

Creative Appropriations in Hybrid Spaces: Mobile Interfaces in Art and Games in Brazil

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Research on the use of mobile technology in developing countries often highlights how they serve as strategies to bridge the digital divide and foster economic development. However, mobile technology appropriation in the Global South is not limited to these cases, as evidenced by Brazil's well-established media arts community, which has embraced mobiles as interfaces for art making since the early 2000s. Based on fourteen in-depth interviews with mobile communication researchers and media artists in Brazil between 2011 and 2013, this article investigates the creative appropriation of mobile technologies in the production of hybrid spaces. Our results reveal that these creative appropriations, namely mobile art and locative art, can be described through four main nodes of articulation: motivations, creative processes, sponsorship, and promotion. The experimental nature of these projects invites us to look at the Brazilian media art scene as a materialization of a circuit of innovative mobile culture and as an indication that investigations about technological appropriation in the Global South must be expanded to include motifs other than the already-known utilitarian purposes.

Keywords: mobile media art, mobile phones, Brazil, creative appropriation, hybrid spaces

Research on mobile technology in the Global South has often focused on how resource-constrained populations appropriate and adopt technology for economic development (Donner, 2008, 2015), a trend called *mobiles for development* (M4D). Further research has focused on how low-income communities creatively subvert mobile technologies' intended uses because of their high prices, difficulty in access, and a black mobile market (de Souza e Silva, Sutko, Salis, & de Souza e Silva, 2011; Sey,

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2010). However, creative appropriations of mobile technology are not limited to resource-constrained communities, and this aspect is often overlooked in research focusing on developing countries. Brazil's well-established media art community includes figures who have embraced mobile technologies as interfaces for art making early on. For example, in 2001 Giselle Beiguelman developed a series of screen savers for mobile phones called *Wop Art*, a mix of optical art and a Wireless Application Protocol browser (Figure 1). In addition, several media artists and researchers, such as Claudio Bueno, Gilbertto Prado, Bruno Vianna, and Fabio Fon, have been using mobile technologies as creative interfaces for making art since then.

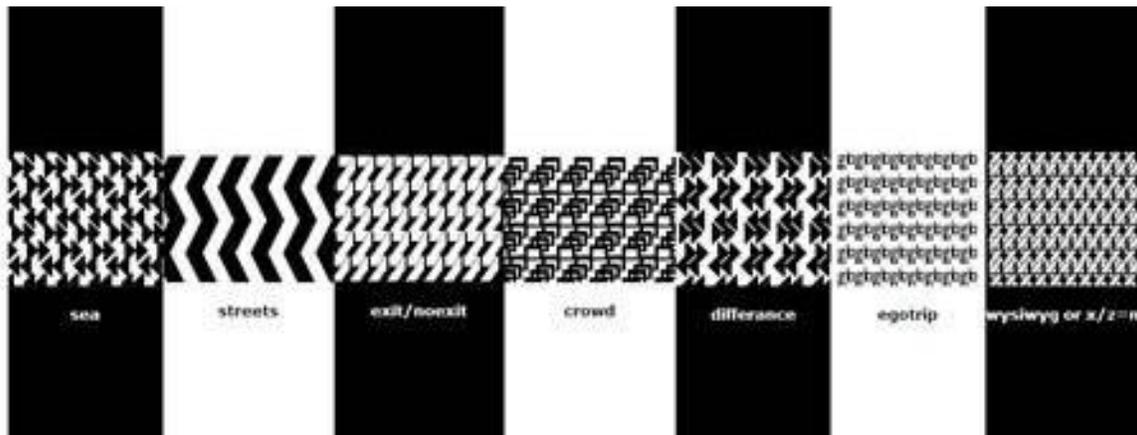


Figure 1. Gisele Beiguelman's (2001) Wop Art. Copyright: Giselle Beiguelman.

The media art scene in Brazil is also relevant because of the development of media art festivals such as Mobilefest¹ (2006–2010), Nokia Trends (2001–2008), FILE—Festival Internacional de Linguagem Eletrônica² (2000–ongoing), Emoção Art.ficial³ (2002–2012), Eletronika⁴ (1999–ongoing), and Vivo Arte.mov (2006–2012), which are events dedicated to a rising culture of mobility. As addressed by Fernanda Duarte and Adriana de Souza e Silva (2014), these festivals have nurtured discussions about mobility, digital poetics, and creative collaboration among media artists from different parts of the world and have catapulted Brazilian mobile media artists to a strong presence in international festivals such as Ars Electronica (Linz, Austria) and Transmediale (Berlin, Germany).⁵

With this framework in mind, we investigate how public spaces become hybrid spaces via the creative appropriation of mobile technologies in Brazil for the production of art and games. Hybrid spaces are mobile spaces created by the social use of location-aware mobile technologies that are constantly connected to the Internet (de Souza e Silva, 2006). In that sense, they highlight the fact that public

¹ <http://www.mobilefest.com.br/>

² <http://www.file.org.br>

³ <http://www.emocaoartficial.org.br/>

⁴ <http://www.eletronika.com.br/>

⁵ <https://transmediale.de/>

spaces are increasingly embedded with digital information. As a result, instead of understanding mobile technologies as devices that disconnect us from our surrounding space (Turkle, 2011), we need to look at how these technologies are embedded into the very fabric of public space. The innovative nature of art and the aperture of the gesture of play make mobile practices a rich landscape to analyze creative appropriations of mobile interfaces. As such, creative and subversive appropriations of mobile technologies happen both as a result of economic inequalities and as artistic practices.

To investigate the mobile media art scene in Brazil, we conducted a series of 14 in-depth interviews with prominent media artists in Brazil between 2011 and 2013. The results of these interviews explore the creative uses of mobile technologies in the domains of art and games. They analyze the articulations among mobile technology, art, and public hybrid spaces, addressing the potential of mobility spaces as new sites for creative interventions, public participation, and social interaction.

Creativity in Public Spaces

The history of mobile media art develops in conjunction with the history of mobile technologies. Similarly to Gerard Goggin's (2006) analysis of the mobile phone, and Taylor, Demont-Heinrich, Broadfoot, Dodge, and Jian's (2002) analysis of Napster, we devise an analysis of mobile media art in Brazil through the articulations of the distinct creative, cultural, material, and regulatory processes that interrelate to bring forth creative technological appropriations. We are inspired by du Gay, Hall, Janes, Mackay, and Negus's (1997) framework of the "circuit of culture," originally devised to theorize the Sony Walkman as a cultural artifact that emerges from articulations among representation, production, consumption, regulation, and identity. Du Gay et al.'s framework emphasizes that the meaning carried by a cultural artifact is not contained by its physicality, nor it is a direct consequence of its production. Instead, it emerges from contingent circumstances in how it is represented, produced, and consumed; the mechanisms that regulate its distribution; and the social identities associated with it. Similarly, in approaching the creative appropriations of mobile technologies in Brazil, this article investigates the social processes that shape the construction of mobile art and games, the modes of production that are sustained by access to technological infrastructure, and how funding and distribution provide opportunities for national and international collaborations.

Since mobile phones became popular around the early 2000s,⁶ artists have been experimenting with the potential of creative expressions in a mobile media ecology, which encompasses mobile phones and location-based technologies. Mimi Sheller (2014) explains that

mobile art has in fact expanded the spatial and social field in which art takes place by experimenting with the mobile interface as a bridge between digital and physical space, a hybrid mediation of human sensory perception and technological connectivity. (p. 376)

⁶ In the 1980s and 1990s, mobile phones were used mostly by business people, not the general public (Ito, Okabe, & Matsuda, 2005).

Larissa Hjorth (2015) states that there are contesting definitions of mobile art. Early iterations of mobile art in the 2000s, such as Rafael Lozano-Hemmer's *Amodal Suspension*⁷ (2003) and Brian House's public art project *Yellow Arrow*⁸ (2004), employ mobile art as a subset of digital media art, as an artistic expression that appropriates mobile interfaces for creative practice. These early projects have conflated mobile art with locative art and locative media (Hemment, 2006; Tutters & Varnelis, 2006), as location-based devices and services are placed in the center of mobile art poetics. Hjorth (2015) advocates for a broader understanding of mobile art as one that "is no longer a device just for 'new media' artists—rather it is providing new canvases, multimedia tools, contexts, and social worlds for artists to play and intervene" (p. 174). She follows Mimi Sheller (2014) to characterize mobile art by its mediality, "as a reflexive form of enacted and mediated spatiality" (p. 201). In this sense, Hjorth (2015) defines mobile art (a) as "intimate co-presence" with mobile technologies; (b) as "emplaced visuality," as mobile practices and mobile technologies become main drivers for imagery production and place making; and (c) as "ambient play," as mobile poetics introduces new ways of producing ambient cartography. Following Sheller and Hjorth, we approach mobile art in its broad definition, that is, in ways that do not confine it exclusively to its relationship to mobile or location-based technologies per se, but rather privileges the spatial and temporal mediations that emerge from mobile medialities. This broad definition of mobile art expands it to include the social dimensions of media and diverse genres of creative production, such as games, selfies, and mobile movie making. Locative art, in turn, is understood as a subset of mobile art that uses location-based mobile technologies as drivers for creation.

Some of the first mobile media art pieces, all developed in 2001, were Golan Levin et. al.'s *Dialtones: A Telesymphony*,⁹ the Chaos Computer Club's *Blinkenlights*,¹⁰ and Blast Theory's *Can You See Me Now?*¹¹ These pieces set the stage for more than a decade of mobile art. *Dialtones* was performed at the Ars Electronica Festival as the first piece of mobile sound. Artists downloaded ringtones to the audience's mobile phones and called them mobiles to produce a live symphony. *Blinkenlights* was initially showcased in Berlin, as one of the first installations where mobile phones were used as remote controls to public spaces. With the keys on the mobile keyboard, visitors to Alexanderplatz could play games such as Pong and send messages to a building façade, which was transformed into a giant screen with the placement of lights behind each window. Finally, in *Can You See Me Now?*, mobile devices were used as a game control, connecting players simultaneously in physical and digital spaces (de Souza e Silva, 2004).

Rowan Wilken (2010) also reminds us that many early mobile media art pieces intended to initiate encounters with strangers in public spaces. This was the case for Blast Theory's *Uncle Roy All Around You* (2003)¹² and Eric Paulos and Elizabeth Goodman's *The Familiar Stranger* (2002).¹³ According to Wilken, *Uncle Roy* "makes questions of trust, and confrontations between strangers a central

⁷ http://www.lozano-hemmer.com/amodal_suspension.php

⁸ http://brianhouse.net/works/yellow_arrow/

⁹ <http://www.flong.com/projects/telesymphony/>

¹⁰ <http://blinkenlights.net/>

¹¹ <http://www.blasttheory.co.uk/projects/can-you-see-me-now/>

¹² <http://www.blasttheory.co.uk/projects/uncle-roy-all-around-you/>

¹³ <http://www.paulos.net/research/intel/familiarstranger/>

component of the game play" (p. 457) because online players need to guide unknown street players to find Uncle Roy, and because each street player is asked to send his or her contact number to an unknown online player at the end of the game. Similarly, *The Familiar Stranger* was a mobile software application aimed at revealing connections among people who had similar commuting paths, but did not know each other.

Public spaces have long been viewed as spaces of heterogeneity, spaces where strangers meet (Canclini, 2001; De Certeau, 1988; Sennett, 1977; Simmel, 1964). According to Jane Jacobs (1961), public spaces are social spaces composed of "fluid sociability among strangers and near strangers" (p. 17). This understanding of public space as a space where strangers congregate is what Jeff Weintraub (1997) has called the sociability model.¹⁴ Because in this kind of public space people are constantly being exposed to "strangers" and need to interact with those they do not know, people feel the need to use interfaces to "filter" public spaces (de Souza e Silva & Frith, 2012). This filtering has been accomplished by what George Simmel (1964) called the *blasé* attitude, the public use of media, such as books and portable music devices, and more recently, mobile phones (de Souza e Silva & Frith, 2012). Mobile media artists have explored this idea of public spaces as spaces to connect with strangers, as game boards, and as spaces to be remote controlled, often transforming them spaces into hybrid spaces, that is, creating a space of sociability and interaction that combines the physical and the digital with the use of mobile technologies. Indeed, John Craig Freeman and Mimi Sheller (2015) point out that increasingly "post-Internet" artists are exploring the affordances that the analog-digital connection offers for digital art in the public sphere.

José Carlos Ribeiro, Karla Brunet, and Thiago Falcão (2008) highlight the importance of this space of sociability through their analysis of the hybrid reality game *Cruel 2 Be Kind*,¹⁵ developed in 2006 by Jane McGonigal and Ian Bogost. The game requires players to articulate tasks with teammates to accomplish common goals (e.g., "kill" enemies and consolidate alliances with other players) while exploring public spaces. A team of players "kills" another player by collecting an object from him or her (each player determines what the booty object is prior to game start). Because mobility in a public space is a mandatory condition for game play, the strategizing of team action is dependent on the use of mobile technologies, which become key elements in binding the social interactions that take place. Ribeiro and colleagues comment that because *Cruel 2 Be Kind* happens in public spaces where life outside of game play also unfolds, players might interact with people that are not playing the game. Because nothing identifies players as such and because the act of "killing" is disguised as an exchange of commonplace objects, the hybrid spaces built through game play are also open to unpredictable social interactions that are not related to the predefined rules of play. Hybrid spaces are actively built in these situations through the interplay between public spaces and digital data and are produced in the interactions among users, physical infrastructures, and technologies.

¹⁴ Other models of public spaces are the economic model, the citizenship model, and the feminist model (Weintraub, 1997).

¹⁵ <http://cruelgame.com/>

It is noticeable that these games and artworks have been developed mostly through the collaboration of artists from various countries—the United Kingdom, United States, Australia, Germany, Spain, and Japan—most of them in the Global North. Latin American media artists, and specifically Net artists, have also incorporated issues of mobility, geolocation, real-time data collection, and processing into ongoing reflections about art and technology. Collaborations promoted by art festivals and residencies in media labs have nurtured international experimentation among Latin American artists and art collectives around the world. The work of art collectives such as Asociación Cultural Banquete (Argentina) in collaboration with MediaLab Madrid (Spain) and Ars Electronica Futurelab (Austria) resulted in artworks in the early 2000s such as Rafael Marchetti (Argentina) and Raquel Renno's (Brazil) *Wikimap Madrid*.¹⁶ This project consisted of an online hypermedia map of Madrid composed of images, sounds, and texts that described a collective memory of the city. The map expanded according to participants' contributions and created a city experience that mixed its physical and virtual realms.

However, mobile media art production in the Global South is not as well documented and is therefore less well-known in media art and mobile communication scholarship. Despite the evidence of international collaboration among artists and collectives from Latin America and other parts of the world, the production of art and technology in developing countries has been neglected by mobile communication and Internet studies scholarship on the Global South. Although there are publications that discuss issues of art and technology in Brazil (Gasparetto, 2014), none specifically addresses issues that particularly concern mobile art. Scholarship in the Brazilian academy has also explored mobilities from a theoretical perspective.¹⁷ However, empirical research that maps the motivations, creative processes, and dynamics of financing mobile art is still at an early stage. In addition, the majority of historical documentation is available only in Portuguese, which makes the information less accessible on a global scale.

Mobile phone use in the developing world has substantially increased in the past 10 years, and scholarship on mobile phone adoption and appropriation in the Global South has grown substantially. Jonathan Donner (2016) recently acknowledged that a comprehensive literature review on mobile communication in the developing world like the one he published in 2008 would no longer be possible today. Nevertheless, the bulk of this scholarship focuses on how mobile phone use might lead to economic development, a trend called Mobiles for Development (M4D). This literature explores the potential of mobile phones to help with health, agriculture, learning, disaster response, governance, and sanitation, among other utilitarian purposes (Donner, 2015). Other bodies of literature on the developing world explore how mobile phones help migrant families to keep connected (Madianou & Miller, 2011; Qiu, 2014) and nontraditional uses of mobile devices, such as sharing and beeping, and their circulation in a black mobile market (de Souza e Silva et al., 2011; Sey, 2011).

An underlying issue encompassing most of this scholarship is the question of access and inclusion, that is, how mobile phones bridge the digital divide, or sustain—and sometimes increase—

¹⁶ <http://www.rmarchetti.com/>

¹⁷ See André Lemos's extensive scholarship on communication and mobility at <http://andrelemos.info/publicacoes/livros/> and Giselle Beiguelman's publications at <http://desvirtual.com>.

existing power relationships and digital exclusion (de Souza e Silva et al., 2011; Donner, 2015; Ling & Horst, 2011). Another underlying issue is related to technology adoption and appropriation. François Bar, Francis Pisani, and Matthew Weber (2007) describe appropriation as a fundamentally political process—a stage that happens after the technology is widely adopted, which includes “a battle for power over the configuration of a technological system and therefore the definition of who can use it” (p. 2). Likewise, Werner Wirth, Thilo Von Pape, and Veronika Karnowski (2008) relate appropriation to a process or reinvention. These theoretical frameworks of appropriation have been applied to the use of mobile technologies in the Global South in the contexts described above, but very rarely has the creative appropriation of mobile devices been related to the artistic production in the Global South. Although the studies of creative appropriation of mobile phones for art and for economic disparities address different sets of questions, both are relevant and, when combined, paint a more accurate view of the use of mobile technologies in developing countries.

Here, Bar, Pisani and Weber’s (2007) concept of cannibalism proves particularly useful because it denotes a form of appropriation in which people absorb what comes from abroad and change it according to local standards as a form of confrontation: “Cannibalism is creative destruction, an innovative act that first requires breaking down the existing to come up with something new” (p. 29). In their article, Bar et al. focus on types of appropriation in which users directly and explicitly confront mobile providers, such as installing applications that deprive providers of revenue, unlocking phones illegally, or cloning mobiles (de Souza e Silva et al., 2011). We can also apply the idea of cannibalistic appropriation to mobile art. This type of appropriation happens when artists directly and explicitly challenge the original and intended uses of mobile technologies, proposing something new. In subverting technologies’ meanings, artists highlight how mobile media art produces public hybrid spaces. As such, creative appropriations of mobile technology in the developing world are not only related to resource-constrained communities. In addition, this artistic production is often inserted into an international context of mobile media art, which also calls our attention to the false dichotomy usually made in mobile communication studies that opposes and contrasts Global South and Global North uses of mobiles. To make this argument, we use a representative case study of the mobile media art scene in Brazil.

Method

This case study uses a qualitative and inductive methodological framework to build a panorama of the artistic production employing mobile technologies in Brazil (Bernard & Ryan, 2010). We selected participants through the census-sampling rationale that uses all units of analysis in a given population (Riffe, Lacy, & Fico, 2014). We chose this approach because of the limited number of individuals working with mobile art in Brazil, making it possible to contact most of them, although we were not able to interview all of them. In addition, this strategy allowed us to provide a satisfactory panorama of our investigation topic. Of the 14 participants comprising our population, 10 work as researchers affiliated with universities, nine create artworks with mobile technology, two curate art expositions, two organize mobile art festivals, and one provides consulting services on digital marketing and education. Often participants had overlapping roles.

This study relied on semi structured, in-depth interviews and mobile artworks as data sources. From September 2011 to April 2013, two of the researchers contacted participants via e-mail to explain our project and invited them for Skype video interviews; 14 of 21 individuals replied to our recruitment message. The three researchers in this study speak Portuguese, so all interactions with participants unfolded in that language.

The analysis of these data sources involved three steps. One of the researchers conducted rounds of initial coding (Charmaz, 2000) to map conversations and topics across all interviews. Next, the same researcher wrote a comprehensive summary of each of these topics with participants' opinions. Thus, these conversation topics allowed us to highlight trends and also provided a multifaceted and detailed panorama of our research subject. Finally, the researchers tabulated all the artworks mentioned in the interviews with further details collected from artists' and researchers' websites. We used this information to provide rich details in our article of exemplary art pieces.

Mobile Media Art in Brazil

Our results reveal four nodes of articulation that problematize the mobile art scene in Brazil: (a) motivations, (b) creative processes, (c) sponsorship, and (d) promotion. As previously stated, these nodes of articulation demonstrate the distinct creative, cultural, material, and regulatory processes that, contingently, interrelate to bring forth such creative technological appropriations. The first node describes the motivations and themes these artists are exploring in their productions. The second, creative processes, refers to the methods of creative appropriation of technologies. Sponsorship, the third node, speaks of the financial and institutional supports for the artistic production. Finally, promotion refers to how the artistic production is distributed and circulates among a broader audience.

Motivations

Mobile art themes and motivations are diverse, but most of the artists we interviewed work with themes that relate to mobility in urban public spaces. In addition, a few artworks are locally oriented: that is, they are developed purposely for the urban reality of specific cities in Brazil. For example, in *Invisíveis* (Invisibles, 2010),¹⁸ Bruno Vianna,¹⁹ a programmer and filmmaker, explores the urban space at the Municipal Park in Belo Horizonte. *Invisíveis* was an augmented reality application that ran on Nokia N95 phones and superimposed virtual characters on the park landscape as the user pointed the phone to certain locations at the park (Figure 2). The virtual characters, displayed as white silhouettes on the mobile screen, represented individuals who were frequent visitors of the park and yet were often ignored by those who walked around the park, such as homeless people and beggars. In a sense, the phone app rendered their presence visible and prompted participants to reflect on this lack of acknowledgment. Similarly, in the location-based game *Campo Minado* (Mine Field, 2011),²⁰ Cláudio Bueno,²¹ an artist and

¹⁸ <http://geral.etc.br/invisiveis/>

¹⁹ <http://brunovianna.net/>

²⁰ <http://www.buenozdiaz.net/index.php/project/campo-minado/>

²¹ <http://buenozdiaz.net/>

researcher, prompted players to use their GPS-enabled mobile phones to avoid stepping on digital landmines located in the urban space. Players saw landmines on a map on their mobile phone screens and were prompted to move from point A to B without stepping on them. By playing the game, users could move around the city in unplanned ways and experience familiar spaces as unfamiliar. As Adriana de Souza e Silva (2009) has shown, location-based-game players transform the familiar urban space into a "controlled adventure," an unknown and unexplored environment. This was the case with other location-based games, such as *Mogi* in Japan (Licoppe & Guillot, 2006), and *Botfighters* in Sweden (de Souza e Silva, 2009). In addition, as Bueno puts it, "The technology of mobile media today is a way to go out on the streets, . . . to discuss urban spaces, and the presence of the body in public spaces."²² With *Campo Minado*, Bueno wants to highlight the inconsistencies and unpredictability of our daily commutes. *Campo Minado* could be played anywhere, and it was exhibited in Mexico City, São Paulo, and New York City.



Figure 2. Bruno Vianna's (2010) Invisíveis. Copyright: Bruno Vianna.

²² Interview conducted in November 2011.

Another artwork that engages with a critical view of the use of mobile phones in public spaces is Fabio Fon and Soraya Braz's *Captas* (2009).²³ Both are multimedia artists and professors at the Júlio de Mesquita Filho State University of São Paulo. In *Captas*, performers using bright yellow raincoats walk around the city of Natal (Figure 3), located in the northeast of Brazil. Sensors embedded in the coats trigger sounds when someone is using a mobile phone nearby, making that person uncomfortable. Much like the pioneer mobile art piece *Social Mobiles* (UK, 2002) from Crispin Jones,²⁴ Fon and Braz's piece is a direct criticism of the intrusive nature of mobile phones in public spaces, and of how mobile phone use might be annoying when people have private conversations in public. Fon explains, "We started to explore another facet of mobile telephony, which is the social issue; users who use cell phones with no concern for privacy."²⁵ Although *Captas* was a site-specific piece in the city of Natal, the issue of public use and privacy is of course not particular to Brazil, and it has been widely explored in the mobile communication literature (Höflich, 2006; Puro, 2002). This early literature normally points out to how mobile phones "remove" people from public shared spaces, although today mobile use in public is considered a part of hybrid spaces, and often a necessary interface to interact with them (de Souza e Silva & Frith, 2012).

²³ <http://www.nomads.usp.br/territorios.hibridos/acoes/corpo/captas>

²⁴ <https://www.ideo.com/work/social-mobiles>

²⁵ Interview conducted in November 2011.



Figure 3. Fabio Fon and Soraya Braz's Captas (2009) at Feira Livre do Alecrim, Natal. Performer: Igor Lucena. Photo: Leandro Garcia.

Another artistic exploration of mobile art, as stated previously, has been the use of mobile phones as remote controls. Giselle Beiguelman, one of the pioneer mobile artists in Brazil and a professor at the University of São Paulo (USP), remembers that "increasingly the cell phone is no longer an urban remote control; it is the indication of a process of cyborgization [of public spaces] that is irreversible."²⁶ Beiguelman recalls that "in a first moment, I used a lot this idea of the cell phone to control electronic panels, to send messages to panels in advertising systems." The use of mobile phones to control and display things in public spaces was very popular in the early 2000s. For example, the Chaos Computer Club's (2001) *Blinkenlights*²⁷ and Rafael Lozano-Hemmer's (2003) *Amodal Suspension*²⁸ used mobile phones to interact with public spaces. In both of these pieces, mobile phones were used to either transmit messages to a building façade or to control searchlights in a plaza. Likewise, Beiguelman's (2002)

²⁶ Interview conducted in February 2012.

²⁷ <http://blinkenlights.net/>

²⁸ http://www.lozano-hemmer.com/amodal_suspension.php

*Egoscópio*²⁹ was a multiuser platform that allowed the submission of text, images, and Flash animations with SMS or MMS to an electronic billboard at Paulista Avenue in São Paulo. Users were invited to submit unmediated content to create a fragmented digital entity whose “ego” transformed at every mobile phone submission. This project also discussed the democratic occupation of public space through electronic graffiti and *webjaying*.

Using mobiles as remote controls might have been a trend in early mobile artworks, but most of our interviewees agreed that today there are no particular trends, either nationally or internationally, in mobile media art. A few mentioned augmented reality or location-based pieces, but most supported the idea that regardless of the technology, mobile art is a way of creatively interacting with public hybrid spaces. These spaces tend to be urban, but there are exceptions. Bruno Vianna, for example, currently coordinates the project *Atividades Territoriais* (Territorial Activities) at Nuvem³⁰ (Cloud) Rural Station of Art and Technology, a hack lab in the countryside of Rio de Janeiro. Whereas most hack labs are located in urban areas and tend focus on issues that are pertinent to urban spaces, Nuvem is focused on projects related to rural areas, technology experimentation, environmental issues, and economic sustainability. Vianna’s project offers artists’ residencies and workshops for the local population about technologies of low environmental impact. They teach participants to develop alternative strategies to organize labor, food production, waste disposal, and energy efficiency. All initiatives organized by Nuvem emerge from local issues, and therefore are specific to Brazilian rural culture.

Vianna’s work is an example of an original Brazilian production, focused on and adapted to Brazilian reality. Artists such as Martha Gabriel believe that the national and international issues artists deal with are the same, but others, including Diana Domingues and Bruno Vianna, believe in art with Brazilian characteristics. Domingues mentioned that “working with sensorial issues is very Brazilian.” She is also among the Brazilian artists who strive at developing an artistic production bound to a national identity, focusing on Brazilian rituals and themes. Her piece *14 Bis* (2010), developed with Camila Hamdan, allows for the visualization of the first Santos-Dumont flight on a mobile phone as augmented reality.³¹ She explains that Brazilians are viscerally emotional, sensual people and that art practice reflects these characteristics. Her installation *Trans-E: My Body, My Blood* (1997), for example, employs body sensors to collect data from participants and produce image projections. It invites participants to experience a “state of shamanic trance” and witness how their sensorial data is translated onto algorithmic “virtual hallucinations” (Domingues, 1997).

Although not all artists we interviewed are motivated by a pursuit of a Brazilian identity, most of their creative processes are deeply influenced by the technologies they use and the partnerships they develop.

²⁹ <http://www.desvirtual.com/egoscopio/english/about.htm>

³⁰ <http://www.nuvem.tk/>

³¹ <http://camilahamdan.blogspot.com/2010/04/14-bis-em-realidade-aumentada-sobre.html>

Creative Processes

The second topic that emerged from our interviews is related to artists' creative processes, that is, how they create their art. This creative process is intrinsically connected to (a) the difficulties they experience in producing their art, and (b) their abilities to collaborate with partners or work as individuals. Many artists acknowledged that their creative processes are intrinsically related to the technologies they use to create their pieces. Some prefer to explore the technical possibilities of devices, and others use a concept as their starting point. Either way, technology's material affordances and constraints always play a role in their creative processes. Either artists experience difficulties in updating their work because the technologies are no longer available, or they need to deal with the audience's lack of technical literacy. The issue with updating mobile artworks is not particular to Brazilian artists, but common to all media artists. Platforms change over time, and often enough, pieces stop working. As Martha Gabriel put it, "I created a mosaic of voices: People called (either via landline or cell phone) and left a message, talking with the app. Now it's deactivated because there are no more voice portals here in Brazil."³² Gabriel is an independent artist, marketing businesswoman, and lecturer in several universities in São Paulo. In *MoZaico de VoSes* (Voices Mosaic, 2004),³³ she asked users to call a number, leave a 15-second message to the voice portal, and then pick a color. These messages were stored in the voice portal and transcoded into a mosaic on the Web (Figure 4). Visitors to the website could click on the little colored squares to listen to the messages.

³² Interview conducted in March 2013.

³³ <http://www.martha.com.br/mozaico-de-voses/>



Figure 4. Martha Gabriel's (2014) MoZaico de VoSes. Photo by Martha Gabriel.

Technical difficulties arise not only from the obsolescence of technology but also from the lack of availability of technology. Vianna argues that technology models the artwork. For him, it is important not only to conceptualize his projects but also to be able to execute them, to program them. He argues that if the technical part is not implementable, there is no artwork. For example, he explains that the first version of *Invisíveis* “was very difficult to implement because there were no libraries for vision recognition.” As such, he had to develop special software for the mobile camera to recognize the user’s movement. He says his software worked, but it was hard to develop and not as efficient as today’s libraries. That technology literacy and technological development shape media art production is also not specifically a Brazilian issue. But access sometimes is. Vianna also notes,

We do not have the same access to production and financial resources as you have abroad. . . . But this lack of resources needs to be incorporated into your creative process. . . . So we appropriate the lack of resources as a technique.

Bar et al. (2007) have used the term *cannibalism*—after the Brazilian movement of Anthropofagism—to describe situations in which technologies are creatively appropriated, modified, and subverted and their use is in direct confrontation with the providers’ business models. What was found, however, in a study by de Souza e Silva et al. (2011) about the use of mobile phones among low-income

communities, is that creative subversion in Brazil goes beyond the cannibalistic practice. Cannibalism assumes people have access to technology. However, in the slums of Rio de Janeiro, "a large portion of the common low-income users lack even the basic ability to use the phone as originally intended by designers (which corresponds to the initial phase of adoption, a preliminary phase considered necessary for the subsequent appropriation)" (de Souza e Silva et al., 2011, p. 416).

Marcelo Godoy,³⁴ one of the organizers of Mobilefest, says that Brazilians use the lack of resources to spur creativity, a position also supported by Giselle Beiguelman. Artists obviously have access to more than slum dwellers do, but they also take advantage of their lack of access to state-of-the-art technology for creative purposes. Beiguelman says that one of the motivations for her first mobile piece, *Wop Art* (Figure 1), was the limitation of technology, as it was "developed with the precariousness of media resources at that historical moment." As traditional discourses of the digital divide and ICT4D show, access to technology is regarded as a critical condition for progress and quality of life. Studies have frequently argued that mobile phones bridge the digital divide (Coyle, 2005; Rice & Katz, 2003). However, what we can see here is that access (or the lack thereof) is the very catapult for creative actions that end up changing, or challenging, traditional uses of technology, and in a way, it can make the public more aware of specific aspects of this very technology.

Another topic that emerged about how artists create their art is related to the collaborative process, with three main kinds of creative processes discussed: collaborative, outsourcing, and individual. As the aforementioned examples of artworks highlight, many of our interviewees develop their pieces in collaboration with others. However, a few artists point out a difference between collaboration and outsourcing:

In the mobile media art scene, often artists develop collaborations to search for someone with a skill they do not have. "Ah, I need a programmer!" [So] there are two different scenarios: One in which you look for someone who helps you develop your idea, and the other in which the actual coauthorship happens. My works are mostly always coauthored. (Andrei Thomaz)³⁵

Andrei Thomaz³⁶ is a visual artist, new media professor, and interactive media developer who works with advertising. Like Thomaz, several other artists who are also professors participate in research groups. For example, USP professor Gilberto Prado created the group *Poéticas Digitais* (Digital Poetics)³⁷ in 2002. The artists in the group have developed more than a dozen media art projects during the past decade, and some of them are mobile art.

Giselle Beiguelman, in contrast, prefers to work individually: "I have a lot of difficulty working with a group because I am not a person that works in a very structured manner; I work more in a

³⁴ Interview conducted in March 2012.

³⁵ Interview conducted in April 2012.

³⁶ <http://www.andreithomaz.com/>

³⁷ <http://www.poeticasdigitais.net/POETICAS/index.html>

philosophical and conceptual way.” Diana Domingues, professor at University of Brasília (UnB), admits she is mostly looking for engineers to develop her own artistic concepts. In this sense, she represents the first scenario described by Thomaz, but she also actively collaborates with students in her research group in the Laboratory of Research in Art and Technoscience at UnB. She often also collaborates with other artists internationally.

International collaborations are an important facet of Brazilian mobile media art production. They show that mobile art produced by Brazilian artists is not created in a bubble. In the past few years, Brazil attracted the attention of several international groups, including the Dutch Waag Society and the British Blast Theory. These represent two main kinds of international connections. In one, an international, widely recognized group, such as Blast Theory, brings a well-established piece to the country, as was the case with *Can You See Me Now?* at the mobile festival Arte.Mov in 2008. Another kind happens when artists work together to develop a piece that might have been originally conceived in the context of another country, but is then adapted to Brazilian reality. This is the case with *Gincana Global* (Global Gincana),³⁸ a location-based mobile game developed in 2009 as a collaboration between Mobilefest and the Waag Society. The piece was developed with the mobile application *7scenes*, built by the Waag Society, which is a location-based game-authoring system that has been used to create other location-based games in Holland and elsewhere, such as *Frequency 1550*.³⁹ *Gincana Global* was based on the concept of *gincana*, a traditional event in Brazilian culture in which groups of people compete against each other to complete a wide range of tasks, from math competitions to treasure hunts. *Gincana Global* aimed to teach participants about São Paulo’s history, culture, and urban space. It involved Brazilian and Dutch students, and it was sponsored by the Mondrian Foundation. This piece shows a model of collaboration that also reflects a key type of sponsorship for Brazilian mobile media art: international funding.

Sponsorship

The third major theme that emerged from our interviews is related to the financial sponsors for this type of art production. Artists cited three main types of sponsorship for their work: national government grants, international funding, and private incentives. Because most mobile media artists have some academic connection, it is easier for them to get governmental research funding than other types of funding for their research and artistic production. Academic funding comes either in the form of stipends for PhD or master’s work or research funds.

Likewise, there is substantial international funding to support international art collaborations. *Gincana Global* is a good example. Another example is the collaboration between Mobilefest and the Ontario College of Art and Design (OCADE) in Canada. Marcelo Godoy explains: “Last year [2011] we got a grant from the Canadian government to promote an exchange between Brazilian and Canadian artists. A group of Brazilian artists went to OCADE, and a group of Canadians came to Brazil to the Mobilefest.” One of the projects featured abroad was *WikiMapas* (2011),⁴⁰ developed by the *Rede Jovem* program, a branch

³⁸ <https://waag.org/en/project/global-gincana>

³⁹ <http://freq1550.waag.org/>

⁴⁰ <https://www.globalgiving.org/projects/wikimapa/>

of the nonprofit organization *Comunitas*, which is focused on social development through emerging technologies. *WikiMapas* is a digital map of low-income communities and slums and their points of interest, such as hospitals, schools, stores, streets, and alleys unavailable on traditional online satellite-image maps. These interest points were plotted on Google Maps and could be accessed through a GPS-enabled mobile phone. The idea was not to create a map of slums, but to set and integrate low-income areas in official maps and geography.

However, Paulo Hartman, another Mobilefest organizer, comments that unfortunately, the festival "has a lot of sponsorship from abroad and very little from Brazil." He mentions that in the first few years of the festival, sponsorship came almost exclusively from foreign institutions, such as the Mondrian Foundation in Holland and the British Arts Council. In fact, Paulo Hartman and Marcelo Godoy complain that Brazilian corporations took awhile to believe in the potential of mobile art.

A few artists, however, receive sponsorship from Brazilian-based (not owned) companies. For example, Giselle Beiguelman and Mauricio Fleury received funds from Nokia to create *Suite 4 Mobile Tags*,⁴¹ which was first exhibited in the 2009 edition of FILE. She explains, "It was completely sponsored by Nokia because it used 16 cell phones that had to be exactly the same." The project is composed of a set of eight mobile phones displayed in the gallery along with QR code tags. The mobile phones rang when participants, using their own phones, scanned the QR codes that contained the displayed devices' phone numbers (Figure 5).

Although Beiguelman sustains that Nokia provides complete intellectual freedom to artists to create their pieces, in the past, several international artists have been criticized for accepting corporate funding and therefore being apolitical and lacking accountability and professionalism (Tuters & Varnelis, 2006). This is the case for the British group Blast Theory, which has been sponsored by Trek for its piece *Rider Spoke* (2008), among others, and Proboscis, which received sponsorship from Orange, a mobile phone provider, for *Urban Tapestries* (2002). However, in Brazil, sometimes this is the only source through which these artists can be funded to develop their work.

⁴¹ <http://www.desvirtual.com/qartcode/en/>



Figure 5. Suite 4 Mobile Tags (2009) at FILE, Festival Internacional de Linguagem Eletrônica in São Paulo. Copyright: Giselle Beiguelman.

Promotion

As there are difficulties finding sponsorship for one's work, there are also struggles to promote and circulate this kind of new production in the country. One struggle has been to reach out to the public, which sometimes is not familiar with this type of art and does not have the necessary technical literacy to interact with the pieces. As Fabio Fon noted, in the beginning, several artworks required users to have mobile phones with specific technologies, such as Bluetooth or GPS, or even specific mobile phone models, excluding people who did not have access to them. When Beiguelman created *Wop Art* in 2001, for example, very few people had mobile phones, much less mobile phones with Internet connections. However, as Prado points out, accessibility is no longer a problem when creating mobile artworks: "I'm not worried if someone will have a cell phone. If this were a few years ago, you would have to give the user a cell phone, but now I know everybody has one."⁴²

Another struggle is related not to how, but where users will interact with these pieces. As Vianna notes, one of the major challenges of producing this type of art is the lack of infrastructure to show it to

⁴² Interview conducted in March 2012.

the public. According to him, there is no particular venue or institution dedicated to exhibiting this kind of art. So far, most of these artworks have been brought to a larger audience at the several mobile festivals in the country. As Duarte and de Souza e Silva (2014) note,

The festivals' goal is to provide an arena for the discussion of mobility, and how mobile technologies act as interfaces to promote education, health, citizenship, and art making. They create opportunities for local and international artists and researchers to articulate critical reflection and production with mobile media. (p. 206)

These festivals not only create the opportunity for artists to exhibit their artwork, but they are also an arena for debating and discussing ideas related to mobile media art. Lucas Bambozzi,⁴³ one of the organizers of Vivo Arte.Mov, notes that these festivals have an academic flair, but they are not restricted to academia. In fact, as we have mentioned, several of these festivals receive sponsorship from private companies, such as Vivo, Nokia, Motorola, and Telemig Celular.

Another interesting aspect of the festivals is that they not only help promote the artwork that is developed in major cities like Rio and São Paulo, but they are also aware of the disparities in the national production of art and technology. Arte.Mov, for example, shifted its format after its third annual edition. The festival changed from a traditional large exhibit in one city to a circuit of activities that includes traveling exhibits with longer duration and workshops with artists. To counter the fact that most art and technology production happens in São Paulo, Rio de Janeiro, and Belo Horizonte, Arte.mov built a mobile lab that travels to the countryside of Brazil to bring exhibits and workshops to locations and populations that otherwise would not be exposed to this type of content. The festival has also published calls for art commission that are exclusive to artists of typically underprivileged areas of Brazil, such as the North Amazon region. Likewise, they also put Brazil in the international art scene by inviting international artists and sponsorship.

Conclusion

This article analyzed the mobile media art scene in Brazil through interviews with the most prominent Brazilian media artists today. This panorama showed that an interplay of artists' motivations, available resources, and national–international conversations shape these creations. One question we had in mind when we started this research was whether a Brazilian mobile art scene or trends existed. Although we did not find Brazilian trends per se, we can identify some characteristics of national production.

First, we found that mobile media art in Brazil focuses mostly on urban themes. These artworks place Brazil in a cosmopolitan scene that contradicts the stereotypical images of the country as made out of jungles, beaches, and exotic animals. This production, however, also honors its culture, by focusing on its sensuality, for instance.

⁴³ Interview conducted in October 2011.

Second, the lack of resources becomes a source of creativity. As pointed out by Marcelo Godoy and Lucas Bambozzi, Brazilians have historically developed a capacity for adaptation that is evidenced in the exercise of creative practices. The lack of technological infrastructure often drives the capacity to improvise and innovate. The Gambiologia collective,⁴⁴ for example, which participated in Arte.Mov in 2008 with the project *Gambicycle*, embraces DIY makeshifts and kludges made out of discarded devices as their main aesthetics.

Third, the lack of resources leads artists to have more than one job—they are professors, consultants, programmers, and more. As a consequence, the production of artworks that reflect on mobility and digital technologies is accompanied by a large body of critical and theoretical reflection. Often, the production and exhibition of artworks are also motivated and sustained by theoretical curatorship and happen in parallel with seminars and research panels to discuss the issues at stake. In addition, the lack of resources makes the collaborative process a necessary part of creative work.

Finally, Brazilian artists creatively appropriate mobile technologies, often questioning and subverting their meanings, and using them in unusual ways to create new perceptions and experiences of (urban and nonurban) hybrid spaces. Following the model of hybrid spaces, several of the aforementioned pieces transform urban spaces into more social spaces, bringing users into public spaces and transforming these urban spaces into hybrid spaces, because they embed digital location-based information in social spaces with mobile technologies. As we have seen, in the sociability model (Weintraub, 1997), public spaces have traditionally been understood as spaces where strangers meet. Any external stimulus or connection (a phone call, an Internet connection, location-based information) would contribute to removing people from these spaces. The idea of hybrid spaces (de Souza e Silva, 2006) emphasizes that these digital connections are now part of those spaces and should be taken into consideration when we talk about sociability in these spaces. These artworks bring this very idea to fruition.

More important, the analysis of the Brazilian mobile media art scene shows us that appropriations of mobile technologies are not exclusive to low-income populations or intended only to contribute to economic development. Although some adoption of mobile technologies is focused on leveraging the digital divide and granting access to mobile Web services, the Brazilian media art scene subverts functional uses of mobile technologies to investigate the aesthetic potentials of mobile interfaces. By doing so, they question perceptions of space and policies of technology access and insert themselves into the international landscape of media art production. By choosing technology appropriation over consumption, Brazilian media artists reposition the Global South in a place of power. This is not exclusive to Brazil. Future research should look at other developing countries to disrupt the homogeneous representation of the Global South as a mere consumer of technology and to acknowledge the ongoing innovative initiatives in those countries.

⁴⁴ <http://www.gambiolgia.net>

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