

## On Gambiarras

### *Technical Improvisations à la Brazil*

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Imbalances of power and alternative modes of living abound in both the Global North and the Global South. Tactics and strategies are used by groups of all sorts to express their meaning-making processes and practices, which often happen through a wide variety of forms: for instance, by using digital devices to perform *bricolages* of materials and thus overcome the shortage of resources. In this chapter, we choose the example of a subtle recombination of materials and practices in which the digital is both at the center of the discussion and in the background, as a context within which practices develop.

We wish to discuss the notion of *gambiarra*: a term applied to a myriad of improvisations, usually material and technical ones, to tackle scarcity of all sorts. Clinio and Rosas define *gambiarra* as “do it yourself à la brasileira,” where the technical limitations are overcome by creative solutions in the face of challenging situations (Clinio, “Mídias táticas no Brasil”; Rosas, “Gambiarra”).<sup>1</sup> It has also been described as an “inventive process of repossession, adaptation and transformation of available materials in an alternative design form, which allows the creation of improvised solutions for real demands” (Clinio, “Mídias táticas no Brasil,” 76; translated).

Although such practices are widely prevalent in Brazilian daily life, the silence with which they are greeted in national and international accounts is striking. This possibly indicates that *gambiarras* are not part of the dominant Western cultures or any other dominant conceptual framework, and that the phenomenon is overlooked by scholars because its contingent, last-minute, “on the fly” features contrast with a well-planned, desirable course of action.<sup>2</sup>

With the support of a genealogy of the term and empirical experience, this chapter will rely on two examples to illustrate the application of *gambiarras*: the initiative of the “Gambiarra Favela Tech” project and of “Hacker Clubs” in Brazil, specifically in the north of the country. In the first case, digital apparatuses are used to produce art in Brazilian favelas;<sup>3</sup> in the second, hacker activities are institutionalized

for education and digital activism. In both cases, we will discuss the main practices that represent gambiarras and trace them back to the concepts guiding our analyses.

Our theoretical support is embedded in Michel de Certeau's notions of creative consumption, as well as Escobar's and Mignolo's contributions to "southern epistemologies" (de Certeau, *Practice of Everyday Life*; Escobar et al., "Welcome to Cyberia"; Mignolo, "Global South and the World Dis/Order"). We argue that gambiarras are more likely to happen in relatively challenging environments—technically, socially, and economically—and that they represent a typical artifact of nondominant occidental situations. Our aim is to contribute to unveiling the roots of the term with a pluralized definition of gambiarra in line with the practice itself: politically plural, fluid, and diverse. Through the discussion of selected cases, we also aim to enhance the notion of digital humanities by providing glimpses of digital practices in Global South locations: ultimately, this can reveal the plurality of what it means to be human in our engagement with digital means and material. As a matter of fact, we argue that gambiarra is both a practical intervention and an epistemology, a form of knowledge based on technical resignifications.

### *A Review of Gambiarra: Bridging the Gaps with Bricolage*

We began our inquiry into the term with an online open search in two renowned online academic repositories, Web of Science and Scopus. The search yielded only four entries, with further documentation for the two treated in this chapter.<sup>4</sup> The first article (Pilar and Henriques, "What's the Impact of Local Cultures?") addresses the notion of gambiarra as a way to understand the cultural context behind user experiences, while the second (Obici, "Gambioluthieri") employs it in the context of assembling musical instruments, especially string instruments.

According to Houaiss's *Dicionário*, the first record of the word is in the *Dicionário Contemporâneo da Língua Portuguesa* (1881) by Francisco Júlio Caldas Aulete. The etymology is uncertain. It may derive from *gambia*, a leg, implying an extension of the body. The historical report of the term says that by the end of the nineteenth century, Brazilian cities started to install gas lighting, which required wires and pipes connected to the gas supply. Such installations were first called "gambiarras" by a São Paulo newspaper in 1886. Bouffleur describes the context in which gambiarras were used: "The front area of the theater is lit by a giant gambiarra" (Bouffleur, "Fundamentos da Gambiarra," 19), alluding to the electrical light installations. In the twentieth century, the term came to represent all sorts of improvisations, like makeshift arrangements for irregular lighting connections in cities—practices usually associated with informal habitations at the margins of the law.

From the 1980s onward, the word expanded its range to encompass the expressions of a chaotic urban development in Brazilian metropolises, as regards not only electrification but any improvisation in housing.<sup>5</sup> Brazilian *favelas* or slums are

typically places with high levels of improvisation, given the general condition of the areas, their precarious infrastructure, and the lack of financial resources (Bouffleur, “Fundamentos da Gambiarra”). Favelas thus represent the epitome of the gambiarra.

The term thus took on a negative connotation. But with the rise of postmodern thought, gambiarra has acquired a more positive association, as an invention devised to solve a problem with whatever resources are available. From 2000 onward, gambiarras are being used in video tutorials teaching how to create and manipulate objects, products, or materials as a do-it-yourself exercise, fostered by the expansion of internet facilities (Bouffleur, “Fundamentos da Gambiarra”). Open searches on Google show a popular notion of gambiarra to mean, in the Brazilian context, a device to invent, fix, repair, and reinvent something.<sup>6</sup> The term has also been commonly associated with *jeitinho brasileiro*, the Brazilian way of doing things, a phrase which remarkably reinforces a stereotyped, generalizing interpretation of a cultural trace. As observed by Livia Barbosa and Roberto DaMatta, *jeitinho* represents a myriad Brazilian cultural traits such as flexibility, capacity for improvisation, and cordiality (Barbosa, *O jeitinho brasileiro*).

Brazilian authors like Rosas (“Gambiarra”), Clinio (“A ação política no cotidiano”; “Mídias táticas no Brasil”) and Bouffleur (“Fundamentos da Gambiarra”) discuss gambiarra in terms of a rationale of improvisation to create new projects, products, and actions. One of the first proposed conceptual connections with gambiarra is the notion of the *bricoleur*, as expanded from Claude Lévi-Strauss’s *The Savage Mind*, where the *bricoleur* is described as a hands-on worker using informal means to achieve one’s goals.

The “bricoleur” is adept at performing a large number of diverse tasks; but, unlike the engineer, he does not subordinate each of them to the availability of raw materials and tools conceived and procured for the purpose of the project. His universe of instruments is closed and the rules of his game are always to make do with “whatever is at hand,” that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed to any particular project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of previous constructions or destructions. (Lévi-Strauss, *Savage Mind*, 17)

Rosas points out that Lévi-Strauss’s distinction between the “bricoleur” and the “engineer” is essential to understand gambiarra as a “freewheeling creation that goes beyond user-manual restrictions, being essentially a practice of *bricolage*” (Rosas “Gambiarra,” 39; translated). The precariousness of the means, the improvisation, the inventiveness, the dialogue with the surrounding local reality and the community, the possibility of acting sustainably, the flirtation with illegality, the

technological recombination in the reuse of a given technology—these are some of the features that Rosas (“Gambiarra,” 37) remarks are typical of a Brazilian gambiarra—a type of bricolage by his own designation.

As the idea of improvisation sets the tone of what gambiarra means, a second conceptual linkage relates to Michel de Certeau’s *The Practice of Everyday Life*, where everyday life practices are the core point of discussion. The author suggests that alternative forms of consumption and production can be opposed to the established top-down orders. Hence, he examines the creative *savoir faire* and *savoir vivre* that ordinary people practice within the realm of mass culture by transforming something into something else with a different purpose, subverting the materials and the ideas that had designed the initial product. This applies not only to objects of everyday life but also to urban planning, laws, and language, indeed all sorts of recombinations toward unplanned use. The practices discussed by de Certeau reinforce the idea of *bricolage*, bridging the gap between his ideas and Lévi-Strauss’s. Both *bricolage* and gambiarras thus transform the nature of consumption, diverting it toward a product that calls for a new application of the relevant lexicon. We argue, therefore, that it is possible to connect gambiarras conceptually with *bricolage* as practices of improvisation that generate creative results in conditions of scarcity, mostly the scarcity of money and materials. Agents (re)signify the original use of an object—either unconsciously or as a result of politically informed action.

The emergence of gambiarra is most commonly noted where there is scarcity of resources, as in various Global South scenarios. By viewing such practices through those lenses, we propose that gambiarras conceptually intertwine both a practical and an intellectual pursuit: the improvisation of techniques with the rationale of a *bricoleur* and a possible concept through which researchers can interpret social realities.

### *Global South Perspectives: Some Examples from Material Culture*

Gambiarras are practical examples of Southern epistemologies (Santos, *Epistemologies of the South*) from which our cases emerge. As Mignolo puts it, “Global South” is a fashionable expression which does not refer solely to geographically southern regions and countries. It entails epistemic judgments toward developing nations. While the so-called G7 nations often compete on criteria created to depict their own standards, the other 6.8 billion people of the world survive the waves of capitalism in various ways (Mignolo, “The Global South,” 165). As well as the West-East division, the binary of North and South has been constructed to take note of the parts of the world where “developmentalism” struggles to find a path. It is still a better expression than “Third World” or “underdeveloped regions,” even if inappropriate for certain nations of the geographical north.

Furthermore, the act of naming is also an epistemic act through which power relations and asymmetric encounters appear to change the geopolitical landscape of

developed and underdeveloped nations. In our case, the Global South perspective is adopted merely to provide a context in which gambiarras develop. Each cultural context produces a different kind of practice (Geertz, *Interpretation of Cultures*), as we illustrate from our two cases below.

#### GAMBIARRA FAVELA TECH: IMPROVISED ART INSTALLATIONS

Favela Tech is the name of an artistic residency held in July and December 2015 in the Maré slum in northern Rio de Janeiro, made possible through a partnership between the Olabi Makerspace (<https://www.olabi.org.br/>) and the Favelas Observatory (<http://www.gambarrafavelatech.org/>). The initiative brought together twelve young people from the local community to devise new uses for obsolete materials. Taking as a motto the pursuit of improvisation and inventiveness to transform reality, around forty hours of workshops were organized to develop the use of materials in line with the rationale of gambiarra: “to take something used in a traditional way and use it in another way, a way that nobody would imagine,” as one of the young participants commented.<sup>7</sup>

Gambarra Favela Tech’s proposal was anchored in three modular aims and concepts:

- (1) to develop environmental awareness, which teaches that rather than discard a product and manufacture a new one, it is better for the environment to recycle and reuse materials;
- (2) to lose the fear of opening “black boxes,” and actively discover how technical objects work;
- (3) *sevirismo*, a Brazilian expression meaning “the science of dealing with what one has”—a synonym for gambiarra.

By the end of the project, the participants had developed art installations based on discarded materials. Materials were obtained from household rubbish bins and slum roadsides, where electronic components were mixed with common garbage, to create whatever sort of art installation the participants wished. This resulted in what the instructors called “low-tech” experiments, later exhibited in the main hall where the project was conducted. In the search to express their own amateur and do-it-yourself artistic impulses, the participants were invited to build apparatuses that would either solve a practical problem or represent an abstract idea. The digital component was present in the recurrent interplay of online and offline strategies to build the apparatus, relying on information found online or even on hints. Some were encouraged to play with Arduino, an open-source platform for creating interactive electronic objects, with the help of technicians in the coding process.

The majority of objects reflected daily lives without much in the way of material resources. The recombination of materials and *bricolage* comprised simple objects

such as old dolls, plants, TV sets, radio equipment, cell phones, and computers. A few examples applying Arduino used hardware components of computers combined with plastic and simple rubbish. For many participants, it was their first contact with the components of a computer, the first chance to operate any electronic object, even if for artistic purposes. In such cases, the digital often functioned as a kind of infrastructure which the participants applied to create their artwork using material or “hard” components. The material resources also constituted a shared infrastructure, close to the sense proposed by Frischmann (*Infrastructure*), in line with a concept of shared, self-governed “commons.”

This project meshes with the idea of *gambiarra* as a concrete example of “sub-sistence improvisation” (Bouffleur, “Fundamentos da Gambiarra”), where the very scarcity of materials and resources inspires inventiveness with what is available—an indispensable element for artistic creation. The improvisation identified with *gambiarra* in everyday life, like its use to create art, goes back to the very culture of the Indigenous populations that inhabited Brazil until the arrival of the Portuguese, since “compared to the evolved state of pre-Columbian civilizations in Peru and Mexico, the Brazilian Indian was seen as quite late and wild” (Bouffleur, “Fundamentos da Gambiarra,” 106). This long history of creative improvisations, linked to a series of very simple needs of both the Indigenous peoples and the first European settlers in Brazil, produced a certain Brazilian identity and ethos, as we have already observed.<sup>8</sup>

#### **RAUL HACKER CLUB: THE HACKER CULTURE APPLIED TO HARDWARE AND SOFTWARE**

The Raul Hacker Club defines itself as “a group of people interested in using, re-using and sharing technology, learning, fun and culture in a collaborative and indiscriminate manner.” Situated in the coastal area of northeast Brazil, this hackerspace defines itself as an assemblage of different people managing a nonhierarchical space, without the support of public or private institutions (Martins, “Hackerspaces”). The name honors Raul Seixas, a well-known Brazilian singer and songwriter born in Bahia, whose songs celebrated alternative ways of living among other themes.<sup>9</sup> Some of the projects carried out by this group are the *Criança Hacker* (infant hacker), a series of construction activities for children under the supervision of an adult guiding the process of a “playful discovery,” free and joyful. Children are encouraged to look for the perfect fit among the chosen pieces and, as much as possible, to combine different materials.

The same hacker club launched what it called “Fliperama do Raul” (Raul’s Arcade, <https://raulhc.cc/Projetos/Fliperama>), developed with a few pieces of electronic equipment passed on by earlier participants or collected for this particular exercise. The participants are encouraged in collective experimentation, sharing materials and learning processes to build the best “arcade” possible, in the video

game of that name popular in the 1980s and 1990s. At the end of the program, the “arcades” remain in the club hall as examples of technical ingenuity, created by people not instructed in electronics or in any skill related to hardware technology.

Raul’s Arcade is part of a series of free activities related to informatics and basic electronics for children: the Data Laboratory for Citizenship Hacker—a collaborative space for work, research, and discussion on crawling public data for journalistic purposes—as well as other learning activities in the areas of electronics, free software, open data, and hacker culture.

The “hacker culture” approach (Himanen, *Hacker Ethic*) implies that communities of coding developers share resources and work (often in nonhierarchical settings) to spread information freely and openly. These elements of the so-called hacker morality have disseminated widely among open-source and free-software communities, of which Raul Hacker Club is part. Their activities comprise not only coding and open software, but also any “hacker practice” related to hard components, hardware, and other physical materials.

Following this line, Raul Hacker Club was part of a network of contacts named “Metareciclagem” (meta-recycling), “a self-organized network that proposes the deconstruction of technology for social transformation” (<https://metareciclagem.github.io/>). A few years ago, this collective network launched the mutgamb or mutirão gambiarra (task force) to produce and share articles related to hacker culture. In their own words again, this “editorial collective . . . articulates collaborative publications on themes such as creative appropriation of technologies, experimental digital culture and collaborative networks” (<https://mutgamb.github.io/conteudo/SobreAbout.html>). The project network has helped to popularize the term “gambiology,” a “science of gambiarra”—a term that rescues the expression from its original pejorative meaning by garbing it with a new positive outlook.

In many hackerspaces, gambiarra is a quintessential form of “hacker culture.”<sup>10</sup> Even if the term “gambiarra” is not used, hacker cultures often appropriate materials, hardware, and software in order to break the “black boxes” of digital equipment. A typical hackerspace sees the learning process as grounded in mutual collaboration and shared common resources. In other words, a hackerspace promotes a “shared social infrastructure” (Frischmann, *Infrastructure*) based on coding development and cooperative work.

### *Bricoleur Epistemology: A Possible Realm for the Digital Humanities*

The investigation by the humanities into the notion of “modernity at large” (Appadurai, *Modernity at Large*) has shown this to be a deterritorialized, hybridized, contested, uneven, and heterogeneous concept. The so-called southern turn in the social sciences (Comaroff and Comaroff, “Theory from the South”; Connell, *Southern Theory*; Rosa, “Theories of the South”) typically emphasizes the relevance of locating the context of inquiry rather than producing universal theories—an

assumption that works well with deconstructing the notion of modernity. As Connell (“Meeting at the Edge of Fear”) contends, an epistemology founded on solidarity would allow mutual learning exchanges in which different knowledge schemes would be respected and would largely intertwine. The challenge of portraying such forms of knowledge is, then, to “produce a reading which is politically more useful” (Spivak, *Can the Subaltern Speak?*, 57), especially as regards the applicability of theories and methods to subaltern regions. The “alternative” use of materials is part of such hybridizing processes, whereby modernity encounters the peripheries of the world, giving rise to new cultural expressions of the digital. As conceived by Mignolo, terms, this would work as a double critique, both of Western dominance and of the production of “otherness” (“Global South and the World Dis/Order”).

Gambarra is both an everyday life practice and a form of knowledge derived from the manipulation of materials in an improvised manner through strategies that often remain undisclosed.<sup>11</sup> In the cases described here, the materials always bear a digital aspect: either because the materials themselves are salvaged from computers and electronic equipment or because the language of coding has been applied in constructing the gambarras. This notion of improvisation relates not only to materials and artifacts but also to ideas. As Le Breton (*Sensing the World*) argues, the Cartesian mind-body divide rarely applies in our daily lives, which mostly merge what modern Western philosophy has separated. Like any manual improvised activity, gambarra unveils a *bricoleur* epistemology, whose objects have been displaced from their original functions to initiate novel discoveries.<sup>12</sup>

As Escobar et al. (“Welcome to Cyberia”) contend, the study of cyberculture is particularly concerned with the cultural construction of new technologies and with noting how everyday lives are shaped by these new apparatuses. Digital humanities emerges a little later, as a field addressing the intersection of computing and humanities (a very broad definition): a “free-floating signifier” (Kirschenbaum, “What Is Digital Humanities?” 9) for humanities done digitally. Our examples reflect the same stance but from the viewpoint of material culture, ultimately hoping to connect it with other epistemologies of Global South theories and subversive acts of everyday life.

The gambarra maker, the material-cultural *bricoleur* of the Global South, can be seen as a possible object of investigation for digital humanities: s/he provides an empirical case for combining the realm of the digital with the manipulation of materials. Ultimately, digital humanities should help us to understand what it means to know the world and create meaning through the alternative use of shared resources.

To define gambarra as an expression of Global South practices might be considered an ethnocentric argument, given the stereotypical view of such *bricolage*. Every technology represents a cultural invention in the sense that it creates a world of its own (Escobar, “*Sentipensar* con la Tierra”); and even though overcoming the “myth of modernity” (Escobar, “Beyond the Third World,” 219) cannot be considered a

new argument in itself, it is important to show the empirical variations of this concept and the rich examples that gambiarras offer. These cases help us to illustrate the ways in which gambiarras function in the everyday reality of life in the Global South. It was our intention to shed light on practices that unveil a particular category of meaning making based on materials in this particular world. We would argue that Brazilian gambiarras translate the digital to a new symbolic realm.

Yet gambiarra is not solely restricted to the Global South: it is a combination of practices tailored to solve the practical problems of everyday life. Our examples might help to realize how the limitation of resources, both technological and financial, can serve as a stimulus for reinventing current technologies and creatively reusing objects that would otherwise be discarded. As shown by the Gambiarra Favela Tech project, the reuse of elements salvaged from the garbage can at zero cost encourages a more critical look at the consumer culture of standard digital (as well as analog) devices. It demonstrates that artistic production can be carried out without large investments, making its practice more accessible to people at the periphery of the world.

Moreover, the collaborative practices of Raul Hacker Club foster popular hacker culture. The club unites high and low technology in order to democratize knowledge about digital technologies and inspire the quest to improve reality. Both these are fundamental questions for the digital humanities to consider, as the language of coding is not yet widely mastered. Gambiarra, in this sense, can serve as an umbrella under which art, knowledge, and technology can come together in a novel way to creative purpose. Also, the inquiry into material cultures of all forms in all regions can raise awareness of the myriad practices originating in the Global South, where creativity finds a way to exist despite all constraints, chiefly socioeconomic ones.

### Notes

1. For example, the opening of the 2016 Olympics in Brazil was named after *Gambiarra*, owing to the material constraints and shortage of funds faced throughout its planning. As the organizer said once: “The spirit of Gambiarra is important in Brazil, it’s like we don’t have the means to do it but we have to do it” (Globo.com).

2. We define the dominant Western cultures as constituting the Global North, in opposition to the context we wish to portray in this chapter: an opposition between the so-called developed countries and countries under development. Even though there are many nuances to both terms, these labels are often rooted in the socioeconomic standards created by the Global North. It is not the goal of this essay to discuss the validity of such notions; but it is worth noting that one reason for discussing the epistemologies of the Global South is that they potentially provide contradictions to universally constructed theories (Connell, *Southern Theory*).

3. A favela can be described as a slum or a shanty town where public infrastructure is usually precarious and the architectural landscape appears chaotic.

4. This cannot be considered an extensive search, but it indicates that the term has been little addressed in either local or international publications.

5. Holston analyzed the development of Brasília, the Brazilian capital, and its satellite cities in the context of a critical discussion of urban planning. Before the emergence of modernist planning in Brazil, cities had grown disorderly and chaotic, and still show traces of that condition.

6. In Portuguese, “grande artifício da manutenção brasileira para inventar, arrumar, reparar ou restaurar algo.” One instructive Google result can be found at <http://clevertoncaricaturas.blogspot.com/2009/10/definicao-de-gambiarra.html>.

7. The summary of the project is available at [https://www.youtube.com/watch?time\\_continue=18&v=h54\\_A5fXk0o](https://www.youtube.com/watch?time_continue=18&v=h54_A5fXk0o).

8. Our view can easily be extrapolated to a counterproductive generalization of identity in the form of daily practices. We wish to stress that while this is a dangerous generalization, gambiarras are rooted in the history of Brazil, as they might have been in the past in any other society, simply as the result of a lack of resources. However, the relevance for modern times is that gambiarra persists as a solution because socioeconomic constraints also persist in a highly unequal country.

9. The musician and composer Raul Seixas is widely recognized in Brazil as a counterculture artist. Hence the hacker club has been named after him, although he died in 1989.

10. Our notion of the hacker is based on Coleman.

11. These observations are manifestly indebted to recent developments in science and technology studies (STS), a branch of learning that conceptually assembles human and nonhuman agency in inquiry into the social world. This is relevant for our case, as our object of inquiry is also an outcome of the manipulation of materials by human agency.

12. De Certeau sees such development as a “tactic.”

### ***Bibliography***

- Appadurai, Arjun. *Modernity at Large: Cultural Dimensions of Globalization*. Minneapolis: University of Minnesota Press, 1996.
- Bakhtin, Mikhail. *The Dialogic Imagination: Four Essays*. Translated by Caryl Emerson and Michael Holquist. Austin: University of Texas Press, 1981.
- Barbosa, Livia. *O jeito brasileiro: A arte de ser mais igual que os outros*. Rio de Janeiro: Elsevier, 2006.
- Bouffleur, Rodrigo N. “Fundamentos da Gambiarra: A Improvisação Utilitária Contemporânea e seu Contexto Socioeconômico.” PhD diss., Department of Architecture and Urbanism, University of São Paulo, 2013.
- Clinio, Anne. “A ação política no cotidiano: A mídia tática como conceito operacional para pesquisas em mídia, cotidiano e política” (“Political Action in Everyday Life: The Idea of Tactical Media as an Operative Concept to Researchers about Media, Everyday Life and Politics”). *Revista Eletrônica do Programa de Pós-Graduação em Mídia e Cotidiano* 1 (2013): 169–88.

- Clinio, Anne. "Mídias táticas no Brasil. Dinâmicas de informação e comunicação." Master's thesis in Information Sciences, Federal University of Rio de Janeiro (UFRJ), 2011.
- Coleman, Gabriella. *Hacker, Hoaxer, Whistleblower, Spy: The Many Faces of Anonymous*. London: Verso, 2015.
- Comaroff, Jean, and John L. Comaroff. "Theory from the South: Or, How Euro-America Is Evolving Toward Africa." *Anthropological Forum* 22, no. 2 (2012): 113–31.
- Connell, Raewyn. "Meeting at the Edge of Fear: Theory on a World Scale." *Feminist Theory* 16, no. 1 (2015): 49–66.
- Connell, Raewyn. *Southern Theory: The Global Dynamics of Knowledge in Social Science*. Cambridge: Polity, 2007.
- de Certeau, Michel. *The Practice of Everyday Life*. Translated by Steven F. Rendall. Berkeley: University of California Press, 1984.
- Escobar, Arturo. "Beyond the Third World: Imperial Globality, Global Coloniality and Anti-Globalisation Social Movements." In "After the Third World?" Special issue, *Third World Quarterly* 25, no. 1 (2004): 207–30.
- Escobar, Arturo. "Sentipensar con la Tierra: Las luchas territoriales y la dimension ontológica de las epistemologías del Sur" ("Thinking-Feeling with the Earth: Territorial Struggles and the Ontological Dimension of the Epistemologies of the South January"). *Revista de Antropología Iberoamericana* 11, no. 1 (2016): 11–32. <https://www.aibr.org/antropologia/netesp/numeros/1101/110102.pdf>.
- Escobar, Arturo, David Hess, Isabel Licha, Will Sibley, Marilyn Strathern, and Judith Sutz. "Welcome to Cyberia: Notes on the Anthropology of Cyberculture" [with comments and reply]. *Current Anthropology* 35, no. 3 (1994): 211–31.
- Filipo, Leonardo. "Com 'gambiarras,' abertura terá mensagem ecológica e de tolerância." *Globo*, August 4, 2016. <http://globoesporte.globo.com/olimpiadas/noticia/2016/08/com-gambiarras-abertura-tera-mensagem-ecologica-e-de-tolerancia.html>.
- Frischmann, Brett M. *Infrastructure: The Social Value of Shared Resources*. Oxford: Oxford University Press, 2012.
- Geertz, Clifford. *The Interpretation of Cultures: Selected Essays*. New York: Basic Books, 1973.
- Globo.com. "Gambiarras," abertura terá mensagem ecológica e de tolerância. 2016. <http://globoesporte.globo.com/olimpiadas/noticia/2016/08/com-gambiarras-abertura-tera-mensagem-ecologica-e-de-tolerancia.html>.
- Himanen, Pekka. *The Hacker Ethic and the Spirit of the Information Age*. New York: Random House, 2001.
- Holston, James. *The Modernist City: An Anthropological Critique of Brasília*. Chicago: University of Chicago Press, 1989.
- Houaiss, Antônio, and Instituto Antônio Houaiss de Lexicografia. *Dicionário Houaiss da língua portuguesa*. Rio de Janeiro: Objetiva, 2009.
- Kirschenbaum, Matthew. "What Is Digital Humanities and What's It Doing in English Departments?" In *Debates in the Digital Humanities*, edited by Matthew K. Gold, 3–11. Minneapolis: University of Minnesota Press, 2012.

- Le Breton, David. *Sensing the World: An Anthropology of the Senses*. London: Bloomsbury, 2017.
- Lévi-Strauss, Claude. *The Savage Mind*. English trans. Chicago: University of Chicago Press, 1966.
- Martins, Beatriz Cintra. "Hackerspaces, ciência cidadã e ciência comum: Apontamentos para uma articulação" ["Hackerspaces, citizen science and common science: some notes for an articulation"]. *Liinc em Revista* 13 (2017): 59–71. <http://revista.ibict.br/liinc/article/view/3752/3205>.
- Mignolo, Walter D. "The Global South and the World Dis/Order." *Journal of Anthropological Research* 67, no. 2 (2011): 165–88.
- Obici, Giuliano. "Gambioluthiery: Revisiting the Musical Instrument from a Bricolage Perspective." *Leonardo Music Journal* 27 (2017): 87–92.
- Pilar, Denise, and Cecilia Henriques. "What's the Impact of Local Cultures on the User Experience of Software Solutions?" In *Human-Computer Interaction: Theories, Methods, and Human Issues*, edited by Masaaki Kurosu, 169–77. Dordrecht: Springer Link, 2018.
- Rosa, Marcello C. "Theories of the South: Limits and Perspectives of an Emergent Movement in Social Sciences." *Current Sociology* 62, no. 6 (2014): 851–67.
- Rosas, Ricardo. "Gambiarra: Alguns pontos para se pensar uma tecnologia recombinante" ("The Gambiarra: Considerations on a Recombinatory Technology"). In *Caderno SESC Videobrasil 02: Art Mobility Sustainability*, edited by Helio Hara, 36–53. São Paulo: Sesc São Paulo, 2006.
- Santos, Boaventura de Sousa. *Epistemologies of the South: Justice against Epistemicide*. New York: Routledge, 2014.
- Spivak, Gayatri Chakravorty. *Can the Subaltern Speak?* Basingstoke: Macmillan, 1988.