Reinventing television in rural Zambia: Energy scarcity, connected viewing, and cross-platform experiences in Macha

Lisa Parks
University of California, Santa Barbara, USA

Abstract
During the past decade, digital distribution has brought about major changes in the ways that states regulate, corporations profit from, and people consume media content in places around the world. These technological and industrial shifts have also catalyzed an important area of inquiry in media studies, leading to investigations of ‘connected viewing’ defined by Holt and Sanson as a ‘broader ecosystem in which digital distribution is rendered possible and new forms of user engagement take shape’. Most scholarly research on connected viewing has focused on postindustrial contexts in North America, Europe, and East Asia. Few have considered these practices in developing contexts such as rural sub-Saharan Africa, where energy infrastructure is underdeveloped and media devices are scarce. Adopting a user-centered approach, this article situates the concept of connected viewing in rural Zambia and explores how remote communities with very limited resources access and produce media content across various platforms. The research is based upon 6 weeks of fieldwork in Macha, Zambia, in 2012 and 2013. It begins with a descriptions of the ways people energize media devices in Macha and proceeds to a discussion of three exemplary connected viewing scenarios: (1) the daisy-chaining of satellite TV services, (2) the streaming of YouTube videos, and (3) the production and distribution of local music video. Far from a model of ‘video on demand’ typical in most postindustrial settings, Machan distribution practices generate more occasional, collective, and limited experiences of television that are scaled to local capacities, enabled by an amalgam of technologies, and frequently interrupted by power outages and network failures. Despite this, underserved rural Zambian audiences are pushing connected viewing practices forward in ways that the region’s telecom and media companies are not by innovating cross-platform tactics for (re)distributing audiovisual content in conditions of energy, bandwidth, and economic scarcity.
Keywords
Digital distribution, music video, rural community, satellite TV, social media, television technology, users, Zambia

During the past decade, digital distribution has brought about major changes in the ways that states regulate, corporations profit from, and people consume media content in places around the world (Curtin et al., 2014). These technological and industrial shifts have also catalyzed an important area of inquiry in media studies, leading to investigations of ‘connected viewing’ defined by Jennifer Holt and Kevin Sanson (2013: 1) as a ‘broader ecosystem in which digital distribution is rendered possible and new forms of user engagement take shape’. Researchers in this area have explored the network infrastructures that enable digital distribution, the regulatory climates that support it, and the companies that control it (Holt and Vondereau, 2015). They have also analyzed emergent media ecosystems from user-viewer perspectives, considering issues such as ‘spreadability’ (Jenkins et al., 2013), transmedia engagement (Evans, 2011), and place shifting (Gillan, 2011). Most scholarly research on digital distribution has focused on postindustrial contexts in North America, Europe, and East Asia. Very few have considered connected viewing in developing contexts such as rural sub-Saharan Africa, where energy infrastructure is underdeveloped, broadcast radio remains the medium of choice for many, and economic resources and media devices are scarce. Despite such conditions, audiovisual content from around the world makes its way to rural African communities through multiple distribution routes.

This article situates the concept of connected viewing in rural Zambia and adopts a user-centered approach to explore how rural communities with very limited resources access and produce media content across various platforms. In this sense, the article sets out to extend existing research on Zambian media culture, which tends to focus on regulation and policy (Banda and Fourie, 2004; Ndlela, 2007; Africa Governance Monitoring and Advocacy Project et al., 2010; Sumbwanyambe and Nel, 2011) and community media (Kasoma, 2002; Muzyamba, 2009; Tembo, 2010) rather than media content or reception practices. Some recent work, however, explores how new technologies have created opportunities for interactivity and audience participation in Zambian media (Abreu Lopes et al., 2015; Simutanyi et al., 2015; Willems, 2013). In a study of the quality of audience participation in radio content production, Willems (2013) emphasizes the need to interrogate what ‘participation’ means in the context of an increasingly corporatized Zambian media system. Gertjan van Stam (2014) has assessed some of the challenges of information and communication technologies (ICT) use in rural Zambia and argues that academic projects often adopt a ‘Western-centric’ perspective on the issue. Studying connected viewing in rural Zambia can be a way of deepening understandings of media participation and use in the country.

While some scholars might approach rural Zambians as part of an ‘informal’ media culture (Lobato and Thomas, 2015) that is largely invisible and uncounted, I approach their media practices as prescient and increasingly significant to telecoms and digital distributors who are reaching saturation in postindustrial markets. In recent years, rural Africans have been referred to by industry and nongovernmental organization leaders as part of the so-called ‘O3b’—the ‘other three-billion’ people still not connected to the Internet (Williamson, 2009). This group is alternately imagined as a giant untapped market and an unserved constituency whose eventual access to the Internet will allegedly bring about ‘development’ and ‘modernization’. The O3b has been targeted by Google balloons, O3b satellites (a company that took the term as its brand name), and Facebook Zero, free
Internet access via mobile phone subsidized by Facebook and mobile phone service providers. Although laced with liberal humanitarianism, the “O3b” is ultimately a pejorative term that posits half the world’s population as a helpless, othered mass on wrong side of the digital divide, as the latest problem for Silicon Valley tech gurus to solve, and as a group that has largely been spoken for rather than listened to. In this way, the term also reinforces the problematic notion of the ‘digital divide’, which, as Jenna Burrell (2012: 7) observes, ‘is framed around a binary of access and non-access and an absolute distinction between users and nonusers’. As I hope to show, digital media cultures in rural Africa are much more nuanced and complex than either of these terms imply. Idly embracing these terms can inhibit thoughtful engagement with the heterogeneity of technologized life worlds and the material conditions undergirding digital inequalities.

In an effort to understand peoples’ different dispositions to digital technologies, I conducted fieldwork in the rural community of Macha, Zambia, for 6 weeks in 2012 and 2013. This fieldwork was part of a collaborative research project that investigated uses of the Internet and mobile phone infrastructure in conditions of energy and bandwidth scarcity (Pejovic et al., 2012). A dimension of my research involved exploring how Machans’ thought about and accessed ‘television’ (TV) and various forms of audiovisual content within the community. This research included qualitative interviews with more than 200 Machans1 (including chiefs, teachers, hospital staff, farmers, radio disc jockeys (DJs), merchants, and youth) about their ICT use, analysis of the community’s Internet traffic, and site visits to server houses, transmission facilities, and TV viewing locations. In Macha, TV is a minor rather than a mass medium, but increasing access to TV sets, satellite dishes, computers, and mobile phones over the past decade has generated new interest in and possibilities for digital distribution of networked audiovisual content in the community. Positioning TV at its center, Holt and Sanson (2013: 9) explain that research on connected viewing is guided by questions of ‘how … connections are created, and in what form, or to what end, in whose vision’. Situating such questions in rural Zambia, my analysis focuses on three exemplary connected viewing scenarios: (1) the daisy-chaining of satellite TV services, (2) the downloading and sharing of YouTube videos, and (3) the production and distribution of local music video.

One of my major findings is that underserved rural Zambian audiences are pushing connected viewing practices forward in ways that the region’s telecom and media companies are not by innovating cross-platform tactics for accessing and (re)distributing audiovisual content in conditions of energy, bandwidth, and economic scarcity. In this way, rural Zambians’ connected viewing practices resonate with what Eric Michaels (1994) has called the reinvention of television by other previously colonized rural communities. While Michaels’ research focused on Aboriginal Australians’ innovations in TV performances and aesthetics (also see, Ginsburg, 1994), my study focuses on distribution, foregrounding the multiple techniques rural Zambians have adopted for accessing and sharing audiovisual content. Far from a model of ‘video on demand’ (VOD) now typical in most postindustrial settings, Machan distribution practices generate more occasional, collective, and limited experiences of TV that are scaled to local capacities, enabled by an amalgam of technologies, and frequently interrupted by power outages and network failures. In this way, it might be just as appropriate to formulate what follows as study of dis/connected viewing, since network connectivity remains a challenge in Macha and in other parts of rural Zambia and sub-Saharan Africa.

**Energizing media in Macha**

While connected viewing is often imagined within a ubiquitous computing environment that is supported by a power grid, in Macha finding electricity or energy sources is a necessary first step of
generating media cultures. A rural community in the Southern Province of Zambia, Macha is home to 130,000 Tonga people. It is also the site of an historic Brethren Church in Christ (BIC) mission, which continues to operate a regional hospital and nursing school, housing, schools, and con-gregates in halls in the community’s center. Most buildings in this mission complex are linked to the national power grid (see Figure 1) run by the Zambian Electricity Supply Corporation (ZESCO), and many of the doctors, nurses, hospital staff, teachers, and religious leaders who live in the complex have access to electricity at work and home. Most Machans, however, live off the grid in scattered homesteads where they cultivate crops, such as corn, soybeans, sunflower, groundnuts, and millet, earning an average income of US$1 per day. Machans who live beyond the mission

Figure 1. ZESCO power grid in the center of Macha’s mission complex. Photo by author. ZESCO: Zambian Electricity Supply Corporation.
complex sometimes use small solar panels or batteries to power electronic appliances and media devices, but this is not feasible with TV sets, given the equipment’s higher energy demands. For most Machans, radio listening is much more common than TV viewing. And mobile phone use is becoming as common as radio listening (Simutanyi et al., 2015). As one informant explained, ‘We don’t watch TV because we don’t have enough power. So sometimes we try to play music or use the radio just for some hours because the power that we have is not enough. When the power is not enough we just sit like that’. Another indicated, ‘The TV is bigger, but it is not better than the phone. The phone seems to be small but is better than the TV’. Some perceive mobile phones as superior technologies because they do not consume as much energy as radio or TV sets. Although more than half of Machans have feature phones, very few have smart phones that can access the Internet.

One of the biggest challenges for media consumers in Macha is gaining access to electricity to use media devices, whether a TV set, radio, computer, or mobile phone. There are only about 20–30 functional TV sets in the mission complex, and there is one at the community radio station, which receives electricity through a line coming from the BIC Macha Girls’ School next door. Most radios are powered by single-cell batteries manufactured in China and sold by merchants at the local open-air market. Mobile phones are charged in a variety of ways. When people come to the mission complex for work, some poach electricity from their employers to charge their phones. Others pay merchants at the local market to do so with solar panels or car batteries (see Figure 2). There is also a thriving secondhand market for mobile phone batteries in Macha (see Figure 3). Mobile phone accessory dealers travel on a bus to the capital city of Lusaka to buy used batteries, which they then resell locally. A merchant I interviewed, who had previously been a beekeeper, indicated he travels to Lusaka 3–4 times per month to resupply. In addition to selling mobile phones (for 85,000–300,000 kwachas—US$16–US$57), batteries, chargers, accessories, and talk time scratch cards from mobile operators MTN and Airtel, this merchant helps people repair their phones when needed. He claimed that on a good day, he earns 200,000–300,000 kwachas (US$38–US$57) and a slow day brings in 30,000–50,000 kwachas (US$5–US$10). Batteries and headsets are the most popular items he sells, both of which trade for 20,000 kwachas (US$4). Since many of these batteries are used, they have been charged and worn down many times by the time they reach Macha and thus are essentially sold as cheap disposables. Some mobile phone chargers have been converted into single-cell battery configurations (see Figure 4). Single-cell batteries are cheaper and easier to find in rural areas and devices powered by such configurations never need to be plugged in.

Conditions of variable energy availability in the community are important because they set the potentials and limits of media distribution and production. As a result, user-viewers tend to be highly opportunistic in their media engagements, attentive to the battery reserves on their devices, and keenly aware of ways and places to recharge them. On many occasions during our fieldwork, our local partners’ phone batteries ran dry and hurried battery exchanging and device sharing took shape to mitigate possible disconnection. Like in other places around the world, connected viewing is fueled not only by national power grids but also by the creative labor of people who take time and energy each day to devise ways of powering their media devices (Parks, 2015).

Because of energy scarcity in their community, Machans are just as accustomed to dealing with network disconnections as they are connections. ZESCO exports the nation’s hydroelectricity resources to neighboring countries Botswana, Tanzania, and Namibia and regularly conducts load shedding, shutting off service to rural Zambians. During these power outages, all TV, radio, mobile phone, and Internet networks fail and broadcasts, phone conversations, and online activities are interrupted. As one male informant explains, ‘Sometimes it’s off, sometimes, it’s on, the …
power here is also a problem ... for example, if you are using a laptop, you can still have power on your laptop, but it means that once the electricity goes, the Internet is also cut. So that is a problem’. A woman we interviewed indicates, ‘if there is something that I really want to check out on the Internet and then electricity goes, I become very frustrated’. Finally, another man states, ‘almost every night, then there is power off power on power off power on, and ... the thing which I have seen, when there is power off, the Internet takes a long time to pick up. It’s very very slow’.

For Machans, watching satellite TV, making a mobile phone call, or downloading a YouTube video is not simply a matter of pushing a button. Conditions of energy scarcity mean that these acts require planning and preparation. Most people do not have electricity or service subscriptions and

Figure 2. Merchant uses solar panel and car battery charger to recharge mobile phones at Macha’s open-air market. Photo by author.
no one in the community has continuous media access because of frequent power outages. In Macha, media devices are often shared, borrowed, and/or poached rather than owned outright, and connected viewing practices are highly contingent upon user awareness of energy availability, efficiency, and cost. While one might argue this is the case for any place in the world, Machans are especially adept at energizing media as exemplified by the cross-platform practices they have created to support media access. As the next sections demonstrate, connected viewing in rural Zambia is characterized less by individuated second screen or multiscreen engagements and more by collective and occasional access facilitated by mobile phone, radio, and social media platforms.

**Daisy-chaining satellite TV**

Machans who can afford satellite TV have access to one commercial network called DStv. Owned by the South African company Multichoice, DStv was launched in 1995 and satellite dishes and receivers have slowly trickled into Macha over the past 20 years. Using the Ku-band, DStv offers tiered premium and basic bundles of African, European, and US news, religious, entertainment, and sports channels and also carries some free to air channels. In 2005, Multichoice entered a contract with the Zambian National Broadcasting Company to carry its national signal as part of the DStv bouquet. By 2009, there were only 45,000 paid DStv subscribers in all of Zambia.
(Zambian Country Report to the CTO Conference on Connecting Rural Communities, 2009), which has a population of 15.5 million. The number of Zambians using their own dishes to access free to air channels is unknown, but it is likely much higher. Suffice it to say, because of the relatively high cost of service, Zambia remains a very small satellite TV market and has had insignificant market growth since 2000 (Banda, 2006). Despite this, the predominant way that rural Zambians access TV is via satellite.

In early 2015, Multichoice announced plans to increase DStv subscription fees from 500 kwachas (US$50USD) to 710 kwachas (US$72USD) per month for the premium package and 330 kwachas (US$33USD) for the basic, attributing the fee spike to depreciation of the Zambian kwacha (Lusaka Times, 2015). In March 2015, more than 3000 Zambian DStv subscribers organized a Facebook campaign called Zambians Against High DStv Rates and vowed to boycott the service, pointing out that Zambia has long had the highest satellite TV rates in the region (Lisulo and Lungu, 2015). Such DStv fee increases hit rural Zambians especially hard. The few Machans who could afford basic satellite TV when I visited in 2013 were paying 170 kwachas, then about US$25 per month, which was prohibitively expensive for most. Because of this, most rural Zambians opt to downlink ‘free to air’ satellite channels.

When walking through Macha’s mission complex, satellite dishes are visible on the rooftops of some private residences, guesthouses, and other buildings (see Figure 5). Brunsdon (1997) has considered how the satellite dish functions as a sign of lowbrow taste in urban spaces of the UK, but in Macha, the dish is articulated with economic mobility and cultural capital. Paid satellite TV subscriptions are only affordable to the community’s economic elite—doctors, nurses, hospital staff, teachers, and foreign visitors who have steady jobs and earn higher incomes. Here, the satellite dish not only marks the presence of an economic elite but also singles out certain buildings...
as electrified sites of potential media access in a place where very few have such amenities. Satellite dishes and TV equipment are not sold in Macha. To purchase them, it is necessary to drive or take a minibus 70 km to the nearest city, Choma.

Nevertheless, Machans without grid access or dishes have created other ways of accessing satellite TV content. They, like many others around the world, have an avid interest in football (soccer). They not only play competitively on teams in their community but also occasionally view national and international games via satellite TV. Since most people do not have satellite TV at home, TV viewing of football in Macha is facilitated by the community’s radio station (see Figure 6), which runs on a shoestring budget made of periodic ad revenue. A TV set in the station’s reception area is connected to a satellite dish on the roof. To pay the satellite TV subscription fee, radio DJs invite community members to the station to watch football games for a small fee. This pooled income helps to pay the monthly DStv subscription and, if they are lucky, the station’s electricity bill. During game times, people (mostly men) cram into the room and huddle around a small 21-inch TV set to watch, cheering Zambia’s national team—the Copper Bullets—or other favorite international teams such as Barcelona. To reduce dust in the radio station, people take their shoes off before entering. When there are lots of men’s shoes outside the radio station’s entrance, there is likely a football match on TV.

**Figure 5.** Satellite dishes on a residential building inside the mission complex. Photo by author.
To organize collective viewing of football at the radio station, radio DJs use on-air announcements, short message services, and Facebook posts to publicize the event and invite participants. Most Machans would never know they could view football matches on satellite TV if the announcements were not daisy-chained in this way. By daisy-chaining, I am referring to the practice of using an affordable and accessible platform to facilitate access to another that is less affordable and accessible. In rural Zambia, satellite TV reaches a broader audience only through other platforms such as radio, mobile phones, social media, and word of mouth. This distribution scenario differs dramatically from a commercial model of direct satellite broadcasting in which a perpetually accessible multichannel environment is downlinked to subscribers in one home. Here, Machans have figured out ways of daisy-chaining multiple platforms to create occasional shared access to the platform that is the most costly. This cross-platform approach not only spreads the cost of one satellite TV subscription among a number of community members but also conserves energy as viewers cluster around one TV set in one building.

While there is a long history of sharing media technologies in rural Zambia, particularly radio (Spitulnik, 2002), the increasing availability of various media devices over the past decade has generated opportunities to access media and build audiences in ways that go unreported to and unnoticed by satellite providers, media companies, and state agencies. Self-organized satellite TV
audiences in Macha, I would argue, are important and effective technosocial innovations, especially given the Zambian government’s dismal record of delivering on its broadcast service obligations or multinational corporations’ unmet neoliberal promises to ‘connect everyone’. Machans’ connected viewing practices, in fact, suggest that some rural dwellers who are perceived as the O3b may in fact be ahead of the curve. They are not waiting around for states and/or companies to link them to the global media economy. They are forging their own connections.

In addition to watching football via satellite TV, Machans view Christian programming as many are worshippers at the BIC, Seventh Day Adventist (SDA) Church, or Pentecostal Assembly of God, and their daily lives are organized around religious practices. Residences with satellite dishes in the mission complex often have the receiver tuned to conservative Christian channels, Emmanuel TV (sponsored by the Synagogue Church of All Nations) or Hope Channel (sponsored by the SDAs), both of which are free to air satellite channels in Zambia. During our 2013 visit, we stayed in the hospital guesthouse (see Figure 7), and when the TV set in the living room was on, it was usually tuned to the Nigerian-based channel, Emmanuel TV. Primarily watched by the housemistress, Rose, she characterized satellite TV access as one of the perks of her job, since she does not have electricity or TV at her home. While feminist TV critics have explored how women in Western societies view TV distractedly throughout the day to mitigate the drudgery of

Figure 7. TV-viewing area in the hospital guesthouse where religious satellite TV programming is often viewed. Photo by author.
household work (Brunsdon et al., 1997; Hobson, 1982; Modleski, 1983), Rose watches TV in a more deliberate, concentrated, even spiritual manner, usually after finishing her cleaning work in the middle of the afternoon. The program she watches features charismatic Christian preachers who tackle vital issues such as poverty, HIV/ AIDS, incest, domestic abuse, addiction, and infidelity while insisting that faith in God and prayer are key paths to resolving such issues. The preachers also often perform dramatic and intensive healing rituals on audience members who are grappling with these issues. When watching these shows, the housemistress does not want to be interrupted. She uses religious satellite TV shows to carve out a sacred and limited time/space within in her everyday workplace and reflects on some of the moral, public health, and social issues faced by her community.

One week during our fieldwork, multiple people from Macha died and the wailing of Machan women reverberated throughout the mission complex. Rose was very close with two of the people who had died, and she returned to the guesthouse after a funeral one afternoon with some of her family members to watch Emmanuel TV. Using her mobile phone, she invited others to join them as well and suddenly the Christian program, like the football match, became the focus of a larger audience made through the mobile phone. The loud wailing from outdoors blared through the windows and became a sound bed for the TV preacher’s voice and, as the 12 women in the room viewed the satellite TV broadcast, they too began to cry. In this case, their connected viewing—cross-platform use of mobile phones to access to satellite TV—was intermingled with their collective mourning and loss.

Rather than use scarce energy resources to scan through a surplus of satellite TV content, Machans share resources—electricity, subscription fees, TV sets—and organize access to slivers of content that are relevant to life and events in their rural community. Watching Christian programming and football matches on satellite TV reinforces activities that are already ‘in the air’ in Macha, so to speak (see Figure 8). Although sport and religious practices have historically been part of colonial processes, they also have been indigenized so that they are now hybrid cultural practices that crystallize a history of complex power relations. Far from being a neocolonial force in Macha, satellite TV content is typically downlinked and viewed only when it connects to life in the community.

Accessing and downloading YouTube videos

In addition to using multiple platforms to organize collective satellite TV viewing, some Machans have used the Internet to access YouTube videos. Between 2009 and 2012, a local Internet service provider called LinkNet, which has since ceased operation, provided Internet access to approximately 300 Machans through a Very Small Aperture Terminal (VSAT) connection linked to Wi-Fi routers in workplaces and homes throughout the community. LinkNet also converted several shipping containers into the Internet cafés and placed them in sites throughout the community and in the neighboring villages of Mapanza and Chikanta. To access the Internet, Machans needed to buy a voucher for 150,000 kwachas (note: the currency system changed in 2012) or US$30 per month, which, like DStv service, ended up being much too expensive for most people. Our research involved collection and analysis of Machans’ Internet traffic over a period of 9 months in 2011–2012 (Pejovic et al, 2012). The goal was to understand what kinds of websites and services Machans sought to access and, more broadly, to determine whether the community’s Internet link could be organized in a financially sustainable and technically efficient way. The traffic analysis revealed significant interest in YouTube. This pie chart (see Figure 9) reflects the top 100 videos
per month for 9 months from 2011 to 2012\(^2\) and demonstrates genres of interest, with the dominant category being music videos (40\%), followed by other categories such as news (12\%), instructional materials (6\%), sports (4\%), and religion (2\%). Based on these numbers, Machans appeared to use the Internet predominantly to download music videos, which are relatively small files. It makes sense that event-oriented content with longer durations such as football matches (soccer) or religious programming would be watched via satellite TV rather than through the Internet, given conditions of power and bandwidth scarcity. A finer grain analysis reveals that within the music category, users downloaded mostly African and US hip-hop, gospel, and world music videos and concerts. News hits varied from Michael Sata’s reelection as Zambian president to Barak Obama’s speech about Osama bin Laden’s capture, from the opening of a new oil refinery in Zambia to the resignation of a local political official. Instructional videos accessed ranged in focus from dating to hairstyling to technology how-tos, and sports videos linked to many segments featuring the Zambian football team, the Copperheads. By the time our team analyzed the links in 2014, 16\% of the videos had been moved or removed from YouTube.

When Internet access became available in Macha, those with the economic and cultural capital took International Computer Driver’s License (ICDL) courses and learned to use software and create their own email accounts. Those with funds for Linknet vouchers taught themselves how to browse the Internet and access online video. This latter process was far from easy. Limited bandwidth in the

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**Figure 8.** Local league teams playing football/soccer in Macha in the late afternoon. Photo by author.
community’s network and a slow satellite uplink to the Internet gateway resulted in very slow streaming and downloading times, especially with multiple users online. Video links often failed and had to be reinitiated. Compounding the bandwidth problem were the electricity problems. In Macha, not only power goes off and on frequently, as discussed earlier, but voltage surges unpredictably, necessitating a full restart of the community’s Internet server after each outage. When Machans connected to YouTube, their downloading was characterized by frequent disruption, often resulting in the capacity to view only pieces or excerpts of audiovisual content rather than the entire production. In many cases, Machan Internet users we interviewed admitted to viewing segments of a movie or video online but not being able to watch the entire thing and expressed frustration with this situation. Their comments suggested that the distribution ecosystem in Macha might be more aptly characterized as one of dis/connected viewing—a situation in which power outages, limited bandwidth, and software maintenance issues often thwart local users’ efforts to access and/or share online video content. What also became clear in our conversations is that dis/connected viewing is much more than a temporary technical interruption or occasional glitch; the repeated disruptions had generated a particular structure of feeling that was alternately experienced by Machans as frustration, exclusion, blockage, loss, or failure, revealing that distribution practices, especially in rural regions, are intricately interwoven with affective relations.

Despite conditions of frequent disruption, Macha’s 300 regular Internet users were quite persistent in seeking online video, requesting 12,757 unique videos during our 9 months of traffic data collection. This amounts to about 64 videos per user over that period, a relatively high number, given the community’s serious connectivity challenges. One of the top YouTube videos requested

Figure 9. This pie chart shows a breakdown of different types of YouTube content accessed by Machans over a period of 9 months in 2011–2012.
was a documentary produced by Cloud Ten Pictures called *Left Behind*, which had 21,055 unique hits over a 9-month period. It explores the biblical concept of ‘the rapture’—the idea that a group of people will be left behind on earth as another group leaves to ‘meet the lord in the air’. Many Machans are interested in the rapture in connection with their Bible reading groups. So determined to access this material, one Internet user stayed up late into the night, on Fridays from 2 to 3 a.m., when no one else was online, in an effort to stream the video in its entirety without technical interruption. Since our traffic collection was anonymous, we were not able to interview this user, but several Machans we spoke to were aware of this video and claimed to have seen it or heard about it. What is striking is Machans’ ardent interest in this particular content and the invention of a temporal and technical scheme to access and share it. These conditions suggest the need to temper the connected viewing concept of VOD, with the material realities of bandwidth- and energy-constrained rural communities. Typically, only short segments of content can be streamed or downloaded in these contexts. VOD is hardly ever possible in Macha—and, if it is, it is during late night or early morning hours when few, if any, are using the Internet and only if the community’s electrical power is on.

Machan Internet users managed to stream and/or download audiovisual content against all odds. In addition to highlighting their perseverance and technical ingenuity, Machans’ interest in online video brings other inflections to bear upon the concept of connected viewing. Their repeated requests to access online videos—in the face of outages and failures—betray a yearning to connect to and participate in the global media economy, to be able to see and hear the kinds of media that others in the world consume without problems or interruptions. As Steve Jackson (2014) has suggested, the ideals of technological efficiency and innovation have become so overvalued in the West that the reality of failure and the labor of maintenance and repair that characterize system operations in much of the world, particularly in southern Africa, tend to be overlooked and underappreciated. Given this, Machan maneuvering through faulty systems to build connected viewing experiences is all the more significant, as it draws attention to the material conditions in which television is reinvented.

**Local production: Music video**

Since Macha’s YouTube traffic data show a major interest in music videos, in this last section I discuss how cross-platform engagement with such content has shaped local production. In 2013, a hospital office worker named Trywell and his wife, Grace, a nurse at the hospital, made a music video in their home. Trywell is also a self-taught, part-time video producer who has recorded instructional videos for the Macha Mission Hospital and wedding videos for people throughout the community. One of his personal projects, a music video entitled, ‘My 29th Birthday’, was shot with a digital still camera (NIKON Cool Pix P510) and a Nokia E7 mobile phone in one of the few modern apartments in Macha. The 7-minute video opens with Trywell explaining in direct address that it is his birthday and he plans to have fun and salsa dance! He and Grace then appear sitting at their dining table and they sing happy birthday, blow out a candle, stand up, and break into a salsa number in their kitchen. After 2 minutes of dancing and a change of clothes, a jump cut places Trywell playing a guitar as Grace sways beside him. Next, they feed each other birthday cake and partake in a final round of dancing.

Inspired by salsa dance lessons they watched on YouTube and the clips they had seen of the TV show, *So You Think You Can Dance*, the music video was shaped by their cross-platform experiences. As it cleverly transforms an apartment into a makeshift dance hall and entertainment studio, which is important since there are no dance clubs in the area, the video provides an
intimate view of domestic life in Macha. Although Trywell and Grace are devout BIC worshippers, the public display of such activity would likely be condemned by Macha’s Christian conservatives, hence the creators’ decision to perform and record this activity in the privacy of their home. In the process, the two are also imaginatively acting out their own participation in the global media economy and their performance draws upon and hybridizes South American dance traditions and the participatory structures (the audition, practice session, competition) of a global TV franchise. Their engagement with online dance videos and segments from satellite TV led Trywell and Grace to want to create their own music video. What is even more striking is how it was distributed.

Christian concerns about public displays of affection in Macha and the challenge of uploading the video to a YouTube server led Trywell to distribute it by inviting people to watch it at his home, which is how I first encountered it. In this mode of rural TV, the site of production doubles as the site of distribution. While some might read this as a simple case of home video production, I want to suggest there are more subtle and significant distribution practices at work. Since it is too costly for most people to downlink or download audiovisual signals in their own homes, Machans who seek media access often must move their own bodies to homes or buildings where there are signals. Just as people travel from remote areas to the radio station to watch football/soccer matches via satellite TV, they journeyed to Trywell and Grace’s apartment to watch their music video. Media access in this case is facilitated by a sprawling web of red dirt roads and pathways, a core infrastructure that has emerged as people have crisscrossed the landscape over time. The distribution of this music video is contingent not only upon electrical power but also on the time and energy it takes for bodies to move to the exhibition site. Here, acts of walking, bicycling, motorcycling, or driving—local modes of transportation—are as crucial to connected viewing as digital network infrastructures (see Figure 10). To access media, Machans are not only willing to stay up all night to try and download videos during times of minimal Internet traffic but also willing to walk for miles to some one’s home to view them.

While Trywell and Grace’s music video serves as an example of the way cross-platform media consumption can inspire local production, social media platforms such as Facebook increasingly are used to distribute music videos in Zambia and other parts of Africa. While most Zambians cannot afford DStv services given their high cost, people can afford Facebook access because it is subsidized. In 2014, the social media giant partnered with Zambian mobile carrier Airtel to launch an app that provides users with free access to Facebook; Facebook Messenger; Google search engine; and a select number of weather, employment, and public service websites. The number of Facebook users in Zambia in 2014 was estimated at 327,600, which is a very small percentage (about 2%) of the population (Economywatch.com, 2015). Since many rural Zambians do not have smart phones, Facebook also launched a ‘lighter’ app called Facebook Zero, which works on feature phones. Most Zambians who use the Internet now do so through these free Facebook-subsidized links on their mobile phones. Consequently, for many Zambians, Facebook is the Internet.

In 2014, a Zambian Facebook friend of mine shared a YouTube link to a Ugandan music video called ‘Ghetto Boys Dancing Sitya Loss’. Although I am not sure how many Machans accessed this video, I want to briefly discuss it here because, like ‘My 29th Birthday’, it exemplifies how globally or regionally distributed media can catalyze local productions that become even more poignant, successful, or popular than the content that inspired them. The 4-minute video, which looks like it was recorded with a mobile phone, was produced in response to the hit song ‘Sitya Loss’ by Ugandan musician, Eddy Kenzo. Sitya Loss means ‘I don’t fear defeat’ in the Lugandan language and many embraced the song’s empowering lyrics,
when it was released in early 2014. Like other hits around the world, the song provoked a host of video mash-ups and responses, and ‘Ghetto Boys Dancing Sitya Loss’ was by far the most popular among them. The video features a group of young kids who have grown up in the slums of the Ugandan capital of Kampala and worked with a trainer to seek recognition and income for their dancing so they could help support their families and give back to their communities (Remedi-Brown, 2014). Shot on the outskirts of Kampala, the video opens with a wide shot of two small boys walking along a dirt road. As the prologue of Kenzo’s song begins, graphics pop up in the frame, indicating the two boys have challenged one another to a dance off, and ‘Sitya Loss’ starts to blare in the background. Not afraid of defeat, the boys attempt to outdo one another with a number of dazzling moves. In the midst of their dancing duel, three other little kids who are passing by, including one girl, stop and join in, offering a number of singular moves. Before long, the entire group turns this dirt road into a mesmerizing scene of rhythmic gyrations and interactions. Clearly, none of them fears losing.

Unlike ‘My 29th Birthday’, which was distributed to those who visited Trywell and Grace’s home, the ‘Ghetto Boys Dancing Sitya Loss’ video was uploaded to YouTube and went viral in 2014, garnering more than 3 million views between February and June 2014. The viral video’s online popularity even exceeded that of Kenzo’s official ‘Sitya Loss’ video, a vibrant homage to

Figure 10. Machans travel around the area on many modes of transportation, including bicycles. Photo by Elton Munguya.
rural Ugandan life that attracted nearly 500,000 YouTube views between March and May 2014. By
the end of 2015, ‘Ghetto Boys Dancing Sitya Loss’ views had skyrocketed to nearly 14 million on
YouTube. In part because it appropriated Kenzo’s hit song and in part because it is of the kids’
iccredible talent, this savvy knock off became one of the most watched Ugandan videos in 2014
and boosted Kenzo’s industrial success and international fame, earning him the Black Entertain-
ment Television (BET) Viewer’s Choice award in 2015 and a number of other awards. As a sign of
his appreciation, Kenzo started a petition to get the kids an invitation to perform on The Ellen
Degeneres Show (Face2Face Africa, 2014). Their homegrown video had so much impact on
Kenzo’s success that it provoked commentary and debate in the African blogosphere. As one writer
noted, ‘It is the combined efforts of Kenzo’s music and the infectious dancing of the Ghetto Kids
that has made the video . . . go viral and create a spark in Uganda and across the globe’ (Remedi-
Brown, 2014). Another argued that the kids received so much attention that the talents and con-
tributions of Kenzo’s audio and video producers were altogether overlooked (Baranga, 2015).

Since ‘Ghetto Boys Dancing Sitya Loss’ features youth staging expressive activities outdoors in
the open air, the video serves as an intriguing counterpart to ‘My 29th Birthday’ and the married
couple dancing in the privacy of their home. Both music videos emerged as local responses to
media content that had circulated throughout the region across multiple platforms, via satellite TV,
Facebook, and YouTube. And both music videos speak to the material conditions of local pro-
duction in rural Zambia and Uganda. In each of them aspiring creatives turn a kitchen or dirt road
into a dance floor, a night at home or daytime stroll into an engaging performance, and a living
room or social media account into a distribution platform. In this way, these videos reveal
something about the bare essentials of TV, while also pointing to its changing meanings and
potentials in an era of connected viewing. As Raymond Williams (1975) insisted decades ago,
TV’s content and form are not fixed; rather they shift in relation to emerging distribution tech-
nologies. If these local music videos are any indication of TV’s changing content and form in rural
African contexts, then we may see more self-organized, self-performed, short-format entertain-
ment made with mobile phones and distributed through home exhibition or social media.

What is clear is that practices of connected viewing in rural Zambia differ dramatically from
those in a broadband model of cloud-supported streaming media. Despite this, rural Zambians have
been quite innovative in areas of shared access, energy efficiency, cross-platform engagements,
and local productions and as such offer important lessons to postindustrial societies, which
increasingly distribute media in ways that reinforce algorithmically defined consumer tastes,
online surveillance, and direct marketing while expending ever more energy (Maxwell and Miller,
2012). Although TV remains a minor medium in rural Zambia, it has been used in ways that foster
technical ingenuity, bring people together, and reinforce local interests. The connected viewing
scenarios I have described starkly contrast with the practices emerging in Western media markets,
where economic elites have a plethora of media devices or ‘second screens’ at their disposal,
access to grid power and can stream or download to their heart’s delight. Since both kinds of
conditions exist in the world, however, it is important to weave them into conceptualizations of TV
and connected viewing so that these terms dynamically engage with and account for diverse and
uneven material conditions.

Conclusion

In this article, I have explored three configurations of connected viewing in rural Zambia: the
daisy-chaining of satellite TV to organize collective viewing of sport and religious programming,
use of the Internet to access YouTube videos, and local production and distribution of music video. Through these examples, I described rural Zambian TV as event-oriented and piecemeal practices that are formed and scaled in relation to energy scarcity and other material conditions in Macha. This critical study of different configurations of TV in rural Zambia suggests the need for further engagement with three issues. First, there is a need to shift away from thinking of TV as a mass medium and to recognize its formations as minor medium in low-income, rural communities. Instead of reading this as a symptom of rural Zambians as being technologically ‘behind’ or as an untapped market, it is vital to recognize that many rural Zambians may not want to become a TV- or Internet-oriented culture. For instance, I interviewed many Machan women who had never heard of the Internet and seemed totally indifferent to it, which may serve as another kind of disconnected viewing. The politics of such positions demand further inquiry and assessment. Second, the distribution practices created by rural Zambians in conditions of energy and bandwidth scarcity, economic disenfranchisement, and moral conservatism should be thought of as reinventions of “television” that are in sync with local capacities and interests. Far from replicating a Western model of television as surplus (whether, as flow, ambiance, or VOD), Machans use limited resources to build versions of TV that fit into rural life. Finally, I want to suggest the need for further consideration of the contradictions of postcolonial conditions as they relate to rural TV. Colonial-era institutions such as the mission have not simply disappeared in conditions of political independence. They continue to offer limited opportunities to rural Zambians in the areas of education, employment, and health care in exchange for devout faith in religious systems that may constrain and delimit expressive behavior and independent thought and thereby play a role in shaping cultural futures.

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Notes

1. The names of interviewees have been kept anonymous or changed to protect their privacy.
2. The three periods of traffic data collection were April–July 2011, November–December 2012, and January–March 2012.

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Author biography

Lisa Parks is Professor of Film and Media Studies at UC Santa Barbara. She is the author of Cultures in Orbit: Satellites and the Televisual (Duke, 2005) and co-editor of Down to Earth: Satellite Technologies and Industries and Cultures (Rutgers, 2010), and Signal Traffic: Critical Studies of Media Infrastructures (Illinois, 2015).