Ituita: An Interface for Playful Interaction and Socio-Spatial Transformation

ANA PAULA BALTAZAR, MATEUS VAN STRALEN, LORENA MELGAÇO, GUILHERME ARRUDA and LÍGIA MILAGRES

This paper discusses Ituita, an interactive media cascade built in Congonhas (Minas Gerais, Brazil) that displayed residents’ perceptions of their city and sought to engage people in discussion, decision-making and direct action. It first introduces Ituita’s purpose of socio-spatial transformation, and how this focused on the design process away from technological development to stimulate dialogical interactions. It argues that representative democracy helps support capitalist interests and hinders direct action that could build a deeper form of citizenship. It then presents the development of Ituita’s ideals and discusses Ituita’s failures. In particular, it considers the need for a pedagogical process that could promote continuous engagement with the city. The following section of the article discusses how an urban interactive interface might trigger engagement, by means of autonomy, leading to a deeper form of citizenship, and how this might enable people to move beyond the political limits of representative democracy. In a brief final section, the lessons for practice are drawn out.

Ituita is an interactive digital interface that aims to engage residents with issues in their city. The design process for Ituita started in 2010, and the resulting urban installation was inaugurated in 2012. The authors of this paper were directly involved in its design and implementation as researchers. This paper revisits Ituita almost a decade later, assessing its former ideals, its failures, and the implications of those findings. This introduction briefly characterizes Ituita as a product, sets out the research approach, and discusses the main theoretical aspects that informed the design process.

Most other urban interactive interfaces have a strong design focus on visual (spectacle) and technological development. Ituita’s technological development is relevant and discussed further in Stralen et al. (2012), but it is not the main driver. A different design approach was trialled with Ituita, drawing on the ideal of socio-spatial transformation by means of public engagement. The emphasis on space beyond mere background for social development comes from Souza (2013), who argues for a socio-spatial approach, taking space as a constituent element of society and vice-versa. As an interface for socio-spatial transformation Ituita was conceived to foster collective autonomy for decision-making and, eventually, direct action, leading to full citizenship.

As shown in figure 1, Ituita is an interactive media cascade composed of three interactive LED (electronically illuminated) panels arranged in a cascade format and connected to a website. It is installed in the central square of Congonhas, a city in Minas Gerais, Brazil famed for its Baroque architecture. Congonhas residents are encouraged to respond to a
questionnaire on a bespoke website, on a theme regarding the city that changes on a monthly basis. Answers from the monthly online survey are visualized in graphics on the three panels of Ituita. Each panel displays the responses to the residents’ perceptions of satisfaction at three different urban scales, (their household, neighbourhood or the whole city). The panels use green, red and yellow lights to indicate levels of satisfaction with the theme of the month: the more the satisfaction, the greener the panel becomes; the more dissatisfaction, the redder; and yellow represents indifference. Importantly, passersby can also interact with the graphics, which respond to their gestures via a set of sensors that captured (e.g.) arms waving up and down or hips moving side-to-side. Thus, it was envisaged that the interactive graphics in the square would systematize information and display public perceptions on subject matter that would not otherwise be visible, and that this would encourage residents to engage via a forum on the website and discuss controversial issues. Besides using the interface for intersubjective interaction (as defined by Flusser 1999), users might also modify its open code. This altered the relationship between the interactive public panels and the website, which enabled engagement with the project via programming its interface.¹

The design of the interactive interface was focused on possibilities of intersubjective interactions rather than on development of the technology. While the sophisticated open source programming remains unexplored by residents, a good deal of attention was paid to the uses of the technology ‘out there’, ready for assimilation by people with no particular technological expertise, and the potential for the interactions that had been envisaged. The research was conducted by our team at the Graphics Laboratory for Architectural Experience – Lagear.² It was guided by critiques of the surrounding prevalence of the logic of the visual (spectacle) to the detriment of broader constructions of experience, and the fetishism of technology (Baltazar dos Santos et al., 2012; 2014; 2019). The central lesson of those works regarding the prevalence of the visual was that it alienates people and con-

Figure 1. The Media Cascade in the central square of Congonhas, Praça Juscelino Kubitscheck. (Source: Authors)
tributes to the fragmentation of experience. Yet the visual spectacle is a powerful, even if not enduring, means to attract people’s attention. Thus, we argue for a dialectics of spectacle and experience, meaning that ‘the visual is not taken as merely contemplative and experience is not taken as merely active, they work in a dialectic relation, enriching each other, avoiding a contemplative finished product and promoting a seductive and enduring interaction of people with each other and with the space’ (Baltazar dos Santos et al., 2019, p. 147). Regarding the fetishism of technology, it echoes Marx’s critique of the fetishism of commodities, which places the focus on relations between things rather than more properly paying attention to the relations between people (Marx, 2015, pp. 47–53). This is a direct challenge to any ‘assumption that the use of digital technology is an end in itself and, in the context of urban installations, enough to accomplish socio-spatial transformation’ (Baltazar dos Santos et al., 2019, p. 148).

As such, our focus turns towards the openness of the interface to the possibility of interaction rather than designing for prescribed interaction (as seen in other types of complex interactive interfaces). We note that a simple reactive interface might trigger dialogical interaction between people themselves and with content. On the other hand, complex interfaces are not conceptually problematic, but complexity is only welcome when it opens possibilities to increase dialogical interaction. Thus, when designing Ituita, the focus was intentionally on interaction, drawing from Flusser’s idea of play (Flusser, 2000) to discuss playful interaction, ‘a form of interaction when one uses an apparatus beyond its prescriptions, engaging with content and not only with its interface’ (Baltazar dos Santos et al., 2019, p. 148).

The primary objective of the Ituita project was to engage people playfully with content by means of an interactive interface in order to achieve socio-spatial transformation. As Souza (2013) discusses, space is no mere background for social development, but rather a constituent element of social reality. In the example of Congonhas, the city space, or spatiality, is understood to be full of social complexities, including strengths and weaknesses, autonomous and heteronomous processes which also change the social fabric. Any political transformation, in this context, should be a socio-spatial transformation, which demands a further discussion of citizenship. This requires that people engage with political issues and are able to start a process of collective autonomy for decision-making and direct action. When seen in this light, the participation of the public is fundamentally different from the types of public participation critiqued in Arnstein’s ladder (1969), which indicated that most forms of participation were in fact ‘nonparticipation’ (either manipulation or therapy) or ‘tokenism’ (informing, consultation and placation). By contrast, the three highest rungs of her ladder envisaged direct action, either partnership, delegation or citizen control. Half a century later, we seem to be trapped in the first five rungs of Arnstein’s ladder. Participation is usually associated with including people into existing processes instead of creating structures to stimulate their direct engagement in shaping new processes.

The idea of socio-spatial transformation by means of direct action has implications for understandings of how citizenship might be achieved. The constraints on direct decision-making and direct action are strongly associated with the way our modern state was forged and representative democracy reproduced. According to Pogrebinschi (2009), Marx makes explicit the roots of the modern state in the French Revolution with the separation between state and civil society – between citizen and individual. He also argues that the uprising of what he called ‘real community’ was the only means towards the fading of both state and civil society, leading to that which Arendt (1958) later called public realm. It is important to say that the problem was not the existence of a state, as Marx was critical
of anarchism, but the modern state. Instead of looking after people’s direct interests, the modern state led to the protection of the interests of capitalists, starting with the French bourgeoisie with the focus on private property, the division of labour and representative democracy. This means that politics in the modern state has become a way to disguise people’s participation (never direct action) as representative democracy, only offering the people a choice among a limited range of predefined possibilities that will never go against the interests of capitalists. More recently, MacLean (2017) has shown that in the US democracy is barely alive, but still used to convince people that they are taking part in the political game, while in fact lies are being told to protect the interests of capitalists, because even representative democracy fails to accomplish the intense demands of such interests. The apathy of people due to sheer manipulation from different sources (state, media, corporations) indicates their conformism with representative democracy.

In each democratic country the process is slightly different, but the principles of the modern state and their effects are very much alike. In Brazil, for instance, in the beginning of the 1960s, before the military coup that installed a dictatorship in 1964, the Quitandinha Seminar (Seminário de Habitação e Reforma Urbana, 1963) brought together professionals, state technocrats, and representatives of civil society, and their report articulated explicit public demands for urban planning improvements. These included the questioning of private property and indicated the need for continuous public participation in decision-making. Although produced before the dictatorship these demands reported from the seminar were revisited for the redemocratization of the country with the 1988 Brazilian Constitution (Brasil, 1988) and the 2001 City Statute (Brasil, 2001), which regulates the Constitutional chapter on urban policy. However, all these documents and laws were written under a modern state. Thus the interests of capitalists are always upheld over social rights. For example, Chapter 1 of the Brazilian Constitution, on individual and collective rights and duties, puts the right to property together with the rights to life, freedom, equality and security (article 5). Private property is never questioned, echoing the fallacious argument of Garrett Hardin (1968) that the self-management of the commons is impossible. In this sense, continuous self-organization of society for direct action, which is much more complex than self-management, is not even considered.

There is clearly a need for a means to enable people’s direct action, and the corollary is that people need to overcome conformism with representative democracy, which involves being aware of its manipulatory processes and questioning the forms of participation it promotes. The crisis of representative democracy echoes the criticism of participants’ lack of power in participatory processes. The participants, who were supposed to be citizens, have the impression that they influence the process, but only validate prescribed decisions already made by those who proposed the process. If democracy is understood as a ‘set of rules … for the formation of collective decisions, in which the widest possible participation of the interested parties is envisaged and facilitated’ (Bobbio, 1987, p. 12), representative democracy is hardly democratic. Firstly, it does not delegate to the collective the decision-making power over the process itself (they can vote but not question the rules). Secondly, it reduces the importance of participation, as it is based on the belief that those with technical and institutional knowledge should have the power to decide what is best for everyone – and so reinforces the idea that the few might decide for the many. As Rancière points out, this form of democracy seeks precisely to ‘control the evil quite simply called democratic life’ (Rancière, 2014, p. 07); representative democracy suppresses the chaotic ‘realm of excesses’ inherent in ‘real democracy’, ignoring the importance of everyday knowledge and the real demands...
of citizens. Thus citizens are rendered passive and their knowledge is not seen as worthy of public discussion.

If people do not acknowledge manipulation in decision-making processes and are only in a position to vote and expect change without actually discussing the changes they want, there is no basis for socio-spatial transformation. However, if we start to think of achieving full citizenship, there is a need to discuss the possibility of a continuous engagement for socio-spatial self-organization in which the separation between state and civil society starts to fade away. In other words, to design an interactive interface for socio-spatial transformation, one might bear in mind that full citizenship will only be achieved with the construction of collective autonomy instead of reinforcing the apparatus of the state. The implication for such a design is that people must be able to engage with political discussions and create their own common rules. It should seek to provoke people to seize the trilogy engagement, autonomy and citizenship. This may be a way to move up the last rungs of Arnstein’s ladder and promote urban residents’ direct action in shaping the city. The next sections cover the ideals behind the design of Ituita, critical analyses of their failure, and possibilities for revisiting the project.

The Ideals of Ituita

This section will further explore Ituita’s design process. The interest is to assess the potential of urban installations to act as catalysts that could accelerate processes towards socio-spatial transformation. Ituita was designed as a permanent installation that would offer a means for playful interaction in the square while also fostering forums for the population to engage further with local issues by means of the website. Following the goal of avoiding any fetishism of technology (as discussed above), our research focused on dialogical interaction for socio-spatial transformation, rather than the mobilization of technology per se. As discussed below, the ideals of the design were informed by urban research in Congonhas.

Ituita is a name derived from the Indigenous Guarani language meaning stone cascade. Itu means waterfall (y = water and tu = fall) and itá means stone. It is located at the Juscelino Kubitschek Square at the centre of Congonhas, a town of 40,000 inhabitants in Minas Gerais, Brazil. The town is best known for its UNESCO world heritage site of Baroque Basilica architecture, the Sanctuary of Bom Jesus do Matosinhos, and its associated soapstone sculptures created by Aleijadinho, an important Brazilian sculptor from the eighteenth century. Urban expansion in the twentieth century had a negative impact on the town, due to negligent laws and lack of proper planning and public investment. In 2010, the municipality commissioned an interdisciplinary team to diagnose more fully the impacts and create a rehabilitation plan for the central area of Congonhas.

Opinion polls were an integral part of the diagnosis and were essential to obtaining an initial understanding of the residents’ perspective of the city. The polls were structured in two parts: a sample survey of environmental perception with 267 responses; and face-to-face interviews with a selected sample of eighteen representatives of neighbourhood associations and municipal councils. All the participants reside within the study area. The majority of survey respondents were between 14 and 55 years old and had completed high school. Around a third were civil servants, and the rest were students, senior professionals, and retirees.

The first part of the questionnaire, composed of six questions, dealt with use of the city centre. It asked why people travelled to the city centre, how often and at what times they went, and their means of transportation. The second part, consisted of open questions, in which interviewees could describe their perceptions of the city. The analysis (Fernandes Caldas et al., 2010) reported residents’ affection for the town, which was valued for...
its people, location and climate. However, as tables 1 and 2 show, residents reported a negative impression of the urban cityscape, using words such as ‘ugly, dirty’, and ‘tumultuous centre’. Respondents recognized the importance of the historical heritage but resented the lack of space for leisure. They acknowledged previous changes in the cityscape and had a great deal of expectation for future change. Importantly, the lack of engagement of residents was amongst the top three negative aspects of the city that were reported (table 2).

The primary reason for the negative perceptions was the precarious situation of most buildings in the central area, and an important conclusion from responses to the survey was that residents did not feel responsible for the improvement of urban spaces. These points caught the attention of the architects commissioned to design the project of rehabilitation of the central area of the city. The project

Table 1. Symbolic image of the centre of Congonhas. (Source: Fernandes Caldas et al., 2010, p. 162)

<table>
<thead>
<tr>
<th>Type of Image</th>
<th>Themes</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative image (54%)</td>
<td>Ugly and dirty city, polluted centre, tumultuous traffic, lack of parking, narrow sidewalks, visual pollution, neglect, disorganization.</td>
<td>‘What did they do to Congonhas?’</td>
</tr>
<tr>
<td>Negative images with hope for change (16%)</td>
<td>City can get cleaner, streets need more trees; the city needs intervention, control of pollution, to be illuminated.</td>
<td>‘I wish to see this city cleaner!’</td>
</tr>
<tr>
<td>References to Historical Heritage (8%)</td>
<td>Presence of historical heritage in people’s memory. (Bom Jesus Sanctuary, Basilica)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Aspects of Congonhas least liked by residents. (Source: Fernandes Caldas et al., 2010, p. 164)

<table>
<thead>
<tr>
<th>Themes for Questions</th>
<th>Number of Related Answers</th>
<th>Percentage of the Total of 784 Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of care with the city</td>
<td>216</td>
<td>27.6%</td>
</tr>
<tr>
<td>Population living in hazardous areas, absence of trees, visual pollution, narrow and poorly maintained sidewalks, unfinished buildings, dirt in the streets, polluted river.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic in the centre</td>
<td>114</td>
<td>14.5%</td>
</tr>
<tr>
<td>Lack of organization of traffic, trucks in the centre, traffic in the centre, lack of parking places, downtown disorder, excess of cars on the streets.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>112</td>
<td>14.3%</td>
</tr>
<tr>
<td>Mineral dust, mining town, pollution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Leisure Areas</td>
<td>59</td>
<td>7.5%</td>
</tr>
<tr>
<td>Closed waterfall park, lack of leisure options, lack of places to practise sports, or to have family outings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>144</td>
<td>18.4%</td>
</tr>
<tr>
<td>Low levels of public engagement/lack of drug prevention and control/railway and trade assistance.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
specified changes in pavement materials, enlargement of sidewalks, conversion of streets into pedestrian zones, and revamping of the town’s central square. Although these transformations could work as catalysts to improve the spatial quality of the city as a whole, the architects believed that other strategies were needed to stimulate a feeling of co-responsibility amongst residents for improving their own space. Therefore, in order to create social connections and facilitate public discussion and interaction with the municipality, they proposed a media cascade in the central square as a public interface to catalyse social interactions.

The cascade (figure 1) consists of five polygons clad with soapstone, separated from each other by three glass panels. As already noted, the water of the cascade runs over the glass panels, which have LED displays installed behind them, serving as output for an interactive digital interface that can be manipulated using two motion sensors, which capture information on the movement of people and feeds into the programmed data shown on the displays. In the initial project approved by the City Hall, Ituita was supposed to serve as an urban thermometer, mapping the public opinion on social, cultural and political aspects of the city. The cascade would be fed by information provided by the population when engaging with a website and would display the level of satisfaction of the population regarding issues such as violence, urban sanitation, pollution, etc. However, more than the development of the public digital display, or the hard structure of the interface, Ituita became a research project in partnership with Lagear. As previously stated, Lagear has a critical position on the prevalence of a technological deterministic approach in urban installations. As such, this partnership underpinned the prime importance given to the development of the soft structure of the interface that focused on people’s dialogical interaction.

Ituita was seen as an opportunity to put into practice three of the premises that supported Lagear’s ongoing research. Firstly, developing a permanent installation was an opportunity to challenge the limitations of ephemeral urban installations to achieve socio-spatial transformation (Baltazar dos Santos et al., 2012; 2014). Secondly, as noted earlier, Lagear has critiqued the excessive focus on the visual in urban installations, drawing on Lefebvre (1991) and Pérez-Goméz and Pelletier (1997). In short, the argument is that the logic of the visual is a means to fragment people’s experience, and this might be overcome through such a dialectic relationship. Finally, by using simple technology in its physical structure, Ituita focused on the interaction and challenged the fetishism of technology that still lingers (Baltazar dos Santos et al., 2019). As already mentioned, its LED displays are low resolution working similarly to computer monitors and the sensors used to capture the body movements at the square are off-the-shelf (Microsoft Kinect). The soft structure also relies on trivial technology. The webpage has a friendly interface, based on popular gadgets of the time, such as questionnaires and forums, and can be accessed by means of personal computers, tablets or smartphones, using simple Internet connection.

Previous research at Lagear had already explored the distinction between reactive, pro-active and dialogical possibilities of interfaces and interactions. It is reactive when a system programmatically reacts to the input given by the other system (Dubberly et al., 2009); proactive, when a system not only displays responsiveness to people’s interaction but also contributes to present-time changes that take people by surprise (Oosterhuis, 2002); and dialogical, when a relationship can be established with the systems mutually affecting each other. To achieve a dialogical interface is a highly complex task. However, a dialogical interaction does not depend on a dialogical interface. A dialogical interaction enables people to interact with information and also with themselves, with less prescriptive outcomes. As Lagear has already learned, a carefully designed pre-recorded projection, not even
ITUITA: AN INTERFACE FOR PLAYFUL INTERACTION AND SOCIO-SPATIAL TRANSFORMATION

reactive, might be more successful in engaging people in dialogue than highly complex dialogical interfaces.

Dialogical interfaces have already been discussed and experimented with. An example is Glynn’s *Performative Ecologies* (Glynn, 2008), an interactive robotic installation that explores the reactive, proactive and dialogical levels of the interface by articulating three robotic entities that perform to their audience. The robots have illuminated tails that rotate and flicker to attract and maintain the attention of the visitors. The dance of each robot is not pre-choreographed and evolves using a genetic algorithm where the dancers are programmed to learn from their successes and failures, and share what they have learned with each other. Despite Glynn’s intention of fostering dialogue, when analysing *Performative Ecologies* one can see that the hardware is extremely complex, but the interaction is not engaging. People find it curious, but do not involve in meaningful dialogue with the machine or with each other, though the machine is learning and changing with people’s input. Such findings demonstrate how privileging the technological focus in the design results in installations that are either simply reactive or proactive. It also indicates that dialogical interfaces based on complex technologies can be unavailing and underscore the importance of dialogical interactions between people.

According to Flusser (1999), a dialogical design is intersubjective and its main characteristic is ‘being responsible’. Given the argument that every design is in itself an obstacle, responsibility is framed as the least obstructive possible design, and open to others. In other words, Flusser is also shifting the focus to interaction, which should inform the design of the interface not to make it more complex, but to increase the openness of the very interaction. It is with such an intersubjective design that socio-spatial transformation is most likely to be triggered. We consider socio-spatial transformation as ‘a political transformation of space having social emancipation at the horizon, acknowledging that space is a social product and that society is formed and transformed by the space it forges’ (Baltazar dos Santos et al., 2019, p. 148). Thus, a pre-established set of feedback options will contribute little to establishing long-lasting engagement that can underpin informed action.

The design of Ituita intended to explore the possibilities of achieving dialogical interaction, by fostering communication among Congonhas residents and, ideally, also a collective negotiation of social space. This took into account the need to avoid visual and technological fetishisms, as part of enabling meaningful interaction between people and with the interface’s content. Therefore, a broader and more politically sensitive understanding of dialogue was adopted, drawing from Arendt’s work on the public sphere. For Arendt (1958), modernity is marked by the decline of the public sphere and its resumption depends on individuals acting as citizens, in all their plurality of class or background, in order to discuss public and not private issues. As such, reclaiming the public sphere and producing information to foster collective action were essential steps to address some of the issues that emerged in the survey and particularly the lack of engagement of the population with the improvement of the urban landscape.

The design strategy for Ituita sought to bring the urban discussion to appropriate levels (personal, neighbourhood and urban) and provide evidence to involve the population in discussing solutions. In order to persuade people to engage meaningfully over the longer term, the interface design sought to strengthen the dialogical process by means of playful interaction. Unlike functional interaction that happens with an interface to access a predetermined content, a playful interaction enables participants to interact with content by means of an interface. Following Flusser’s approach (Flusser, 2000), those interacting functionally tend to become functionaries of the apparatus acting as expected, while those interacting playfully engage with content. This is clear if we compare the different ways
people interact with a music box and a piano. In the first case one interacts with the interface, but not with the content, i.e. the music would be a predetermined output. By contrast, when playing the keys of the piano, the player accesses predetermined notes to interact with the content by means of the interface to produce indeterminate output, the music (Baltazar and Cabral Filho, 2011).

In order to explore playful interaction in Flusser’s perspective, Ituita promoted physically engaged and non-prescriptive use of the space, by providing evidence of views on social issues displayed in a playful way, which relied on interaction between people in the square and those online. This created an interactive relationship between Ituita’s hard structure at the square, where the sensors capture body movements of passersby to generate graphic responses at the LED displays, and its soft structure, which were the interactive interface and the website. On the website, people would respond to questions about urban issues in Congonhas, and their responses would feed the LED displays in the square thus providing input for interaction. In principle, the display of information at the main square was a form of invitation for people to participate further in the website and also potentially to engage in direct action on those issues, as it displayed the data and encouraged engagement with it. Whether or not people would make that connection and follow up is another matter, which we come to below.

As noted earlier, Ituita’s online questionnaire had a new theme every month, such as traffic, health, or education. There were two sets of questions. The first concerned perceptions of the theme, and respondents’ levels of satisfaction (satisfied, dissatisfied or indifferent) at the three urban scales (household, neighbourhood, and city). The second asked if there was a responsibility (‘yes’, ‘no’ or ‘I do not know’) at three scales of agency (individual, civil society groups and state). The answers were depicted for each individual response as a circle, which was coloured green, red or yellow, according to the responses. This was seen on the website (figure 2) and the LED panels in the square.

The information on the LED panels was built up with a swarm of data for each urban scale on a single panel. It was envisaged that people would play at the square with the answers, and that the panels would catch people’s attention because it was a public display of the perception of the inhabitants. In addition, the visualization of the different scales was to be a means to raise the residents’ awareness of city issues and, eventually, awaken their sense of responsibility to improve the conditions of living in the city.

In short, the displays were supposed to work as a dialogical thermometer of the city,
and were intended to make residents better acquainted with the website interface and more engaged with concerns about the city and actions to address them. The core goal was to stimulate members of the public to discuss city issues, both amongst themselves and with the municipality, and move towards direct action. Therefore, the proposal was that the spectacle created by means of the displays and the playful interaction would engender more enduring experiences, considering that people would also engage in discussions in the website forum. The feedback between those two modes of interaction moves the focus of technological development on to the possibility of dialectical interaction.

Ituita’s interfaces at the public square and the website are physically separate but interdependent and interconnected, and the layers of design that created this interrelationship could elevate the playful interaction beyond the functional and individual (as depicted in figure 3). The possibilities of information exchange among Congonhas inhabitants and the synthesis of new information was designed to foster dialogue as proposed by Flusser (1999). While a socio-spatial transformation was not programmable or programmed in the system, the premise was that it might emerge from dialogue based on layers of responsible design (discussed earlier). In the website, this could be seen for example in the ideas of collective information and self-management of the website, in which a collective view on an issue would become visible in the square where there could be wider engagement. Likewise, in the square, the evidence of a collective view of Congonhas was to go beyond just assimilating information and move towards a collective understanding of how a given issue was manifest at different scales of the city. The design therefore sought to promote intersubjectivity. Ideally the engagement with Ituita would lead to a broader understanding of the city stimulating collective direct action of residents to improve their own space.

This section has described the conceptual development of Ituita’s design, and the associated participatory expectations for its interactive cascade. However, as will be discussed in the following section, these aims were not achieved.

Figure 3. Three levels of interaction at work. (Source: Authors)
Ituita’s Failure

The ideals for interaction envisaged for Ituita never happened, and most importantly there was a lack of engagement with the website and this has implications for interactions with the panel displays, which are discussed here. This section presents a critical analysis of the implementation process, mainly looking at the lack of articulation between the design team, state and society, and at the overdesign of its soft structure (its programming). As discussed above, the focus was on interaction to promote socio-spatial transformation, but no attention was paid to making people acquainted with the project. A key lesson is that residents’ engagement was overlooked at the development stage.

There were three main protagonists in Ituita: the political team of the municipality; the inhabitants of Congonhas; and the designers of the interface. Dialogical interaction between the different actors was largely overlooked. In January 2013, one month after Ituita’s inauguration, a new mayor stepped into the municipality with a new team, who were not very interested in the achievements of their predecessors. This is not to imply that the political team in power during the development of Ituita had been fully committed to the ideals of the project, but they had at least engaged with the proposal and were willing to try it out. With the change of team, Ituita became more of a visual display or an ornament in the city centre. Sometimes the programmed interface would not even be turned on, but only a screen saver displaying fishes swimming in the LED panels behind the cascade, with no interactive element whatsoever. The dialectics of spectacle and experience was in effect put aside and the logic of the visual prevailed. This happened due to a lack of communication between the design team and the politicians, rather than any fault on either side. The design team had relied on the soft structure of the programmed interactive digital interface to engage people and had overdesigned it. Yet other matters that were equally important were not given sufficient attention, particularly the role of the municipality in the project as a whole, mainly its interaction with residents.

The new public administration needed to familiarize themselves with the potential of the interface in order to take up its reins. However, the design team neglected that, which meant not only a failure in articulating the protagonists, but indicated an over-reliance on the designed structures themselves, as if the Congonhas municipality would focus on the public benefits of such a proposal. The thinking did not take into account the workings of the modern state (as discussed earlier) with its tendency to shut down public voice, and the consequent passive position of the residents. The overreliance on Ituita’s structures, suggests they were overdesigned, which is a failure indicated by Illich (1979) when discussing interfaces designed for conviviality. Illich argues that overdesign wards off the possibility of engagement and tends to create structures that eventually operate as manipulatory capitalist tools instead of opening its potential to conviviality. In the case of Congonhas, such an overdesign of Ituita’s structure also indicates the lack of a critical perspective of the state, or perspectiva estadocrítica (Souza, 2006b; 2012). This perspective would acknowledge the tactical nature of self-organization and the importance of strategic perspective (usually the perspective of institutions) (ibid.). Nevertheless, Ituita never managed to achieve this. Low levels of active citizenship might have been predicted given the context of representative democracy, which does not in itself foster direct action. There was no apprenticeship of any kind for the general public to stimulate their engagement with the structure and the city or encourage a critical perspective of the state.

The complexity of interaction, in which there would be diverse unpredictable experiences, was neglected. Here, the definition of structure and organization (Maturana and Poerksen 2004) is helpful in understanding the relation between interface and interaction.
Maturana argues that self-contained systems will have a fixed organization, and if the organization changes, the system collapses (ibid.). Further, as Maturana and Varela (1991) set out, organization and structure are distinct but related, and organization is the primary determinant of stability. The explanation is that ‘the relations that define a machine as a unity, and determine the dynamics of interactions and transformations which it may undergo as such a unity, constitute the organisation of the machine. The actual relations which hold among the components which integrate a concrete machine in a given space, constitute its structure’ (ibid., p. 77). This can be illustrated with two common examples, a wooden table and a toilet. A wooden table might have a limited amount of its wooden structure cut off and keep its organization as a table, yet on further amputations it will become something else, making it impossible to use it as a table. Looking at the example of a toilet, ‘regardless of the materials used to make the parts of a toilet, it will still be a toilet if its organisation is that of a toilet. Changing materials, means changing structure, not changing the machine as a unity, its organisation’ (Baltazar, 2007, p. 1242).

In the case of Ituita, the relation between structure and organization does not reproduce such a dependence, it was intended to offer a structure for people to organize a critical perspective on the city by themselves. Ituita was never seen as an isolated unit, but as a live part of a network. In other words, Ituita was not intended to be a self-contained, closed cybernetic system, as proposed by Maturana and Varela (1991), but to have an open organization. However, this was only fully achieved with the hard structure (the programmable LED panels). The overdesign of the soft structure (the programming), with the focus on the complexity of the interface, impinged on the organization by limiting in its structure what people would be able to do. The design team took too many decisions, leaving the structure relatively open, but closing the organization, without leaving space for people to organize their own proposals by means of the structure.

To envisage political change via an interface such as Ituita, the discussion above suggests that organization should not be fixed or directly attached to structure. What really matters is the potential for interaction with the structure (be it closed or open) and the possibility of emergence of an unpredictable organization (one not prescribed in the structure). This means that the design team should not overdesign the structure (prescribing an organization), but might propose a simpler interface to engage people in dialogical interactions amongst themselves, enabling them to discuss the city in unpredictable ways. This is not to say that people would never be able to play with the structure, but that they would not be required to do so. The main role of residents would then be to define the organization of unpredictable outcomes (for instance using the data displayed for educational purposes) and eventually transforming the city, while using the given structure.

Initially, the design team intended to open up the structure as much as possible, enabling people to formulate questions. This would have required a complex process in which a number of people could elect a theme, and then formulate questions related to it. The questions needed to be compatible with the positive, negative, neutral colour output options, and fit into the three panel scale categories. This was a very difficult task even for the design team when testing possible questions. If implemented, it would have placed a considerable burden on residents, who would have had to continuously redesign the interface’s structure while still not engaging with its organization. When the design team realized the difficulty of engaging people in the continuous design of the structure, it was decided to use the simpler option of having a set range of themes and questions.

This has contributed to people engaging in a sort of limited playful interaction in the square, but only at a visual level, falling into
the spectacularization, not even getting close
to the dialectics of spectacle and experience.
Looking at the fishes swimming was in fact
more engaging than looking at a number of
meaningless circles with different colours,
even though people were not able to play
with the fishes. This echoes the point made
earlier (Baltazar dos Santos et al., 2014), that
interfaces need not be designed as complex
structures in order to engage people with the
interface and with each other.

Another important finding was that the
design team overlooked the need to introduce
people to the interface and make them ac-
quainted with the objectives of Ituita. This
was partly due to the municipality, with its
bureaucratic drivers, not actually understand-
ing the aim of the proposed structure. It was
also partly due to the residents being so used
to representative democracy that they needed
to learn about the potential of the structure
in order to engage with it. The design team
could arguably have learned from Sesc Pompeia,
a design for an old factory structure in São
Paulo (from 1977 to 1986) by the Italian-Brazil-
ian architect Bardi. This design successfully
accommodated multiuser spaces in the for-
mer factory building, which could be used for
unpredictable purposes. There is a restaurant
and a cafe, a theatre, a flexible space with a
library and clusters with tables for board games
and tables for reading and studying, multiuser
spaces for art and technology courses, multi-
user spaces for recreation and cultural activities
(all that in the refurbished factory), and also
sports spaces such as an indoor swimming
pool, gym rooms and covered sports courts
(in a new structure built specifically for that
purpose). In order to take advantage of the
potential of the open structures, the focus
of this project was on the need to create
a culture by means of apprenticeships of
different kinds for both the institution and
the users. The apprenticeships happened mainly
by means of a programme of activities to
make people used to the space’s multiple
possibilities. Sesc Pompeia’s design was not
only of its physical structure (the interface)
but also included the structure of its func-
tioning over time (interaction). The architect
was involved with programming the activities
offered at Sesc Pompeia for more than a year
after its inauguration. When the architect left,
Sesc administration was able to keep using
the physical structures in the open way in
which they had been conceived.

In summary, Ituita’s failure can be attri-
buted to the overdesign of its interface and the
lack of users’ understanding of its purpose.
While the hard structure might be open
enough, the soft structure needs adjustments
in order to keep its organization open. Addi-
tionally, in order to achieve the dialectics of
spectacle and experience, people need to be
acquainted with both hard and soft structures
and their potential, which is Ituita as a socio-
spatial interface. The main failure, though, was
the lack of engagement of residents with the
interface. This might be achieved by means
of critical apprenticeship that could engage
people with the city without becoming mani-
pulative. In this way it would help to make
visible and comprehensible information that
is not usually available or systematized for
the municipality and the population. In this
way, the website could collect data and foster
dialogue, and the interface might trigger a
process of collective autonomy, by which
people would start to define their own set
of rules for action on urban issues and even
eventually take action instead of waiting for
city hall. Such a dynamic would move indi-
viduals towards full citizenship.

Ituita Revisited

This section rethinks Ituita considering the
critiques of its failures to achieve the ideal of
moving through engagement to autonomy
and towards citizenship. This goes beyond
the technological development of the hard
and soft structures of Ituita to consider the
problems of relating the interface to the
social dynamics and critical apprenticeship
that might be needed in this instance. Ituita
is reflected upon as a catalyst and means
ITUITA: AN INTERFACE FOR PLAYFUL INTERACTION AND SOCIO-SPATIAL TRANSFORMATION

for residents to continually engage in socio-spatial self-organization.

According to Milagres (2016), processes of socio-spatial self-organization are a result of ordinary urban residents’ own efforts to change the conditions of decision-making in the city, which deepens urban democracy. This requires power to decide on the uses, material configurations and procedures for the production of urban space, which currently tends to be the privilege of those at the top of the urban political hierarchy. Processes of self-organization are both social and spatial, as they coincide with practices of appropriation and material transformation of a certain space. They do not involve the types of social cohesion or the clearly defined agendas that are normally seen in urban social movements or activism. Instead, they make room for the experience of self-management as an everyday practice, by trial and error, and learning by doing. Milagres argues that one of the challenges for this type of self-organization is to maintain a connection between the continuity of the process and material transformation, ensuring that the means are more important than the ends (ibid.). A central question is therefore how Ituita might be re-designed and embedded into the socio-spatial dynamic of the city in order to trigger self-organized processes or to foster the continuity of ongoing ones.

The critiques of the first implementation of Ituita in Congonhas suggest that particular conditions are necessary to achieve citizenship by continuously engaging urban residents. In the context of capitalism and representative democracy, decision-making tends to be overwhelmed by institutional practices. An interface like Ituita could incite people into practices of direct democracy in their everyday life. However, if common interest issues are not understood as matters for public debate and action, the challenge is to find a way to start such a political dialogue, particularly addressing the lack of involvement and the sense of responsibility. For Bobbio (1987) democracy is a set of rules that enables collective decision-making with the direct and broad participation of the interested parties. Looking at Congonhas, we argue that residents do not see themselves as interested parties, and even less as agents who might influence urban decisions. Therefore, the first step to stimulating the political dialogue is to raise awareness of socio-spatial issues, emphasizing that ordinary people might influence them, and that they do not have to be left purely to the state, the municipal planning authorities or private investors.

Thus, Ituita might be understood as a pedagogical tool for socio-spatial processes. Understanding pedagogy as a set of means to achieve educational goals (Best and Dottrens, 1972) before asking ‘which pedagogy?’, we must first ask ‘why educate?’. This moves away from the historical educational goals of moulding someone into the right person, bound by established rules and reproducing ‘dominant elements of a given society’ (ibid., p. 30). Ituita seeks an educational process aligned with the theory of Freire (1975; 2012) on education as the formation of a free person capable of creating new rules for a more just society. According to Freire, this libertarian pedagogy must ensure that individuals problematize, by means of dialogue, ‘their concrete, objective, real situation so that, critically grasping it, they also act critically on it’ (Freire, 1975, p. 24). Therefore, the pedagogic tool would be oriented towards the future through critique of the present.

Likewise, Souza (2006a) argues for an urban pedagogy, which is focused on making urban planning and management attainable for people and requires broad dissemination of relevant information for citizens to make informed decisions. Drawing on Freire, he points out the necessity of ‘exorcising technocracy’ and of ‘assuming a dialogic stance’ (Ibid., p. 266). However, the idea of establishing a dialogue between technical knowledge and everyday knowledge presupposes that people already have the practice of engagement, or at least some interest in urban issues, which is not the case in most urban environ-
ments. The pedagogical challenge for the Ituita project is to trigger awareness of everyday issues to public critique and debate. This challenge comes before the dissemination of technical knowledge and involves problematizing collective issues as part of daily life.

By providing means for urban residents to connect their own reality to urban issues, and propose actions, Ituita might engender a process of socio-spatial pedagogy in which people see themselves as part of a continuous and open process of ‘learning by doing’. Such a pedagogy would also foster a broader appreciation of how urban planning and management procedures relate to the everyday life and how urban residents can be protagonists in those procedures. In that sense, Ituita might help open the black box of the municipal administration by enabling collective discussion on urban planning, management and even legislative and budgetary practices. In so doing, it helps to reveal the limitations of institutional participatory and decision-making structures that concentrate decision-making power and alienate residents. This would create a dialectical relationship between direct action and institutional struggle, as suggested by Souza’s (2006a; 2006b) critical perspective of the state. This can help overcome the participatory inertia, discussed earlier, that results from representative democracy, and help to build engagement and self-organization for a radical democracy.

For an interface like Ituita, the key lesson is to focus on designing simple soft structures, with fewer subjects and clearer questions, and to follow the Sesc Pompeia example of establishing a culture by means of apprenticeship. In this way, a simple structure with an open organization could support diverse ways to engage urban residents, by means of collective discussion and action, as well as the city administration and politicians, by means of more informed and responsive public policies.

In conclusion, even if the design of Ituita’s structure and organization is crucial to its potential as a catalyst, the ultimate success depends on its connection with the local socio-spatial dynamics. No tool has the power to forge a process of self-organization or work in an isolated and self-sufficient way, waiting for participation. As Baltazar (2017) points out, citing Zielinski (2000), ‘an interface is something that separates and connects at the same time’ without previously defining the nature of separation or connection. Therefore, Ituita’s potential was not fulfilled because of the gap between the interface and city dynamics. One important factor was the lack of connection between the designers’ team, the city administration and the residents, ignoring institutions or practices that play a role in the city. The connection with local knowledge as a driving force for engagement is important, especially to engage groups and processes that are independent from the city administration, as groups of residents, schools, neighbourhood associations, NGOs, etc. Therefore, in order to spark public awareness of Ituita, a socio-spatial pedagogical strategy is needed as a precondition for engagement, autonomy and citizenship.

**Lessons for Future Practice**

In this paper, we have assessed the challenges faced by Ituita in its design almost a decade ago and revisited the process with a socio-spatial pedagogy perspective. In this final section, we draw out the key practical lessons for developing interfaces that seek to promote socio-spatial transformation, turning the focus towards the discussion of citizenship and avoiding the prevalence of technological development.

The whole implementation of an interface such as Ituita must consider, from the outset of the design process, the position of protagonist of urban residents, city administration and interface designers. Design decisions affect how an interface might unfold and the possibilities of openness to unanticipated uses by city residents. This means that designers should avoid overdesign and focus on creat-
ing a structure that enables open organizations for conviviality. Such a design process requires dialogue between different actors (institutional and individuals). We have also learned that a pedagogical process might bridge the technical knowledge and practices of the design team with local practices and knowledge of residents. Interfaces for socio-spatial transformation challenge designers to avoid their specialized cultural bias and gain an understanding of the specificities of the socio-spatial context in which an interface should operate.

It is important to discuss possible uses of the interface for private interests, which tend to happen. In order to avoid that, one might bring to the residents’ and institutions’ attention the opportunity to collaborate and resume the public sphere (Arendt, 1958). Openness to different types of input to an interface can foster a political discussion. This is no guarantee, but a step towards people’s engagement with the interface, eventually leading to socio-spatial transformation.

In conclusion, the engagement of individuals in defining their own socio-spatial rules is an essential step towards citizenship. This might start with interfaces such as Ituita, which can contribute to people’s self-organization in an ongoing pedagogical process. Thus, such interfaces might play a strategic role in the construction of a strong basis for a radical urban democracy. This might happen because they promote the conditions for a continuous engagement of residents with the critical production and discussion of information regarding public issues and also for eventually triggering collective direct action.

NOTES

1. A video explaining the functioning of Ituita can be found at: https://vimeo.com/54800861 and a contextual video at: https://vimeo.com/63165302.

2. Lagear is a computer research and teaching lab dedicated to investigations concerning architecture and new media, based at the School of Architecture at Universidade Federal de Minas Gerais, Brazil.

3. The team that elaborated the diagnosis consisted of architects and engineers hired by the Renato Azeredo Foundation, and sociologists from the Foundation for Support and Development of Education, Science and Technology of Minas Gerais. The rehabilitation plan was developed by the architects Henrique Gazzola, Mateus van Stralen and Rafael Lemieszek from Opera Studio.

4. Microsoft Kinect sensors.

5. The original idea was inspired by the D-tower (Serafijn and Spuybroek, 2003), a 12-metre high sculpture in the city of Doetinchem in the Netherlands, attached to a website and an online questionnaire. D-tower was conceived as a visual display of four colours, changing according to the responses of the citizens to the online questionnaire.

REFERENCES


ACKNOWLEDGEMENTS

We acknowledge the funding received for our research from the Brazilian agencies CNPq, Capes, Fapemig and Finep, the partnership with Opera Studio and the support of Congonhas Municipality for the development of Ituita.