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'Makhanda Forever?': Pirate internet infrastructure and the ephemeral hip hop archive in South Africa

ABSTRACT

This article examines how hip hop heads in marginalized, Black, low-income neighbourhoods in a town in South Africa make use of 'grey' pirate internet infrastructure from the Global South to create distribution platforms for their music. In this ethnographic study, hip hop heads from the town of Makhanda, who cannot afford the bandwidth to use graphic-intensive sites such as ReverbNation or SoundCloud, come up with innovative ways to hack and extend the limitations of their own low-bandwidth internet distribution infrastructure. To do so they not only move media offline onto various digital devices in innovative ways but also use online solutions from the Global South developed for less-connected users like themselves. This includes the file-drop platform DataFileHost, the 'Wap' platform Wapka and various forms of translocal pavement internet involving WhatsApp distribution. As digital pioneers in their communities, these hip hop heads showcase innovation from below by cobbling together translocal digital spaces that incorporate grey pirate platforms. Since they exist outside of the public, algorithmically monitored channels of the internet, these spaces remain outside of the mainstream centralized global media flows and exemplify 'pirate modernity' in the Global South. They point to the deep infrastructural inequalities between and inside countries and the need for building a more inclusive internet where no-one

KEYWORDS

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music
yard computer
less-connected
WhatsApp
DataFileHost

is exiled to the low-bandwidth, mostly off internet outposts of the less-connected. While pirate platforms form part of an interim innovative solution to help connect communities, their ephemeral nature means that the music archives created by these hip hop communities remain precarious and under constant threat of being lost forever.

INTRODUCTION

More than two decades after the end of apartheid, South Africa remains the most unequal country on earth (World Population Review 2022), where inequality is most marked by the persistence of racialized neighbourhoods. The democratic government has failed to lift the vast majority of Black South Africans out of poverty, partly due to the disappearance of working-class jobs in a globalized economy. The current expressions of racism and colonialism can be linked to the continuation of exclusionary assimilatory practices. For example, despite the official recognition of Black African languages, English is the language of education and employment in South Africa. Most Black African youth are unable to access expensive schools with proper facilities and therefore remain excluded from higher education and employment due to lack of facility with English. Thus, while a new Black middle class, now nearly equal in number to the white middle class, has become increasingly assimilated into English white culture through expensive schooling (Seekings 2015), the vast majority of Black South Africans remain marginalized from the economy. Notably, more than a third of young people in South Africa – about 20 million – have no prospects for escaping poverty, since they are neither employed nor engaged in formal education (Cloete 2009; Department of Higher Education and Training 2018). The town of Makhanda, where this study is set, is typical of this scenario. It is a small university town with a quaint Victorian centre located in South Africa's poorest province, the Eastern Cape. Like other towns across South Africa, the unemployed are concentrated in dusty 'townships', sprawling Black[1] residential areas located on the periphery of the urban centre.

The town had been called Grahamstown since the early nineteenth century, named for a brutal British commander during the frontier war between the British and the amaXhosa. As part of the government's project of 'symbolic reparation' in 2018, it was officially re-named 'Makhanda', the name of a nineteenth-century amaXhosa anti-colonial leader. To celebrate this renaming, local hip hop producer Azlan immediately posted a cross-armed image from the movie *Black Panther* with the title 'Makhanda Forever!' on Facebook – a slogan, derived from the name of the fictional land of Wakanda in the Marvel film *Black Panther*, that would link local expressions of resisting coloniality with global Black aspirations for recouping history, freedom and dignity.[2] The slogan seems particularly apt for the hip hop artists of Makhanda, as it not only describes their ethos but also suggests a reversal of the global gaze, where hip hop artists from a small town in the Eastern Cape in South Africa can imagine themselves as a global force akin to the mythical Wakanda, the moral compass of the Black diaspora.

Hip hop culture in South Africa has for many years created spaces for marginalized Black youth to try and make sense of the inequalities that still define South Africa despite Black majority rule (Haupt 2008). Most hip hop artists in Makhanda embrace conscious hip hop and see themselves as responding to and extending the political work of crews such as Public Enemy,

1. This article uses the term 'Black' to define all people of colour who were oppressed under apartheid based on perceived racial features, including those who identify as Indian and 'coloured' (the broadly accepted South African term for mixed-race people assimilated into western lifestyles). I will specifically use the term 'Black African' to refer to Black South Africans who adopt ethnic identities based in African languages and traditional practices.

2. Of course Azlan's wit is more apparent when we recall that the language of mythical Wakanda spoken in *Black Panther* is indeed isiXhosa.

Mos Def and KRS-One. Like many other conscious hip hop heads in South Africa, the hip hop artists in this study understand it as a tool to resist nihilistic and potentially self-sabotaging responses to racism and poverty, such as the celebrations of crime, sexism and crass consumerism in gangsta rap (Haupt 2008). Despite their extreme economic and racial marginalization in South Africa, the hip hop artists of Makhanda are not content to take a marginal position in the global hip hop community. They see themselves at the forefront of innovating hip hop. These innovations include incorporating local elements into their lyrics, such as isiXhosa language and *imbongi* praise poetry, a Black African oral history practice that pre-dates colonialism and apartheid. This is not understood simply as an indigenizing of hip hop, similar to the localizing practices of hip hop heads around the world (Bennett 2004), but instead, as a way for these musicians to help return hip hop to its African roots (see Charry 2012; Osumare 2008). Much of conscious hip hop promotes an African American ideological aesthetic. By contrast, the hip hop artists of Makhanda feel strongly that by incorporating African languages and traditions into their work they produce a hip hop that is even more authentic to the broader Black experience and aligned with this ethos of 'staying true to one's self', or 'keeping it real'. Hip hop, much more than other music genres, locates itself at the interface between the global and the local (Alim 2009: 103; Malone and Martinez 2015), because of the importance of 'representing' the neighbourhood while also responding to global hip hop conversations and styles. The hip hop artists in this study use hip hop's potential to promote 'dialogic spaces' (Pieterse 2010: 428–37) to contribute to in-depth conversations about inequality in this town. But hip hop can also be seen as an 'organic globaliser' connecting marginalized spaces across the world (Malone and Martinez 2015), and these hip hop artists also embrace a global association with the Black diaspora and speak to that space through hip hop music based in their lived experiences in Makhanda.

Makhanda's hip hop artists' aspirations for a global presence through their music tracks on social media platforms are, however, severely hampered by the difficulty of access to the internet. Their struggles with access is typical of South Africa's digital apartheid and its racialized digital inequality (Pritchard and Vines 2013). Black township spaces are marked by infrastructural dysfunction and absences, including unequal digital infrastructure that frequently bypass these spaces. Among the reasons for this digital apartheid is the fact that last mile connectivity does not extend much beyond the (predominantly white and ageing) centres of South African cities and towns. This means that internet access in peripheral township spaces is generally restricted to prepaid mobile internet. Mobile data costs reinforce spatial inequality in economic terms, placing all but the barest minimum of mobile internet access outside of the reach of most township residents, sparking activism around this issue (The Global Economy 2016). At the time of my study in 2016, data to access the internet in South Africa were more expensive than in Germany and four times as expensive as in the United Kingdom, absurd given global inequalities in income (*Internet Bandwidth by Country, around the World* 2016). Most concerningly it is the poor who pay the most for data costs in South Africa, where small data bundles can cost up to 64 times more than the bulk data packages commonly bought by the wealthy (de Lanerolle 2018).

This article focuses on economically marginalized Black youth from the townships of Makhanda and their experience of the internet as hip hop artists. It reveals how these hip hop artists develop ingenious ways to create

connectivity by mobilizing strategies for extremely frugal data use, establishing access points more likely to resemble a trickle than a constant streaming flow of data. It celebrates this ingenuity born through frugality, but also calls attention to its limitations, particularly the ephemerality of this digital ecology. Mainstream social media platforms like YouTube or SoundCloud have reliable business models to fund the massive cloud servers that ensure that the uploaded music of their users will be stored there forever. As this article will show, these mainstream platforms often remain out of reach of marginalized internet users in the Global South like the hip hop artists of Makhanda. While there is much discussion around inequality in terms of internet access, commonly called the digital divide (Dijk and Hacker 2003: 315; Fuchs and Horak 2008: 99; Mutsvairo and Ragnedda 2019), there is very little discussion of unequal access to digital storage spaces. This is possibly because marginalized people are simply conceptualized as consumers of digital information, and not producers or archivers of digital media, despite the existence of vibrant digital media producer communities in such marginalized spaces across the world (Eckstein and Schwarz 2014). Increasingly digital technology is designed to privilege capitalist consumption of digital products and advertising instead of prioritizing creative production and innovation (Zittrain 2009).

Makhanda hip hop artists pride themselves on their knowledge of digital media software, their ability to navigate the mobile internet and their skills in disassembling and assembling second-hand PC hardware. Indeed, they see their competence with such digital technology as part of the conscious project to resist nihilism and reclaim their dignity. Such dignity is not located in the display of technology, which tends to be old, frequently in a state of breakdown and not designed for mobile connectivity, but in their sense of competency. They have an acute sense that most people see marginalized unemployed Black young people like themselves as useless. Through engaging in digital hip hop production, they are able to show they are productive even without employment and committed to learning despite not being enrolled in an institution (Schoon 2014: 207). They are proud of the fact that they spend long hours in backyard bedroom shacks recording music and uploading it online, instead of wandering the streets aimlessly like their peers. Their project is one of psychological survival and hanging on to hope in the context of extreme inequality and deprivation.

HIP HOP, DIGITAL INNOVATION AND THE INTERNET OF PIRATE MODERNITY

Given the genre's history of technological innovation, it is inevitable that hip hop artists would approach the internet in innovative ways. From its earliest moments, with the invention of turntablism and the assembly of homemade amplifiers for the New York block parties of the 1970s, hip hop culture has embraced the reconfiguration of technology (Watkins 2005). Such appropriation, however, is not merely a by-product or spinoff of hip hop music production; as Forman argues, rap music in fact '*relies* on the appropriation and reassignment of music technologies' for its instantiation (2004b: 389, emphasis added). An example might be the genre convention of sampling, where artists re-contextualize and technologically manipulate a range of musical sounds to create new expressions. In the early days of rap and hip hop music, this practice was not accepted as an expression of authentic creative authorship by the

commercial music industry. To avoid copyright prosecution, hip hop artists had to create their own parallel distribution networks, selling mixtapes from car boots and mom-and-pop stores in the African American community (Watkins 2005). Artists engaged in this technological appropriation took on certain 'outsider' status, a perspective reflected in their socio-economic circumstances. Emerging out of the African American inner-city ghetto, early hip hop artists often opposed authority, 'representing' or creating spaces of belonging and recognition despite the city and the economy not being geared to supporting their communities (Forman 2004a). Technologies such as ghetto blasters and spray-paint were used in these instances to reclaim space and produce a sense of ownership. In more contemporary times, technological appropriation of the internet has also taken on a spatial character, with hip hop artists attempting to (re-)claim digital networks in the same way that their predecessors attempted to (re-)claim urban spaces.

Hip hop artists have been at the forefront of internet-based innovation through practices such as peer-to-peer music sharing (Guins 2008). Chuck D from Public Enemy, for example, was the first hip hop artist to defend peer-to-peer sharing as a legitimate way of distributing music (Watkins 2005). As Haupt observes, conscious hip hop artists have led the struggle against the corporate enclosure of the internet, fighting to maintain its status as a shared information commons (Haupt 2008). Hip hop culture has similarly been quick to embrace new digital devices, from the pager, to the mobile phone, to the palmtop computer (Heckman 2007). When it comes to incorporating mobile messaging (Rheingold 2007: 23), social media (boyd 2001: 99) and digital music distribution (May 2005: 195, 197), hip hop artists have always been early adopters/adapters of digital practices.

In the South African hip hop community, digital media practices have been similarly innovative. Interestingly, despite Cape Town and Johannesburg being the main centres for hip hop, it was the town of Makhanda where the first South African hip hop website was created. In 1991, Mass Dosage, the host of the Rhodes University Music Radio show *Hip-Hop Headrush*, launched the site HipHop.co.za (Hunter 2018: 105). Five years later, the Cape Town hip hop artist Milk launched the website AfricasGateway, a resource that went on to share South African hip hop news for more than a decade (Hunter 2018: 105). Many such websites could not be sustained due to the high cost of hosting (*What Happened to the AHHB: Point Black* n.d.: n.pag.). The largest hip hop grassroots music production community at that time was based in Cape Town and it was here that a lot of digital innovation occurred. This included digital sampling and remixing, video production and the extensive use of online social media (Haupt 2008). As a result, bedroom production studios became commonplace. However, even within Black hip hop communities, there was unequal access to online and digital production tools, mirroring historical apartheid divisions, with artists in Black African townships having limited access to the digital tools of relatively privileged 'mixed-race' or 'coloured' hip hop communities (Pritchard 2011). Internet access remains a privilege for most South Africans. Even though significant gains have been made in extending internet connectivity, the statistics do not reflect the actual experience of the less-connected, those users whose internet access is mainly confined to WhatsApp messaging (de Lanerolle et al. 2017), such as the hip hop artists in this study.

Despite several studies of hip hop as a cultural phenomenon in various places across South Africa, there is limited academic research documenting digital and online hip hop practices beyond the city of Cape Town. Bodunrin's

(2019: 174) study of Indigenous Khoisan hip hop production and how their digital practices led to the preservation of a dying language is a notable exception. Bodunrin's work points to the lack of digital archives that preserve the cultural heritage of marginalized people, a fact that is reflected in the ephemerality of erstwhile South African hip hop websites and blogs. Compared to the demise of these websites, the loss of the mobile app KasiMP3 was arguably much more tragic, as it had housed a huge South African hip hop music archive. KasiMP3 emerged in 2012, created by Black African computer programmer and hip hop fan Mokgethwa Mapaya from the township of Tembisa ('Kasi' is shorthand for 'lokasie', a vernacular term for township). In 2012, three months after Mapaya launched KasiMP3, the site had amassed 3000 registered users, reaching 200,000 users during its peak a year later. Despite Mapaya managing to broker deals with companies such as EMI, KasiMP3 lacked the capability to monitor the copyright infringements of its users. The app was eventually forced to shut down, and an entire archive of locally produced music was lost forever.

It is common for marginalized communities in postcolonial countries to rely on 'grey'[3] or pirate infrastructure that is frequently in antipathy with copyright laws, to distribute and archive their own locally conceived cultural products. This reliance is the result of deep global inequalities reflected in both the economy of global cultural industries and the inequitable distribution of media infrastructure, a condition that Sundaram calls 'pirate modernity' (2009). In the marginalized slums where global media are priced beyond the means of most people (Karaganis 2011), there is still a massive demand for media fuelled by global imaginaries in such spaces (Appadurai 1996). Such dreams of elsewhere drive media piracy, producing a new illicit infrastructure for media distribution in these marginalized places where none had existed before (Sundaram 2009). It then becomes an infrastructure that is also used to distribute the music of local musicians and media producers. Many cultural groups in marginalized communities around the world are using such infrastructure as their primary means for distributing and archiving their own cultural productions (Eckstein et al. 2014). It is for this reason that Lobato (2008) argues that piracy should not primarily be studied through a legal paradigm. Media piracy, he contends, is predominantly an issue of infrastructure, revealing the absolute lack of media and communications infrastructure in certain spaces or highlighting the lack of affordable infrastructure if it exists at all. Haupt (2014) extends this argument, positing that copyright enforcement is part of an extractive system of colonialism that has systematically deprived Indigenous people of their rights and resources, including cultural resources such as music.

While Indigenous people have their music appropriated, circulated and sold through powerful global networks, their own distribution channels remain fragile and marginal in the spaces of pirate modernity. Unlike the graphic heavy, mainstream Web 2.0 platforms of global hip hop distribution like ReverbNation, which might garner hip hop artists the attention of global cultural industries, the networks of pirate modernity do not reach these mainstream globalized spaces. No hip hop artists in New York or Tokyo would use makeshift pirate distribution platforms from the Global South with their ephemeral data hosting and ugly interfaces to host their music. Within the global hip hop community too, there is a need to acknowledge that what is accepted as easily accessed internet platforms in the Global North, such as SoundCloud or ReverbNation, may be out of reach for hip hop heads in the Global South. These actors are forced to hustle and create their own very

3. Grey infrastructure refers to informal infrastructure where both legal and illegal interactions may occur. It includes informal marketplaces selling both legal and stolen goods, unmonitored web storage spaces containing both pirated and original music and footpaths used by both residents and illegal immigrants.

different internet experiences by patching together and combining various digital devices, tools and platforms, much of which exist in the ephemeral space of pirate modernity.

METHODS

This study describes the digital ecologies of hip hop artists in Makhanda. Following a digital ethnography approach, it considers the relationship among the social environment, digital infrastructure and digital practices to be dynamic and deeply informed by context (Horst et al. 2010). Digital media research in Africa that foregrounds decolonial approaches is best served by a qualitative methodology that privileges local knowledge and understandings, foregrounding concepts emerging from local activism and artist movements (Schoon et al. 2020: 1). As a filmmaker and lecturer, I was initially invited to base my research on Makhanda hip hop artists by a leader within the community, XNasty. He knew me well since my students and I have over the past few years helped to document their activities on video. He is a member of the Fingo Revolutionaries collective and has played a pivotal role in establishing hip hop in the area. For this research, I would work more intensely alongside these hip hop artists and document their creative process through filmmaking. Initially the research was simply going to use filmed focus group discussions and technical skills workshops to gather data. However, this soon developed into a much more organic and sustained interaction with hip hop artists in their home spaces. I wanted the research process to benefit the artists and offered to work with them to produce music videos, and also contributed some basic computer support. In the end I made five music videos (Azlan 2015; Dezz Imbongi yesingqi 2015; Rymgees 2014; Reteliation 2014; Zion Eyes 2014) in collaboration with the hip hop artists. I made it explicit that I was providing camera and editing skills while allowing them to direct their own music videos. Making these music videos produced rich insights as I became immersed in the technical challenges facing the artists around producing and distributing digital media. In discussions with the artists around the meanings they wanted to emerge from the music videos, I developed a much more nuanced understanding of the kinds of messages they wanted to promote through their music. Eventually I interacted with about 40 hip hop artists, of which I interviewed seventeen on video and hung out with them to produce music videos and a documentary about their work from 2014 to 2016. During this period, I also attended a few local hip hop events, but mostly spent time at home with artists in their backroom bedroom studios. Focusing on the broader ecologies of their digital media practices instead of only one particular application, platform or device, allowed me a much broader understanding of how their internet use was immersed in a range of other digital distribution ecologies. I came to understand the importance of combining or 'remixing' such devices to achieve their aims and was made aware of the extraordinary degree of innovation and resourcefulness needed to work with digital media in this locale.

THE HIP HOP INTERNET OF MAKHANDA

What does the internet look like for hip hop artists in Makhanda? It is a mobile phone rapidly running out of data. Files need to be transferred from the second-hand computer in the producer's backyard bedroom to the phone

and then uploaded, often failing in this procedure due to time-out errors. The basic processing capabilities of these feature phones[4] and the slow mobile network speeds in the township conspire relentlessly against artists. Every attempt costs data, which means that using the internet is not a leisurely surfing experience, but an anxious rush of grab and go while watching a rapidly running meter about to reach its cap (Chetty et al. 2011: 72). The township is too far from the central post office for an ADSL line – not that anybody here could afford one. While you can find 3G mobile connectivity in the centre of town, infrastructure is not prioritized for the township and the signal often dips to Edge or even 2G. Like less-connected mobile internet users elsewhere in South Africa (de Lanerolle et al. 2017), this means that hip hop artists in Makhanda have developed an encyclopaedic knowledge of various mobile service provider specials and zero-rated services.

Among the hip hop artists of Makhanda, internet practices can be described in terms of three core concepts that I will set out in the following sections: translocality, pirate infrastructure and remixing a data-lite internet.

4. Feature phones are basic mobile phones that can access the mobile internet but are differentiated from touchscreen Android or IOS smartphones by their basic push-button interfaces and limited access to apps.

1. Translocality

Internet access for these hip hop artists was translocal. Downloading files from the internet was often a communally focused practice inextricably linked to offline file sharing with neighbours, friends and fellow pedestrians. Such communal offline file sharing created a sense of the internet as enabling interactions not primarily with dispersed individuals around the world, but instead focused on connecting with places and dense sociable communities similar to their own. This first section discusses communal file sharing ecologies based on computer hard drives, or USB flash discs and DVD players, or mobile phones.

Translocality is a concept that is particularly useful for understanding processes of globalization beyond the West and should be conceptualized not simply as networks linking the local with the global, but also includes connections beyond the local that are not quite global in scale (Freitag and Van Oppen 2010). The hip hop artists of Makhanda are fans of global hip hop and aspired to get their music on international platforms like ReverbNation and SoundCloud. While they sometimes manage to do this, most have little engagement with fans there and also not enough data to access these platforms regularly. As such it is regarded as more of an aspirational activity, based on hopes to one day have a global presence.

The artists' main distribution network is in the local space of the town of Makhanda itself. For this they mainly use digital transfer methods that do not involve the internet, such as Bluetooth sharing to send a file from their mobile phone to someone else's or copying files from a computer onto the mobile phone of a visitor. It is a pedestrian social space, one in which young people would often meet each other on the street, where sharing music offline is an expression of sociality, and preferred to private downloading since data required for internet access are expensive for people here. One of the ways of connecting to other Eastern Cape towns is by posting a download link for a track to the Facebook groups of hip hop communities in these towns. The Shizzo Manizzo crew, for example, often make the approximately four-hour roundtrip to King Williamstown for live performances and like to share any new tracks on the King Williamstown Facebook Hip hop group. This practice illustrates how these hip hop artists employ the internet primarily to insert

their music into translocal networks connecting various towns around the province, specifically networks incorporating the Black African townships on the outskirts of such towns where youth with similarly difficult circumstances and aspirations for a better life could be found.

Another way of connecting to other Eastern Cape towns is by sending music to an acquaintance in another town for direct download via WhatsApp. While it might appear to be simply sending music to an individual fan, this is not how the Makhanda hip hop artists conceptualize it. Rymgees, for example, explained that he had just sent his music to Beaufort West almost 300 miles away, having WhatsApped an MP3 to someone he knew there. The understanding was that since the friend is located in a similarly, very social pedestrian space, he would walk around his own township bluetoothing the track to friends he encountered on the street. In this way Rymgees's music would be shared with other people from Beaufort West. Such offline distribution networks that ripple out from a single download – a 'pavement internet' according to Walton (2014) – arguably spread messages much more effectively in less-connected communities than online media distribution. For example, some of the hip hop artists in this study explained that even if they just bluetoothed a song to one person, in a few days everyone they knew in the community would have it on their phones. The Makhanda hip hop artists thus create a networked space that span various towns and their outlying townships, tying together young people with similar circumstances and aspirations.

However, the creation of these translocal networks does not preclude dreams of a city life and for recognition from the mainstream. Blaqseed explained to me that urban recognition could be achieved by adding metadata to a song, such as embedding one's image in the exported MP3. He has never been to Johannesburg, but he has sent his music there on WhatsApp. He asserted that now some people in Johannesburg would recognize him since they would have seen his image on their phone screens. The internet thus becomes a way for these hip hop artists to interact with broader geographies and extend their social world beyond the 'stuckness' they experience due to the lack of opportunities available to young people in the township space (Schoon and Strelitz 2014: 25). However, despite such aspirations, the predominant translocal nature of their networks becomes even more entrenched through platforms such as DataFileHost, which are generally unknown to or otherwise sneered at by the global centre (Monaheng 2014). The result is that aspiring artists' media generally remain confined to the margins, invisible to players in the urban global hip hop scene.

2. Pirate infrastructure

Internet practices in Makhanda depend on pirate infrastructure. This term refers to infrastructure that is commonly used to share global movies and music in the community to evade costs and copyright obligations and does not necessarily imply that the applications were designed to intentionally undermine copyright. Here I discuss three applications: KasiMP3, 'Wap' sites and DataFileHost.

Hip hop artists use various forms of pirate infrastructure to assist them with minimizing both their own and their fans' mobile data use. While some of the hip hop artists complain about people illegally copying their own local music, generally they circulate their own tracks for free, engaging with hip hop to manage the drudgery of unemployment and get respect from others in

the hope of future fame and income. The degree to which global pirate infrastructure is enmeshed in the township spaces on the outskirts of Makhanda is astounding. For example, I would arrive at the makeshift outside room of a hip hop artist – mud, wood and corrugated-iron rooms constructed in the yard for adult children too old to share a bed in the tiny government sponsored brick house – only to find them huddled over a computer screen watching a grainy Hollywood movie with Chinese subtitles.

Mobile service providers have for several decades targeted township-based residents through discount plans, making mobile phones nearly ubiquitous. In comparison, the typical township resident was not similarly targeted as a computer user until recent years, with the advent of mobile dongles and the rising popularity of streaming services. Computers were therefore relatively rare in the township space, yet hip hop artists were early adopters of second-hand desktops or laptops that generally came from other spaces. They would receive a steady stream of visitors with phones and flashsticks in tow, to copy over media, but also to deposit new media onto the yard computer. Many of Suffocate's neighbours, for example, would download movies from the mobile pirate website F-movies, which is optimized for less-connected mobile-only users as its downloadable films are data-lite 480 pixels-wide videos suited for mobile screens. Despite the relatively small size of such movies, they soon fill up an entire memory card. Since most people only have limited space on their phone's memory card and absolutely no access to cloud storage, the yard computer where a hip hop producer would mix music also becomes a communal collection. It now contained not only locally produced music but also pirated media, thereby inscribing it into the infrastructures of pirate modernity in that neighbourhood.

Such lack of access to digital storage space means that for the less-connected there is limited opportunity to build up an archive; media are always ephemeral and at risk of being lost. XNasty explained how the smallness of the mobile phone memory card meant that it was difficult to have a sustained presence with one's fans through your music. What develops is a 'grab and go' situation where a popular song would be on everyone's memory card this week but deleted the next to make space for the next local hit. While depositing it on a yard computer creates a longer lifespan for both pirated media and hip hop music, these devices are also risky repositories, exposed to rain from leaks in the corrugated-iron roof or vulnerable to surges from the makeshift electricity connection extending from the main house.

The pirate infrastructure used to share data online is similarly fragile. KasiMP3, like the yard computers, had become inscribed into the pirate infrastructure of the low-income townships it served at the time of my research. It was an app configured for minimal data use and not particularly graphic intensive, making it well-suited to township users with limited access to data. Busta, for example, uploaded several of his tracks on KasiMP3. He lost them forever when the platform was eventually sued and shut down.

'Wap' sites such as the Wen.ru and Wapka.mobi sites (originating in Russia and Indonesia, respectively) offer data-lite hosting platforms for people to build their own mobile sites using the simplest internet protocols, accessible even for the less-connected who only have basic feature phones. They were popular in South Africa in the early 2000s as text-based hyperlocal bulletin-board gossip sites, illustrating how internet tools built elsewhere in the Global South for the less-connected found a ready home with the less-connected here (Schoon 2012: 690). By the mid-2010s 'Wap' sites developed the capacity

to host media. Rymgees would always upload his music to a 'Wap' media site on the Wapka.mobi platform Konings.me which hosts lots of Afrikaans hip hop, but also includes a movies tab with Hollywood movies for download, illustrating just how embedded it is in pirate infrastructure. When I clicked on the tab to explore Wapka sites in South Africa I noted many sites hosting local music alongside pirated media, such as VendaMP3.wapka.mobi, which has a repository of music in the minority Indigenous language, Venda. It also includes rap, gospel and traditional songs, as well as several pirated British comedy skits and commercial R&B tracks for download. In the next few years most of these 'Wap' sites would disappear as globally even less-connected users shifted to more sophisticated smartphones. Abandoning 'Wap' sites and their associated archive, most of which was not backed up elsewhere, meant that these tracks were also lost forever.

The most popular (although not the most prestigious) platform for sharing music within the Makhanda hip hop community is DataFileHost, a form of grey[5] infrastructure. The platform does not seem specifically intended to host pirated media, but like many other anonymous no-frills, no-login sites such as WeTransfer, it is popular with people who do in fact pirate media (see e.g. Dredge 2015). What makes DataFileHost different from other anonymous file download sites is that it is explicitly designed for multiple downloads and includes a counter tracking how many times a file was downloaded. This affordance would prove to be very popular with local hip hop artists, who keep a careful record of the download tally as a measure of the song's (and their own) popularity. Rymgees is especially proud that one of his tracks had more than 6000 downloads. Dezz appreciates that one could just skip over all the data-consuming prefatory steps found on other platforms: 'With DataFileHost you don't even have to sign up for some profile […] you just upload the song and they give you the link, you spread it – boom! – and that's it!' (personal communication, 2014). Once a track is uploaded one would receive an obscure link consisting of random numbers and letters. DataFileHost offers no branding, not even the name of the track, never mind the attractive graphic interface of Web 2.0 platforms with their functionality for profiles, artist playlists and searchability.

I looked up DataFileHost on EasyCounter at the time and noted that it had 105,000 unique visitors to the platform every day, with most traffic coming from India, but about 7 per cent of the daily visitors coming from Nigeria and South Africa, respectively. These statistics illustrate how the internet in the Global South often operates outside well-known global Web 2.0 platforms. What most hip hop artists were however not aware of was the ephemeral nature of DataFileHost itself – all tracks were deleted after 90 days if they failed to remain active (Monaheng 2014). Once again this meant that the hip hop archive of Makhanda and that of the broader South African hip hop scene was being flushed out and forgotten on a daily basis.

3. Remixing a data-lite internet

However, hip hop internet practices in Makhanda involve much more than simply clicking 'upload'. They involve ingenuity in creating various assemblages (Latour 2005) from different digital devices, remixing various applications and social media platforms in order to create workable data-lite solutions to access audiences and hip hop communities in other spaces. I am not trying to argue that it is hip hop artists in Makhanda who developed these practices.

5. Grey infrastructure refers to informal infrastructure where both legal and illegal interactions may occur. It includes informal marketplaces selling both legal and stolen goods, unmonitored web storage spaces containing both pirated and original music and footpaths used by both residents and illegal immigrants.

Indeed, they never claimed to have invented them, but rather these innovations are part of a broader South African hip hop innovation culture shared among those who are compelled to innovate to access the internet. This section looks at how these less-connected hip hop artists use mobile phones, digital cameras, second-hand Pentium computers, DVD players and USB cards in different assemblages to create different affordances. It also explores how pirate infrastructure is combined in innovative ways with the mainstream social media platforms Facebook and WhatsApp, to maximize audience reach while exploiting services favoured by mobile phone networks in South Africa.

In the Global North, artists might simply click 'upload' on their computers to promote a track and its associated visual branding to a Web 2.0 platform like SoundCloud where many members of their fanbase could be found in one simple step. For the hip hop artists of Makhanda, this seemingly simple task would require a host of different steps, devices and platforms. It would require ingenuity, persistence and a remixing of technology. For example, at the time of this study most of the feature phones the artists owned did not have the capacity to tether a computer to the internet, meaning that accessing the internet was always a two-step process of transferring media to the phone's memory card and then uploading it to the mobile internet from there. Some hip hop artists had digital cameras with much better photo capacity than their feature phones, which meant they had to insert the camera's memory card into the phone to upload the image, constantly opening the back of the phone for memory card swapping. This made managing the phone's memory card an important part of accessing the internet, but the two-step internet still did not suit all tasks. Azlan complained that it was impossible to install or upgrade his computer's software in this manner, as such files were often designed to intermittently access the internet throughout the installation process while also accessing the computer hard drive. Consuming downloaded media would often also involve multiple devices, as many people did not have very good speakers on their mobile phones and would instead first download the file on their phone, copy the downloads onto flash sticks via a yard computer and, finally, play media from these flash sticks on cheap DVD players connected to the television. Accessing the internet, both for distributing and consuming media, thus required an assemblage of the artist and their devices that together would create the affordances that they lacked individually. Mustered together, they collectively provided access to internet media distribution platforms.

Such remixing was not only required to distribute or access media on the internet but also a necessary approach for hip hop artists to package their music download links into attractive posts still suited to extreme data frugality. What was needed was to share these DataFileHost links in a way that was more social and visual, but that still used as little data as possible. This cost saving was possible by incorporating social media platforms that were either zero-rated or subsidized by mobile phone operators in South Africa. WhatsApp was one of the most popular platforms, and despite being the lightest on data costs, some struggling artists would uninstall it to avoid messages at times when they wanted to preserve their data for other purposes, such as waiting for an e-mail from a potential employer. This was because WhatsApp was always running in the background and creating new data costs whenever the phone's data signal was enabled and a message was received. Hip hop artists were therefore aware that sending WhatsApp messages to fans might be unwelcome. Frugal hip hop artists would also not want to waste

money on such messages to numerous fans, even if each message cost just a fraction of a cent. Instead, hip hop artists would therefore simply change their profile photos and profile status to announce a new music track. Such profile changes would only be sent if someone explicitly opened the app and would not be delivered otherwise. Now their fans would only have to incur the data costs when they explicitly opened WhatsApp and scrolled through the profile pictures of their contacts and the accompanying profile status. A new profile picture would often be a poster image for a new track and signalled to fans that a new music link was available. Where the profile status' default modes included 'Please text only', 'In a meeting' and 'At work' to indicate the availability of the user, the hip hop artists would change it to the new DataFileHost link. Fans could therefore scroll through their contacts to see if any profile pictures had changed, and then go and look at the associated status message. It was much more data frugal to simply change one's profile and use WhatsApp in this way to communicate with others, even though this was not a way WhatsApp was designed to be used. At this point in time the WhatsApp status update panel allowing users to post a story about themselves did not exist. Might it be that such South African hip hop practices of embedding messages in WhatsApp profiles inspired engineers at Meta to add the status update panel functionality we now have as a standard WhatsApp feature? This speculation might be far-fetched. Nevertheless, it illustrates how users might help define how technology is used and so prompt corporations to include such functionality in future as a standard feature.[6]

6. See Ling (2004) on Norwegian teenagers and SMS functionality.

DataFileHost links were repackaged not only within the WhatsApp platform but also on Facebook posts, where hip hop artists were able to incorporate them into a rich Web 2.0 architecture. Using this method, a cryptic DataFileHost numerical link could be posted on Facebook together with metadata such as the name of the track, the names of the artists featured, the beatmaker, as well as an attractive image, enabling all track links to be curated together on the artist's profile page. Many mobile providers offered special discounted rates for accessing Facebook that made it much more accessible than other Web 2.0 interfaces like SoundCloud. Since none of the hip hop artists used Facebook privacy features, this information was easily searchable on the web. By remixing DataFileHost links and Facebook posts the hip hop artists hacked Web 2.0 functionality for their music, creating searchable visual interfaces to access their DataFileHost files. This interface suited those who could not afford high data costs, but also now more closely resembled SoundCloud or ReverbNation. Unlike these mainstream sites, however, the pirate backend was unreliable. This archive of hip hop music being created was not only more ephemeral due to the regular data flushing of DataFileHost, but the grey infrastructure of DataFileHost existed in spaces alien and untrustworthy to middle-class digital ecologies: when I clicked on some of these Facebook posts with my work PC, for example, my university antivirus software refused to open the DataFileHost link, reporting that it was associated with malware.

CONCLUSION

This article has shown how hip hop heads from Makhanda are part of a South African digital hip hop culture that has mobilized ingenuity to patch together a translocal data-lite internet. While the internet as used by hip hop artists in Makhanda may technically be 'global', it can be considered translocal as

it tends to bypass global centres and primarily connects marginalized places with each other. What kind of space might the hip hop artists be constituting through their interchanges with other towns in the Eastern and Western Cape's remote spaces far from the cities? Robert Thornton (cited in Ranger 2010) argues that South Africa is not a true nation due to massive imbalances of geographical power. He suggests that South Africa more closely resembles an arrangement of three city-states – Cape Town, Johannesburg and Durban – that collectively are immersed in global and regional networks. The rest of the country is simply a 'hinterland' that looks upon these regions with desire and loathing. This translocal internet of distributing hip hop tracks to other small towns and their townships arguably allows for translocal ideas of belonging to emerge. In contrast to Appadurai's (1996) notion of the global mediascape, what is emerging here is a translocal township mediascape. Through this self-fashioned infrastructure, hip hop artists are able to reach out to audiences in other remote township spaces who are facing the same struggles.

Makhanda's translocal internet also creates communal imaginaries. These hip hop artists imagine an internet that is not focused on connecting individuals, or networked individuality (Castells 2001; Wellman 2001: 227), but rather they imagine it connecting communities where people meet on the streets and exchange media, spaces that do not resemble the gated communities and walled suburbs of the middle class. This translocality that connects the local without running through the global centre is at once a strength as well as a weakness. On the one hand, it creates space outside the dominant public sphere where alternative publics may emerge and formulate ways of speaking back to such hegemonic spaces (Fraser 1990: 56). On the other, an ethos of translocality also works against the artists' desire to insert themselves into global dialogues and make their individual mark in a centralized global space. The reason this translocal internet struggles to access the spaces at the global centre is because these grey platforms of pirate modernity exist on the margins of the internet and do not have the legitimacy of mainstream platforms.

Many scholars have argued for the importance of the digital commons (Haupt 2008; Kidd 2003; Lessig 2012) and it is important to revisit these debates given the massive global expansion of internet connectivity. Given that connectivity is not equally distributed and that the always-on streaming connectivity that defines internet access in the Global North is very different from the mostly off, predominantly message-app-based of the majority in the Global South (Donner 2015), different digital commons may emerge to connect such spaces. The spaces of pirate modernity that serve the needs of marginalized internet users in the Global South thus create channels of media distribution that connect other such marginalized spaces on other continents. As platforms that have been created in the Global South, they are tailored to the less-connected user who needs a no-frills data-lite, low cost platform. However, these platforms are only able to exist due to their association with media piracy and the economies of scale of the bottom of the pyramid (Sundaram 2014). This means they are therefore coded as dangerous spaces from which the middle-class user of the Global North should be protected, as my experience with my antivirus software illustrated. Outside of the safe, familiar terrain crawled by Google, these spaces therefore remain excluded from the experience of internet users in the Global North, including hip hop artists and fans in these countries.

Most notably, the ephemeral character of these platforms denies hip hop artists the permanency of creating a digital cultural archive that preserves their

music and tells their story for future generations. It also means that the global hip hop community itself is denied access to this music and these histories. Such ephemerality means that there is no 'Makhanda Forever!' for the town's hip hop archive. Moreover, this problem extends beyond Makhanda and points to a broader global problem of digital infrastructure and digital storage equity. As other global studies suggest, there are many less-connected marginalized musicians in the Global South who similarly depend on ephemeral pirate platforms to distribute and archive their music (see Eckstein et al. 2014). Clearly, there is a need for more research specifically examining the digital media ecologies of hip hop artists in marginalized communities in the Global South. What the experiences of the hip hop artists of Makhanda highlight, is that in these spaces, internet access is not only about access to connectivity, information and media consumption but also fundamentally about access to digital infrastructure and data storage.

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