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Performative place branding and Brazilian smart cities: the strategic character of smart city positioning

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Abstract

Purpose – This paper aims to address what it means to brand a city as "smart". In other words, what ideas, understandings and actions are mobilized by the discourse of smart cities in a particular context.
Design/methodology/approach – Taking a brand interpretive approach, this paper uses deconstructive criticism to understand the performativity of smart cities within the Brazilian Charter for Smart Cities and to expose hegemonic power structures and the various colonizations that disenfranchise consumers and citizens of the Global South.
Findings – This paper finds that the branding of smart cities within the Brazilian Charter for Smart Cities is largely performative and rhetorical in nature. The authors identify those dimensions of the smart city that are materialized by this branding performance. For example, the authors identify how the Charter calls forth issues around technological solutionism, sustainability and social inclusion. At the same time, the analysis draws attention to the dimensions of smart cities that are disguised by such performances.
Research limitations/implications – The implications of the work suggest that the authors need to understand the designation "smart city" as a branding performance. More research is required in context to determine in exactly what ways smart city projects are being implemented.
Practical implications – Rather than adhering only to the rhetoric of smartness, cities have to work hard to make smartness a reality – a smartness constructed not just on technical solutions but also on human solutions. That is, the complexity of urban issues that are apparently addressed in the move to smartness demand more than a technological fix.
Originality/value – The research offers a novel lens through which to view smart cities.

Keywords Big data, Smart city, Equality, Performativity, City branding

Paper type Research paper

Introduction

> Places are assembled through immutable mobiles too: maps, photographs, paintings, televised images, textual descriptions, poems and so on. These representations [. . .] arrange, order, include and exclude, they make knowable a space to everyone who might choose to look at these representations and also

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> make it possible to compare it with another space [. . .] using those representations to establish the difference between one place and the next. Those representations contain truth claims (not necessarily scientific) about a space. They perform place myths as places Hetherington (1997, p. 189).

In this paper, we are concerned with the notion of smart cities and what it means to position a city as "smart". In other words, how do those who live, work and visit a "smart city" come to understand it through such a positioning. We thus turn to the *performativity* of smart cities in a Brazilian context, focusing primarily on the Brazilian Charter of Smart Cities (BCSC, 2020) as an exemplar of smart city branding and Rio de Janeiro as an instantiation of smartness. Our core objective is to assess the performance of smartness in the Charter and to determine the extent to which that performance structures how Rio de Janeiro is understood and what practices emerge as a consequence.

Underpinning these questions is the assumption that the designation "smart city" functions as a place branding performance that configures the imaginations and practices of the actors involved in its production and consumption (Söderström *et al.*, 2020). We ask what dimensions of the city are materialized by such performances. For example, to what extent does smart city branding call forth technological solutions (Camero and Alba, 2019), sustainability (Ferraris *et al.*, 2020) and social inclusion (Hollands, 2008). At the same time, our analysis draws attention to the dimensions of smart cities that are disguised by such performances. Here, we are mindful of the ability of smart city branding to mask the concentration on efficiency (Chib *et al.*, 2021), the complications of big data collection and use (Boyd and Crawford, 2012) and continued inequalities (de Freitas, 2020).

Having recently entered the marketing domain, debate around smart cities has taken on a strategic role in providing support for the move from disorderly city growth to urban competitiveness (Almeida and Engel, 2023). In such a context, the concept has been molded to fit a traditional marketing management agenda: "In the smart city discourse, consumerism and the needs of citizens merge to form 'the market'" (Flynn, 2022, p. 5). Here, the smart city is envisaged as a practical and material means of developing more defined place attributes in the form of products and services and, ultimately, to deliver satisfaction in respect of citizens' needs (Ferraris *et al.*, 2020). Within this domain, smart cities are understood as hubs of innovation (Secinaro *et al.*, 2022) where digitization and disruptive technologies enable citizens to identify and deal with the complications of urban living. That is, smart city development holds the potential to help with a range of social issues that include social justice (Kitchin *et al.*, 2019), crime (Chiodi, 2016), pollution (Chu *et al.*, 2021) and mobility (Savastano *et al.*, 2023). The democratic participation of a variety of stakeholders in this process is made possible through more or less formal leadership systems (Letaifa, 2015) and organized through information and communication technologies (ICTs) (Leite, 2022). The urban innovation hubs that emerge are considered to work for the benefit of the various stakeholders involved, including both businesses and citizens, and to hold sustainability as a key goal (Ferraris *et al.*, 2020).

It has also been noted that smart city development is not just a matter of urban planning but also of city branding (De Jong *et al.*, 2019). Developments in city branding connect to a large degree with the unfolding of the entrepreneurial city (Harvey, 1989). Initial forays into city branding essentially treated cities as marketable commodities (Hankinson, 2010) and very much had a focus on physical planning aimed at improving the appearance and function of city spaces (Aydoghmish and Rafieian, 2022). This approach was superseded by efforts to develop the brand image of cities (Kavaratzis, 2004). Here, concentration lay on fostering subjective perceptions of cities in the minds of various stakeholders (Aydoghmish and Rafieian, 2022), with the understanding that while particular images may be pursued, ultimately brand images are socially constructed and negotiated. The next move in city branding worked to foster a participatory approach to engage a range of stakeholders including local communities in brand

building (Eshuis and Edwards, 2013). Promoted as more egalitarian in nature, and incorporating a broader range of diverse needs, this approach is not without its problems (Bonakdar and Audirac, 2020). In this context, city brands are forged through a reflexive process embedded in ongoing place identity formation (Kavaratzis and Hatch, 2021) incorporating consultation with locals and others that contributes to the realization of brand discourses (Colomb and Kalandides, 2010). Despite widespread participation, these discourses may still be open to influence as different actors mobilize their cultural capital to negotiate meaning and to legitimize their influence in the place branding process (Reynolds *et al.*, 2022).

Our understanding of city brands, then, has shifted dramatically over the years such that we no longer simply objectify cities as "products" to be marketed or consider those who visit, work and live in cities as "customers" to be targeted (Lichrou *et al.*, 2014). Neither do we accept that city brands are just socially constructed (Aitken and Campelo, 2011), emerging in the interplay between various publics and historical and local contexts. Rather, cities might be more accurately portrayed as multi-layered, contested and dynamic "spaces through which power, identity, meaning, and behavior are constructed, negotiated and renegotiated according to sociocultural dynamics" (Saraniemi and Kylänen, 2011, p. 138).

On the basis of these arguments, our appreciation of city brands may shift once more to consider their performative nature (Andéhn *et al.*, 2020). Thus, the appellation "smart city" might also be figured as a mode of performative place branding: "performativity is considered for its power through language alone to influence the planning or making of a particular place" (Shin and Lee, 2024, p. 68). In this respect, it is worth reconnecting with the seminal literature on place which suggests that "people and places script each other [. . .] [in] [. . .] conglomerations of communication" (Amin and Thrift, 2002, p. 23). As Hetherington (1997) suggests in the opening quotation in this paper, a multiplicity of discourses (historical, political, cultural, etc.) circulate around cities and serve to make them knowable in particular ways. Moreover, the understandings produced by these discourses, in turn, have the effect of reshaping the urban gaze (Boland, 2013) and ultimately structuring the activities of people in and toward the city (Gao *et al.*, 2012). These understandings and activities, imaginations and practices become embodied by consumers of the city, effectively enabling the city to be performed anew (Diener and Hagen, 2022). Christofi *et al.* (2021) view the development of the smart city as a key tool in the international reimagining and competitive positioning of cities. The significance of a performative perspective then is captured in the departure from essentialist accounts of identity toward understandings of identity as a social process of enactment (Andéhn *et al.*, 2020). Here, attention is focused on how performances do things to constitute a reality that is in a perpetual state of becoming (Cohen and Cohen, 2012), produced and reproduced.

Attempts at city branding, then, have a tendency to follow capitalist logics, underlining salable dimensions and economic competitiveness (Wiig, 2016) and with "great potential to affect places and, by extrapolation, citizens by making them understandable as (un) desirable in reference to market objectives" (Andéhn *et al.*, 2020, p. 329). Against this backdrop, the branding of cities is often commercially driven and optimistic in outlook (Shin and Lee, 2024). Notwithstanding the power of these discourses to structure our understanding and experience of cities, for Cohen and Cohen (2012), performativity does also allow for acts of resistance and critical potential.

In continuing the paper, we provide the theoretical foundations for the work by further explicating the concept of smart cities. Following a discussion of methodology, we offer an analysis that notes how the smartness of Rio de Janeiro is performed in particular ways to enhance its international competitiveness. We also draw attention to the issues that such a performance disguises. Finally, we offer up a discussion of the concerns to emerge from the analysis and outline some tentative directions for further research.

Smart cities

Definitions of the smart city are many and varied. Indeed, research underlines the profusion of conceptual variants that are not always used consistently (Noori *et al.*, 2020). Moreover, the lack of consensus around definitions of the smart city seem to have produced either of two responses (Engelbert, 2019): first, the pursuit of a singular definition or, second, the analysis of definitional variety in and of itself. Our approach here does not attempt to close off the meaning of "smart city" but to understand the utility of its conceptual fuzziness.

From its origins, the term smart city was associated with the significance of new ICTs to modern infrastructures within cities, and soon it became an "urban labelling" phenomenon (Albino *et al.*, 2015). Later, the term underwent critical scrutiny (Eger, 2009) demonstrating that the smart city was not limited just to the dissemination of ICTs but also encompassed the needs of communities (Albino *et al.*, 2015). The malleability of the concept is such that it can be used for the benefit of certain stakeholders while excluding others, and to connect to a range of different agendas. For example, the smart city concept may be mobilized to focus on the use of digital technologies to process data that enable urban efficiencies (Kelleher and Kerr, 2020). It may be used to buttress alternative smart urbanism approaches that combine the use of ICTs, neoliberal visions and technocratic solutions for development and governance (Kitchin *et al.*, 2015). Smart cities might be grouped into categories such as cities built from scratch and existing cities (Greenfield, 2013). The plethora of smart city initiatives may also be classified according to their different agendas, such as people, mobility, economy, governance and so forth (Camero and Alba, 2019).

Our interest here is on the some of the key dimensions of the smart city mobilized in city branding initiatives such as technological solutionism, sustainability and social inclusion. The smart city is figured, for example, as a city transformed by technology and data such that the vagaries of everyday urban life can be predicted and controlled (Flynn, 2022). Indeed, technology is offered up as the only real solution to a variety of issues including energy consumption, anti-social behavior (Cardullo and Kitchin, 2019) and the empowerment of citizens (Morozov, 2014). Similarly, in the face of resource depletion and climate change and the understanding that urbanization is at the forefront of these problems, the sustainable smart city concept has emerged as a potential solution (Cugurullo, 2018). Sustainability is considered here a fundamental outcome of the smart city and is held to be a progressive dimension of urban growth (Secinaro *et al.*, 2022). Furthermore, the smart city is also understood as a means to progress toward social inclusion (de Oliveira and Pinhanez, 2017) and to overcome the historical legacy of cities where some people are "left as marginalia, sketched in roughly, acted upon and limited to passive roles" (O'Shea, 2022, p. 111). Social inclusion is apparently precipitated by the dissemination of smart technologies and the expansion of digital access and education (Albino *et al.*, 2015; Tan, 2022). Nonetheless, social inclusion remains difficult to achieve (Cardullo and Kitchin, 2019) and particularly in the context of the Global South (Willis and Aurigi, 2020).

Following Caprotti and Cowley (2019), we argue that the smart city concept is fuzzy, allowing it to be co-opted to serve the interests of different programs. One way to manage such fuzziness is to analyze how smart cities are constituted within a given location (Shelton *et al.*, 2015). Local exemplifications of the smart city are largely the outcome of case-specific logics and thus the study of smart cities ideally needs to focus in on specific examples (Masik *et al.*, 2021, p. 2). Our objective here then focuses on the *Brazilian Charter of Smart Cities* as a performative place branding mechanism. However, it is important to remember that this document emerged at a time when several smart city developments were already in place around Brazil. It appears that Brazil has been an enthusiastic adopter of the idea of smartness, instigating countless programs with heterogeneous objectives (Kraus *et al.*,

2023). For Vanolo (2017), this drive to develop smart cities in Brazil may have much to do with the promise of smart cities in tackling injustice and social exclusion, and at least partially a consequence of the need to challenge perceptions of urban decadence as epitomized by the favela. To aid the analysis, we will work with Rio de Janeiro as an empirical illustration, signaling the contrasts between the performance of an idealized smart city and how the project is enacted in practice. Rio is an interesting case as it was a kind of prototypical smart city deploying technological solutions to deal with waste management (Arghittu *et al.*, 2023). Furthermore, Rio has won numerous international smart city awards including the 2013 World Smart City Award and the 2015 InovaCidade Award (Mendes, 2022).

Methodology

In investigating the place branding performance of Brazilian smart cities, and the particular incarnation of the smart city in Rio de Janeiro, this research combines a general interpretive research orientation with a more particular focus on deconstructive criticism (Stern, 1996a). The objective is to analyze and critically evaluate the textual performance of smartness within the *BCSC* (2020) as it applies to Rio. Brands are "part of the fabric of popular culture and populate our modern mythology; they must be analyzed as cultural forms, carriers of meaning, and devices structuring thought and experience" (Cayla and Arnould, 2008, p. 105). This research connects with a long tradition of media studies and critical theory research in identifying how systems of meaning embedded in marketing communications serve to structure our understandings and experiences, and to protect dominant interests in society (Arnould and Thompson, 2005). Within this approach, a document such as the *BCSC* is therefore read as a set of discursive practices (Stern, 1996a) on the part of governmental and/or commercial agencies that effectively operate as rhetorical propositions to act and consume in particular ways (Scott, 1994; Stern, 1996b).

Inspired by a similar charter in Germany, the *BCSC* is a strategic governmental document that represents the first major attempt to federalize the smart city program (Kraus *et al.*, 2023). The need to develop a charter emerged "when the federal government understood the need to integrate the sustainable urban development agenda with the digital transformation process" (BCSC, 2020, p. 6). The creation of the Charter was underpinned by several strategic partnerships between the Ministry of Science, Technology and Innovation, the Ministry of Communications and the ANDUS Project (the National Sustainable Urban Development Agenda in Brazil). The result is a document that consolidates a concept for smart cities in the Brazilian context, identifies five guiding principles and six guiding directives, eight strategic goals and 163 action recommendations (BCSC, 2020).

Specifically, we mobilize deconstructive criticism (Stern, 1996a) as a means of:

> "directing subjective attention to the comparison, analysis, and interpretation of cultural texts, providing a critically and theoretically informed evaluation of that text and the historical and sociopolitical contexts in which they are located" (Fowler *et al.*, 2022, p. 339).

Our purpose is not only to understand the performativity of smart cities but also to expose hegemonic power structures (Fowler *et al.*, 2022) and the various colonizations that disenfranchise consumers and citizens of the Global South (Ricaurte, 2019). In using deconstructive criticism, this research complements the work of others on the *BCSC* such as Kraus *et al.* (2023) who engage with Critical Discourse Analysis to "examine and demystify the naturalization of policy agendas" (p. 32067).

Deconstructive criticism does not constitute a formalized program of research though various authors have tentatively offered up a relatively systematic approach

(Campbell, 2012). Here, we have loosely followed a three-step process. The first step involves explication, "a close analytical examination of units of text" (Miller and Toman, 2016, p. 476) to identify the core textual attributes of the *BCSC*. The purpose here is to identify the core issues that the *BCSC* deems to be important in setting the agenda for and positioning Brazilian smart cities. The second step involves the construction of provisional meanings (Stern, 1996b) by categorizing textual elements. Effectively, this is achieved through a kind of thematic analysis to identify genres of text and rhetorical elements and connecting these to existing tropes within the literature on smart cities. The third step incorporates the deconstruction of the text to reveal the underlying cultural assumptions of what is being said in the *BCSC* (Fowler *et al.*, 2022). Here, then we are interested not only in what is being said but also in what is being left unsaid (Stern, 1996b). Through deconstructive criticism:

> What is previously considered 'universal' is seen as but one construction of reality [. . .] then deconstruction brings to light the alternative disenfranchised realities (e.g., those of the culturally marginalized audiences such as minorities, women, lower classes, or uneducated members of society) that have been suppressed. (Stern, 1996b, p. 64)

Analysis

The smart city could be understood as the ideal solution to urban problems through association with ICTs that promote the automation of city management with the expectation of benefits involving everyday urban experience (de Freitas and de Faria Nogueira, 2020). Nonetheless, this view occludes understanding of the smart city as a new socio-technical system that produces political, social and cultural impacts and is incorporated into existing social structures (Wiig and Wyly, 2016) in a context of local and global political and economic transformations. We emphasize that the *BCSC* has as its main purpose the promotion of sustainable urban development in line with the Brazilian digital transformation of cities, a process that must be guided by environmental, urban, social, cultural, economic, financial and digital sustainability perspectives (BCSCa, p.14). In this way, the document intends to differentiate itself from others that adopt technological solutions to treat urban problems in a symptomatic way, without giving account of their historical causes (BCSCa, p. 7).

At the core of the *BCSC* lies a narrative positioning that amounts to a kind of "spatial imaginary" that works to "shape material practices molding geographies through [. . .] linguistic circulation and embodiment" (Watkins, 2015, p. 509). As such, this imaginary is not quite a definition of the smart city, although the document itself claims it as a definition. Rather, it is an imaginative construction of what Brazilian smart cities could or should be:

> Committed to sustainable urban development and digital transformation, in their economic, environmental, and sociocultural aspects that act in a planned, innovative, inclusive, and networked manner, promote digital literacy, governance and collaborative management and use technologies to solve real problems, create opportunities, offer services efficiently, reduce inequalities, increase resilience and improve the quality of life of all people, ensuring the safe and responsible use of data and ICTs. (BCSCb, p. 8)

The avoidance of a specific definition of the smart city here allows for the flexible application of the term. In a positive sense, such flexibility is necessary because local context is central to the execution of smartness. The move to smartness depends on the ability of a city to make the most of local resources and qualities and a fundamental understanding of the place, its people and its history (Lara *et al.*, 2016). In a negative sense, flexibility in definition affords cities the ability to associate the smart city concept with rather abstract and unmeasurable goals (Gaffney and Robertson, 2018), such as we see in the *BCSC*.

Connected as it clearly is with IBM's Smarter City model, the *BCSC* positioning facilitates a practical focus on the use of technologies and the circumvention of a more wide-ranging accountability (Gaffney, and Robertson, 2018). In other words, the *BCSC* points to the implementation of technologies as evidence of smartness and corroboration of the potential therefore for sustainable and socially inclusive solutions. Whether the technology used is actually able to deliver on promises of smartness and so forth is not really in the remit of the Charter, because it is plainly a positioning document that taps into utopian urbanism built on rhetoric as opposed to practical interventions (Melgaço Silva Marques and Freitas de Souza, 2022). Such a strategy serves the competitive interests of a city well for:

> "[. . .] it is the mobilization of the smart city label, as a distinctive mark, that better positions these cities in the global financial flows, clearly configuring a strategy of urban entrepreneurship" (de Freitas, 2020, p. 52).

We witness such a situation first hand in the case of Rio de Janeiro. Having won the World Smart City Award 2013, Rio was able to engage in "urban entrepreneurialism" (Chib *et al.*, 2021), promoting its success worldwide to audiences for the 2014 World Cup and 2016 Olympic Games, effectively working to camouflage the more disagreeable aspects of the city (de Oliveira and Pinhanez, 2017). In sum then, this marketing of cities as smart allows them to attract an increasingly mobile creative class that further augments their cultural reputation, economic growth and societal progress (Gaffney and Robertson, 2018; Sadowski and Bendor, 2019).

Following our close reading, we have identified three key elements of this positioning:

(1) technological solutionism;

(2) sustainability; and

(3) social inclusion.

It is to these elements that we now turn.

Technological solutionism

For Kraus *et al.* (2023), technology is offered up in the BCSC as a positive force for change. A striking indicator of the solutionism of the BCSC is the declaration that through the sustainable digital transformation carried out by the state and municipalities, it will be possible to face the historical and contemporary challenges of Brazilian cities (BCSCb, p. 16). As suggested by Kravets (2017), such solutionism forecloses possibilities that are perhaps less linear and more socially, economically and politically demanding. Underpinning this agenda is the idea that new technology represents the only real solution to a variety of urban problems. Moreover, governments are generally considered to be "behind the curve" when it comes to understanding and deploying technology. As such, technology solutions are only to be found in the market (Cardullo and Kitchin, 2019) and, in fact, it is corporate interests that are the driving force behind the adoption of technologies for smart cities (Kitchin *et al.*, 2019).

In early 2010, a workshop was held in Rio de Janeiro that sought to investigate the ways in which IBM could contribute to the city. However, in April 2010, the highest daily volume of rain in 50 years was recorded in the city causing flooding, displacement, electrical problems and deaths (de Freitas and de Faria Nogueira, 2020). This event changed the theme of the workshop, directing the debate toward a more specific purpose in making the city more resilient (de Freitas, 2018). This purpose, combined with the demands of the

International Olympic Committee lay the foundation for the Rio de Janeiro Operations Center (COR), inaugurated on December 31, 2010 (de Freitas, 2018).

As the materialization of smart, COR incorporates "a room full of screens where white-coated operators monitor and steer the city's processes" (Wigley and Rose, 2020, p. 303). It also manifests the solutionism (Morozov, 2014) associated with the ICT market, that is, "the belief that all the world's problems, even those that should not be thought of as problems in the first place, can be solved technologically" (Sadowski and Bendor, 2019, p. 553). According to its website, COR:

> "[. . .] seeks to anticipate solutions, alerting the responsible sectors about the risks and urgent measures that must be taken in cases of emergencies, such as heavy rains, landslides and traffic accidents" [Centro de Operações Rio (COR), 2022].

Here, the predictive character associated with Big Data is evidenced, rendering it not only anticipatory but also efficient and, therefore, a market-based epistemology (Thatcher *et al.*, 2016). This position is corroborated by de Oliveira and Pinhanez (2017) who describe the predictive powers of COR as a cosmetic strategy designed to support commercial appeal and sell a specific image to investors. Indeed, Mendes (2022) suggests that although COR is directed to improve the technical monitoring of Rio's weather, the causal roots of the city's climate vulnerability (e.g. socioeconomic inequalities and irregular developments) are not addressed.

A national strategy for smart cities is embodied in the *BCSC* and is considered a "fundamental step for the country in the move towards economic development with a reduction in inequality" (BCSCa, Presentation). Considering that the positioning of the smart city here is based on twin pillars of sustainable urban development, representing the "city" pole, and sustainable digital transformation, representing the "smart" pole, it seems that despite the progressive ideals underlined here, the "smart" pole prevails as an idealized solution to systemic issues. None of this is far removed from smart city positioning elsewhere because:

> "[. . .] the implementation and effective integration of new technologies in cities have the potential to improve quality of life, boost economic growth, mitigate the negative effects of climate change, and even foster more active citizenship" (Gaffney and Robertson, 2018, p. 49).

A variety of technologies, influences, ideas and trends converge to produce smart cities as templates onto which ICTs are inscribed (Gaffney, and Robertson, 2018). However, what seems to elude the smart city concept are questions concerning data extraction promoted by ICTs on data ecosystems, which consist of:

> "[. . .] infrastructure, institutions, analytics, and data capture systems that are used to take data and relay it to the system owners, who can then alter their provision of goods and services and marketing accordingly" (Calzada, 2019, p. 40).

Indeed, the emergence of smart cities, especially in the Global South can be considered an entry point for international companies aiming to expand profit (Melgaço Silva Marques and Freitas de Souza, 2022), reshaping cities as places of extensive and intensive value extractivism at different levels (Antenucci, 2021). Key sites of data mining, smart cities have curiously been sidelined in recent discussions about platform capitalism, surveillance, algorithms and artificial intelligence, particularly in the field of marketing. Taking communicative capitalism as a broader context, understood as "the materialization of ideals of inclusion and participation in information, entertainment, and communication technologies in ways that capture resistance and intensify global capitalism" (Dean, 2009,

p. 2), it is easy to understand how data acquires a central position in contemporary value generation.

In Sadowski's (2019, p. 1) words, "[*t*]he collection and circulation of data is now a central element of increasingly more sectors of contemporary capitalism" and the logic informing the digital technology industry behind it is data extractivism (Morozov, 2017). Despite the expressions used to report on processes involving data (e.g. "mining", "extraction") alluding to the universe of natural resources, it is important to remember that data are not raw products, existing in nature, ready to be extracted. On the contrary, data are produced by people, objects, social interactions and cities; captured by devices; stored and amalgamated in large quantities; and processed algorithmically (Thatcher *et al.*, 2016). Through this process, data become commodified and the imperative of (digital) capitalism could be summarized as the constant collection and circulation of data "by producing commodities that create more data and building infrastructure to manage data" (Sadowski, 2019, p. 4). That said, questions arise about the technological infrastructures of smart cities, especially with regard to the data produced in these locations, and about the impacts of such operations in the countries of the Global South.

Sustainability

The *Brazilian Charter for Smart Cities* holds an explicit aim of "guaranteeing the right to sustainable cities for all people" (BCSCb, p. 10). In laying out its agenda for sustainability, the Charter calls upon issues of sustainable development and sustainable digital transformation. Sustainable development is referred to as a key concept in the *BCSC*. It is defined following the Brundtland Commission's report in 1987 as "development that meets current needs without compromising the ability of future generations to meet their own needs", (BCSCb, p. 11), Furthermore, the BCSC provides for the responsible adoption of ICTs through what has come to be called sustainable digital transformation (BCSCa, p. 29). What we have within the Charter then are multiple and varied uses of the term "sustainable". As Han and Kim (2021) indicate, approaches to the sustainability of smart cities have always tended to be varied and range from a concentration on sustainable services and systems to a recent move toward sustainable operational management. Kraus *et al.* (2023, p. 32081) understand the fractured use of sustainability here as an empty signifier:

> "[. . .] including innumerable potential meanings and with no fixed sense, it represents an absent totality. Hence it potentially comprises a term used to make more attractive and legitimize the process of smartization".

The *BCSC* does make a direct connection between digital transformation and sustainability that valorizes the efficiency of contemporary urban living (Han and Kim, 2021). That there is a focus on efficiency here is not accidental, for IBM is one of the key partners in the evolution of Brazilian cities toward smartness. The relationship between Rio de Janeiro and IBM began when the city was one of the first to be considered by the company for partnership contracts with local governments (Söderström *et al.*, 2014). The relationship continued through the city's participation in the IBM Smarter Cities Challenge, a program that consisted of providing "IBM experience and technology grants to face [the] main strategic challenges [of the city]" (IBM, 2022). According to the IBM website, the winning city would receive a team of experts for three weeks which through "cognitive computing, cloud platform, mobile and social analytics and extensive weather data capabilities [should] provide deep, data-driven insights that help improve policy development and decision-making in cities" (IBM, 2022). Projects such as the Smarter Cities Challenge opened the door to future partnerships with local governments (Sandulli *et al.*, 2017), in addition to

showcasing the company's services and technological power for governments around the world (de Freitas, 2018).

IBM holds as a key principle the idea that data can be used to optimize systems and manage finite city resources. IBM's rhetoric of systems and efficiencies is then adopted by city governments such as Rio de Janeiro and further influenced by discourses of neoliberal economics and corporate governance (Gaffney and Robertson, 2018). For Chib *et al.* (2021), smart cities become torn between two objectives, greater productivity and improved well-being with a degree of conflict between them. Productivity is constructed around notions of efficiency that "do more to 'show face' in a global investment market than address internal concerns of social equity" (Chib *et al.*, 2021, p. 3). Moreover, existing evidence seems to suggest that improvements in efficiency do not naturally lead to improvements in welfare and well-being. According to Gaffney and Robertson (2018), Rio de Janeiro is a perfect case in point. The partnership with IBM enabled Rio de Janeiro to use the company's expertise to improve its city management. The first results from the city's participation in the Smarter Cities Challenge included the institutionalization of digital practices, the appointment of a Chief Digital Officer and the creation of the Rio Negócios agency (an official agency of the city of Rio de Janeiro responsible for the attraction and facilitation of new investment), according to the governance model defined by the Smarter Cities Challenge team (IBM, 2010). The subsequent creation of Centro de Operações Rio (COR) represents a milestone in what became known as intelligent governance (Kitchin, 2014) and was directly responsible for the attribution of the 2013 World Smart City Award (De Oliveira and Pinhanez, 2017). A control room such as COR functions as the materialization and visible representation of the smart city, a symbolic presence of smartness, demonstrating for citizens how smart is being performed (Wigley and Rose, 2020).

Although there have certainly been advantages related to the move to smartness, for example, in terms of environmental monitoring and traffic management (De Falco *et al.*, 2019), increased access to urban infrastructures and more robust community networks have not been forthcoming (Gaffney and Robertson, 2018). This may be because IBM essentially offers off-the-shelf solutions and thus it seeks out problems that might be solved by those particular solutions rather than attempting a more wide-ranging effort to solve a city's problems (de Freitas, 2020).

Social inclusion

The BCSC foresees the responsible adoption of ICTs guided by principles of digital ethics and with open codes and data availability as well as the protection of personal data in accordance with the General Data Protection Law (L.13.709 / 2018). The recommendation to provide free Wi-Fi (Recommendation 2.5.6, BCSCa, p.54), for example, is in line with Strategic Goal No. 2 of the BCSC, which deals with equitable access to quality internet for all people, especially in remote and low-income areas and observing cyber security and the general protection of personal data. The initiative aims to:

> [. . .] enable access to platforms and applications of essential services (e.g., digital public services, education, health, mobility) without the consumption of mobile data, since access to the Internet in Brazil today is mostly through mobile devices [INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE), 2018].

The target audience is people and vulnerable social groups, aiming to use ICTs as a tool for social inclusion (BCSCa, p. 54). In fact, digital inclusion through free and broad access to the internet is important for expanding the concept of citizenship within the information society, inserting citizens into activities and enabling access to information and services available in

cyberspace (Coelho, 2010). However, linking this practice to a smart city project can have consequences that put citizenship itself at risk.

"Despite representations in smart city discourses about the importance of local communities and social learning, an overall emphasis on business-driven technology and gentrification could be interpreted to imply that this urban form is relatively unconcerned with class inequality [. . .] inclusion [. . .] and social justice" (Hollands, 2020, p. 191). Nonetheless, the *Brazilian Charter for Smart Cities* is clear in its determination to introduce issues of equality. In the narrative positioning of smart cities, there are references to inclusivity, the promotion of digital literacy, reducing inequalities and improving the quality of life of all citizens. Indeed, the *BCSC* devotes a great deal of attention to how the development of smart cities might address historical and current inequalities in Brazil:

> In the Brazilian urban policy, "leaving no one behind" means guaranteeing the right to sustainable cities for all people. It means committing the city to reduce historical inequalities that make people and socially vulnerable groups lose access to opportunities, goods, and services. At the same time, it means structuring actions suited to the country's wide territorial diversity, so as to "leave no municipality behind". (BCSCb, p. 8)

A fundamental aspect that precedes any initiative foreseen by the *BCSC* is internet access in Brazil. After all, access to the smart city is subject to the right of access to the internet, guaranteed in the fourth article of the law 12.965 / 2014 (Marco Civil da Internet). The percentage of households with internet access rose from 79.1% to 82.7%, from 2018 to 2019. About 12.6 million households still did not have internet due to a lack of interest (32.9%), the high price of the service (26.2%) and/or a lack of digital literacy (25.7%). Cell phones continue to be the most used equipment to access the internet (in 99.5% of households). Broadband connection (3G/4G) grew from 80.2% in 2018 to 81.2% in 2019 and fixed broadband connection went from 75.9% to 77.9% (Agência Brasil, 2021).

The *BCSC* recognizes the digital divide that exists in Brazil as well as the socio-spatial character of inequality linked to it (p. 15), thus providing, through sustainable digital transformation, for digital inclusion and literacy, "in an appropriate and respectful manner concerning sociocultural, economic, urban, environmental and political-institutional characteristics specific to each territory, to conserve natural resources and people's health conditions" (p. 11). The *BCSC* also alludes to digital ethics and ethics by design, which might reference current contemporary concerns about biases in ICTs (Constanza-Chock, 2020), thus dispelling belief in their neutrality and objectivity (Boyd and Crawford, 2012). Nonetheless, it might be argued that the superficial approach of the *BCSC* could easily collide with market-oriented, data-driven governance.

Simply overlaying digital technologies onto a city is no guarantee that traditional inequalities will be challenged. First, in the absence of genuine participation of citizens and a more bottom-up approach to smartness, the entire project is likely to serve a rather narrow set of interests and consolidate power in the hands of those who have traditionally held it (Gaffney and Robertson, 2018). Second, the introduction of a digital infrastructure is likely to open divides between those already with and without access to technology (Melgaço Silva Marques and Freitas de Souza, 2022) such that some citizens become "subject to monitoring without participating in the flow of information" (Gabrys, 2014, p. 42). Moreover, not all areas of the smart city will be smart or equally smart and consequently the inequalities that already exist between people, places and activities will persist (De Oliveira, and Pinhanez, 2017). In the end then, the trajectory of smartness simply produces a "new geometry of power relations" (de Freitas, 2020, p. 55).

In the case of Rio de Janeiro, longstanding socioeconomic inequalities do not appear to have been addressed by the attribution of smartness but may, in fact, have been made

worse. A number of studies (Gaffney and Robertson; de Freitas, 2020) use the particular example of surveillance cameras managed by COR across the city. More cameras are located in wealthier districts which limits the ability of COR to comprehensively monitor and manage traffic flows and for the city generally to address inequalities and ultimately produces a "peripheralization of dumbness" (Gaffney and Robertson, 2018, p. 57).

Discussion

One of the foundations of the current neoliberal agenda is the data market (Schiavi and Silveira, 2022) and datafication is essential for the execution of the smart city as it facilitates the efficiency of services and processes and aids decision-making (Schiavi and Silveira, 2022). The massive collection of data that drives this new market is only possible when individual rights are violated, including the right to privacy. Arora (2019) draws attention, for example, to the fact that new forms of discrimination resulting from predictive data analysis end up marginalizing already vulnerable subjects in society. This points to the need to carefully analyze the impacts of a smart city in the Global South. In attempting to understand the fundamental problems associated with the use of data in smart cities, we now address Big Data as epistemology and issues of Digital Colonialism.

Big data as epistemology

Understanding Big Data as epistemology means that data is currently responsible for establishing the parameters for producing truth and knowledge. Only through its principles are we able to know what is true, to separate true ideas from false ones and to acquire the knowledge necessary to do so. And so, it is with Big Data that has shaped social reality to the point of becoming a technological and cultural phenomenon. The bases for such a phenomenon lie in three areas:

(1) in the technology itself, capable of "maximizing computation power and algorithmic accuracy to gather, analyze, link, and compare large data sets" (Boyd and Crawford, 2012, p. 663);

(2) in its power of analysis that enables the identification of patterns in large data sets in order to make economic, social, technical and legal claims (Boyd and Crawford, 2012); and

(3) in the mythology surrounding Big Data, which has been crucial in the popularization of scientific knowledge (Puschmann and Burgess, 2014).

Metaphorically speaking, Big Data has commonly been positioned by the mass media as a reliable, value-neutral source of information (Crawford *et al.*, 2014), based on the:

> "[. . .] widespread belief that large data sets offer a higher form of intelligence and knowledge that can generate insights that were previously impossible with the aura of truth, objectivity, and accuracy" (Boyd and Crawford, 2012, p. 663).

The power of Big Data is such that it is simultaneously identified with "a Kuhnian paradigm shift with the potential to displace established models of knowledge creation and do away with scientific tenets such as representative sampling and the notion of theory" (Puschmann and Burgess, 2014, p. 1690) and with a "dominant epistemology that translates into the domination of bodies, affects, and territories" (Ricaurte, 2019, p. 356). A major concern regarding smart cities projects and Big Data is that the latter, as an epistemological orientation, is considered the bearer of quasi-magical solutions (Morozov, 2014) to systemic problems (Mouton and Burns, 2021). In addition, Big Data is also capable of predicting and

generating insights in a cost-effective way, which makes it a market-based epistemology (Thatcher *et al.*, 2016), setting up smart cities as terrains for capital accumulation (Sadowski, 2019), surveillance (Zuboff, 2015), militarization (Graham, 2016) and colonization (Couldry and Mejias, 2019).

Big Data success is made possible through the continuous process of social datafication. van Dijck (2014) draws from Mayer-Schönberger and Cukier (2013) and defines datafication as "the transformation of social action into online quantified data, thus allowing for real-time tracking and predictive analysis" (p. 198). Datafying social relationships and the banalities of everyday life has never been as easy as it is today thanks to inexpensive, ubiquitous computing technology and smartphones. Data is voluntarily handed over by people (e.g. demographic or profiling data), but there are also social interactions captured as data (e.g. through digital social networks) (van Dijck *et al.*, 2018). What is interesting about the intersection between smart cities, Big Data and datafication is that it underscores several questions that put technological solutionism in check, even in the case of a project with progressive content like the *BCSC*. How city governments develop datafication in smart city applications (van Dijck *et al.*, 2018) is a serious question as the consequences of datafication seem to deepen problems already existing in the Global South (Milan and Treré, 2019).

Digital colonialism

Mouton and Burns (2021) propose the use of the term digital neocolonialism to describe the mechanisms of domination in the digital age. Although digital colonialism would refer to "to the state-driven forms of direct control exerted over digitally entrenched individuals" (Mouton and Burns, 2021, p. 1899), digital neocolonialism is used to describe "more diffuse forms of domination that operate through the imposition of new normative frameworks and involve a complex web of public and private actors" (p. 1899). They highlight the actors involved in the process (nation-states and digital platforms); the mechanisms they mobilize that manage to circumvent state sovereignty; and the discourses produced to legitimize their actions.

Addressing the context of India, Moser (2015, pp. 33–34) draws parallels between smart cities and the colonial cities of the past suggesting that smart city projects in the Global South require:

> "[. . .] the guidance of modern and technologically savvy Western-sanctioned global 'experts' who promise that utopian corporate cities will spark economic growth, modernize the locals and lift the rural poor out of poverty".

Attending such a colonial approach is a degree of symbolic violence in which citizenship and justice are ignored, whereas geopolitical inequalities are reinforced (Fonseca Alfaro *et al.*, 2023).

Neo-colonialism, then, as "new forms of domination exerted by Western powers over their former colonies, despite the formal independence of the latter" (Mouton and Burns, 2021, p. 1892) brings to the fore debate about these more diffuse forms of domination. In this sense, Ricaurte's work (2009) takes data-based epistemologies as "an expression of the coloniality of power manifested as the violent imposition of ways of being, thinking, and feeling that leads to the expulsion of human beings from the social order, denies the existence of alternative worlds and epistemologies, and threatens life on Earth" (p. 350). In this same vein, Milan and Treré (2019) recommend the framework of coloniality of power to analyze how digital capitalism presents itself as a new manifestation of colonialism. It may be necessary to think of a situated perspective (Haraway, 1988) to discuss how data colonialism unfolds locally (e.g. in the countries of the Global South, for example, or even more specifically, in Brazilian smart cities).

Conclusion

Fariniuk *et al.* (2020) ask whether it is possible to attribute the concept of intelligence as it is used for human beings to objects and cities. Cities can be anthropomorphized, as human beings tend to adopt themselves as a measure to understand the world (Brown and Campelo, 2014). In this way, the smart city of Paredes, Portugal is described as: "a more benign urban creature [. . .] a planned city [. . .] aiming to be an environmentally sustainable city. And just like an organism, it will have a brain: a central computer that regulates everything from its water use to energy consumption" (Knight, 2010, p. 22).

As a personified political and social actor, the city could only reveal its fragile singularity through processes of narration (Ajana, 2010), which exalt expositive, exhibitive and relational characteristics, making its social and political life viable through its "whoness" as opposed to reducing matters to a particular "whatness".

Vanolo (2017) contends that much of the infrastructure developed in Rio de Janeiro in the move to smartness, from the smart gondola air elevator near Alemão to COR, has made little material difference to the lives of local residents. Cabral *et al.* (2021) do evidence an increase in the scope of smart interventions in recent years in Rio, but they also temper enthusiasm for the smart city project by pointing to a lack of real sustainability or social inclusion. For Kitchin (2022), technological solutionism is not a panacea for the various issues that complicate urban living. Indeed, the focus on technology as the only real solution to urban issues might have the effect of favoring:

> [. . .] real-time and all-encompassing data- and algorithm-led planning decisions over political discussion and agonistic processes of governance (Cardullo and Kitchin, 2019, p. 818). Instead of blind adherence to technological solutionism a more nuanced approach is called for in which technology is part of a battery of measures (Kitchin, 2022).

The conceptualization of the smart city in the *BCSC* does not say what it is. Instead, it highlights what a Brazilian smart city project should be committed to. Perhaps, it signals that a definition of the smart city is not possible because the city, the urban, "is an imaginary, a relationship between multiple spaces and scales from the personal to the global, a site of politics and governance" (Datta, 2018, *n*.p.). The city is something that is performed as it happens, as political, economic and cultural decisions are made, as natural events occur and city dwellers mobilize. The attribution of smart city status is a form of performative place branding that places the city on the international map of competitors for investments. Such an approach signals the context through which we must understand projects involving ICTs and cities, despite the progressive ideals of the *BCSC*. Citizens are transmogrified into consumers and the beneficiaries of smartness tend to be corporate interests (Masik *et al.*, 2021). The smart city is inclined not to be a human, dynamic city endowed with "whoness", but a neoliberal city focused on performance and profit. We must be mindful too that the pursuit of smartness also serves to reduce dissent and conflict, to discipline the city and to render it amenable to capital accumulation (Vanolo, 2014).

What this research evidences is the fact that smart city positioning is largely a discursive production. The *BCSC* helps us to understand certain Brazilian cities as smart and as such it serves to attract economic investment into cities like Rio de Janeiro. In addition, there is certainly a drive toward smartness on the ground as a variety of smart initiatives are put in place. To that extent, the smart city imaginary becomes real as various technological solutions take their place in the city and have some impact on the lives of its people. However, the stated aims of the smart project outlined in the *BCSC* are never really fulfilled as sustainability and social inclusion appear to be as far away as ever. It may be, as Kraus *et al.* (2023) contend that these terms are merely empty signifiers designed to further the

smart agenda and operate principally as a place branding exercise with no real significance for the people who live and work in the city.

These issues point to the key practical implication of this research. Rather than adhering only to the rhetoric of smartness, cities have to work hard to make smartness a reality – a smartness constructed not just on technical solutions but also on human solutions (Kitchin, 2022). That is, the complexity of urban issues that are apparently addressed in the move to smartness demand more than a technological fix. As we have seen in the case of Rio de Janeiro, technological solutions have a tendency to exacerbate some urban problems rather than solve them. Thus, in the drive to smartness, sustainability, social inclusion and even global competitiveness, cities must make it their goal to truly lift their social, economic, environmental and institutional potential (Szczech-Pietkiewicz, 2018).

In terms of further research, there is a clear need to address the practical work being done on the ground and in context in the move to smartness. As Kitchin (2022) contends, not only is there variability in the definition of the smart city concept, but there is also different emphasis placed on the execution of smartness in different contexts. Against such a background, research will need to investigate how smart solutions in context practically work to the benefit of residents and visitors alike.

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