

## **The City Emerging from Mobile Applications**

**Fabricio Farias Tarouco**

PhD, UNISINOS, Brasil  
ftarouco@unisinós.br

#### **ABSTRACT**

This article starts from the concept of Communicational Metropolis, proposed by Massimo Canevacci, connecting it to the studies of Lev Manovich, which explain a growing influence of software in our society. With these pillars, a reflection is presented on the conception of a softwarized communicational metropolis that emerges from the use of applications for mobile communication devices. These mobile media have become central for providing mobility to the user who circulates through physical spaces, promoting greater interaction with the territorial context and causing new dynamics of communication and conviviality. Recent data lead us to believe that in a short time practically all mobile phone devices will be smartphones, a fact that will reconfigure established urban practices once and for all. In this context, a set of applications for mobile devices that articulate urban issues emerges as a contemporary instrument that talks in different ways with this multiple metropolis, from the conception of its practices to the cultural changes that they cause. To answer the questions of this research and identify the transformations that took place, Walter Benjamin's character flâneur was used as a methodological resource that led to the definition and analysis of 10 contextual fragments extracted from the metropolis observed in the apps and their images. The intersection of these fragments highlighted particularities and dynamics that updated the understanding of Communicational Metropolis, interpreting it as a combination between its streets, avenues and the dynamics caused by the apps on them, that is, a composition between the mobile applications themselves and the communicational metropolis with which they interact.

**KEYWORDS:** Cities, Mobile Devices, Apps.

#### **INTRODUCTION**

It is a fact that technological advances occur with certain periodicity in contemporary society. The gap between new discoveries and the emergence of inventions happens at intervals that do not follow a regular temporal logic. These advances are responses to a human characteristic of being almost always in search of qualification of living conditions, increased well-being, reduced time needed for daily occupations, such as those at work, and increased leisure time.

In the past, at different times, various technologies have brought great advances to humanity, such as electricity, airplanes, x-rays, nuclear energy, television, telephony, computers, magnets and the Internet, among many other innovations, with a greater or lesser impact on society. If we focus our observation only on the 21st century, it will be seen that the technological advances with the greatest impact on people's daily lives are related to information technologies, such as cell phones, ultra-fast computers and connected multimedia, which have intensified the formation of a globalized world, where everyone has access to almost everything and almost everyone.

In this technological scenario, communication practices have gained an extra boost with the advancement and proliferation of mobile devices, which are evolving with great speed, gaining quality, performance, multiple functionalities and scope of action. According to Pellanda (2011), the impact of these practices transcends commercial and technical issues because mobile access to information is becoming the main source of diffusion of cyberspace. Almost all of the services available on these devices are configured in the form of mobile applications—apps—which have become popular over approximately two decades, creating a virtual market segment that reaches expressive numbers, both for downloads and for values moved.

Data released by the ONU Telecommunications Agency (ITU) (2011) in Geneva, Switzerland, indicate that there are an estimated 6 billion mobile phone subscribers in the world, that is, almost the population of the planet, which recently exceeded 7 billion people. The number represents growth of 500% in relation to the year 2000, when only 1 billion people in the world had a cell phone. The number of internet users worldwide is much smaller than that of mobile telephony. The agency recorded that 3.9 billion people in the world used the Internet at the end of 2019; that is, more than one in two inhabitants of planet Earth has already browsed the World Wide Web. However, a great disparity has been documented between rich countries and developing nations.

In recent years, the popular "cellular device" has taken on numerous functions that have strengthened its importance in society, adding to its value. In addition to being used as a telephone, it has gained other services, such as a camera, contact book, notepad, calendar, games, news and television receiver, e-mail and SMS diffuser, WAP, social network updater, GPS, music player and electronic wallet, among many others. In André Lemos's (2005) view, the smartphone currently expresses a radicalization of digital convergence, becoming a "does everything" for the mobile and informational management of everyday life.

According to data from the company Neolane (2012), the beginning of the 2010s was fundamental for the worldwide consolidation of these communication technologies, and in 2009 the App Store application store exceeded the 1 billion mark of downloaded applications. In turn, the Liftoff mobile app trends report indicates that, in Brazil, 143 billion apps are currently downloaded annually, leading to the belief that the future of computing is closely linked to mobile devices, as defended by Rattner, the director of Intel (LIFTOFF, 2019). According to the executive, in addition to being more "smart" than they already are, smartphones will become increasingly aware of the habits and daily life of their users. There is an expectation that, when devices understand the way in which their users live their lives, they will become true personal assistants, and it is likely that, in a few years, smartphones will use this knowledge to help guide them in their day-to-day activities.

The impact of this movement on the dynamics of cities is great—at least, that is what is believed since it is in the urban context that technologies are tested and transformations take place in all their fullness. It would be no different now since, in addition to the process of softwarization of contemporary society, we are beginning to see a simultaneous smartphonization of social practices, as defended by Lev Manovich (2008). Along with the high investments and results of the main brands, this interpretation is given credibility by the large number of app developers, who, alone or in their companies, have been dedicating their efforts to implementing new products that have a positive impact on the lives of citizens and the environment in which they live.

Today's society follows the inclusion of the digital world, which was previously restricted to computers and now includes cell phones. The growing development of millions of mobile applications has allowed users to stay informed, research food options, listen to their favorite music and exchange messages and emails, among many other benefits.

Therefore, the study shared here started from the constitution of a triad between an observation, of urban practices, an attribute, the softwarized city, and a form of support, the mobile applications, the intention of which was to tension these elements from a study of the probable practices and interactions that applications for mobile devices provide, leading to the constitution of a "new" city, now much more digital. The concept of "new" mentioned above should be interpreted less with regard to its character of something nascent and more concerning the aspect of change that it carries with it.

In summary, what is sought is an understanding of the transformations in the practices of that subject who, a few years ago, lived in a predominantly analog world full of artifacts, being unable to imagine the innovations that the 21st century would provide, and who, in less than two decades, has come to depend on a series of pieces of technological equipment to be able to interact with the environment in which they live. This individual was the same person who spent countless minutes scrolling through the phone book and looking for the location of streets on printed and folding maps, the same person who used a typewriter to write their texts and letters, who used the phone only to talk after waiting years to acquire a fixed line, who went to their bank monthly to update their savings account, who issued checks, who took photos on a Kodak camera and waited anxiously for their revelation and who met people only through friends and social events. Today, when transporting this subject to the 21st century, as illustrated in the following image, a person is connected to the digital world for many hours of the day, calls transport through the application of this type of service, accessing their bank on their mobile devices, downloading apps from a virtual store that allow them to access the movie schedule, book hotels, choose restaurants, make purchases, follow the weather forecast, establish contacts, take photos and share them on social networks in real time, listen to music, access videos, locate themselves and allow themselves to be located, in short, to be a person who enjoys the resources available to them, interacting with their time and space.

**Figure 1—Changing habits due to technological advances**



Source: DUNJA MIJATOVIC @OSCE\_RFoM.

Furthermore, given this understanding, the projectual path of design and the incursion into communication, the question is which communicational metropolis is emerging from applications for mobile communication devices.

### **THE IMPACT OF APPLICATIONS ON SOCIETY**

It is still premature to measure the transformations that the advent of technologies is causing in society, but, from the numbers observed, it can be said that a new chapter in the history of information technologies is happening right now, especially with the arrival of 5G telephone networks. Habits are being reconfigured, and forms of interaction, communication and expression are coming to life, with new services being implemented and made available daily. The current moment is one of construction, as happened with the Internet around the year 2000, when navigation and software standards were still being established.

Gradually, these transformations caused by the apps are becoming present in widely different activities of human beings' daily routine. The habit of shopping, which was initially revolutionized by online shopping and later group buying sites, today has a series of apps for these services that allow one to make purchases while in a doctor's waiting room or in that tiring

event that one was forced to honor, for example. Other habits, such as reading a magazine, watching videos on the Youtube platform and checking in before boarding a flight, are also migrating to mobile devices. These changes affect not only the individual but also the collectivity as life in cities and the services that they house also experience the interference of these technological advances.

If the previous transformation had been carried out by the domain of software, now is the time to understand which communicational metropolis arises with the influence of mobile applications. Canevacci (1993) dates to the 1970s the beginning of the transition from an industrial city to what he calls a communicational metropolis, a transition that originated in the industrial city, which had the factory as its central monument, and evolved into the communicational metropolis of today, which is much more structured in consumption and communication. This research is based on urban anthropology, an old need to know the functioning of urban life so that one can indirectly control the process of modernization and urbanization. This discussion started when the old colonial powers began to study the cities that were being constituted during their transition to independence in the former colonies. The author also introduces two important concepts for the understanding of this metropolis: the first is ubiquity, also used to identify the way of operating through the Web, in which there is the assumption of a decentered development, with each character having its individuality, linguistic autonomy and psychological self, in an uncontrollable, incomprehensible and indeterminable way; the second is simultaneity, described as a fragmented experience between metropolises and technology, which is only possible thanks to the simultaneous individual, when two or more events occur at the same time in at least one reference system. Both concepts help us to understand this new configuration of communicational metropolises.

The creation of apps that relate to the urban space bring facilities to contemporary society and, consequently, change old routines, promoting new habits. Controlling the day to day through a smartphone is already a reality achieved by a large part of the world's population, approximately 90% according to estimates made by the company Ericsson (2015). For this reason, understanding urban dynamics and observing the introduction of these technologies become fundamental. One of the first facilities provided by apps was the location functionality, overcoming the need for printed maps or information from local residents. Today, with the resources of a smartphone, it is possible to know the world in a more oriented way, guided by the global positioning system (GPS) of satellites and with functions directly related to social networks, allowing us to choose the correct applications of streets, routes and timetables and, thus, to find "almost" anywhere on the planet, offering a significant boost to the expansion of tourism.

Tourism is the great beneficiary of these tools as it now has numerous facilities for organizing a trip. Apps Magazine no. 1 (Online Editor) presents a collection entitled "Around the World in 80 Applications" in which it lists a series of resources for those who want to know the six continents of the Earth. The first items on the list are tourist guides, and each of the world's main metropolises already has its own. The next is information about tourist attractions, subways, radars, events, fair prices, weather forecasts, news, hotels, shops and restaurants.

Applications complete the selection with alerts and important recommendations to avoid problems on the trip as well as translators and currency converters.

Directly downloading the useful service apps on a daily basis may be a strategic option as there are already apps available for most everyday needs. If the topic is mobility, various applications are available that make it possible to call a taxi or similar, rent a bicycle or car, find bus schedules and routes and even search for rides. Banks, which are increasingly digital, already offer their apps with their main services, and some even have physical branches. If you need to fill up your car, Petrobras makes its app available to locate gas stations. What if hunger strikes? Just use the iFood app to have a pizza delivered at home. To find parties, there's the app "What's good today?", and, if the demand is for cinemas, there are several apps that indicate which movies are showing in theaters along with schedules, available rooms, summaries and trailers.

Following a city from different angles and interacting with it to share the experience later have become frequent practices among smartphone users. At least, the perception is growing as the photographic record is articulated with geolocation, for example, with several options for capturing images, manipulating them, sharing them, enjoying them and commenting on them, promoting the habit of registering photos of the place where you are, of the dish you are eating or of a beautiful sunset. Immortalizing moments in photographs has long been a practice of society at different times and is now updated and intensified by the Instagram app, all in real time, with its stories, reels and videos.

#### **URBAN EXPERIENCES EMERGING FROM APPS**

Beginning the observation of the proposed empirical objects, the flâneur character, an observer proposed by Benjamin, is methodologically recovered. Peixoto (2003) presents this as a subject with a slow and directionless step, who crosses the city contemplating a panorama, interpreting calmly the types and places that cross their path and making "an inventory of things" or, rather, a work of classification characteristic of the time. As the study carried out took place through mobile applications, created and shared in digital format and through digital media, the flâneur of this moment maintains the characteristics of being a curious subject by nature but is updated to the present day, thus invoking a designer's look, mastering information technologies and no longer having the priority need to cross the metropolis to discover it but rather being able to observe and interact with it using mobile communication devices, thus constituting a particular type of digital flâneur. Therefore, this flâneur started to move around the city supported by a set of strategically selected urban apps, promoting an incursion inside these apps (without direct geographical displacement) and accompanied by them in an external experimentation of the urban space (now with a geographical displacement direct).

This city observed and accessed through mobile applications is also configured as projectual and software since every day hundreds of app developers work on countless innovative technological solutions to meet the dynamic needs of individuals and the society in which they live, thus constituting a digitally designed city, since this is a special moment in which the metropolis becomes an argument for projects and creative minds, which observe it as an



object of study that longs for the interventions and facilities that apps and their images can provide.

To think about the metropolis in this way is to understand its practices and routines and, through codes and algorithms, to propose innovations in its flows and in the perceived media processes as well as to create new services and processes and alternative forms of interaction with this territory. This is one of the moments when aspects of creativity can be strongly applied in the communicational metropolis.

The urbanist and politician Jaime Lerner introduces the concept of urban acupuncture, arguing that a series of small interventions is necessary that will act as a spark that initiates an action and its subsequent propagation in the urban space. This is what Lerner (2003) calls good acupuncture or urban acupuncture. In his words:

A good acupuncture is to allow the normal sound of cities to be heard, as if it were possible to tune the rhythm of the city. In the old days, there were those people who had the noble mission of lighting the gas lamps that lit the cities. My dream was to be a tuner of the sound of cities.

In this context, the protagonism for that subject "connected" to the digital world is rescued. In addition to being a smartphone and/or tablet user, this subject sees their old habits being transformed, not always consciously but feeling the strong influence of this culture of digital interaction with the metropolis. This subject is the same person who was present in the introduction to this analysis; that is, the one who started to use apps to locate themselves as well as to hail a taxi, to look for cinemas, hotels and restaurants or when interacting with other people, among countless services that are already at their fingertips digitally.

To understand the dimension of cities' smartphonization process, a series of apps that represent and interact with the diversity of urban practices most frequently perceived in public space was observed. The observations made were compiled and structured under the inspiration of a polyphonic methodology, considered relevant to the object, which is described by Massimo Canevacci (1993) in his studies. From a dialogue established with the research problem posed, a set of categories was more freely detected that allowed the identification of the scope of action of the main apps that relate to urban practices. It started with the category of geographic location, one of the main difficulties encountered in metropolises. Soon after that came the apps providing tourist information and services. Subsequently, some services that had worked regularly in the city and had gained versions in apps were chosen. This group was completed by urban mobility apps, social media, augmented reality, audiovisual resources, popular participation and entertainment, which have been tested in their context of use, both individually and integrated with other apps and the territory.

After mapping these categories, some applications stood out for the degree of interaction and innovation that they establish with the city, approximately 20 of which were prominent as the most accessed among those analyzed in this study. The point of reference for this observation and the experimentation of these apps took place in the territory of Porto Alegre, RS.



Next, 10 observation fragments are described with the intention of characterizing and constituting the city that emerges from the apps. Each fragment of these, or shards of the observation carried out, was planned to encompass moments of exposure of an initial position that contextualizes it and establishes its links with this study, followed by the flâneurism of the apps that interact with urban life and by theoretical seams that seek to respond to the questions presented.

### **1. The slippery pocket city**

The first fragment identified was based on the pocket version of a city, which can easily be accessed, consulted and taken to all frequented places. The basis of this pocket city is no longer printed paper in book format, as in traditional travel guides or maps, which have helped considerably in the past, but a smartphone and its varied set of apps. It is a compact version in size but contains a wide range of data, a version that can be customized as if it were a small Porto Alegre, just as it could be a small Paris, London or any other city that allows itself to be experienced digitally via mobile devices.

This way of interacting with the city causes, through navigation practices on smartphone screens, a new performance experiment in its tactile perception. For a generation of citizens who have adapted to the click of a mouse, now a specific type of touch is needed, whether touching, tapping, squeezing, rotating or sliding the fingers, to live fully a digital experience of interaction with the city.

### **2. Urban geocoding**

Another digital experience, which requires graphic appropriation, solves an old problem faced by large centers, which is the difficulty of locating, that is, finding addresses or better paths to a destination. The technologies of geolocation and urban mobile mapping represent a significant step as, in addition to facilitating the location of users, they allowed other derivative services to be developed. These technologies consist of broad digital territorial mapping, which graphically represents places, paths, distances and limits between identified regions, with several layers of geographically referenced data made available in an integrated and overlapping way, and they can be accessed by mobile devices that pass and are identified by an Internet Protocol (IP) code. This code helps to identify on the map the location where a mobile device is being used (and its user), sharing data such as the country, city, address, displacements and times. Currently, a series of applications for mobile devices offer this geolocation technology, which is gradually improving the scenario of difficulties in urban location and mobility, among others.

### **3. Digital mobility**

One of the main applications of geolocation technology is in the urban mobility features that some apps exploit. As the Waze application has been transforming drivers' routine, it is becoming necessary to qualify the practices of those who use public transport, such as buses, subways, parking lots, bicycles, taxis or even rides. As this mobility theme involves a

considerable number of people, the opportunity arises for apps to introduce facilities into a system considered chaotic by most of its users.

When observing this situation in an integrated way, we can see two distinct groups of services provided by applications. In the first are those with the main function of sharing data (lines, stops, etc.) with their users, imposing passive participation, since it is only up to them to receive information about the mobility segments covered. In the second, more active appropriation is detected, allowing actions that affect routines through the available technological resources, such as calling a taxi/uber, reporting an accident or renting a bicycle/scooter, actions that extend beyond simple access to information.

Mobility problems will continue to exist indefinitely, but while these are being resolved in other instances, mobile technology will continue to create alternatives that address this growing discomfort both through existing solutions and through apps that are yet to be created.

#### **4. The re-signification of check-ins**

The act of sharing data was enhanced with the advent of apps, making it a habit to post images, videos, opinions, actions and even "the momentary location of each individual," repeated multiple times a day. These are obvious signs that a "new social habit" is being configured, referring, above all, to the recurrent act of registering presence in frequented environments as well as informing about the location itself, all in real time. This practice, called check-in, was initially introduced by the Foursquare application, which made it possible to inform people of the location where you are, marking it and sharing it with all your contacts or integrated social networks, as well as making it possible to know where your friends are. This habit highlights that group of people who found themselves unknown in the midst of a crowd of citizens who live daily in large urban centers, therefore abandoning the conceptual role of an invisible character to become socially active and a protagonist in their digital relationships. The configuration of this current moment, which is affected by the resources of mobile devices and their apps, enables the re-establishment of contacts that have become dormant over the years, even though the pace of life remains intense, thus promoting a break in the "natural distance" versus "digital approach" dichotomy.

#### **5. The revamping of the yellow pages**

For more than a century, society was used to consulting the phone book regularly; this book was in high demand among 20th-century telephone subscribers and was a fundamental instrument in its time for mapping and searching for users, services and locations. With the expansion of Internet access in the 1990s and the possibility of offering this service online, the printed telephone guide underwent a process of decline that almost extinguished it, and it is still possible to find rare summarized copies being distributed today.

In this transition, digital versions of the yellow pages were developed but always maintained the essence of a guide. However, while these sites innovated little, changing only the access platform, it was the emergence of mobile applications specialized in service guides that introduced a series of functionalities that reinvented those old yellow pages of telephone guides, which now provide a geolocation system, mobile access, space for comments and

ratings, additional information and worldwide coverage. Working in an integrated way and complementary to geolocation apps, these apps, aimed at both tourists and residents, offer facilities for those who need to plan a trip or find services in an unknown or extensive city.

#### **6. The multiple urban voices**

When Massimo Canevacci (1993) characterizes the metropolis as polyphonic, comparing it to a choir, he refers to the multiple autonomous voices that intersect with, relate to and overlap with each other in it, interpreting that polyphony as being found both in the object and in the method of communication. Mobile technologies have added yet another layer of independent voices to this context, with countless messages crossing and superimposed in virtual spheres. Thus, urban communication gained intensity, speed, inclusion, new support and appropriate environments for the issuance and sharing of information and positions, whether personal or public and positive or negative. Thousands of testimonials are posted daily, promoting the habit of expressing oneself about everything that is consumed (products, services and places), sharing perceptions and evaluating the service received.

This reality encourages the posting of personal opinions about the most diverse daily experiences, leaving the challenge of mapping and absorbing this range of public information about users. It reflects their preferences and offers data to qualify the decisions, taken under the responsibility of the segments involved, and establish better strategies for future action. If the current moment is called the information age, today we are living in a peculiar period that assumes the characteristics of an era of personal opinion.

#### **7. The panoptic city live**

Since digital technology has provided the facility to capture images indiscriminately, both in photographs and in videos, people live under constant observation, in which almost every subject is able to capture the particular vision that they have of things and the world at the same time, which becomes the focus of countless cameras that follow their daily routine. There are security cameras installed in the most different establishments and even cameras that control traffic and public roads, media cameras, private cameras and many others that position the city as the stage of an immense reality show.

In relation to the present day, Michel Foucault (1987) explains the concept of panopticon as a form of power that no longer rests on the investigation (whereby one sought to know what had happened) but relies on the total and uninterrupted surveillance of individuals. Data from the Brazilian Association of Electronic Systems Companies (ABESE, 2014) show that more than one million surveillance cameras are spread across the country, 80% of which are in the state of São Paulo, where there is almost one camera for every eight people. In this scenario, a set of applications is available that receives and shares signals from webcams transmitted from widely varying parts of the world, some for tourists, others for security and some even showing images of private environments.

## **8. The gamified society**

In addition to the fragments described, practices from the world of games and entertainment, especially aspects of competition, scoring, goals, evaluation and bonuses, are increasingly being introduced into urban life, interfering in citizens' routines. According to Ysmar Vianna et al. (2013), gamification corresponds to the use of game mechanisms aimed at solving practical problems or arousing engagement among a specific audience. With increasing frequency, this set of techniques is being applied by different segments of society, especially with regard to encouraging people to adopt certain behaviors or become familiar with new technologies.

Data from the Institute of Electrical and Electronics Engineers (IEEE) indicate that an estimated 85% of current daily tasks already have game elements, a sign that a gamified society is in the making. It is possible to observe that some companies already use such techniques for recruiting and managing people as well as in marketing areas since many people already use their smartphones to check in, score in applications and obtain advantages in frequented places. According to Garriott, a member of the IEEE, "our cell phones will be a hub for all the 'games' we play daily, collecting all our data and using it to connect everything" (IEEE, 2014).

## **9. Digital citizenship**

The accelerated development of certain technologies and the centrality of communicational systems and processes in societies promote important political movements for the actors involved. Gil Ferreira (2010) dates to the mid-1990s the emergence of expressions such as "digital democracy," "electronic democracy," "cyberdemocracy" and "digital citizenship" among others used with increasing frequency by political science researchers and political actors themselves, bringing expectations for the renewal of the possibilities of democratic participation. In summary, the aim came to be to introduce contemporary alternatives of new resources for civil participation in political decision making, taking into account related aspects such as the increase in discursive practices based on a new notion of democracy and collaborative collective involvement, thus configuring the Age of Digital Citizenship, which is advocated by many authors, such as Karen Mossberger et al. (2008).

With this in mind, some programmers have been investing in the "citizen" application segment, a category that combines some of the most powerful features of mobile devices, such as the mobile Internet, geolocation and cameras, transforming its users into independent units of registration of the problems that happen around them, thus promoting greater inclusion of these individuals in cities' social issues and using mobile technologies as a channel of intermediation.

## **10. The layers of an augmented city**

For Marlon Luz et al. (2008), the reality observed through the sense of sight can be enriched with virtual supplements that seek to provide more information than we can observe in reality. Such virtual functionality, also used by some mobile applications, is provided by the augmented reality (AR) feature, which adds layers of information superimposed on images captured in real time. According to Kirner and Kirner (2008), augmented reality is an overlay of

virtual objects onto the physical environment observed in real time through technological devices, using the interface to visualize and manipulate real and virtual objects.

The combination of AR with mobile technology for smartphones and tablets with an Internet connection is called mobile augmented reality. When the camera of a moving artifact is aimed at an object or image recognized by AR, its elements are replaced by graphics and 3D information while the rest of the real world remains unchanged. An example presented by Marlon Luz et al. (2008) is the virtual museum system, in which markers are placed on the walls of a museum, close to the works. When a smartphone, or another mobile device, captures the image of the marker, it will be able to show additional information about the observed work on its screen.

## **CONCLUSIONS**

These fragments, taken from the urban context and from a flâneuristic experience through apps, lead us to reflect on the special moment that we are currently witnessing, especially with the transformative contributions that technological and creative resources have made to the observed universe. However, even though it was chosen to work methodologically with fragments structured in an "apparently" isolated way, with the aim of achieving better delimitation and observation, a series of connections, crossings and overlaps established between such fragments was perceived, which somehow are characteristic events of an intrinsic polyphony in cities.

According to the data presented, it was found that, in addition to the increasing domain of software in our society, a process of smartphonization is in progress, which will end up replicating and intensifying, in a certain way, the properties of ubiquity and simultaneity that are so peculiar to the digital medium. If we take into account the recent research by Abinee, mentioned above, in the coming years, we will have a scenario in which practically all the telephony devices in use will be smart mobile devices, as is the case with smartphones. In this way, the city is increasingly experienced through these technological instruments and the software that accompany them. Therefore, it is a fact that digital culture has settled once and for all in the dynamics of cities, and adapting to this new reality is the challenge for many. If we are really entering the Age of Apps, we will have to know how to live it in all its fullness.

When we analyze this clipping of the city that emerges from the apps, a certain way of being appears in the images extracted from these interfaces, with new habits being established and old practices being changed on a recurring basis. This way of being that is drawn from the apps is, above all, softwarized, but it also presents itself as smartphonized, projected, geolocated, mediatized, timed, gamified, shared, visualized and commented on, among many other properties that have emerged from this "new" digital city in the making. In summary, in this way of being that is beginning to consolidate, the individual's actions start to be marked formally in time, crossing everything (it's been 15 minutes since so and so checked in, it's been 2 days since, etc.). This individual of today becomes a reflection of what they publish, both in terms of imagery and through their posted testimonies; the same individual of today also becomes an agent of constant sharing because, when they stop, it is as if they have disappeared from the universe of this digital city. Even in this individual's way of being in the apps, their life

is geocoded because a geographic coordinate is automatically associated with each photo posted, each comment left or each check-in carried out. What is undeniable is that the "way of being" of images, individuals, urban space and social practices has been significantly altered in this new city configuration experienced by urban apps.

Finally, the active digital voices found in practically all the apps and fragments observed are highlighted in a continuous overlap, sometimes independently and at other times related but always constituting a noisy communicational chorus that is updated in the millions of messages issued and shared daily on the mobile platforms in use, the software itself being another of these voices. This polyphony is echoed in all dimensions of the multiple layers that make up the digitized city, which is the object of study of this work, whether in its layers of traffic management, in augmented reality contents or even among the numerous mapped territorial services, so there will always be voices speaking and reverberating.

## **BIBLIOGRAPHIC REFERENCES**

- ABESE. (2014). Associação Brasileira das Empresas de Sistemas Eletrônicos de Segurança. Clipping Eletrônico, p. 5. acessado em <http://www.abese.org.br/>
- CANEVACCI, M. (1993). *A cidade Polifônica. Ensaio sobre a antropologia da comunicação urbana*. Coleção Cidade Aberta. Ed. Studio Noel, 1993, p. 17.
- ERICSSON. (2015). *Relatório de Mobilidade*. Press Release, p. 1. Disponível em <https://www.ericsson.com/4a5af7/assets/content/d0ddd94b8bbe4464afcaf6f2273ed770/2015-06-03-emr-po.pdf>
- FERREIRA, G. B. (2010). *Espaços discursivos on-line e democracia deliberativa: promessas e limites*. In: Cidadania Digital. LabCom, p. 101.
- FOUCAULT, M. (1987). *Vigiar e punir: nascimento da prisão*. Petrópolis: Vozes, 1987, p. 223.
- IEEE (2014) *Everyone's a Gamer*. (Garriott, Richard). PRNewswire, New York, p1.
- ITU. (2011). International Telecommunication Union. *Medindo a Sociedade de Informação: Dados e Gráficos 2002 a 2010 (Relatório)*. ONU, p. 15.
- KIRNER, C., KIRNER, TG. (2008). *Realidade Virtual e Realidade Aumentada Aplicada à Visualização Simulação*. In: El Sheikh, AAR; Al Ajeeli, A.; Abu-Taieh, EMO. (Ed.). *Simulação e Modelagem: as tecnologias atuais e Aplicações*. 1ª ed. Hershey-NY: IGI Publishing, 2008, V. 1, p. 391.
- LEMONS, A. (2005). *Cibercultura e Mobilidade. A Era da Conexão*. XXVIII Congresso Brasileiro de Ciências da Comunicação. Intercom, Rio de Janeiro, p. 7.
- LERNER, J. (2003). *Acupuntura Urbana*. Editora Record.
- LIFTOFF. (2019). *Relatório de Tendências de Apps para Dispositivos Móveis*. Liftopp Report, p. 8. Disponível em <https://liftoff.io/pt-br/blog/2019-mobile-app-trends-report/>

LUZ, M.; GARCIA, L. F. F.; MARCHIORO, G. F. (2008) *Realidade aumentada em dispositivos móveis*. Anais do Workshop on Pervasive and Ubiquitous Computing, part of 20th Intern. Symposium on Computer Architecture and High-Performance Computing (SBARC-PAD). Campo Grande, 2008, p. 1.

MANOVICH, L. (2008). *Software Takes Command*. San Diego, p. 177.

MOSSBERGER, K.; TOLBERT, C.; MCNEAL, Ramona S. (2008) *Digital Citizenship: The Internet, Society, and Participation*. Cambridge: MIT Press, p. 69.

NEOLANE, Inc. (2012). *The Age of Apps: Evolution of the Mobile Application* [Infographic], Oct 18, P 1. Disponível em <http://pt.slideshare.net/Neolane/the-age-of-apps-evolution-of-the-mobile-application-infographic>

PEIXOTO, N. B. (2003). *Paisagens Urbanas*. Editora Senac - SP, 3ª Edição.

PELLANDA, E. C. (2011). *A conexão entre lugares e espaços proporcionada pela rede Foursquare*. Intexto, Porto Alegre: UFRGS, v. 1, n. 24, p. 166.

VIANNA, Y.; VIANNA, M.; MEDINA, B.; TANAKA, S. (2013). Gamification, Inc. *Como reinventar empresas a partir de jogos*. 1ª Ed. Rio de Janeiro: MJV Press, P. 13.