*Review*

DIY

# The digital infrastructures of music scenes: Perspectives from the Global South

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**Abstract**

The digitization process has been reshaping music scenes all over the world in diverse and ambiguous ways. Such ambiguities are all the more visible among scenes in the Global South: those scenes, and the countries they hail from, have experienced the digital in ways that often do not conform to the standards, norms, and narratives established by digitization in the Global North. By reviewing the literature on the digital infrastructures of music scenes outside of the North, this article looks as such diversity, pointing out how digital infrastructures are often marked by fragility, lag, and unequal access. This may pose the condition for Southern scenes to invent alternative scene arrangements, alternative forms of digitization, and even alternative pathways into digital modernity. At the same time, the fragility of digital infrastructures signifies the enduring dependence and structural violence suffered by the Global South at the hands of the Global North.

**Keywords**

Digitization, digital infrastructure, music scenes, Global South

## Introduction

Decades into the diffusion of MP3s, digitization keeps reshaping music, and the social worlds in which it exists. None of the aspects that compose our experience of music has been left untouched by this disruption (Moreau, 2013): it has changed the industry, music circulation, its reception, the idea of music a sellable commodity, and the form and meaning of music itself. Digitization put music in a state of flux: the early 2000s scenario of peer-to-peer download networks, iPods, and MySpace self-promotion bears no resemblance to the present world: a world of listeners who stream algorithm-created playlists from proprietary platforms that pay scarce revenues to musicians.

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The effects and perceptions of this process are ambiguous. Digitization has, to some extent, provided a fertile context for creative entrepreneurship (Waldfogel, 2020) while draining and concentrating profits, and sabotaging professional perspectives for most musicians in the world (Hesmondhalgh et al., 2021). Moreover, this ever-evolving digital infrastructure *ipso facto* projects the digital divide onto the music realm, imposing all over the world the technological standards of Global North music industries (Sprengel, 2023). Indeed, musicians in African, Asian, South-American societies and beyond, need to compete into a global music market that is based on the premise of a strong, flourishing digital infrastructure. At the same time, they are often forced to deal with limited internet access, recurrent power outages, scrap technology, and pirated software They often respond to this condition of inequality and scarcity by inventing new arrangements of digital infrastructures, and their scenes are reshaped by these arrangements (Olivier and Pras, 2022; Schoon et al., 2020).

This article explores how music scenes in the Global South fashion themselves around such uneven digital infrastructures. It aims to respond to these questions: How do the socioeconomic conditions of Global South locations influence local scenes' digital infrastructures? How do these scenes organize, and respond to the challenges of, their digital infrastructures? How do the hard and soft infrastructures of these scenes interact?

The article does not aspire to fully encompass its theme, nor to be systematic. This is mainly due to the nonsystematic nature of its object: what is usually identified as Global South is not a coherent space, and music scenes in Southern countries are extremely diverse. A common analytical framework for those scenes would risk to be biased toward the Global North: it would cast Northern scenes as "normal," thus classifying scenes in the South as abnormal.

I will, instead, rely on Sprengel's (2023) understanding of Global South. The author adopts a multiple, rhizomic, and comparative understanding of this notion—one that is not geographically specific, but is rather defined by relations of oppression, inequality, and resistance. Such notion of Global South therefore encompasses diverse areas, and can be even used to discuss marginalized populations in the North. Rather than wanting to identify a set of features of the Global South, as if it was the reverse of the Global North, Sprengel hence calls for a comparative approach looking at the particularities of different contexts.

In line with Sprengel, the article maps different scenes' uses and reactions to digital infrastructures. It is based on a qualitative literature review identifying relevant themes and case studies related to crucial nodes of digital infrastructures: studios, digital audio workstations (DAWs), distribution platforms, and alternative forms of music circulation. I reviewed articles and books on Africa, Asia, and Central/South America (though, for reasons of comparability and due to my own specialization, the article focuses on the first two continents), identifying relevant entries through Google Scholar search. The article focuses on sources published between 2010 and 2025, to concentrate on the current developments of digitization; however, a broader range of sources was consulted, and some earlier references have been included to offer a thicker historical reconstruction of the processes under review. My own ethnographic research on Tunisian metal, rap, and electro music scenes (Barone, 2019) inspired the initial research questions and problematizations; its findings are sometimes discussed in the following pages.

The rest of the article is structured as follows. The next section will look at digitization as the establishment of an infrastructure, linking broader analyses of infrastructures with understandings of infrastructures within music scenes. I will, in particular, make reference to Geoff Stahl's (2004) theory, and will discuss some frameworks that explain how digitization works in Global South scenes. The following three sections will be dedicated to different aspects of digital infrastructures: in the first two sections I will look at the production side, focusing on studios and on DAWs; then, I will look at music circulation and distribution in Southern scenes.

## Digital infrastructures, fragile scenes, and pirate modernities

The digital turn was not a sudden revolution, but rather a gradual historical process (Théberge, 2015). For instance, CDs were already a digital format, and yet they existed in a music industry not radically different from that of vinyl and cassettes. However, it is difficult to question the effects of digitization once it separated the musical commodity from its classic physical supports (Morris, 2015): these effects have led some authors to identify digitization as a disruption (Moreau, 2013), one that stimulated a whole reinvention of the music industry.

Digitization reorganized music making, producing ambivalent effects on DIY artists' practices and principles. For instance, Bell (2018) identifies the advent of home studios and digital audio workstations as an important step in centuries-long DIY music-making continuum based on "self-directed and exploratory music-making experiences" (p. 202), which rendered recording a creative act. As will be seen below, digitization greatly expanded access to musicianship, encouraging, and opening up musicians' DIY practices (Bennett, 2018). At the same time, Frenneaux (2025) sees digitization as a reconfiguration of the relations between DIY as strategy and DIY as ethos: the affordances of platforms, for instance, imposed new forms of gatekeeping and new logics of participation on musicians, thus limiting their ethical self-organization perspectives. Such reconfiguration of ethos can also be seen as a component of a broader transformation of DIY, signaled by the emergence of "DIY careers" as strategies of adaptation into the postindustrial creative economy (Bennett, 2018).

The music industry itself knew consequent waves of renovation. The increasing availability of broadband internet networks, coupled with the diffusion of the MP3 format, resulted in a worldwide peer-to-peer network, made of users who exchanged illegally downloaded music files. This scenario proved to be just a historical parenthesis, as in the course of the 2000s platforms such as iTunes and Spotify started to emerge, affirming an infrastructure based on streaming (Hesmondhalgh et al., 2023).

In the new scenario, platforms became the key mediators of the industry. Platforms can be understood as particular infrastructures themselves—centrally controlled networks that act as intermediaries between different kinds of users, and transform such users' activities into data for an array of marketing purposes (see Caliandro et al., 2024; Hesmondhalgh et al., 2023). Platformization hence refashioned the music economy around a blend of financialization, advertising, subscription fees, and increasing datafication—that is, the extraction of information and value from metadata generated by users who interact with platforms (Hagen, 2022). Such data are used to train the algorithms that cater to the music preferences of listeners, tailoring platforms' musical offers to their preferences, and thus connecting users with advertizers. As the basis of such processes, datafication displays its effects on disparate aspects of music production and consumption: it influences listening habits, for example encouraging music exploration and discovery (Cole, 2025), producing a shift from album-based listening to playlists, and demanding reflexive engagement with the system of music recommendations (Zhao, 2024). It affects production and composition, as well: this can be noticed, for instance, in the shortening of average song lengths, that responds to the reduced attention span of platform users; composition practices themselves have been described as increasingly respondent to "what works" within streaming platforms and within social media such as TikTok, that disseminate songs to the audience (see Raffa and Pronzato, 2025). Datafication hence transforms the digital infrastructure, albeit in ways that are managed by proprietary algorithms whose functioning is not publicly observable (Hesmondhalgh et al., 2023). The extension of machine learning and artificial intelligence to the most disparate domains of music—from composition to production, mix, and mastering—is, at the time of writing, conjuring yet a new shift in the era of digitization.

Digitization also signified a reinvention of the music commodity—less a dematerialization, as it originally seemed, than a rematerialization of such commodity, which is now reshaped by new materials (such as the hardware and software used to listen to it), new aesthetic conventions, new capabilities, and new market

strategies (Morris, 2015). Authors have studied the effect of digitization on the music form—that is, what happens when sound is turned into binary code (see Evens, 2005): Brøvig and Danielsen (2023), for instance, have discussed what they call *digital signatures*—that is, the new sounds, effects, arrangements of musical time and space, and in general sonic marks that appear when turning sound into data.

Research on digitization has, in general, taken inspiration from a broader *infrastructural turn* in the social sciences (Hesmondhalgh, 2022)—a wave of studies focusing on both the materiality of infrastructures—from the traditional and physical ones such as roads and sewage systems, to the hardware and software facilities sustaining the digital world—and on the networks of people that maintain, use, and are connected by those infrastructures (see Larkin, 2013).

Interest in infrastructure has always been present in music scenes research,[1] even though this literature often employs the concept in a broad and even metaphorical sense (see Hesmondhalgh et al., 2023; Magaudda, 2020). Several ideas, at the encounter of music scenes literature and infrastructures studies, will be useful for this article: in particular, an emphasis on the material conditions of information and communication, and a focus on the material anchorage of social networks. Scenes research has had the merit of enriching music sociology with a complex understanding of spatiality, which reveals the interplay of material and symbolic space (Barone, 2016). Reference to physical nodes of infrastructure—be them venues, radios, music studios, or labels—highlights the reliance of scenes on facilities which, in turn, depend on pre-existent infrastructures (for instance, technological and economic ones). This emphasis links the possibilities of music making to users' capitals and to the conditions of local economies. For the aims of this article, I will focus on a particular theoretical contribution elaborating the theme of scene infrastructures: Stahl's (2004) work on scenes' *hard* and *soft* infrastructure.

Stahl presents this theory in a chapter on the indie rock scene in Montreal. He identifies the hard and soft infrastructure of music scenes as follows:

> Hard infrastructure is made up of the built environment, educational institutions, cultural centres, meeting places and so on; soft infrastructure is composed of "the associative structures and social networks, connections, human interactions that encourages the flow of ideas between individuals and institutions." (Landry, 2012: 133; Stahl, 2004: 55)

The interesting aspect of Stahl's framework is his emphasis on the interaction, and the tension, between these two forms of infrastructure: in Montreal, infrastructural imbalance (caused by a weaker hard infrastructure than in more resourceful cities) produced a strong soft infrastructure, imbuing scenesters with a sense of community and motivation.

In the following pages, the notion of hard infrastructure will be reduced to what Stahl identifies as "the built environment," that is, the proper material technologies, hubs, and internet networks articulating music production, circulation, and fruition. We will see how specific arrangements of such hard infrastructures of digitization stimulate particular configurations of scenes' soft infrastructures: scenesters in the Global South not only resort to creative assemblages of technology in response to scarcity and disadvantage; these assemblages also end up influencing scenes' identities, ambience, and potential for producing music and a symbolic sense of community.

My research on Tunisian music scenes (Barone, 2019) looked at the dynamic between hard and soft infrastructure through the concept of *fragility*. Fragility refers to the impermanence, unreliability, and risk involved in these infrastructures: technology that is bound to fail, but also venues and cultural centers at permanent risk of closure, and events constantly on the verge of being canceled or shut down by the authorities. Tunisian scenes were fragile because the simple closure of a club would damage music making and put them to a potentially fatal halt. More often, scenes had to work, and reconfigure themselves, around such fragilities; however, these reconfigurations did not result in the re-establishment of functional equilibrium. Fragility can potentially work as a framework that applies to disparate locations in the Global South

and beyond, as it helps highlighting scenes' labor and transformation around experienced fragilities (see Barone, 2025).

The concept of *infrastructuring*[2] proves useful in connecting music scenes, infrastructures, and fragility. In contrast to the idea of infrastructures as a given, infrastructuring refers to the continuous practices by which infrastructures are formed, maintained, and transformed (Nehl and Landau-Donnelly, 2025). This processual aspect regards both the maintenance of material infrastructures, and the social labor of keeping together the collectives that interact with such infrastructures, producing "spaces of care, collectivity and community" (Nehl and Landau-Donnelly, 2025: 5). For the purpose of this article, infrastructuring has the advantage of keeping together the use of infrastructures in scenes research—for instance, the labor of adjusting hard and soft infrastructures—with the reproduction, adaptation, and repairing of material infrastructures within contexts characterized by fragility.

One of the characteristics of infrastructure, as noted by Larkin (2013), is its ability to signify modernity and civilization. For societies in the Global South, infrastructures are much more than the practical, rational advantages that they foster: they are signs of accomplished development. Conversely, lack or disadvantage in infrastructure tends to be perceived as a fault, which acquires even moral underpinnings. Concepts such as *imperial lag*, proposed by Sprengel (2023), aim at capturing this sense of minority—the idea that, in the Global South, everything happens too late; the idea of being constantly out of touch with modernity. This condition stems from having to play according to rules established elsewhere, and thus being doomed to fail: imperial lag is a concept that exposes the structural violence of the Global North imposing its standards as "objective."

Scholars focusing on cultural production in the Global South have elaborated frameworks that challenge such structural violence by "theorizing from the South" and refusing to consider any non-Northern modernity (nor infrastructure) as lacking or failing, just because it does not resemble uses and availability of technology in privileged countries. Examples of this are Ravi Sundaram's (1999, 2009) references to "pirate" and "recycled" modernities: the author makes reference to India (and, more broadly, to lower-class social locations in Asia), where nonlegal uses of scrap technology are essential to everyday life, and result in sociotechnological imaginaries that are never openly acknowledged in discourses about global modernity. Drawing on the idea of pirate modernity, Schoon et al. (2020) propose an agenda to decolonize digital media research on Africa and the Global South. They call for attention to the ways in which alternative technological assemblages (rooted, for instance, in semilegal "grey digital spaces") blend with, and shape, forms of social interaction, producing distinctively local senses of community. Similarly, Olivier and Pras (2023) refer to the "alt tech" practices in Malian studios, which respond to lack of modern hardware and "legitimate" expertise by creatively assembling available tools and knowledge, thus producing local forms of creativity and virtuosity.

In the following of the article, I will present examples of music scene labor around local digital infrastructures, treating these as hard infrastructures characterized by fragility. I will show how such labor produces identities, ambiences, and senses of community—in Stahl's terms, distinctive soft infrastructures—that convey the representations of alternative modernities hailing from Global South locations. I will start with an analysis of music production, focusing first on music studios and then on digital audio workstations.

## Music production: Studios

The DAW-based music studio is one of the most tangible embodiments of the digitization process. The increasing availability of powerful computers and internet access, coupled with technological developments that made music production software affordable to lay users,[3] created a music industry in which imponent, major label-owned music studios are no longer the core of music production, and even bedroom studios are able to release worldwide successful music (see Arditi, 2016; Bell, 2015). Besides decentering music

production, the emergence of independent, home and amateur studios refashioned scenes and industries, both in the Global North and the Global South.

New actors have been able to take center stage and become fundamental nodes of scene networks. The role of producer was greatly enhanced, acquiring both artistic dimensions and crucial mediation roles within scenes. This is, for instance, visible in the "urban music" Nairobi scene (Eisenberg, 2022), a scene focused on Western-influenced music styles usually sung in vernacular languages. The advent of DAWs and independent studios, together with broader industry and social factors, opened the music industry and markets to a new class of musicians-cum-entrepreneurs, who became the individual gatekeepers of the new scene.

A similar dynamic marked the infrastructuring of the rap scene in Dar es Salaam, where liberalization of the media gave studio owners a gatekeeping role: these actors could benefit their networks with access to music production, and condemned rappers with lesser social capital to an "underground" status (Kerr, 2015). Looking at the emerging rap scene in Delhi, Dattatreyan and Singh (2020) observed a comparable process: home studios were instrumental to the development of the scene, but their professionalization acted as an individualizing dynamic, pushing the fortunes and market possibilities of individual actors while fragmenting the original community ethos that was embodied in street rapping circles. In a very different context, control of the studio as an infrastructure has been seen to shape the Lebanese alternative music scene as well. For instance, Nour El Rayes (2022) noted how the collaboration of the most important studio producer in Beirut with a label manager and radio show host resulted in a fundamental scene cluster. Being produced and promoted by such a cluster required what the author defines a "cost of admission": commitment to a series of aesthetic, attitudinal, and social norms and networks, linking emerging artists to those central actors and institutions of the scene. While important in shaping the sound of Lebanese alternative music, such a soft infrastructure has been also described as exclusive and cliquish (Nickell, 2020).

These examples illustrate the complex interplay of hard digital infrastructure and soft infrastructure in Southern scenes: assets that promoted these scenes also signified shifting power relationships, the emergence of key actors, and the rise of conflictual and fragmenting dynamics, which in turn potentially conjured the fragility of scenes themselves.

Because of its history, South Africa is an interesting location, in which digitization took both affluent forms and more fragile ones. The country's strong major music industry profited from digitization, outsourcing work to the mushrooming independent studios since the 1990s (see Herholdt-Powell, 2007; Meintjes, 2003). On the opposite end of the spectrum, the extremely deprived and marginalized townships saw the proliferation of "backyard studios" (Schoon, 2014, 2021). The term "backyard studios," also used in other countries,[4] identifies bedroom studios built in backyard shacks, mud and scrap metal facilities that often host older children when the house gets too crowded. In her work in backyard studios in the township called Makhanda/Grahamstown, Schoon notes how these studios were not simply sites of music production based on pirated software and makeshift hardware. They acted as polyvalent infrastructuring nodes in local rap scenes and in the space of the township: they were technological hubs, whose facilities (monitors, keyboards, and the like), collected through the most disparate means, then circulated across the neighborhood among locals who had no access to computers and technology. Studios worked as entertainment centers, where local kids could go and play videogames, watch videos, or experiment with music. They were scene hubs, points of reference for the local crews, and were charged with the task of storing local rap repertoires —which, in the absence of broadband and cloud access, depended on chronically scarce gigabyte availability in hard-drives, and hence were often bound to be lost (Schoon, 2021).

Steingo (2015, 2016) observes something similar in his ethnography of electronic music making in Soweto's home studios. Studios were here quasi-public spaces, constantly visited by fellow musicians; studios worked as hubs for the circulation of music, DAW project files, and other digital content through hard drives and memory sticks. This "technical bricolage" offered the context for a peculiar ethos of collective musicking, and indeed a peculiar soft infrastructure. In the local music scene, compositions were rarely the

result of individual artistry, and more often the product of many people's frequent interactions, as they visited each other's homes and played on each other's tracks, adding layers to them and recombining their structures.

Studios-as-hubs were also instrumental in the professionalization of the Egyptian independent scene, as shown by Yakein Abdelmagid (2018). In pre-2011 authoritarian Egypt, independent studios helped underground musicians overcome limited access to professional media and the constant risk of an authoritarian crackdown. Postrevolutionary Egypt saw a professionalization of these studios and their owners. By turning themselves into cultural entrepreneurs, and diversifying studio services beyond rehearsal and music production, studio owners could navigate the fleeting authoritarian climate that quickly followed revolutionary enthusiasm, using their entrepreneurship as a means to fulfill hope.

Studios in the Filipino independent scene needed to recur to similar patterns of diversification. Monika Schoop (2017) shows how Manila's independent studios needed to expand their portfolio to activities such as arrangement, postproduction, and work with other industries (such as advertisement) in order to survive a fragile and economically limited musical environment. Producers enacted such strategies also to benefit a scene in a vastly unequal country, in which only a limited number of musicians could afford professional studio costs. Interestingly, the digital production scene studied by Schoop bears parallels with the informal infrastructuring techniques noted above. Several of her participants equated production to driving jeepneys (a local public transport vehicle): just as drivers fix their jeepneys as they go, production was constantly improvised and tweaked: producers learned from a trial and error more than from formal training, available spaces were converted in studios, and difficult access to technology needed to be creatively circumvented.

## Music production: Digital audio workstations

DAWs are at the core of digital studio proliferation: their availability made personal computers potentially self-sufficient devices throughout the full process of musical composition, production, mixing, and mastering (Bell, 2015). Eisenberg (2022) notices how these technologies greatly expanded access to musicianship: older and newer DAWs such as Ableton Live, Cubase, FL Studio, Logic Pro, Nuendo assist users with sound design presets, available samples, and instruments to set songs' music scales and harmonies. In so doing, they redefine the musician's role, similar to what happened to the producer's one.

The affordances of DAWs have been seen to directly inform the aesthetics of music genres that, in time, acquired global interest. It is, for example, the case of musics such as Egyptian mahraganat (Ghazal and Tantawi, 2023), Angolan kuduro (Sheridan, 2014), and South African gqom (Eaby-Lomas, 2021).

Kuduro has been, since its origins, based on the use of cheap technology, which directly contributed to its aesthetics of scarcity—for instance, its initial forms were composed through imported sequencers and samplers, and singers usually sang over a musical background provided by a monitor speaker (Sheridan, 2014).[5] The advent of Fruity Loops (later renamed FL Studio) not only expanded the social diversity of *kuduristas*, opening the genre production to the Luandan working classes, but also reshaped the sound. The second generation of kuduro indeed adopted 140 bpm (FL Studio's default) as its standard tempo, made the DAW's synth and drum presets its signature sounds, and enriched the musical palette through the use of effects (such as distortion, chorus, and slap reverbs) that were unachievable in the pre-FL era of the genre (Sheridan, 2014).

DAWs frame music production in sonic conventions that prove particularly appropriate in the reconstruction of certain local styles. Looking at urban music in Nairobi, Eisenberg (2022: 54) for instance notes how its "iterative-variative" style was well-matched by digital music practices such as looping. In the case of Azonto (a style of Ghanaian urban tracks and dances that became viral online in 2011) Shipley (2013) notes instead a complementary phenomenon: local producers made Azonto by recombining sounds and rhythms from Western sound banks, in ways that were not devised by the original developers of software.

This practice not only made Azonto globally popular: it also contributed to realizing a form of cosmopolitanism. The digital repeatability and reproducibility of the Azonto rhythmic pattern, and its links to software-programmed urban sounds from the Global North, created a sense of global modernity in Ghana, while making diasporic listeners aligned with their Ghanaian roots (Shipley, 2013). Similarly, in the Malian hip-hop music scene, Olivier and Pras (2023) note how producers were to some extent reluctantly constrained to use, and readapt, Northern sound banks to mimic traditional Mali instruments; at the same time, though, their use of nonlocal samples testified a desire to be part of global modernity.

In many ways, thus, DAWs transform local folklore and its repertoires. An example of this process is presented by Bates in his rich ethnography of studio production of "traditional" Anatolian musics. Bates (2016) notes how local musicians responded to the requirements of digital recording by developing specific playing techniques, and even specific "folk" instruments, which were explicitly designed to suit DAW workflows.

DAWs have been used to supplement the lack of available musicians, particularly in music genres that require the performance of large musical collectives, which have become, in time, rare, and expensive. An example comes from the Luo region in Uganda, where musician Leo Palayeng coined the Acholitronix music genre, using DAWs to convert local Acholi music into an electronic sound (Jadinon, 2022). The main aim of Acholitronix was to benefit the Luo region, for instance composing songs for weddings in a situation in which newlyweds could no longer afford to hire traditional musicians—as such, Acholitronix worked as an infrastructuring device for the local social fabric. Palayeng's work was based on intensive fieldwork, aimed at collecting musical traditions from the Acholiland and using it as an inspiration for digital compositions rather than as a source of samples.

Acholitronix exemplifies how digitization can address fragility in the soft infrastructure of a disappearing music scene. This function has been observed in several contexts,[6] and is by no means only related to "traditional" and vernacular repertoires. For example, in my research on the Tunisian metal scene (Barone, 2019), I observed how DAWs were used by musicians as a way to overcome the lack of reliable musical partners in a frail and litigious scene, as well as the lack of adequate recording spaces and techniques to professionally capture metal bands. This practice transformed local metal, opening the way to electrometal hybrids.

Digital audio workstations have been used to collect, preserve, and revive music repertoires increasingly being lost.[7] Such digitization of heritage serves archival, creative, and educational purposes among others. Vernacular sonic archives have been nourishing popular music scenes all over the world, often in the form of samples to be recontextualized. Projects aimed at preserving music instruments by digitizing them into digital instruments have also shown the cultural heritage potential of DAWs.[8] Questions of authenticity and cultural appropriation have, however, problematized such approaches to music heritage since sampling became a common music practice, thus well before the current age of digitization.

While such efforts participate in the abovementioned infrastructuring and de-fragilization of music scenes, in some situations the digital refashioning of music genres has produced conflicts within scenes, particularly counterposing "traditional," acoustic performers with younger musicians basing their music making on DAWs. In different contexts such as in Zimbabwean (Mutavati and Muranda, 2023) and Ghanaian (Shipley, 2013) music scenes, classic musicians have lamented the repetitiveness, lack of subtle variation, and ultimately "soul" and human proficiency that characterized digital music in their ears. Researching the electronic reformulations of Bihu music in Assam, Kotoky and Bandopadhyay (2024) note how "traditional" musicians at times criticized such new versions of their music on the basis of cultural authenticity arguments, besides lamenting the decline of local instruments and increasing difficulties in their own careers.

A final point to be made regards the criticisms, from musicians, scholars, and activists in the Global South, of DAWs' "technocolonialism" (Castanheira, 2020). These criticisms broadly refer to the fact that

the affordances of globally used DAWs are limited by the aesthetic canons of Northern "high" music (and by the neoliberal capitalist mode of production and circulation established by societies in the Global North).[9] An example of this situation is the equal temperament of Northern scales used as standard in DAWs' piano rolls (their composition interfaces) and tuners, which make these programs less suitable to produce music that responds to different melodic and harmonic principles and conventions. The idea of technocolonialism suggests that a predatory, colonizing history is embedded in technology that is supposed to be neutral (Allami, 2022; Castanheira, 2020). It relegates the use of non-Northern musics to embellishments, forms of "sonic tourism" that convey an aura of exoticism to global music genres born in the Global North, but makes it inconvenient to compose music coming from different traditions. Even considering the points made above when discussing Azonto's cosmopolitanism (Shipley, 2013), we should take these critiques seriously as they demonstrate how the power unbalance between the Global North and the Global South is, to some extent, inscribed in the very digital infrastructure that fashions contemporary globalization. I will explore further aspects of this condition in the next section, focused on music circulation and distribution.

## Music circulation and distribution

Download first, and streaming platforms in recent years, have established a narrative that casts music—*all* music—as immediately accessible everywhere. While this narrative has to be critically assessed even in the Global North, the digital divide and frail digital infrastructures of societies in the Global South further disprove it. The Global South is, indeed, rife with contexts in which alternative, less seemingly immaterial infrastructures assure, and shape, the circulation of music.

Once again, studies on South Africa demonstrate how fragility leads to the reinvention of digital infrastructures and music distribution networks. In her work on South African township rap, Schoon (2014) shows how local rappers circumvented digital apartheid by resorting to an array of "grey" and "pirate" infrastructures. For instance, they would use semi-illegal and unreliable data hosting sites as their storage spaces and centers for music distribution; they would creatively use social media such as WhatsApp in order to minimize data consumption costs (for instance by advertising new songs on their profile information), and rely on the offline and online assemblages of "pavement internet". For example, a rapper would send their new song to an acquaintance in a different township, making sure that they would then share the song to local listeners through available Wi-Fi.

These assemblages are also remarked by Steingo (2015, 2016), who notices how hard drives and memory sticks were the primary vehicle of music circulation in the Soweto electronic music scene, responding to persistent problems in failing internet networks and power shortages. This form of circulation was plagued by several problems, including theft, the loss of storage units and the digital degradation of files; however, it also produced distinctive artistic and social inventions (an indeed innovative soft infrastructure) based on an "aesthetic of obduracy."

In his study of South-African amapiano, Eaby-Lomas (2024) identifies WhatsApp groups as the main vehicle for the circulation of new tracks. While these groups may seem a rapid and accessible infrastructure of music dissemination, they actually experienced friction, in the form of spam and other interferences. These examples show how infrastructuring practices which "repaired" and readjusted hard and soft infrastructures could only partially overcome the inconveniences of fragility.

Schoon's above reference to pirate infrastructures calls into question the ambiguous role of piracy in Southern music scenes and music circulation. Piracy is an extremely heterogeneous object (Lobato, 2008), and studies of Global South cultural industries have emphasized the conceptual limits of legal, copyright-focused understandings of it (see Eckstein and Schwarz, 2014). By conceiving piracy purely as theft of authored material, such approaches also conceal the complex links between piracy and capitalist

modernity (Eckstein and Schwarz, 2014). Recent contributions have highlighted the postcolonial dimension of piracy: this has allowed authors to emphasize the domination aspects of piracy enforcement—Haupt (2014), for instance, looked at copyright as a form of extractivism against Global Southerners. At the same time, though, postcolonial perspectives have shown how piracy is linked to the proliferation of alternative modernities (see Sundaram, 2009): in many countries in the Global South, the spread of piracy forms signified a reconfiguration of infrastructures.

This reconfiguration predates digitization (consider, e.g. the cassette market) and exploded in its early stages, with the diffusion of CD copies. The new technologies significantly fragilized local music industries, draining capitals off music production. At the same time, piracy posed the bases for the rise of alternative infrastructures: this is exemplified by the case of Nigeria, in which the Alaba market in Ojo, Lagos, arose as the prominent grey market in the commerce of duplicated music and video CDs. In the long run, Alaba became the central of "new" music business, as local hip-hop artists engaged with Alaba merchants for the diffusion of their music (Adedeji, 2023). The Alaba example illustrates a critical dynamic in Global South "pirate" infrastructures: piracy induced a crisis of local music industries and "classic" scenes, creating a void that would be later filled by new music scenes, this time explicitly catering to disenfranchized urban youth. This has been noticed in Zimbabwe (Mutavati and Muranda, 2023) and in the case of Kenyan "new urban music" (Eisenberg, 2022) among others. The new scenes, now existing in a fully digitized environment, had to devise strategies to face the persistence of piracy, now in the form of download and streaming, and—more generally—they had to confront a global context in which music is increasingly perceived as a potentially free, available service.

Global streaming platforms such as Spotify and Apple Music are increasingly taking over Southern markets; however, their encroachment in the Global South has been relatively slow: this has made room for local platforms, which in 2021 accounted for 19% of the global market (see Khalil and Zayani, 2022).[10] Local and regional startups have often failed trying to convert music markets largely characterized by pirate download: online forums and genre-specific websites have provided an alternative for a long time, offering listeners an opportunity to freely download local tracks. This was for example the case in the Tunisian rap scene: these infrastructures allowed the scene to exist and be visible, but rappers were often bitter about the gatekeeping privileges of their owners (Barone, 2019). In order to succeed in these markets, proposing legal streaming as a viable alternative, local services had to tailor their offers to the specific infrastructures and publics of Global South societies. An example is Anghami, a successful company catering to the so-called Middle East area. Anghami succeeded by adapting its streaming offer to the cultural, sociological, and technological conventions of its target region, for instance by offering a free streaming tier to respond to diffused pirate downloading, by focusing on mobile phones as the main technology for streaming, and by carefully organizing its playlists around the cultural values and conventions of Middle-Eastern listeners (Khalil and Zayani, 2022).

The penetration of platform giants such as Spotify also exposed another form of digital fragility suffered by Southern scenes, which updates a long-term power dynamic between North and South: the phenomenon defined by Sprengel (2023) as imperial lag, which I introduced above. Examined by Sprengel in the context of the Egyptian music industry, imperial lag manifests in being permanently "behind," not up-to-date enough to comply with the standards of the global industry, as these are set in the Global North. In the platform era, this means a continuous struggle to comply with sophisticated digital standards that require capitals (in terms of expertise and access to technology) and, at the same time, are ever-shifting. Sprengel clarifies that imperial lag is not a matter of objective backwardness, as much as it is a form of space and time peripheralization that stems from the normative power of Northern industries to decide what is "normal." As such, lag derives by the long-term colonial history of the Global South, and is simultaneously reproduced by class conflicts between music scenes and industries, in which the practices of lower-class artists are seen to hold local music "behind." In the scope of this article's

analysis, lag can hence be seen as a dynamic that reconfigures the soft infrastructure of scenes in a conflictual way.

## Conclusions

This article has been exploring aspects of music scenes' digital infrastructures in the Global South. Focusing on how fragility shapes such infrastructures—through difficulty and disparity of access, malfunction, lack, impermanence, and other factors—I showed how scenes organize themselves around fragile hard infrastructures, striving for creative ways to overcome their limits and problems. In so doing, scenes' soft infrastructures are reshaped as well. The above-discussed cases demonstrate how, in some circumstances, fragility in digital infrastructures conjures and facilitates collaboration and a communal soft infrastructure. In other cases, it stimulates conflicts, creates hierarchies, factions, and gatekeeping: lack of resources results in further, uneven distribution of such resources. Through the creative embracing of digital infrastructures, scenes have the potential to manifest and enact alternative forms of modernity, in which technology and the digital take different forms and values in comparison with the digital paradigms normalized and enforced in the Global North.

The cautionary approach stated in the Introduction needs to be reproposed here. The Global South is everything but a homogeneous region of the world. It encompasses extremely different, and diverse, societies: fragility is not, as such, a defining feature of Southern infrastructures, nor it affects any citizen, music project, or music scene in a given "Southern" country in the same way. More correctly, the presence (and in some cases the preponderance) of fragile infrastructures in Southern countries demonstrates how the discourses on technology and modernity circulating from the Global North should not be taken at face value, and cannot account for the complexities of most societies in the world.

In the same vein, arguments about alternative modernities should be problematized. Infrastructural fragility can produce new uses of technology, new scene arrangements, new forms of music, and new aesthetics. In contexts used to fragility, an idea of fragility-as-opportunity may well arise. However, this does not mean that musicians in Southern scenes are necessarily happy about those limitations, or interested in their creative possibilities: Steingo (2016), for example, shows how the constant accidents, glitches, and instances of file degradation were seen by South-African musicians as a problem, not a mark of originality.

A similar point can be made about alternative modernities and the disruption of norms established in the Global North. For many musicians and scenesters all over the world, lag, exclusion from modernity, remains a dramatic condition. In the case of Tunisian music scenes, the realization of this condition was often expressed as a refusal of the local: Tunisian musicians did not want to be stuck in Tunisia, where they felt deprived and confined (Barone, 2019). Modernity and lag can be ideological constructs, but their effects are real. Only the analysis of scenesters' practices and sentiments can shed light on the complex coexistence of alternative possibilities within a modernity that is, nonetheless, structured by power relations. Overall, the creative potential of infrastructuring in fragility-ridden contexts should not be romanticized: fragility is, first and foremost, the mark of the ongoing oppression of an enormous part of the world. As a Tunisian electronic musician once told me, participating in a Southern scene like his "can be summed up in one word: suffering."

Further research on this article's topics should expand its scope. My analysis has mainly drawn on case studies from Africa and Asia; perspectives from the Americas, from Oceania, and from disadvantaged locations all over the world are required for a more comprehensive, comparative understanding of music scenes and digital infrastructures. Further dimensions of the digital—related, for example, to music consumption, and to the ever-evolving technologies reshaping music (such as artificial intelligence and developments in music production technologies) need to be thoroughly explored. Digital inequality and digital justice are among the greatest global struggles of our time, and, as this article has demonstrated, music proves to be

a privileged window on how those struggles are fought: a wider, continuous attention to music scenes in the Global South is thus a key into understanding the battle for digital modernity.

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## Notes

1. Infrastructure is explicitly or implicitly evoked in the classic works of Finnegan (1989); Straw (1991), and Shank (1994). See Magaudda (2020) for a review of the literature.
2. See Magaudda (2021) for some of the application of infrastructuring to the music domain.
3. …and piratable, which is an important element to consider when looking at Global South scenes—see below.
4. For example in Namibia (Nambinga et al., 2022) and Zimbabwe (Butete, 2023).
5. However, it is worth considering Alisch's (2020) critique of what she defines a "scarcity-resilience narrative": the author notes how the studio circumstances and social infrastructures behind the production of kuduro can also be understood through a discourse of abundance.
6. See for instance Chimbudzi et al. (2021) on Zimbabwean session musicians, and Mulyadi and Daryana (2020) on traditional Javanese theatre music.
7. See for example Canazza (2012), Deo (2021), Gautier (2006), and Howard (2016).
8. An example is the Global Sound Movement: https://www.globalsoundmovement.com/
9. Musician and independent researcher Jon Silpayamanant has been collating a bibliography on this topic in his website: https://silpayamanant.wordpress.com/bibliography/daw-colonialism/
10. In 2025, these shares were already different, testifying the growth of global platforms: "others" accounted for less than 10% of the global market (Mulligan, 2026).

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