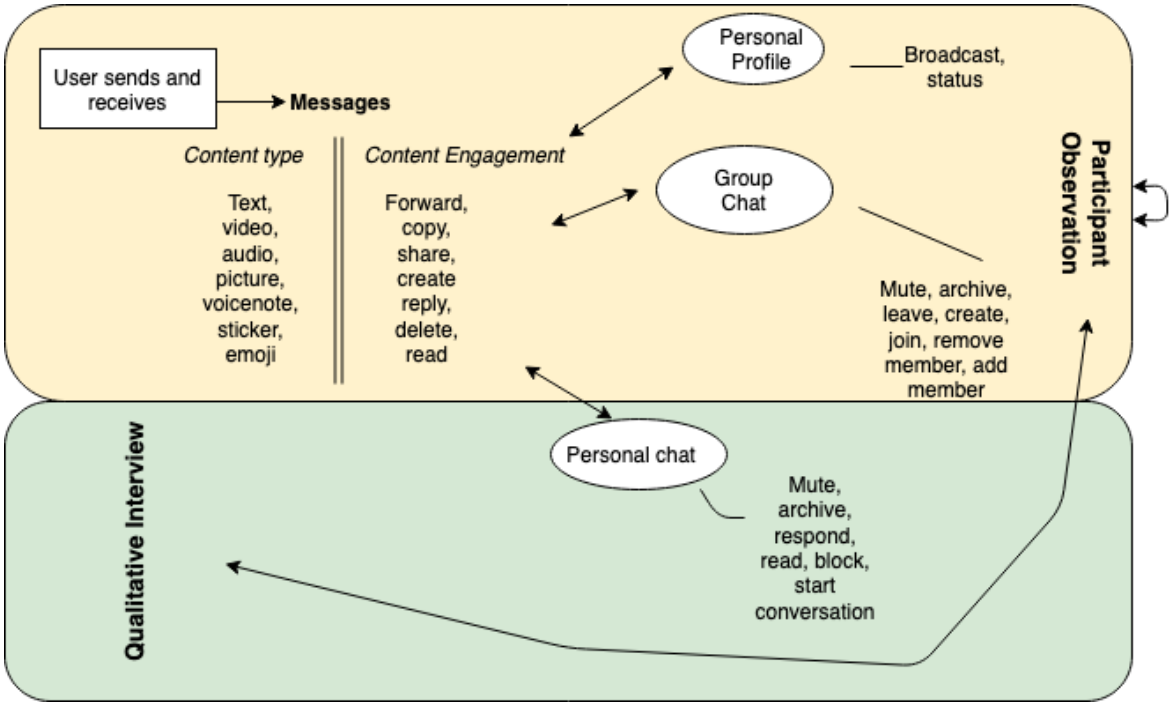


Figure 3: *Schematic of empirical data types and their relations*

4.8.2 Vocabulary

The similarity between the vocabulary of virtual ethnography and the terms on the WhatsApp platform to indicate actions and features, such as participant and member, can cause confusion. Also, the WhatsApp terminology has specific concepts that require explanation. Therefore, I have provided an overview of the vocabulary used in my method (see table 3).

Table 3: *Table of platform-specific terms and functionalities*

WhatsApp terminology			
Content type		**Content Type engagement**	
Term	***Description***	**Term**	***Description***
Text	Text-based writing	**Create**	Self- created content
Voice note	Audio file of a phone-made (voice) recording	**Forward**	Content received in another message forwarded to other users by selecting the 'forward message' function. Forwarded messages are marked by WhatsApp
Audio	Songs and forwarded voice notes in. agg format audio files.	**Reply**	Reply directly to messages by using the 'reply' function
Video	Self-made or forwarded video recording	**Delete**	Delete own message for your own archive, or for others in the chat
Image	Picture or computer graphic	**Share**	Share content to other users by using the 'share' function. Shared message are marked by WhatsApp.
Sticker	Small graphic image	**Copy**	Copy text-based content.
Emoji	Emoticons used with short code or in dictionary menu	**Mute**	Muting a group or personal chat so that no notifications are received
Files	Word processor or .pdf documents	**Archive**	Archive a chat so it does not appear in user's WhatsApp feed
Status	A personal content update (text, video, or image) visible to WhatsApp contacts for 24 hours	**Star**	Starred messages appear in a personalised archive on WhatsApp
Virtual ethnography vocabulary			
Term		**Explanation**	
Respondent		One of twelve interviewees whom provided me access to their WhatsApp groups to observe user practices	
User		Any WhatsApp user	
Participant		A WhatsApp user part of a specific WhatsApp group	

4.9 Ethical considerations

For this research, I followed the ethical principle of transparency by adhering to the following three points. First, each respondent was briefed extensively on the aim of the research, what measures I took to ensure their anonymity, what would happen to their contributions to the research, and their rights as respondents to file official complaints to the university board and to abort their participation with no consequences.

Second, I had a zero tolerance for any disagreement concerning my participation in the groups that my respondents added me to. Even if a group consisted of 200 members, if one member had issues prior to my I would not join. If issues were raised after my inclusion, I

would leave the group.

Finally, I changed all my WhatsApp settings to show traces of my activity. This includes the 'seen by' function on WhatsApp statuses, and when reading messages, so that my respondents were aware of what data I was observing. Instead of lurking- where my observing activities would remain unnoticed by my respondents- I became co-present by announcing my presence to create a space of mutual understanding between me, and my respondents (Hine, 2017, p. 321- 323).

4.10 Challenges and limitations

There were several challenges and limitations to my methodology. The first challenge was of a practical nature. Due to my physical absence, I had to conduct all interviews and data collection online. Being that Sierra Leone continues to have a challenging digital infrastructure, there were several occasions where interviews could not take place or were interrupted by technical problems, such as unstable internet connections and failing batteries.

The second challenge also relates to my physical absence, which restricted my ability to build a bond of trust with my respondents. As such, it was not always clear whether technical difficulties obstructed participant behaviour, or whether it was a lack of engagement with my research. This also affected my access into different WhatsApp spaces. Some groups required me to be part of a relational network that I did not belong to, and because I chose not to lurk in any of the groups, the possibility exists that I gain access to these groups due to a lack of trust.

The third challenge was that although my approach did consider the virtual as a space for immersion to do participant observation, I had no first-hand access to observing user practices outside of the virtual space. In order to bridge this challenge, I tried to direct specific questions during my interviews to gain insights into physical situatedness of the respondents. Although this did offer me insights into some aspects of this dimension, it remains a recount of an experience, and not a direct witnessing of the experience.

5. Analysis: WhatsApp as a Space

5.1 Introduction

In this chapter I will present and analyse my research findings. The mixed-method approach of virtual ethnography and qualitative interviewing yielded a variety of viable empirical data. In line with the research question on how mobile technologies affect the

experience of reality in a postcolonial context, I have pre-selected the findings and have chosen to present them topic-wise, rather than per data format. Reason being that the standalone data, being the qualitative interviews and the observations from my immersion into the space, became (more) meaningful when observed in relation to each other. This follows the approach described in my methodology of creating a synthesis between the two methods to allow for enriched interpretations.

My immersion into the WhatsApp groups resulted in thick descriptions based on my felt experiences, observations, and coding of the content and metadata available on the WhatsApp platform. In addition, the qualitative interviews were transcribed and coded as well. When combined, two main topics relating to the experience of reality as affected by mobile technologies emerged; WhatsApp information relations, and WhatsApp as a Space.

This chapter will start with the first topic, which will describe how WhatsApp plays a dominant role as an information platform in Sierra Leonean society as experienced by the users. In the second topic, WhatsApp as a space, I will elaborate on the experiential features of this information space by applying concepts from theories on technological mediation and virtualities as described in my theoretical framework.

5.2 WhatsApp as a dominant information structure

In this first section of the analysis I will be looking at states of flow in the information dissemination as shaped through WhatsApp. Furthermore, I will look at how users create meaning by engaging with the information available on WhatsApp and the interplay between this information and Sierra Leonean society.

5.2.1 WhatsApp and news

During the observation period of this research, two major developments occurred in Sierra Leone. One, the COVID-19 pandemic affected the daily movements of Sierra Leoneans through government enforced lockdowns. Two, concerns on the validity of information sources and fake news elicited government concerns and attention from national and international media. In Ibrahim's following quote, he describes how he regards WhatsApp as an information source:

> It is easy for all things to go viral. All things that are happening in society. Yesterday we started another lockdown. There was a video, someone videoed

> the soldiers that were beating a man outside. Before - it happens like around 9 o clock. By the time it got to 12, most people using WhatsApp have seen that video. Because everybody is just talking about it, they transported it to Facebook. In terms of information people share it a lot. And people use WhatsApp information, they tend to rely on it more than other sources. In a way it is slowly taking over this radio, television, somewhat the normal places we get use. Some people rely on WhatsApp. Especially with this Adebayor guy. People tend to wait for him to release an audio. People in my area will say 'Adebayor don send'[translated: did Adebayor send a message]? And they tend to share the information a lot. (Ibrahim)

The Adebayor case Ibrahim refers to a Sierra Leonean refugee based in the Netherlands whom sends out audio voice notes with political critique. His voice notes spread through group sharing, and the government has issued a fake news ban after Adebayor falsely reported that the First Lady, Fatima Bio, was diagnosed with COVID-19. To understand the significance of Ibrahim's statement, it is important to note that Sierra Leone observes issues with freedom of speech and press freedom, and that President Maada Bio declared a state of emergency of undefined time due to the COVID-19 pandemic, which renders any spoken statement by the government as lawfully valid, even if it contradicts the nation's legal constitution.

As such, information that can be considered politically sensitive is shared on WhatsApp, which remains a relatively anonymous communication platform. It is shared on WhatsApp not only because of fear of government prosecution, but also because it pulls attention towards the WhatsApp space, where it can be shared virally through WhatsApp groups.

> In Sierra Leone, in these groups- being that WhatsApp is widely used social media platform- it gets easy for you sit in your couch at home or whatever and cook up stories that are not real to gain sympathy, or to scare people. When COVID-19 came, first all news being disseminated by WhatsApp group. Up until last week the president said 'anyone caught sharing fake news about COVID-19 will be prosecuted' but still they are doing it. But what they do is that they are monitoring WhatsApp now, through the telecommunications company, and there was this news that came up few

> news ago: "The first lady has been infected with COVID-19," and it was shocking. It was done by the opposition, yesterday she was forced to do a Facebook live video explaining that she is not infected. (Hamid)

In the WhatsApp groups I observed, the prevalence of forwarded and shared content was significant. Despite the different in goals and functions of each group, I saw specific (fake) news videos and images repeatedly shared across various groups. This included a voice note where users were warned that 5G network activation would cause mobile phones to explode on a specific date. These types of viral messages were all forwarded, which means that they lack metadata on the creation of the content. WhatsApp's 'forward' function facilitates the sharing of such content and contains a signature that marks this information as such. 'Shared' content, however, is either copy-pasted from other textual sources (chats, other social media, news articles, etc.), screenshotted, taken a picture of, or filmed. These messages therefore do not always bear the trace of being shared content.

Key to understanding how information travels from one WhatsApp space to another, means taking a closer look at why and how users interact with the available information. Without user engagement, the information cannot move from one space to another. Hamid's quote shows that unconfirmed 'fake' news is punishable by law, still, the prevalence of forwarded and shared content of questionable validity I observed was high. Content seems to have pull-factors that dictate the quality and quantity of user engagement, bringing about questions of what affects this pull-factor, and why content has a pull-factor in the first place.

> In traditional media someone gives the news and that's it. In WhatsApp there are so many different views from you, it's nice to see it. I can see something like a riot in Kenema between police and youth. I could think the youth are wild and crazy, but someone from Kenema [in a WhatsApp group] can say: "no no, I think the police are violently abusing the youth. (Memuna)

> For someone to be in our class and not be on WhatsApp **(laughs)** that's not good. It's like us being in the year 2020 versus someone living in the year 1961. Yeah. The person will find it hard to connect with the class, because once we are going forward at a faster pace, that person will be like ten steps back. Once, my phone got missing and we were supposed to have a test, but the lecturer passed on the information to the class rep, who spread the

> message on WhatsApp. Unbeknownst to me I waited for an hour before I called my friends and knew that the test was cancelled. Transport wasted; time wasted. (Hamid)

> For some of us who do not have radio, you can do the radio frequency "Good morning Salone" that is a programme that informs all of us. Some of us we can be on WhatsApp we can see what happens on good morning Salone. (Benjamin)

The three quotes above depict three different ways in which WhatsApp dominates as an information platform. Benjamin's quote reveals how WhatsApp gives new forms of access to traditional media sources. For WhatsApp users without access to radio or television, WhatsApp as an information space functions as a single access point to other media sources. This is similar to how forwarded content bears traces of other information sources as well, as they are (edited) copies of images, audio, other textual sources and videos. Therefore, the information and the WhatsApp space (the platform) function as a means to stay updated on the latest developments within society.

Memuna's quote shows how information on WhatsApp can function as a new space for interpreting information. As users from various locations can access and interact with the same content, they can exchange information to 'dress' the content and allow for various interpretations. WhatsApp therefore not only functions as a single access point to other media sources, it also provides alternative contexts for interpreting the information.

Before elaborating on the third quote, it is important to question what the WhatsApp space refers to in a conceptual sense. When speaking of groups, WhatsApp creates a virtual space for interaction with, and dissemination of information. The relationship to information in the form of content (messages, pictures, etc.) is that they can co-exist and move virally through various virtual spaces. As such, the content and the virtual WhatsApp spaces are inextricably linked; the WhatsApp Space (capitalised) therefore refers to the various WhatsApp spaces in relation to each other through information flows. Hamid's quote shows both the dominance of these spaces, and how the WhatsApp Space operates differently from the subsequent WhatsApp spaces.

As a singular space, the WhatsApp group of Hamid's university function as the dominant access point to interpret information that would have affected his course of action,

and thereby how he navigates his (academic) life. On a broader scale, he describes the inability to access the WhatsApp space as being stuck in a past time. The comparison to a person living in 1961 is striking, since it refers to the inability of a person to move (forwards). Instead, there is a push backwards, to a time (or space) far removed from those who do gain access to the WhatsApp Space. This hefty dominance of the WhatsApp virtual Space was unanimously described by the respondents. Not being on WhatsApp meant being:

"blind, deaf, and dumb"
"dumb"
"ten steps back[wards]"
"missing out on a lot of things"
"unable to verify information/ being reliant on others for information"
"left out"
"out of tune and not connected"
"having difficulty staying connected, and difficulty in keeping your spending down,"

All the responses pointed towards a deficit. None of the respondents mentioned something that could be gained from disengaging with WhatsApp. What the lacking referred to depended on two things. Firstly, the respondents all needed WhatsApp to get informed about topics relevant to their lives. For university students this could be anything relating to their education; for musicians anything happening in the music industry, etc. Secondly, all of the respondents reported that gaining access to important information relating to Sierra Leonean society depended highly on access to the WhatsApp Space.

Thus, the WhatsApp Space can now be conceptualised as two types of spaces; the singular spaces to which the participant has an individual, non-generic interest for inclusion (for example, church or university groups) and the WhatsApp Space in which information about Sierra Leone exists as potentialities. The link between the two types of space are user practices of engaging with information (see figure 5).

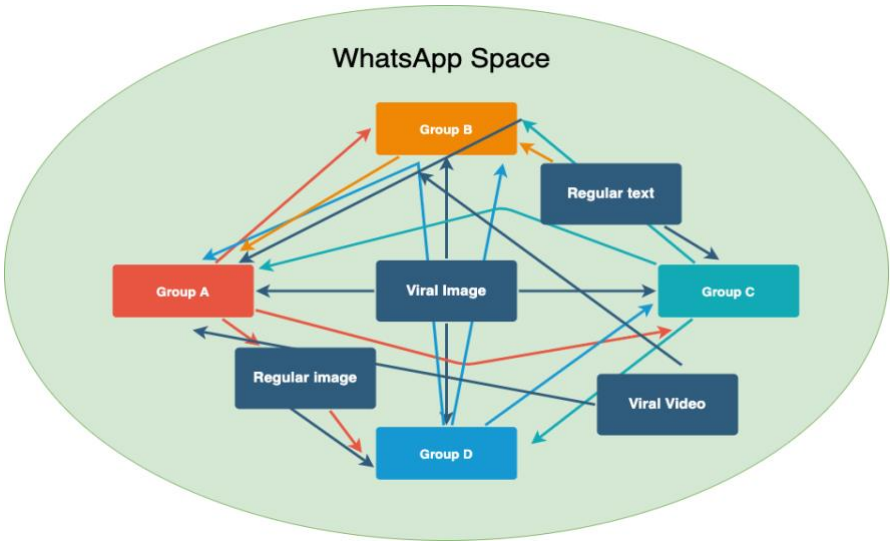


Figure 5: Schematic of the WhatsApp Space in relation to its subsequent spaces

The question then is, what characterises this generic WhatsApp Space? What are its boundaries and limits, its spatial and temporal features?

5.3 WhatsApp as a Space

In the second topic of this analysis, WhatsApp as a Space, I will closely examine the spatial-temporal and (im)material dimensions that determine the features of the WhatsApp Space, and its subsequent spaces. First, I will elaborate on the relation between the virtual space and the physical/material space. Second, I will look at the rules and boundaries of the virtual space and how this relates to experiencing these spaces in reality, virtuality, and potentiality.

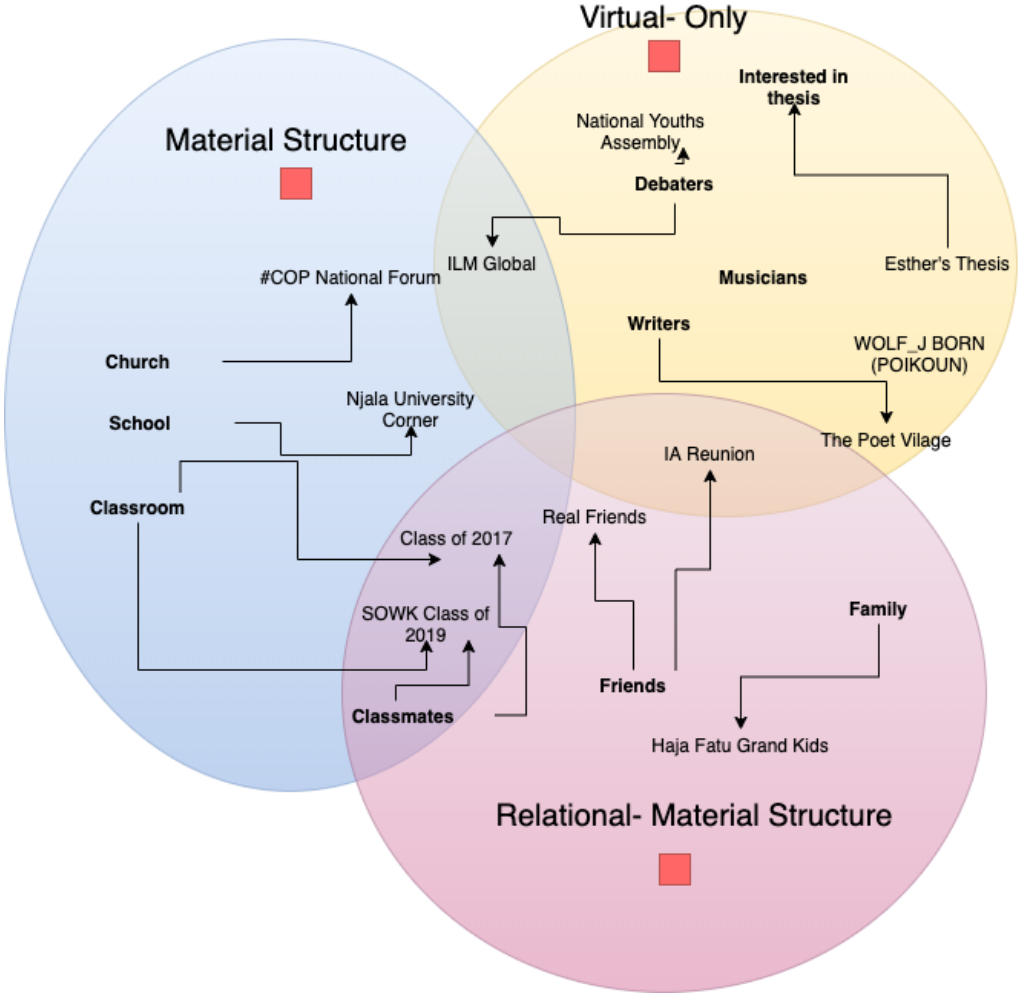
5.3.1 WhatsApp as a virtual space in relation to the physical/material space

There were two dynamics between the physical/material space and the virtual WhatsApp space; that of existing structures and that of mediation. In the first dynamic, the virtual space was founded on existing relational structures in material space.

> The #COP National Forum is a WhatsApp group the Church where I belong. When I was in Bo, I did not get any information on the activities of the Freetown branch. It was a strain. So, I created the group, added people who were upline, in Kailahun, Kenema, Makeni... They don't get information; it

would take one or two weeks for them to know [about any updates]. The group includes everyone in the church. I added pastors from upline because I have their numbers. Now it has members from all over Sierra Leone. Not everyone, but the majority who has WhatsApp can be on that forum. We advertise programmes. We get national meetings for all church members, and we discuss it there, within 24 hours it reaches everyone. (Benjamin)[2]

In the quote above, the respondent explained how he constructed a virtual space based on the material structure of the church organisation. The properties of the virtual space allowed for ignoring physical boundaries, such as the distance between the church locations. As such, the virtual space did not mirror the material structure, but became an expansion of the existing structure with new possibilities of interaction and information dissemination.



[2] Upline refers to any geographical area that is non-Western Area (Freetown and the wider peninsular), stemming from colonial times when the colonial rule only covered the Western Area. Bo, Kailahun, Kenema and Makeni are therefore upline towns and cities in the central and eastern part of Sierra Leone.

Figure 5: Schematic of WhatsApp groups in their material-virtual and relational dynamic

This same space-virtuality dynamic was observed in other WhatsApp groups as well, where the physical structure was based either on a material space, such as a church, or a school, or on relational structures, such as friends or family.

The above schematic illustrates the different WhatsApp groups and how they related the material or relational structure. The groups in overlapping sections, such as ILM Global and IA Reunion show the dynamism between the categories. In IA Reunion, different friends whom were based in Sierra Leone interact with each other, but as time passed and some of the participants moved to other countries, the WhatsApp space where they interacted that used to have a material relational structure (the friends were based in Freetown) now existed mainly as a virtual-only space. Meaning that these dynamics are in continuous flux.

The virtual-only groups, which show a second dynamic between materiality and virtuality, came to existence in a different fashion. The group WOLF_J BORN (POIKOUN) for example, had no physical counterpart. The group, existing of musicians, music producers, promoters, and creative producers, served as a virtual space in which members affiliation to the Sierra Leonean music industry could gather and discuss relevant issues. The group was created by the respondent named Osman, who used it as a space for self-promotion by adding music affiliates. These affiliates could be known through offline material interaction, or through virtual group interaction where users profiled themselves as affiliates. Members could request to add other members, of which the admin did not know their identity. Through invite links, Osman's group grew in users with whom he shared his latest releases. As such, it functioned as a space for him to develop his music career, similar to an open mic session at a music bar.

The material-virtual relations illustrated in figure 5 serve as a snapshot of the conditions that existed at the time the groups were created. A movement of time resulted in a change of the material conditions, thereby changing the relationship between the virtual space and the material/relational structures. The following quote from respondent Issa on the ILM Global group, a WhatsApp group where youth discuss contemporary issues, serves as an example.

> It [the WhatsApp group] is based in Sierra Leone, but we are aiming at a global level [...] It is not only on WhatsApp, but due to present situation most of the meetings are done on WhatsApp. But we have branches in schools

> across Sierra Leone; they are having their own WhatsApp forums [...] At times we conduct programmes, such as the American corner by the Africell office. We engaged in a leadership training seminar. We invited school going pupils. They were given topics to [discuss, to] motivate the young. (Issa)

> It started on WhatsApp because at that time he [the group admin] was in America and initially we were having meetings twice a month, general membership and executive meetings, [...] sometimes on WhatsApp, sometimes face to face. At Noreskar and bars in the Eastend. Most of our activities are suspended because of this Corona virus. (Issa)

At the time of creation, the group's relation to the material structure was relational/virtual-only. Later on, virtual activities took place in material spaces, such as in schools. Yet at the time of the research, most material-space events had been suspended due to the COVID-19 outbreak. The material structure collapsed, in which the virtual space became the only space where participants could meet. In all three instances, the virtual and the material interacted in varying degrees of interdependency. At the creation phase, the virtual-material links were not that important, but during the phase of school debates, the virtual served as the foundation for the material. By the third phase, when all offline activities were suspended, the virtual dominated, serving as a robust space in which physical boundaries (or challenges) had no effect on the virtual space.

5.3.2 Boundaries of the WhatsApp virtual space

The concept of boundaries, in which two elements are separated by defining conditions, permeated throughout the conceptualisations of space by the respondents. When asked whether WhatsApp was a space or a place, all but one respondent answered 'yes'. Contrary to physical spaces, the virtual WhatsApp space had no material infrastructure such as walls, doors, and ceilings that defined its boundaries. Still, several respondents described movement in-and-out of this space, where information in the form of relations and content constructed the boundaries and rules. The space was entirely experiential, meaning that engagement with the WhatsApp platform meant entry into the space.

> In a sense yeah. Like- a communication and interaction space. It's not entirely a space, but- it depends on the individual. Like, my sister and I, for us WhatsApp is not a space because she doesn't use it, but I do use it. It exists in

> a contextual sense if you do not interact with it [...] Sometimes you can get hurt in WhatsApp with the content that has been shared. For example, there was this incident between my cousin and some girls. They made a WhatsApp group and they and abused her, cursed her, so she got hurt from that. So yeah. The information becomes the structure. (Désirée)

In the above quote, conditions for entering the WhatsApp space were platform dependent. The space only came into existence if they both interacted with WhatsApp through engagement with the content. Until then, the content existed as a potentiality. The other space Désirée described shows a similar relational boundary. Here, the group was created with the aim to hurt one participant. The space could only be entered by those in the relationship network whom grouped around a theme. The (abusive) content did not hurt the victim in a material sense- think of how debris from a collapsing wall could cause bruises - but in an immaterial form; virtual debris causing virtual, emotional bruises.

In another example, the boundaries of the space were entirely relational. The following screenshots are of the SOWK Class of 2019 group, in which I was removed by the admins after less than an hour (see figure 6).

The first reason for my removal involved doubt as to my formal identity. As Benjamin described: "they felt like you were a spy, because they can get peace for talk, talk about the government, that's why." (Benjamin) With 'peace for talk', Benjamin refers to a sense of safety to express thoughts and feelings.

The second reason was voiced out in one of the audio voice notes sent in the discussion, being that the group was only for 2019 graduates of their university course. Which meant that those not belonging to that group were not granted access. Therefore, my inclusion crossed a predetermined relational boundary, reinforced by my removal from the group through an action ("remove participant from group").

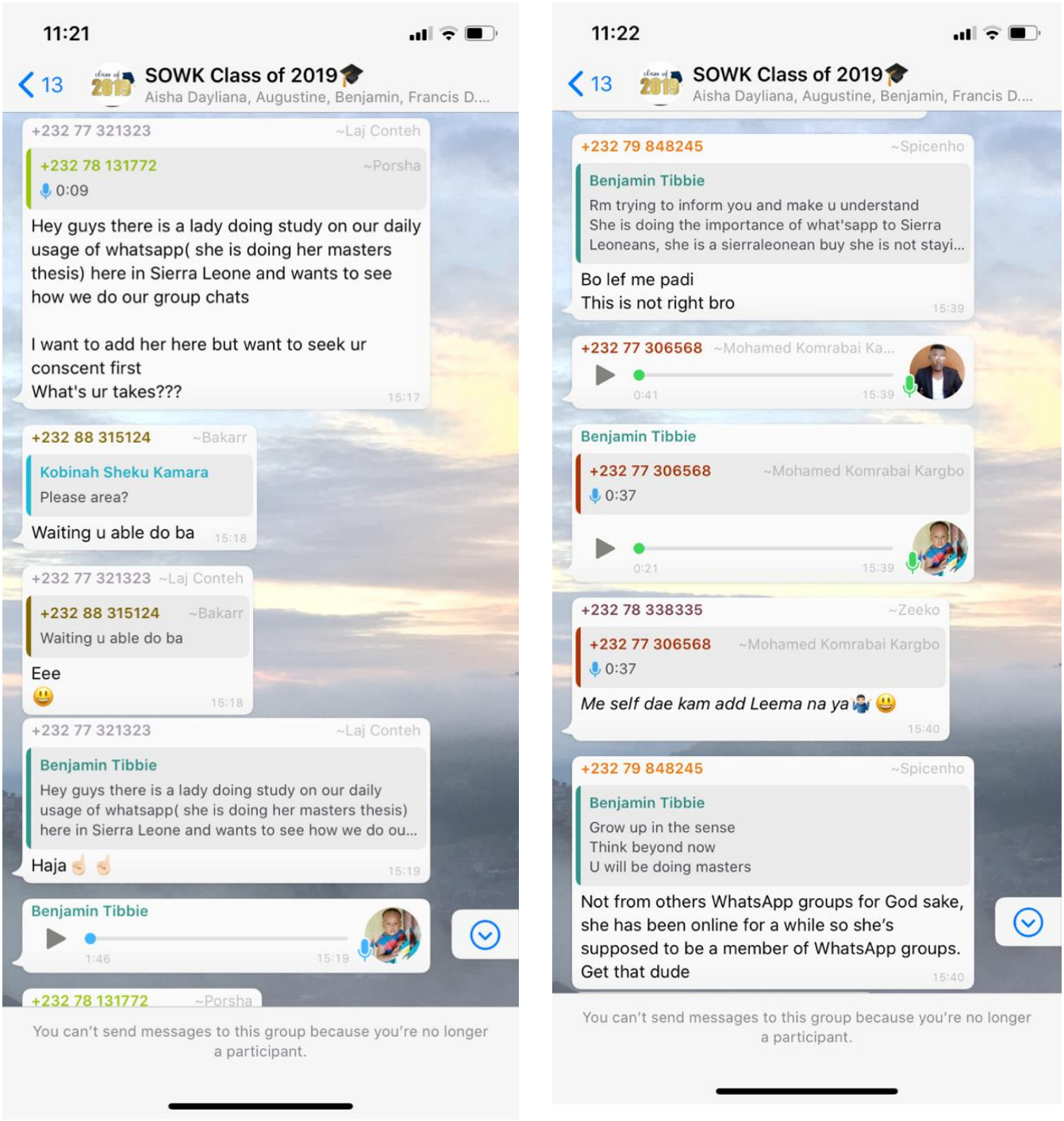


Figure 6: WhatsApp screen shots of the SOWK Class of 2019 discussion on my entry into their group

The third type of boundary related to the content and purpose of the group. In the WOLF_J BORN (POIKOUN) group, the admin had relayed that the group was for 'entertainment', and thus any content that was entertaining was allowed. In the National Youths Assembly, however, the same type of entertaining content could result in penalties (see figure 7).

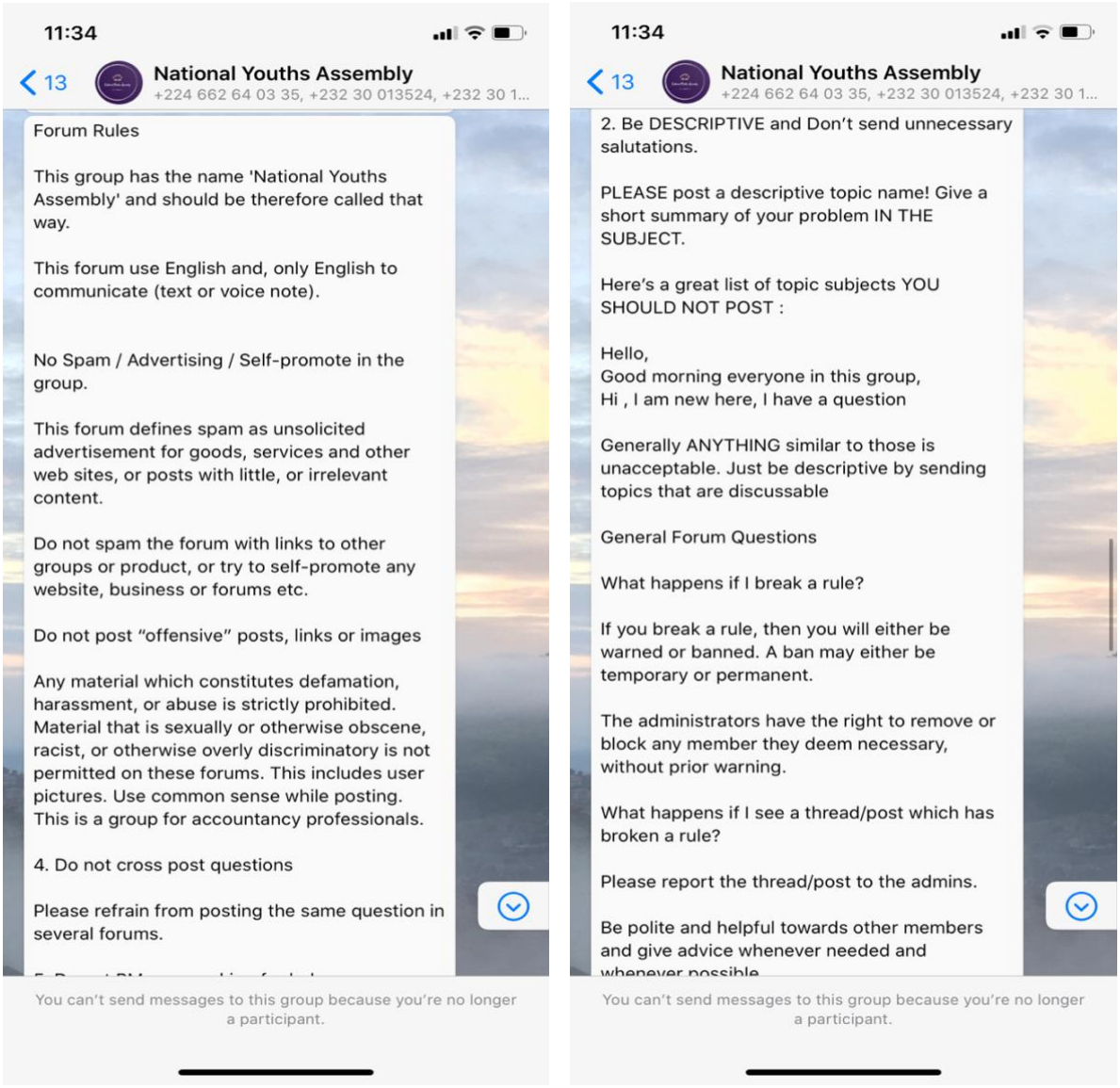


Figure 7: WhatsApp screen shots of the National Youths Assembly group rules and regulations

Interestingly, the groups in which content became a defining boundary were more open, meaning that the only condition for group entry was an affiliation with the group theme. In the SOWK Class of 2019 group and the bully group described by Désirée. Both constructed by relational networks, entry was closed to those either unaware of, or not belonging to the network. Although the content did play a role in terms of creating the f*oundation* for the space- resulting in boundaries as *structure*, the relationship *defined* the

boundary that separated those with access from those without access to the group- resulting in boundaries as *borders.*

5.3.3 Experiencing space

Up to this point, WhatsApp has been conceptualised as a virtual space with different relations to material and physical structures, in which content, relationship and engagement constituted the boundaries and entry points for participants. The role the physical plays in these examples served mainly as a base for comparison or departure; the virtual serving as an elaboration of, and (un)affected by the physical. When looking at the *experienc*e of place, however, the relation between the physical and the virtual had more of an *amplification/reduction* dynamic as conceptualised by Ihde (1990).

> When going to WhatsApp it tends to feel as if I'm in a secondary place, even if I'm sitting with people around me, when in WhatsApp I forget the environment I'm in. My body is here, my consciousness; my mind is elsewhere. For me it's a place, and I look at people around me like at SLNBCC- there the idea sprung up to me. Memuna is sitting right by me and miss Williams are over there, but when all of us are engaged in WhatsApp we tend to forget the environment we are in. Even when communicating between ourselves it's distorted. They'll say, 'hmm...hmm..." but they're elsewhere. It's different. I don't know- in a spiritual way. It's something like that. When you're into it, even though your body is somewhere sitting right at a place, but then the conscience- it's the most valued thing for me. The body for me doesn't determine where you are. But there where your mind resides is where you are. For me it's a space. (Ibrahim)

Here, the virtual caused an implosion of physical space as inhabited by the user. Ibrahim describes that the boundaries between the virtual and the physical disappeared- not in a material sense, but in how he *experienced* space. Respondent Abubakarr recounts a similar experience of the erasure of boundaries:

> "WhatsApp is a platform. It's a place, that's quite right. Even though people are not seeing each other, they can feel that they are in the same environment, understand? Right now, I am talking to you, we are using WhatsApp to communicate, I feel that we are face to face. So, it's a place. An unseen place

> (laughs). You don't normally see it, but you feel it existing. It's not a permanent place, but you feel that it exists. I find it real, it's a real thing. I am just thinking that you are sitting by me, discussing. Even though it's not [in the] normal [sense]. (Abubakarr)

Both quotes recount an experience where engagement with the virtual space *reduces* the experience of reality of the physical space. In Ibrahim's case, the virtual takes precedence over the physical; users 'forget' their physical environment as their mental preoccupation is 'swallowed up' by the virtual. There is no duplication of space, but a duality of experiencing space either virtually or physically. Abubakarr's example indicates a different virtual-physical space interaction. Here, the virtual erases the boundaries of physical space; he felt as if I was next to him, even though I was in Amsterdam and he was in Freetown. Abubakarr did not experience this detachment of his physical self when interacting in a virtual space.

> Being in the street, forgetting where you are: it causes accidents. I'll be in WhatsApp, there, focusing on the person I'm chatting to. Having fun, your mind- you forget that you are on the street, somewhere, so black, unimaginable. But it pulls your attention and the passion about chatting with a particular person. (Mary)

Mary describes a similar sentiment to Ibrahim, where the physical implodes due to the virtual, caused by the intensity of Mary's engagement with the person she is chatting with. Interestingly, it is not WhatsApp as a virtual space in itself that draws her in, but the specific individual co-inhabiting the space that causes the experience of the disappearance of the boundaries.

> Going through WhatsApp I feel I belong. Sometimes I'd say I'm exploring. [...] Your mind occupies, and then there's a space you're going to occupy. It may not be a particular space, but it's not a fixed destination. [...] There is certain information when reading them, you're in that particular scene, it feels like that. You may feel as if you're there at the scene of the incident. You're exploring, it's a movement. But here it's a movement of the mind, not physical. You will be in a particular space in the incident. When the incident at Pademba road happened last week, reading the press releases it feels as if you're there. (Issa)

The above quote from Issa reveals yet another aspect of experiencing space. Here, the movement from physical to virtual is caused by the engagement with information that relates to a physical space. Opposite to what Mary describes, it is the content (the text from a press conference) in the WhatsApp space that defines its pull, not the individual behind the message. Meaning that there are different types of pull factors that constitute the intensity of the engagement that affects the experience of space.

To further illustrate these dimensions, the quotes by Mariama and Augustine reveal some of the specific relational dynamics on WhatsApp that affects the experience of space.

> For the mental connection: if someone is far away, at time it felt closer, as if the individual was close to me. For the distance: if we are doing a live conversation or videocall, the person may want to show something and then I have to it see through the video. [...] It will feel as if it's there, as if I am there. (Mariama)

> When we are all online for my school WhatsApp it feels as if we're in the classroom. We will be posting discussions or comments, it will feel real. Sometimes you do not need to be together in one place- sometimes in WhatsApp it's better to discuss these things. With my family chat it's another space. For family at times you have to discuss family issues or something else outside the family. Most of the time we are all at home, all in our own place, we just discuss things that are outside of family issues. (Mariama)

> It depends to the attachment with the people you are talking with, it will determine the place and the space with regards to closeness. If you're talking to a long-term friend you haven't seen in a while, or a family member, because of that longing and desire, it seems as if they’re close by. (Augustine)

Mariama's and Augustine's quotes reveal three experiences of space where WhatsApp serves as an *amplification* of specific phenomena. First, as Augustine describes, WhatsApp makes a person feel mentally close, depending on their existing relationship. Second, WhatsApp makes a person feel physically closer by bringing in sensory information virtually into the physical space (seeing what is happening with the other end-user). Third, the conceptualisation and experience of virtual space relates to the physical-material relation

described earlier, where 'school' or 'family' material structures relate to the virtual and are determined by the function of the group. Mariama's family WhatsApp group is experienced as an undefined 'space outside of the house', one that is away from the physical space she inhabits with her family in her home. Her WhatsApp school group is experienced as a 'classroom outside of the classroom' when she and her classmates are not physically inhabiting the space.

By now, the boundaries separating the virtual from the real, the physical from the immaterial are not either-or categories; but represent an axis in which space is experienced virtually, physically, or both. Movement in and out of these spaces, whether from the material into the virtual-only, or vice versa, depends on the form in which WhatsApp's functionalities construct the virtual space. Either through functioning as a platform in which (sensory) information co-constructs the experience of space by the user, or the relational boundaries that defines the virtual spaces. The movement is not a physical movement, but, as Issa explained, *'a movement of the mind',* describing the mental directedness underlying the concept of *intentionality.* Although some examples illustrated the amplification or reduction of phenomena when experiencing space through WhatsApp engagement - and their subsequent boundaries- the examples of when the virtual and the physical re-enacted boundaries (such as Issa's ILM Global and Mariama's family and school spaces) could not be categorised as such. Instead, the dynamic between the virtual and the physical co-constructed a fluid and non-fixed space defined by boundaries which were, in turn, also co-constructed by relational and material interactions.

5.4 Experiencing the virtual space in reality, virtuality, and potentiality

The relationship between temporality and spatiality in the two previous subtopics were characterised by movement, directing the intentionality of the lived experience of the WhatsApp user. This movement, caused by a progression of time, resulted in a change of the virtual and material properties that constituted the WhatsApp Space. The example of how ILM Global moved from a virtual-only, to a material, and back to a virtual-only space illustrates this movement. Although time served as the initiator of the movement, the focus of analysis was on the *experience of space*. When looking at the *experience of time,* however, the movement of the intentionality of the lived experience depicts a different type of change; being that from potentiality to actualisation. In this next subtopic of 'WhatsApp as a Space', I

will bring forth the experiential aspects of WhatsApp by focusing on the experience of time of the respondents and how this relates to potentiality.

5.4.1 Experiencing time

The analysis of the experience of time combines two data sources; the introspection of the respondents and the flow of messages in the WhatsApp groups I participated in. Although the interview questions were inspired by behaviours I observed in the groups, the respondents recounted their experience of time when engaging with WhatsApp in general; including personal chats I had no access to. The ethnographic approach allows for the researcher's personal experience as an empirical data source. For this subtopic, I will include my experience of time when engaging with WhatsApp to add to the context to better place and analyse the other data sources.

The main finding, which I co-experienced alongside the respondents, was the overwhelming amount of potential and actual messages and interactions on WhatsApp, and the heavy burden of realisation that going through these messages would take more time than I could afford.

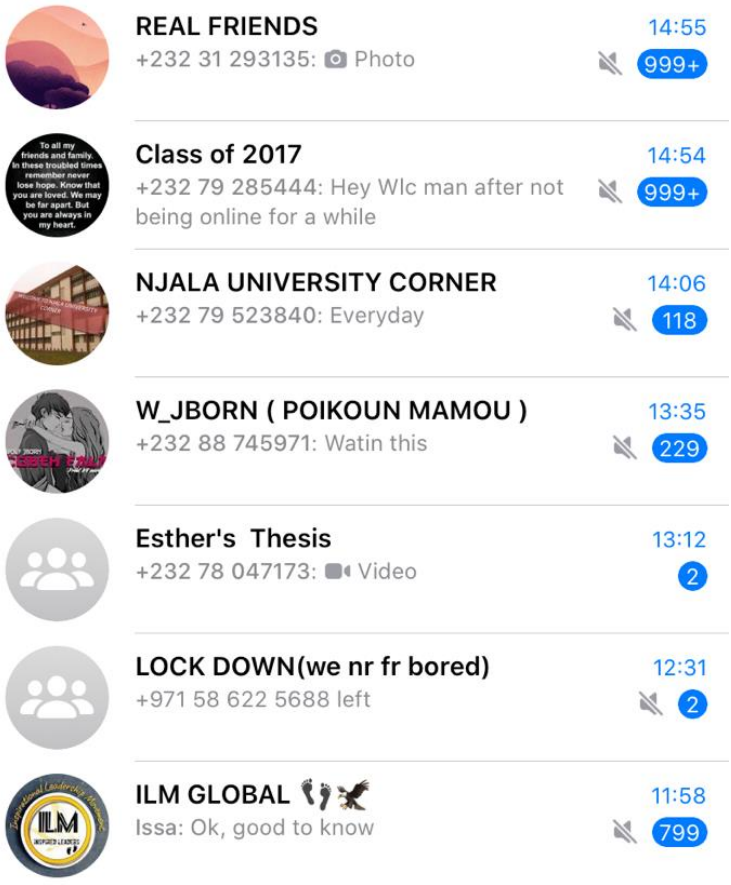


Figure 9: Screenshot of WhatsApp feed showcasing the number of messages received after two days

Figure 9 above depicts my WhatsApp feed after two days of inactivity. The maximum number WhatsApp portrays is 999, meaning that the actual number of unseen messages could be higher. At first, the prospect of engaging with so much empirical data excited me. However, when I saw that the majority of the messages were videos, images, and voice notes of varying lengths, I realised that it was physically impossible for me to engage with (reading, listening, watching) each message, in all the groups, for a period of four weeks. As a result, I experienced two things. First, I became anxious whenever thinking of the pending messages on my phone. Even when not seeing "999+ unread messages", I was aware that messages were piling up every second. It felt as if it was a lost battle against time, as even ten messages could require between 2-100 minutes of my time. My responses- the second observation- were that of 'clearing' the chat (quickly opening and closing the chat) so that the 999+ notification disappeared. I skimmed through the messages to see whether there was relevant information and noticed that when I observed an increase of group activity, I was more likely to view the content of the post than when messages were not interacted with.

Table 3: Table of total messages and daily averages of WhatsApp groups. THE POET VILLAGE and SOWK Class of 2019 are excluded due to insufficient data

Group Name	Participants	Messages	Average per day	Dominant content type
LOCK DOWN (we nr fr bored)	15	8	<1	Text
IA Reunion	39	37	1	Text, video, images
Real Friends	144	1.865	69	Text, video, images
National Youths Assembly	181	906	30	Audio, images, video
#COP National Forum	198	983	41	Images, video, audio, text
ILM GLOBAL	102	2.649	74	Text, images
W_JBORN (POIKOUN)	40	515	15	Audio, images, video
Haja Fatu Grand Kids	20	52	3	Audio, images, text
Class of 2017	103	3.708	155	Audio, images, video, text
Esther's Thesis	45	75	3	Text
Njala University Corner	177	378	14	Audio, images, video, text
TOTALS	**1.064**	**11.176**	**406**	

Table 3 shows the total average of messages I received during the research period to demonstrate the volume of messages on WhatsApp. The content type affects the time spent per message, and if I would take 24 hours each day to engage with 406 messages, the average

time I could spend per message would have been 3,5 minutes. Thus, there was a clash between the time necessary to fully engage with all the messages on WhatsApp and the time I was physically capable of spending. Of course, the same could be said for reading all newspapers from top to bottom or watching every television channel available simultaneously. The difference with WhatsApp, however, was that the affordances of the platform turned each message into a notification, with a sound or a buzz to pull my attention. Each time I received more messages I experienced this potential clash, and felt time as heavily burdening me, as an inability, a disconnect; an uncomfortable slipping and disappearing of the relevant content. Whereas some of the respondents depicted a similar experience, others described a more pleasant, upbeat, 'connected' experience of time, with only a few recounts of when time imploded with negative consequences. Key to this difference in experience can be explained by the attachment the respondents felt to the content or the sender of the messages.

> Time on WhatsApp as for me, time is fast. Especially when participating in an interesting discussion, it is fast. But if the messages are not nice, I feel bored. But still it passes very fast. At times I am on WhatsApp, chatting, it will be around 1- 2 o' clock and I watch the time and think, 'wow, that's fast going.' It's because of you engaging with certain things. One thing I learned, if you are engaged, your mind focuses, and your experience of time is different. Your mind is moving with what you're doing. (Issa)

> Time passes without you even noticing. At times I forget to go to school. I'm always late with it. I will be wearing my uniform and something [a message notification] distracts me I forget the time is going. You see me running the moment I get conscious of this. It's because of my negligence I guess, I should prioritize thing [...] my phone should not control me, I should control it. With WhatsApp now; it's hard for me. I don't know. Maybe it's just the urge, when someone chats with you, and you have interest in this chat, it takes your time. Or when there's fun and people are chatting; you want to see what's happening. (Mary)

Similar to the experience of space, these quotes reveal an experience of time where lived time (time that passes in a linear fashion, or measured, clock-time) is experienced in relation to felt time (or subjective, personal time). The two quotes illustrate a disproportionate

discrepancy between lived and felt time; not in that they notice time passing quickly, but in how their introspection of how they expected their lived time to pass differed significantly from lived time.

> You never really know how much you've invested in using your phone and WhatsApp unless you check your phone usage statistics. Because you don't feel that you're not spending too much time, but when you check it it's hours and hours on time. Wow, this is mind boggling. (Désirée)

> It's stronger with a phone, this mismatch. You're not staying on one app. So, in total after one day, it's more than 11 hours on the phone, but with a you feel that you want to take a break; but you never want to take a break from your phone. (Désirée)

Whereas Mary and Issa described the 'pull strength' of WhatsApp in terms of their interest in the (sender of the) content as factors influencing the clash of felt and lived time, Désirée's quote brings in the aspect of the mobile phone on which WhatsApp is installed. The different types of content and engagement kept her attention, not feeling like she needs a break. The total time she spends 'boggled' her. These examples depict the experience of time as lived time ruthlessly continuing whilst their experience of felt time is either fast, or unfelt, and that there is a loss of control when engaging with lived time. The following quote by Hamid showcases how this management of time, similar to the experience of space, depicts time as related to boundaries:

> Considering who I'm chatting with influences how long I'll be on WhatsApp. If I'm chatting with my mother [...] it won't take me 15 minutes to chat every day [...] When I'm chatting with my sister, it's way way different - it can take hours. When I'm taking a shower, getting dressed, even when driving; I'll still be talking. [...] When chatting with my sister I don't care about time, meaning we don't look at the time. She'll be in her office working and talking to me. Unlike when chatting with friends I'll be like, 'call me later'. And then my girlfriend, that's on another level, (**laughs**). We will chat and then voice call, and then: boom, video call. "Oh, I wanna see where you are right now," **[imitating girlfriend]** Show me around, stuff like that, it will go on for hours, I can't imagine. Then I'll say, "We've chatted enough." She's working

> in a bank now. "Oh, you're handling people's money, please!" And she'll know that she has to go. With mummy, the same thing applies, "oh, mummy I want to do something now." But with my sister, she'll say: "Oh you want to leave me?" Since we were little, we were very close, you know. (Hamid, own emphasis)

Hamid's closeness to his sister determines the manner in which he allows time to pass freely without feeling the need to establish boundaries. With his mother and his girlfriend, however, he does create boundaries. Warning his girlfriend of the danger of dividing her attention between two tasks, he ignores his own advice when driving whilst talking to his sister on WhatsApp. He explains that when it comes to his sister, he does not care about time. Time seems to be conflated with space. Does his intentionality reside at the location of his sister- and therefore removes his experience of self from his current place, or does the intentionality of his girlfriend remove her attention (needed in the bank) to where he is physically located? The depictions of intentionality in other recounts shows that it not an either/or situation. Rather than regarding the (lack of) constructing of temporal boundaries as conflated with space, the experience of time must be analysed *in relation to* space.

> For me, since I'm busy with other things I cannot be on WhatsApp 24 hours a day. My data may be on, but I will not be online if I'm busy [...] Sometimes it's fun to be on WhatsApp, the conversations dem kin swit **[translated from Krio: they are/ can be nice].** That's when time passes fast. Like having a conversation with my family members or my loved ones. We'll be talking and I won't even notice how long it's been, time will pass quick. I'll look at the clock and I'll be surprised. If I'm having a very interesting conversation, I will not even look at the time, or manage my time. But, I'm not late because of WhatsApp. (Mariama, own translation)

> At times that you go, and you leave some of your duties, some you can do them on WhatsApp. Because you can be spending one hour it will look like [you have spent] 15 or 30 minutes. Provided that you are considering the kind of thing you're doing, the people you're talking to; maybe you're talking to friends. You're getting into the conversation, I would maybe check for 10 minutes, before you realise you spent more than an hour, you are surprised. I

did not plan this. I let so many other things go, that's the risk considering time. (Augustine)

Both Mariama and Augustine relate to their experience of time and how they manage their temporal boundaries as being affected by the importance of the activities *outside* of the WhatsApp space. Alternatively, Hamid, Mary and Issa are influenced by the importance of the (sender of the) *content* on WhatsApp. Earlier in this chapter, space was conceptualised as material/physical space in relation to virtual space. To prevent confusion about what is affecting the experience of time versus the experience of space and how they affect each other, I have created another schematic depicting intentionality and boundaries relating to time and space (see figure 10).

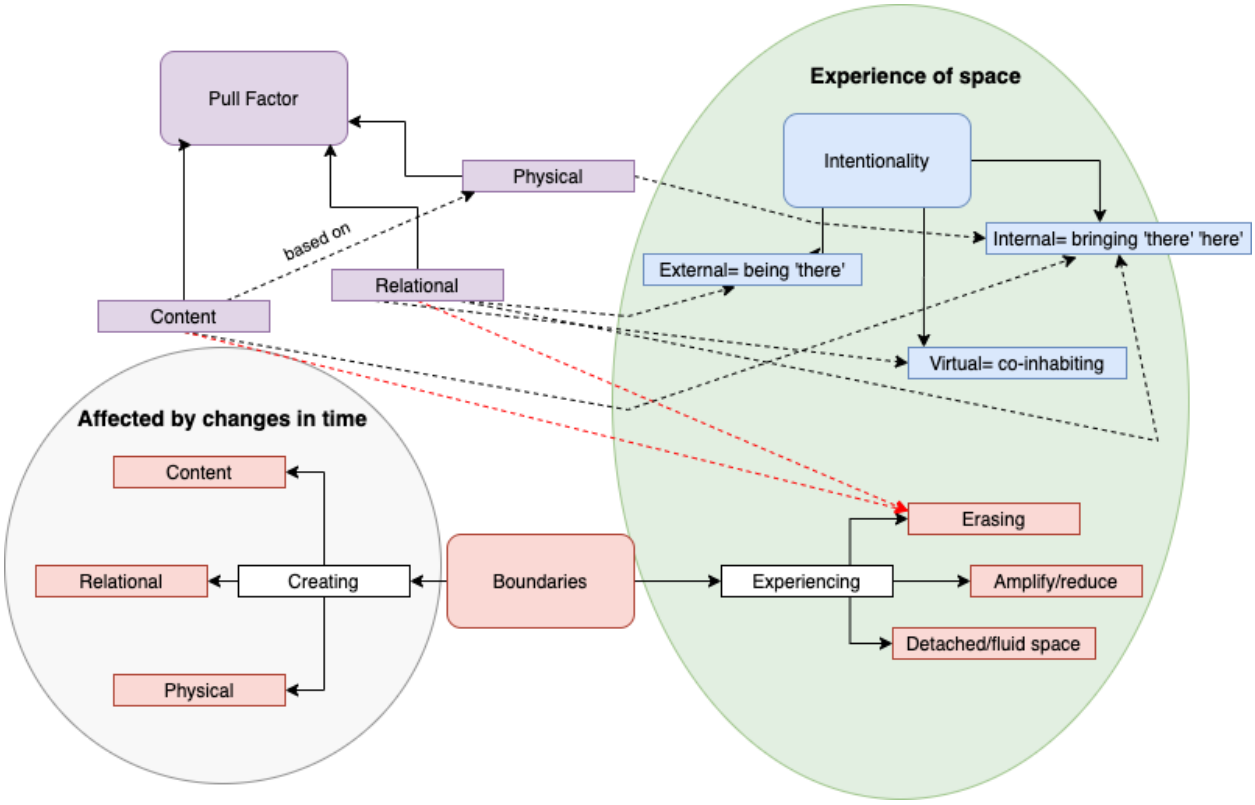


Figure 10: Schematic of time, space, pull factor, boundaries and intentionality relations

These dynamics depict the experience of time and space when users are interacting with WhatsApp. If the pull factors are too strong, the users experience a loss of time and space. The material dimension in which the user is situated physically is present in two ways. One, it is present in the pull-factor intentionality dynamic where content depicting this material dimension can affect the experience of presence. Two, it is present in the temporal-

spatial dynamics where changes in the physical caused by movements in time cause the emergence of a virtual, fluid space without fixed boundaries. Based on these observations, it could be concluded that technologies mediate the experience of reality by the change in spatial and temporal boundaries affected by relational and contentual changes as mediated in the virtual WhatsApp space. However, leaving the analysis as is would skew the conclusions drawn on how WhatsApp affects the experience of reality, as it would only reveal some of the workings of WhatsApp when in-use. WhatsApp spaces did not stop *existing* when they ceased their real-time interaction with the platform, both inside and outside of user's experience. The potential of content to be actualised, as I will demonstrate in the following section, created another dynamic between the physical and the pull factor affecting the changing boundaries.

5.4.2 WhatsApp as a potentiality- permeating the experience of reality

When the respondents were not online, they continued to be affected by the conversations occurring in the WhatsApp virtual space.

> If I'm not using my WhatsApp and my data is on, there will be things that will come up that will still affect my life. When I'm less busy and I check it maybe someone will have sent an important message. Even if I'm not actually online, it's still running. You have to look at it at some point. If someone is sending me a message and the person sees I'm not online he or she will call me and say, 'check your WhatsApp. (Mariama)

> When I'm not on WhatsApp sometimes what happens to me is, I actually think about the things I'm going to say to this person on WhatsApp. The fact, the idea that I am going to do this, or write this person; to me it seems as if WhatsApp influences me even if I'm not there. Even when not on WhatsApp I think about what to do when going there. (Ibrahim)

> Yesterday I missed the discussion [of ILM Global] because I was sleeping, but I was informed [earlier on] by the CEO that it would be happening. So, it was in my mind. But I slept off. When I woke up and decided to rush into the group, I went into it and spent an hour. But my phone went off, so this disturbs me." (Issa)

The above quotes demonstrate the manner of engagement, or the mental preoccupation, the respondents experience with they are not using WhatsApp. As Ibrahim describes it, this influence relates to a temporal aspect; his future actions are pre-determined as he experiences time and place. This temporality is apparent in Mariama's experience as well, when she decides to tend to messages at a later stage. In addition to this, she portrays a more aggressive pull towards WhatsApp in the form of an intrusion by people whom demand her to use WhatsApp and engage with their message. In both examples, the virtual WhatsApp space extends in time and place as it continues to exist in potentiality. As soon as the the users engage with with WhatsApp, it causes a change in the state of the space from virtuality to actualisation as illustrated in figure 11:

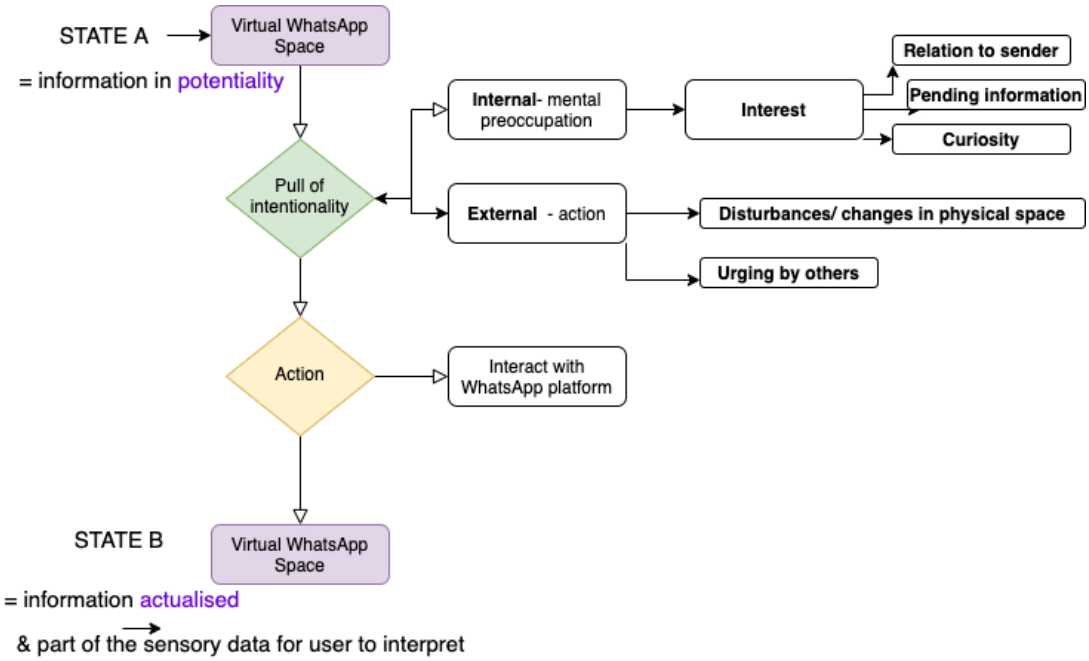


Figure 11: Schematic of dynamic and change in state of the WhatsApp virtual space

When the information becomes actualised, it becomes a part of the sensory data for the users to interpret to create meaning. This *hermeneutic* relation- or the interpretation of the sensory data provided by a technology which would not be accessible without the technology- thus relates to the potential-actual dynamic of the WhatsApp virtual space. It is through the interpretation of the information that meaning is created. Nevertheless, the virtual space does not entirely transcend the physical; Issa's quote illustrates that despite the permanence of the fluid, virtual space, the physicality of his body- situated in a physical space, still determines

his access to the virtual space.

In addition, the schematic also illustrates the affecting qualities of the physical space in relation to the WhatsApp virtual space. As a change occurs in the physical space (an interruption) that pulls the intentionality of the user to interact with WhatsApp and actualise the information existing as a potentiality in virtual space, and the virtual space becomes actualised. In other words: changes in the physical space cause changes in the state of the virtual space, affecting the experience of reality of the user (or this Space (capitalised) in which traditional boundaries have been altered, or disappeared, extends outside of the engagement with WhatsApp. Permeating not only the experience of reality in virtual space but affecting the course of events as occurring in physical space that can be experienced collectively. Still, the physical space dominates as the first access into the space; through the physicality of the body as well as the materiality of the mobile device housing the WhatsApp application. Therefore, the content of the messages, which relate to the changes in the material space in which the user is physically situated, becomes enablers of change in the experience of reality. Through user engagement, this information swarms through various subspaces (groups and individual chats), thereby creating, restructuring, and altering the continuous, never-ending, fluctuating and shifting WhatsApp Space.

5.5 Nodes and networks- WhatsApp as a dominant information Space

In this analysis I looked at the role WhatsApp played as creating virtual spaces for the sharing and dissemination of information, and what the defining features of these spaces were. The WhatsApp Space consists of multiple WhatsApp spaces, in which user practices that affect the information flow continuously alter the qualities of this space. As such, the relationship between users, the virtual and the non-virtual space as affected by mobile technologies shows a network-relation in which information (as content, and when engaged with) serves as a foundational structure. In this network structure each user functions as a node connecting the various groups by the engagement with information. Each group) functions as a node of the larger, dominant WhatsApp Space by creating viral pathways through which information can flow. Due to the fluid and fluctuating nature of the WhatsApp spaces, the dominant WhatsApp Space is in a permanent state of change. This explains why all the respondents concluded that not being able to access this space meant a disconnect from change; from movement and flux. As such, the WhatsApp Space , which consists of and is constructed by the individual groups, personal chats, statuses, and broadcast messages- which

in turn are created by the individual users sharing information- permeates through the experiences of Sierra Leoneans, changing and erasing the boundaries between the virtual and the non-virtual. An increase in the quality and quantity of information embedded in the space causes an increase in density of the potential, which in turn increases the importance of the hermeneutical process of users when actualising the information. In this process of actualising the potential into sense data to navigate the reality, users must be able to assess the quality of the information. If there is no access to this information, or (due to lack of education) no opportunity for users to distinguish verified from un-verified news, their reality is affected by trying to make sense of reality from the context of an information deficit, or by interpreting false information. With a growing, steady increase of WhatsApp users in Sierra Leone, the (potential) impact of this Space thus increases as well. Leaving those who are unable to safely navigate the space, or whom have no access to the space, to be 'ten steps back'.

6. Conclusion

6.1 How mobile technologies mediate the experience of reality in a postcolonial context

My mixed-method approach of virtual ethnography and qualitative interviewing allowed me to collect and analyse empirical data from WhatsApp user practices in Sierra Leone. Based on my findings from participant observation and introspections of the respondents about their WhatsApp user practices, I came to the following conclusions.

Firstly, WhatsApp virtual spaces and their boundaries were constructed by users engaging with and creating relational networks and content. Whereas relational boundaries defined the borders for users, content could co-exist in multiple places, and the existence and movement of this content was determined by user practices. As such, user practices were an essential aspect of constructing WhatsApp spaces. In addition, the prevalence of forwarded and shared content revealed how the affordances of the WhatsApp platform facilitated information sharing. This type of content lacked context; the metadata on the origins and trajectory of its creation are not accessible on the platform, thereby causing each WhatsApp space to function as a unique context in which the information could be interpreted.

Secondly, there were causal relations between the physical and the virtual space. Changes in the physical space caused changes in the state of the virtual, thereby affecting the experience of reality of the user in which traditional boundaries had been altered or disappeared entirely. As users engaged with the content, they caused changes in both the virtual and the physical space, functioning as nodes in an interrelated network of WhatsApp spaces.

Thirdly, regarding the experience of space when using WhatsApp, some WhatsApp virtual spaces illustrated an amplification and reduction dynamic, where the boundaries between the physical and the virtual were in flux. In other spaces, the virtual and the physical co-constructed a fluid WhatsApp space of which the fluctuating and ever-changing

boundaries were co-constructed by relational and contentual changes. Although the boundaries were not fixed, they did serve as demarcations of virtual space, affecting whether and to what extent users had access to this space.

Fourthly, the interrelated network of WhatsApp spaces constituted a large WhatsApp Space (capitalised), a continuous and never-ending space where information flows through the engagement of users with the WhatsApp platform. Pull factors such as importance of content or relationship to the sender of the content affected the manner in which the respondents experienced their reality. Changes in the physical could increase the pull factor of information existing in materiality, where a strong urge to actualise the content caused experiences where time and space 'disappeared'.

Finally, the dominance of this WhatsApp Space emphasised the importance of the user's capacity to assess the quality of the content when interpreting the information into sense data used to navigate their lives. The pull factor of the entire WhatsApp space has grown to the extent that a lack of access means existing in an information void removed from a Space co-inhabited by a multitude of users. Users are nodes in a network of virtual spaces that in turn, are nodes of the larger WhatsApp space, and information serves as the principle structure that holds these fluctuating networks in place.

To conclude, the answer to my research question of how mobile technologies mediate the experience of reality in a postcolonial context, is that the WhatsApp Space permeates through the experience of users, changes and erases traditional boundaries of felt time and space, of virtual and non-virtual, as it functions as a complex network in which users become information nodes that direct, interact with, and create the information that exists as potentialities, waiting to be actualised by other users whom co-inhabit this Space. The material and immaterial conditions which construct the post-colonial context create an environment where this WhatsApp Space can grow to such an extent that the boundaries between the virtual and the non-virtual fade.

6.2 Limitations

As described in my chapter on methodology, there were several challenges and limitations to the way I conducted my empirical research. Some of these challenges limit the extent to which I can draw some of the conclusions of this research.

The first limitation was that my physical absence may have affected the manner in which I could build a trusting relationship with the respondents. Despite my efforts to

mitigate the risk of ending up with a homogenous cluster of respondents by virtual snowballing and 'showing face', the lack of comparable research and data makes it difficult to move beyond speculation. Although the topological network and relational structure of WhatsApp would render virtual snowballing as resulting with a random pool of respondents, this same topology renders it impossible for me to view beyond the networks I have access to.

The second limitation is a further extension of this. Due to the fact that some groups were closed off, I could only rely on the respondent's description of these spaces. This could both strengthen and weaken my findings. If their recount proves inaccurate, then the existence of these closed spaces, as well as their properties, remains dubious, thereby affecting the relational boundaries that define the WhatsApp spaces. Alternatively, if their recounts are accurate, then the topological network structure of WhatsApp, and how the user practices of their engagement with the information that holds these WhatsApp spaces together, would indeed make my access into these spaces impossible. The difficulty of accessing hard-to-reach spaces can be reinterpreted when dealing with virtual spaces; not being part of the relational network of such spaces, means that the existence of these spaces can only be experienced through second-hand recounts.

The third limitation is that the COVID-19 pandemic has affected the role the virtual plays in relation to the non-virtual globally. My respondents were restricted due to the lockdown imposed by the Sierra Leonean government as a response to the pandemic, which caused activities that would usually occur both virtually and non-virtually, to only happen in the virtual WhatsApp space. Although this does not disprove that the postcolonial dimension must be studied to inform our understanding of technologies in societies, it does underline that macro processes that may or may not be affecting the postcolonial context, also affect the extent to which virtual spaces relate to the non-virtual.

7. Discussion

7.1 Introduction

In this final chapter of my thesis, I will discuss my findings and place them in the current academic debates on technologies in societal contexts. First, I will reconsider the approach of postcolonial theory on how technologies affect macro dimensions by arguing that the micro dimensions of technologies in-use should be studied to inform theory creation. Second, I will reconsider theories on virtual and digital technologies by arguing that postcolonial contexts require alternative approaches for understanding the way technologies affect the experience of reality. Third, I will reflect on Jandrić's and Kuzmanić's (2015) tentative approach on establishing the field of *digital postcolonialism* by looking at how the mixed-method approach of virtual ethnography and qualitative interviewing can yield insights into understanding user practices in a postcolonial context. Finally, I will give suggestions on further research to gain better understanding on postcolonial virtual spaces as a phenomenon.

7. 2 Reconsidering postcolonial theory by looking at the micro dimensions of technological mediation

In recent debates on the relationship between society and technologies, postcolonial scholars such as Adam (2018), Alzouma (2005) and Arewa (2019) regard these relations in two manners. First, they emphasise the unique socio-economic context of postcolonial nations as affecting the way and extent to which technologies can disrupt societies. Second, they problematise tech-utopianist and dominant western epistemologies and narratives on the role technologies play in such postcolonial contexts (Adam, 2019; Alzouma, 2005; Arewa, 2019a). According to these views, technologies function as in-between macro dynamics and

societies, with the potential to amplify power structures embedded in these macro dynamics. I argue that the micro dimension of user practices should be studied alongside these macro dimensions, and that the virtual spaces such technologies create function as an alternative space for embarking on such an enquiry. Informed by my study of user practices of WhatsApp users in Sierra Leone, I conclude that the virtual and the non-virtual are inseparably linked. As such, changes in the virtual caused changes in the non-virtual, and vice versa. Although this conclusion may not be novel, the ways in which the virtual and the non-virtual were linked in the postcolonial context sheds new light on issues of access to, and ownership of the technological (virtual) space. According to my findings, the user's capacity to assess the quality of information existing (as potentialities) in the virtual WhatsApp space affected the manner in which they experienced their reality, and thereby affected how they navigated their lives. This last point is especially important, as the WhatsApp Space became the dominant space to access the information that users required. This could be in a more personal context, such as finding out whether classes had been cancelled, or in a more societal context, where users would be informed on news issues that they could not access through alternative information sources.

The more information existed solely in the WhatsApp Space, the higher the pull-factor of this virtual space. Because users functioned as nodes in a network of virtual spaces, information - and their engagement with the information- served as the principle structure that held the WhatsApp Space together. Therefore, the WhatsApp Space was not a virtual world existing in-between the virtual and the non-virtual; the WhatsApp Space incorporated the virtual and the non-virtual through user engagement. This also meant that limited or no access to this space causes users to enter an information void and lack the essential information necessary to live their life to satisfaction.

Therefore, to reconsider how postcolonial theory can look at the relation between technologies and societies means a consideration of technologies that create virtual spaces as inseparable from the non-virtual, in which information affected and constructed by user practices serve as creators and shapers of these spaces. It is within the micro dimension of technologies in-use that we can study the interplay between technologies, macro processes, and humans. Overlooking these user practices and how they relate to virtual spaces, means that an essential part of how technologies disrupt societies misses in our theoretical understandings of technologies in societies.

7.3 Evaluation of alternative macro contexts in theories on virtual and digital technologies

Postcolonial theory focuses on the macro context as affected by its colonial past but overlooks the micro dimension of technologies in world-human-technology relations. Alternatively, where (postphenomenological) theories on these relations do focus on micro dimensions, there is limited consideration for alternative postcolonial contexts to inform theory formation. As such, I argued that to study the micro dimension of technologies in-use, the material and immaterial qualities of the postcolonial context should be taken into account. To do so, I created an approach based on Hine's (2000; 2017) virtual ethnography which allowed me to access the material and immaterial dimensions of the postcolonial contexts and how these related to user practices of a technology that creates virtual spaces.

The existence of a WhatsApp Space (capitalised), which embeds multiple, ever-changing WhatsApp spaces, depended entirely on user engagement with the information existing (as potentialities) in these spaces. The reasons for both the WhatsApp Space and the subsequent WhatsApp spaces to come into existence depended on material and immaterial factors in their socio-economic and physical contexts. WhatsApp spaces where members of a pre-existing relational structure, such as churches, school classes and families, functioned as immaterial spaces where users could 'meet' in ways not possible before. Issues unique to the Sierra Leonean postcolonial context such as poor infrastructure and an increasingly high cost of travel, affected the frequency and importance of users accessing such WhatsApp spaces.

However, other factors affected the dominance of these spaces as well. The COVID-19 outbreak rendered some non-virtual spaces as inaccessible, leaving WhatsApp spaces as the only space where members of the relational network structure could engage with each other. Furthermore, users affected the density of the WhatsApp Space and spaces in two ways. One, by adding and interacting with content that affected its pull-factor. Two, by functioning as nodes in a network where user practices affected the construction of boundaries that demarcated the virtual spaces. This showcases how the user practices (the micro), the postcolonial power structures and the disruption of the global pandemic (the macro) relate to each other. Therefore, human-technology-world relations in postcolonial contexts depict a complex axis of power structures. Where micro processes are interplaying with macro processes, macro processes are interplaying with technologies, and technologies are interplaying with power structures.

It is important to consider the specific types of technologies when studying these axes. Based on my findings, Verbeek's (2011) phenomenological theory of technological mediation provides a foundation for understanding world-technology-human relations yet requires modifications in order to be applied to technologies that create virtual worlds. The unique characteristics of virtual spaces, including the shifting boundaries Hine (2000) describes, asks for a supplementary vocabulary when studying human-world-technology relations with a technology such as WhatsApp. De Souza e Silva and Sutko's (2011) conceptualisation of virtual spaces using potentiality and actualisation allowed me to look at the interplay between user practices and information existing in virtual spaces. As such, studying technologies that create virtual spaces can aid in understanding (virtual) world- (virtual) technology- (virtual) human relations. Here, the bracketed virtual does not depict a duplication, or separation of non-virtual and virtual, instead, as De Souza e Silva and Sutko (2011) argue, the non-virtual becomes folds of potentialities existing in the virtual (p. 31). The authors focused on locative media as examples to showcase the relevance of potentiality and actualisation in understanding virtual spaces, however, in their analysis the non-virtual (material) space was not studied whilst considering the macro dimension, nor was it conducted in a postcolonial context. My empirical data suggests that the user practices of engaging with information existing (as potentialities) in the virtual WhatsApp Space are affecting by, and affecting, the postcolonial context of the technologies in-use. Furthermore, the unique properties of WhatsApp meant that users had three different technological levels that affected their user practices. These three levels, including stable internet connection and electricity charge, were in turn affected by the postcolonial context the users were physically situated. Therefore, to understand (virtual) world- (virtual) technology- (virtual) human relations in a postcolonial context, the postcolonial contexts must be studied alongside, and as it interacts with the virtual.

The argument for studying the virtual in relation to the postcolonial was made previously by Jandrić and Kuzmanić in their tentative approach to establish the research field of *digital postcolonialism* (2015). No empirical study has informed their theory formation, and they foresaw methodological challenges due to our limited understanding of the relation between the virtual and the non-virtual (p. 48). As such, my study was an attempt to further this ideat by devising a method for studying user practices to reveal the micro dimensions of (virtual) world, (virtual) technology, (virtual) human relations. Core to this method is considering user experiences as the space where the immaterial and material postcolonial

context and the virtual and non-virtual features of the technology were at interplay. The empirical data revealed that the material and immaterial conditions affecting the postcolonial context, as well as the user practices of engaging with information in the virtual space affect the characteristics of the virtual space. Therefore, I argue that to further the research field of *digital postcolonialism*, we must study user practices of technologies that create virtual spaces whilst considering the postcolonial context.

7.4 Setting the research agenda

This research advances the study of virtual spaces in postcolonial contexts. Although it has revealed some of the characteristics of the WhatsApp virtual space in a postcolonial context, there has been no exploration on the specific reasons why this WhatsApp space has become so dominant. My empirical findings hint towards a lack of properly functioning alternative information infrastructures, quality of education, and prominence of illiteracy and high poverty. However, as this research was not aimed towards unveiling such reasons, the findings are insufficient to base any conclusions on.

Furthermore, as I studied this phenomenon in Sierra Leone, which has its unique postcolonial context, there is an opportunity for studying similar phenomena in other postcolonial contexts. In addition, because mobile technologies are the dominant technology used in Sierra Leone, and the WhatsApp usage is prominent, other contexts may require study of different (dominant) technologies, standalone or at interplay, to further our understanding of such phenomena.

As WhatsApp usage was highest among young urbanites, my pool of respondents in my empirical study reflected this demographic as well. Findings in the analysis suggested that the WhatsApp Space does not affect the rural areas of Sierra Leone as much as the urban areas. Whether this is indeed the case remains unclear and would require a study of user practices in non-urban areas. Further research could therefore look at specific spatial factors and socio-economic macro processes such as urbanisation and increasing (youth) population, and how this may affect the existence and properties of such virtual spaces. In addition, as the virtual space is not limited to physical rules and boundaries in a traditional sense, further research into Diasporic movements and virtual spaces can reveal whether and how these relate to each other.

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