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EDITED BY
Diogo Guedes Vidal,
University of Coimbra, Portugal

REVIEWED BY
Marina Prieto Afonso Lencastre,
Fernando Pessoa University, Portugal
Hélder Tiago Da Silva Lopes,
University of Minho, Portugal

*CORRESPONDENCE
Luciana Souza Bragança,
lubraganca4@ufmg.br

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Possible Gardens: cosmopolitical worlds

Luciana Souza Bragança*

Project Department (PRJ), Natureza Política, Escola de Arquitetura, Universidade Federal de Minas Gerais–UFMG, Belo Horizonte, Brazil

This article presents some of the reflections produced by the Possible Gardens research, which explores the world of gardens where living beings interact directly, creating multispecific worlds. It is directed toward everyday gardens, which are still very present in Brazilian cities. It uses comparative case studies of multiple exemplar cases throughout the Arrudas River territory in the city of Belo Horizonte, Brazil. The aim is to present the contributions of the Possible Gardens, this expanded category of garden understood as cosmopolitical worlds, to the thinking of contemporary cities based on ecological practices derived from urban daily life. In addition, it opens an understanding of the potential of gardens as a culturally relevant element, as an example and catalyst for environmental policies.

KEYWORDS

cosmopolitics, gardens, possible, multispecies, architecture, urbanism, cities, ecological practices

1 Introduction

This article presents some of the reflections produced by the Possible Gardens research. Since 2017, this research has been exploring the world of gardens, where living beings interact directly, creating multispecific worlds, and their contributions to the discussion on contemporary cities. It is oriented toward ordinary gardens, abundant in Brazilian cities. It aims to understand this expanded garden category and its contribution to ecological studies by widening the boundaries hitherto found in garden studies. Furthermore, it enables understanding the potential of gardens as a relevant cultural element and as a possible catalyst for environmental policies arising from the daily life of cities, through the recognition of cosmopolitical worlds.

In this research, Possible Gardens encompass nonhierarchical domestic spaces, collectively planted public spaces, and flower beds and vases. The gardens chosen for the research are those with which people engage personally in some way and build relationships with nonhumans, not necessarily supported by public policies. In this approach, the interpretation of knowledge, cultural significance, handling and traditional uses of floral elements, interaction with animals, and ecological relationships is a means of understanding the affection between many beings and also between them and their site.

For the proposed concept of Possible Gardens, all living beings, human and nonhuman, are recognized as agents of the territories they build, not only as objects. The term “nonhuman” is used by many authors referring to these agents and distinguishing them from human agents. It was crucial, however, to seek their real understanding starting from two distinct perspectives: the friendly nature composed by subjects and an objectifiable, resourceful nature. It is through comprehension, which is built by affection and familiarity, and not by scarcity and difference, that the pursuit for an inclusive way of living in the spatialized world that unites all beings in the city and its gardens took place.

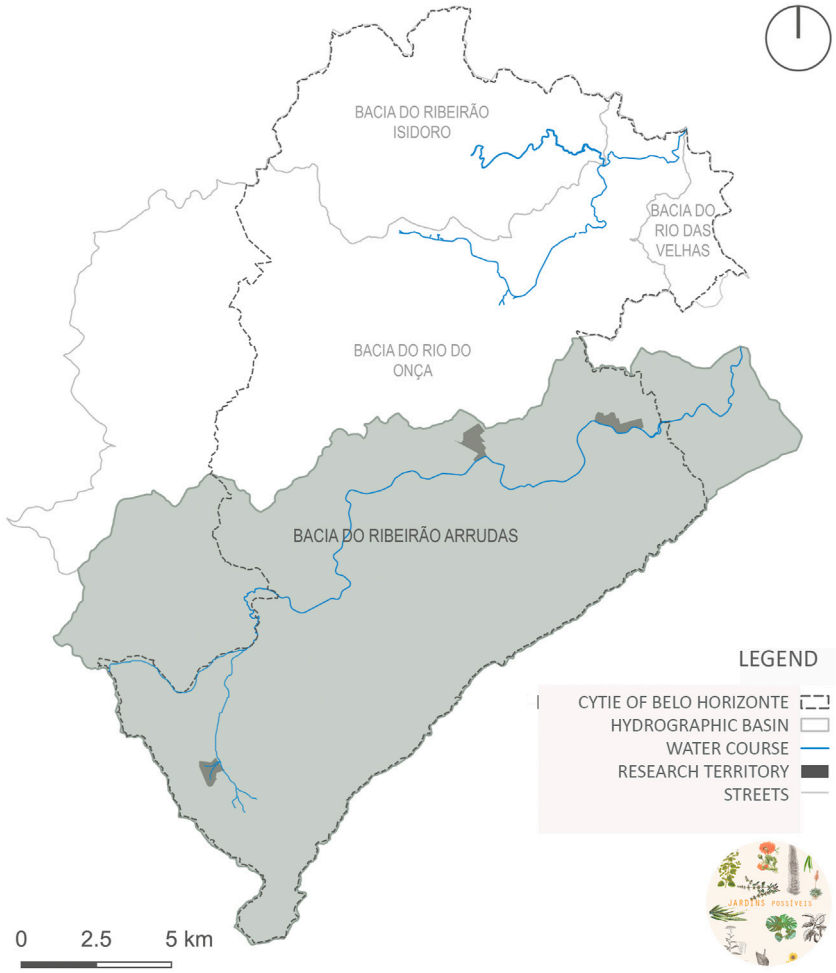

FIGURE 1
Case studiy map.

The working hypothesis focused on understanding how the Possible Gardens contribute to thinking of the city in an integrated way because they are elements of connection. They are multispecies collectives based on memory, alliances of affection, and confluences and also build other worlds.

The research methodology was understanding the garden historically, the initial proposition of the term Possible Gardens, the realization of a comparative case study of multiple cases, and the analysis of the data focusing on understanding the meaning of Possible Gardens and their contribution to cosmopolitics. This will also be the structure of this work.

The contributions of gardens, as spaces found in the daily life of cities, will be presented in terms of cosmopolitical confluences and multispecific relationships as a way of foreseeing other "possibles," both the resistant ones and those that are examples to imagine other worlds.

2 Materials and methods

The first step of the research consisted of understanding the idea of gardens in the history of official landscaping and on the proposition of the term "Possible Gardens" as a broader garden category and as a definition yet to be explored in the framework of landscape studies.

Subsequently, a comparative case study was performed in the city of Belo Horizonte, Brazil. As for the dimension of the studied space, it was conducted on multiple exemplar gardens found near the Arrudas River and its tributaries of the river basin. The Arrudas River is Belo Horizonte's most important watercourse, from which the occupation of the city was structured. To some extent, it was even ignored by Aarão Reis' Plan for Belo Horizonte[1]. However, it is not the only existing water body.

The Possible Gardens research was developed at three spots of the river basin: upstream, in the Barreiro neighborhood; in the Centro (downtown) and Lagoinha neighborhoods; and downstream, in the São Geraldo neighborhood (Figure 1). These

1 Belo Horizonte is a city that was planned to be the capital of Minas Gerais, designed by the engineer Aarão Reis with the aim of creating a modern capital for the state.

specific areas were chosen because they contain important natural elements for the ecosystem of cities.

For the case study, exploratory research studies of the territory were developed, then questions were formulated for the interviews, and some approaching procedures were established.

In a third moment, 900 quantitative interviews were applied throughout the studied territory, as well as ethnographic nature interviews based both on participant observation and on a thorough photographic survey of each of the studied spaces. On the ethnographic interviews, 65 were conducted in the São Geraldo neighborhood, 15 in Barreiro, and 12 in Lagoinha. Three other interviews were related to gardens built by homeless people in public areas.

The last step consisted of analyzing the data and presenting the results, focusing on understanding gardens and their contribution to the discussion of possible worlds and their cosmopolitics.

This methodology was applied for the whole research. Herein, the detailed methodology and results of the São Geraldo neighborhood are presented.

2.1 Possible

The research begins by discussing gardens within the universe of architecture and urbanism and its modern construction practices, recognizing the existence of other relationships throughout the city that include nonhumans, "fracturing the founding anthropocentrism of the ways of building the world of these very modern practices" (BRAGANÇA, 2021, p. 75). It starts from two distinct views, first, of an intimate close nature or, in other words, a "friendly" nature, composed by subjects, and, second, of an objectifiable, instrumentalized, commercialized nature, therefore, a "resourceful" nature, an object. These distinct understandings also shape what is historically considered a garden—the space whose project is based on control and extensive maintenance—in contrast with the Possible Gardens, where other beings, not only humans, act upon and where control becomes interaction. If there is distancing from the world of other subjects that are not human, it is also a fact that other people who live in cities occupy and operate other ways of inhabiting Earth. We also live in the urban condition in a communion of differences, in a multispecies relationship[2].

The research starts with a discussion on the notion of "possible." "Possible" is connected to the characteristic of generativity, of creativity already latent in the territory. The "possible" is equipped with qualities or abstract strengths that may become real or not but with big chances of doing so. It is crucial to understand, based on the study by Stengers (2002), that capitalism weakens us as it kills the "possible" and the politics when it hinders our thoughts with a profusion of premade desires. Searching and reaffirming the "possible" in the territory is a political act of resistance, even if not confrontational.

Taking another approach, from the Latin American space and its colonial heritage, modern coloniality was not inscribed in a space empty of significance. Therefore, more than resistance, there is R-existence, as there is no reaction to others' actions. What exists is a preexistence that R-exists (MIGNOLO, 2004). The relations among the "possible," strength, and power are a relation among content, energy, and form, respectively (BERARDI, 2019). The "possible" is every immanence of possibility, and it is always plural. On the other hand, the strength is the collective capacity of transforming possibilities in actuality. The power is the selection and imposition of a possibility and the simultaneous exclusion of many others. Thus, the power is a visibility and invisibility regime, and it invents and concatenates what should be seen and what should become invisible.

The "possible," therefore, is the key for recognizing and discovering the territory, acknowledging and inventing forms of coexistence in our urban world. Despite the expansive form with which urbanization domesticates and colonizes other non-modern worlds, there will always be another "possible" within other non-modern cosmopolitics. The Possible Gardens is proposed as a way of exposing some of these other "possibles" seen as cosmopolitical worlds, multispecies artifacts built in reciprocity by nonhumans and humans, in a double-influence process.

The use of the term gardens becomes important as they are spaces for the building of meaning. Baruete (2016), in his book *Jardinosofia,* argues that gardens are not only a material construction but also a construction of metaphor. For Mongin (2013), they are the microcosm of infinity, a cosmology that refers to a macrocosm. Building gardens also implies in building places for living together. Thus, gardens are exemplary for thinking about the macrocosm of contemporary cities in the Anthropocene. Similarly, the idea of the Possible Garden as an analytical category proposes a rupture with traditionally discussed and consolidated concepts by the historiography related to this subject as it considers the agency of other beings, including the bonds among beings and among these beings and their places, beliefs, and practices. Thus, other forms of coexistence are evidenced, despite canonical beauty esthetic standards, bringing to the debate the concrete social agencies of everyday life, evidencing previously invisible narratives.

This leads to the understanding of cosmopolitics, as proposed by Stengers (2018), adopted in the research. It concerns the necessary cohabitation of different beings and uncertainty. Stengers questions the nature–culture bipartition. She takes ecology in its political and scientific sense, supported by an alternative cosmology and another politics, attentive to the multiple divergent worlds and articulations they could become capable of (STENGERS, 2018). The singularity of the author's proposal is to break with the enlightenment heritage by requesting a practice of continuously questioning certainties and the usual ways of relating to others. This proposal only makes sense in concrete situations. Cosmopolitics presents itself as a great challenge: to accept a world with many worlds within. The Possible Gardens are one of those worlds capable of bringing to the discussion the construction of everyday space concreteness in the cosmopolitics of territorialized relational worlds.

Possible are territories of "topobiorelational" symbiosis found in cities with the strength to recreate them while being or becoming real. For that matter, the aim here is to criticize hegemonic planning as a regime of visibility and prescriptions. Therefore, it is criticism to

2 The multispecies anthropological studies have, as one of the starting points, the dichotomy between nature and culture and between humans and nonhumans, which must be surpassed. Bruno Latour will be the reference for the critique of this modern dichotomy. The term "multispecies" will be based on Anna Tsing.

the anthropocentric form of power, operated by urban planning in cities. In this process, a diversity of "possibles" is invisibilized, among them, the ones that take place in gardens.

From the gardens, this search for the cultivation process, care, familiarity, relatedness, social relations, symbiosis, interspecific mutualism beyond competition, and interspecific societies takes place. In this pursuit, the working hypothesis is to understand the Possible Gardens as cosmopolitical worlds that contribute to thinking of the city in an integrated way, as gardens are elements of connection of different living beings, multispecies collectives based on memory, alliances of affection, and confluences, and also build other worlds. Through the mapping of garden spaces, the research aims to acknowledge humans, animals, plants, water, soil, rivers, and wind as city agents, capable of coexisting, with the concrete possibility of extending subjectivity and forms of otherness to other beings rather than only to humans.

The specific goals are understanding the gardens with which people engage personally as culturally meaningful, particularly expressive, and environmentally more enriching; surveying the public and private gardens in floodplain areas of the Arrudas River; analyzing the space provided by them; understanding the relationship between humans and nonhumans undertaken in exemplary cases; systematizing the ways with which they unravel territoriality processes; identifying spatial memories and ways of resistant living; and identifying the garden's contribution to cities as an inseparable part of urban life.

2.1.1 Gardens as a possibility

The systematic articulation between urban and environmental spheres is recent in Brazil. In the beginning of the 20th century, there was still a lack of intimate articulation between urban space and environmental space in the Brazilian law and in the notion of urban. However, such articulation occurred and still occurs as a practice in gardens, producing social–spatial arrangements.

2.1.1.1 History of gardens

It is estimated that the origin of gardens dates back to 4000 BCE in the ancient Mesopotamian and Persian regions, near the Fertile Crescent. Techniques developed for the progression of agriculture also supported garden cultivation. The first gardens were utilitarian, contemplative, and also, medicinal, but primarily sacred.

In a classic conception, the garden is considered the representation of a world. Historically, we can highlight some of these representations: the garden as a religious microcosm, as a representation of power, and more recently, the private garden as an individual projection of upward mobility (MONGIN, 2013). For the research, this understanding of gardens as a microcosm is crucial. So, to which cosmoperceptions[3] do they refer us to today? What is their cosmopolitical strength in the production of contemporary cities?

In gardens which had a religious or cosmic dimension, gardening practices reflected myths, starting with the creation myth of the Western modern Judeo–Christian civilization, the Garden of Eden. In this sense, "they are originally the paradise where men and women live without sin or desire, as depicted in The Book of Genesis" (MONGIN, 2013, p. 11). They are planted as part of the mythical religious world, purifying nature and creating metaphor spaces. However, in this purification, the gardens also hold their opposites: sin, savagery, and agency of other beings outside the human domain. The wild and the indomitable are associated with evil.

A civilization of humans, despite the purpose of domination, cannot fully control nonhumans, also equipped with agency and otherness. Though the strength and power processes project a cosmology, there is always something that escapes. If power legitimizes some narratives, it invisibilizes others. These other narratives, other "possibles," however, exist on the back side of power.

In medieval Europe, the hegemony of the Christian religion made other religions invisible. The ancient Greco–Roman, European, and North African pre-Christian polytheistic religions, entitled paganism, cultivated the respect for the living and sacred forces of Nature. The garden as an invisibilized "possible" appears around that time as a repository of knowledge and as a memory artifact of ancestry and the multispecies symbiotic relationships, oftentimes repressed and condemned under witchery accusation. Everything that was connected to the green world, in particular to the use and knowledge of plants, was considered a woman's prerogative numerous times. They were the ones responsible for harvesting herbs and wild plants and for the yards. With the rise of Christian power came the prevalence of intolerance from the church toward healers who handled plants. Every pagan relationship with plants and animals was seen as witchcraft[4]. Nevertheless, convent gardens marked the Middle Age with an enclosed garden as an allegory for the lost paradise named hortus conclusus, which contained the same medicinal and healing plants (RONCHETTI, 2009).

In *Caliban and the Witch*, Federici (2017) describes feudalism and its transition to capitalism as a period of struggle, as people noticed being drifted apart from the land and their common lives. She places the witch hunt as the big event responsible for annihilating the participation and resistance of women who built their autonomy from the multispecies relationship operated by their profound knowledge of plants, animals, and their site. It is also around that time that, in the western world, the sedimentation process of the ideas of an objective nature, exterior to the human, and of the human detachment from other creatures developed and deepened with the epistemological backing of Christianism. It is also possible to relate this colonization of nonhuman elements to the invention of an objectified nature at the service of men.

3 The term "cosmoperception" was created by the Nigerian author Oyeronke Oyewumi (2018), in connection with the term "cosmovision," to set a distinction regarding the knowledge production and the perception of reality by different peoples. According to Oyěwùmí, the widespread term "cosmovision" creates a hypertrophy of vision to the detriment of other meanings. For gardens, the term "cosmoperception" is considered more appropriate.

4 The treatise *Malleus maleficarum*, written between 1486 and 1487, which served as a base for witchcraft trials, establishes a direct connection among women, plants, animals, and witchcraft. Available at: https://www2.unifap.br/marcospaulo/files/2013/05/malleus-maleficarum-portugues.pdf (accessed in August 2020).

The garden as a reflection of power was disseminated through the French tradition of expressing the absolutist royal power. Gardens and vegetable patches, which were contiguous spaces, were the projection of royal power and the rational man over the objectified nature, a nature which does not include man is extremely controlled, based on the Enlightenment ideals. The classic French and Italian gardens had low, geometric, symmetrical vegetation. The use of perspective in big spaces was to show the superiority of the owner. However, also in those gardens, the subject of hypercontrol, the manifestation of a strong eroticization of the same natural elements that composed little-controlled domestic gardens can be observed. Rationality and passions cohabit and coexist in gardens of power (MONGIN, 2013).

Following historical evolution, the garden becomes private and is conceived as a projection of the house and the individual. Examples include the aristocratic garden of the 19th century, the English garden, the garden city, the domestic worker garden, and the popular garden. More than a macrocosm with vast ascendance, the garden also transforms itself into its own projection in fragmented microcosms.

The term landscaping is much more recent than the term garden. It comes from the work of "landscape improvers," developers of the English gardens, called so for working the landscape in such a way that every creation seemed natural. Their main influence was the oriental gardens, and they were inspired by landscape paintings of this period. The English garden emerges as a returning of a bucolic, idealized nature, uncommon in cities between the 13th and 19th centuries, and also from the belief in urban greening as a cure for all ills of the cities.

The domestic garden and the worker garden are those that succeed private gardens designed by landscapers and remain oftentimes as a repository of memories. They also remain as a place of cultivation for subsistence, feeding, and medicinal purposes. In contrast, they also carry upward mobility symbols such as the thoroughly trimmed gardens and perfectly mowed lawns, common for social classes with greater economic power in the beginning of the 20th century (MONGIN, 2013).

2.1.1.2 Brazilian gardens

In Brazilian history and in the formation of its cities, it is necessary to understand what the garden means for indigenous and Afro-Brazilian cultures, in addition to the inherited Christian tradition of Portuguese culture. The existence of several ways of engaging for humans and nonhumans, whether precapitalist and capitalist, presumes a detailed analysis of the relations between these several societies and other living creatures and with their space, considering there are indigenous, rural, *quilombolas*, and collecting societies, articulated with the urban industrial society, not only in historical development but also in current Brazilian cities.

For Afro-Brazilian cultures, the garden initially makes little sense. According to Boaes (2009), in the African universe, there is no semantic place for the notion of a garden since what prevails is the forest. The forest would be the ultimate phenomenon, nature manifesting itself to its fullest. On the other hand, Boaes emphasizes that in the Judeo–Christian universe, civilization led to the emergence of gardens. However, it becomes important in the sense of preserving species in the Afro-Brazilian culture. After studying the Bahian *terreiros*, Barros (1993) highlighted the existence of a "bush space" built differently from the original. It would be a garden where vegetal elements, essential to the worship, were cultivated. This space is a result of an adjustment to dense urban territories. Thus, what they call "garden" becomes part of rituals as a consequence of the absence of the natural element. However, it is still a key element to understand the garden as a possibility of recreating a world derivative of deforestation, urbanization, and, for black people, of their separation from their homeland. The garden becomes a means through which culture and religious worship survive in cities.

According to Levis et al. (2017), long before Europeans disembarked in the Americas, the indigenous people had changed the landscape over the course of thousands of years, and those effects define the current characteristics of the forest. Levis also stated that the plants that could be useful were cultivated in gardens through an almost intuitive selection process. Krenak (2019) also claimed the Atlantic Rainforest as a big garden, with continental proportions, composed by the interaction of natives with plants and animals in the territory for almost 2,000 years. Thus, the garden was one of the ways in which Brazilian indigenous people arranged the original forest in a scale of creation and recreation of their world. Moreover, their knowledge of and familiarity with native species was crucial for agriculture and shaping the cities and Brazilian gardens. Due to the dense forest, penetration into the territory was slow because the Portuguese techniques became useless. To create cities and remain on the land, the Portuguese needed to ally with the natives, exploring their knowledge of fauna and flora. The indigenous technique derived from a symbiosis between all beings, as well as the relevance in the symbiotic field of myths within the multispecies relations, which still survive in the contemporary city.

The European colonization in Brazil brought the Enlightenment belief of human superiority above all creatures and of European superiority above other ontologies. The colonizing process advanced over these other ontologies and other living organisms, as well as over the territory, with amplitude and violence. In this context, the official Brazilian history of gardens, those of European influence, is not very vast. It begins with Glaziou, a French landscaper, and reaches its peak with Burle Marx, an icon of Brazilian modernism (DOURADO, 2011). This understanding of history, which only legitimizes European-inspired gardens as genuine, reveals the attempt to build a modern vision of Brazil, able of being among the capitalist countries and a part of the coloniality that only validates the European imaginary.

Macedo (1999) considered the existence of three great lines in Brazilian landscape architecture in which gardens are incorporated: the eclectic, modern, and contemporary. As a critique to this approach, Magalhães (2014) proposed the inclusion of the Brazilian colonial garden as a relevant object of analysis, even if they do not fit into landscape architecture completely. According to Magalhães, the typical Brazilian colonial garden was a mix of a yard, vegetable patch, orchard, and flower garden. It was in such colonial gardens that indigenous knowledge about flora and fauna also merged. The familiarization with plants promoted by natives and incorporated in convent and domestic gardens brought Brazilian native elements to these spaces. In those gardens, ritualistic plants were also cultivated by slaved women, which enabled them, in secrecy, to conduct their rituals.

The division that separated the garden, yard, and house came with the modernization of cities, and nevertheless, it did not overrule the spaces and the perception of gardens completely. In this research, Possible Gardens are a memory of those gardens that existed in colonial times and still exist nowadays all over Brazil. They break away from the ordination and correspond to the majority of Brazilian gardens.

2.2 Case study methodology

In the search for other worlds and their cosmopolitical potencies—Possible Gardens built historically in the memory, in the gaps of hegemonic planning—the methodological path evolved from water territories. The proposal was to develop the study in stages utilizing proprietary methodologies. A progressive approach to the issue was undertaken through a case study whose objects are the Possible Gardens defined previously.

As mentioned previously, the Arrudas River is Belo Horizonte's most important watercourse from which the occupation of the city was structured. The result of overlapping the characteristics of the natural site, a very irrigated and hilly area, and the hygienist model of urbanization, the main road system occupies, oftentimes, the valley floors with sanitary avenues or the crests and watershed divides. Methodologically, the area of study is located along this river, at the valley floors and the nearest hillsides, in points with urban occupation characteristic of residential neighborhoods in Belo Horizonte.

These are precisely the characteristics of the São Geraldo neighborhood, whose case is presented here: a consolidated, middle-class neighborhood, with a typical occupation found in Brazilian peripheries, with the prevalence of residential constructions, low verticalization, and local commerce and services. In the extensive urbanization context, these peripheries, developing from the historic city, play, perhaps, a more important role. They carry, in their incompleteness and improvisation, the central dynamics of urban expansion and reinvention of the contemporary social space. The possible worlds articulated by the forms of urban–rural social–spatial organization, resistance generating important urban actors, and different ways of fighting centered in reproduction and in the quality of life and environment will be searched for in this place where, in addition to gardens cultivated inside the lots, there is a common area built by residents.

Initially, exploratory research studies of the territory were implemented through informal conversations, photos, exploratory interviews, maps, and the definition of territorial demarcation. Four visits for exploratory interviews were conducted, asking a simple question: do you cultivate a garden or do you know someone who does? The initial takings occurred with people sitting in public gardens and with those who lived in houses where it was possible to see the existence of gardens from the street. Prior knowledge of public gardens cultivated by dwellers and the horizontal residential character of the neighborhood were essential for choosing the territory. The territorial cutout was predefined from the recognition of the hillside, valley floors, and morphological units of the river basin, chosen based on the importance of the half-hillside as the definer of spatial relations. These limits were adjusted on site, guided by the exploratory interviews. In addition, Google Maps was used to discover gardens that were not visible from the street.

In a second moment, questionnaires were created for the interviews; a few approaching procedures were defined, including three encounters with gardeners[5], which was called "Coffee with Plants" (Figure 2); and the demarcation of the territory was performed with graphic signs on the site (Figure 3). At the meeting, the gardeners wrote their stories on thematic cards with pictures about the following: house, sidewalk, street, animals, plant, water, train, and faith. The cards were hung up, and a wheel of conversation was held.

In a third moment, quantitative and ethnographic interviews were applied based both on participant observation and on a thorough photographic survey of each of the studied spaces. The São Geraldo neighborhood sample for ethnographic interviews was proportional and stratified by relief units.

Specifically in the São Geraldo territory, 873 quantitative interviews were applied. These interviews surveyed the location in relation to the hydrographic basin; place (referring to constructive typology and use of the space where the garden is located); size; mobility; permeability; people's access (public and/or private); and the place they occupy and their visibility.

The ethnographic interviews were developed in 15% of the gardens found in the neighborhood. The ethnographic interviews, 65 in São Geraldo, surveyed who the gardeners were; origins of gardeners and gardens; gardens used; anthropic influence on their development; natural times; relationships; whether there is income generation or barter; nonhuman agents (animals, vegetation, water, and sunlight); plant and animal species and the reason for their presence; relationship of cultivated plants with the spiritual energy field; and cultural origins. Different factors were also recorded, such as the life stories of the interviewees and spaces, network of relationships built, agency of humans and nonhumans, construction of ecological knowledge and its circulation, socio-biodiversity of the gardens, management techniques, and destination of cultivated species. Some quantitative questions were inserted in these interviews. There was a space in each of them to record observations in the field. Some gardeners' stories were filmed[6]. Along with the questionnaire, notes were made in the field notebook.

The last step consisted of analyzing the data and presenting the results, focusing on understanding these gardens. The worlds of Possible Gardens will be presented in this article, along with their potential as catalysts for environmental policies arising from the daily life of cities in light of these ordinary spaces. The contributions of gardens will be presented in terms of cosmopolitical confluences and multispecific relationships as a way of foreseeing other "possibles," both the resistant ones and the ones that are examples to imagine other worlds.

5 For this research, the term "gardeners" refer to those who cultivate previously delimited gardens in their homes, common spaces, public spaces, and their workspaces and who are directly involved in the process.

6 The filmed interviews are available on the research YouTube: https://www.youtube.com/@jardinspossiveis656.

FIGURE 2
Development of "coffee with plants".

3 Results: the Possible Gardens

The data from the 873 analyzed areas from the São Geraldo neighborhood are detailed herein[7]. Of these areas, 50.74% have a garden (Figure 4). Data from 873 areas, including occupied lots, empty lots with well-tended gardens, residual areas, and public and semi-public areas, of the researched territory were collected in the field and compiled using virtual maps such as Google My Maps, BHmap, and Google Maps.

The use and occupation of the majority of the studied spaces containing gardens is residential. In some of these houses, there are people who look after public gardens.

Comparing areas with and without gardens, including lots and residual areas, showed that the gardens found represent 30.02% of the permeable surface area. The presence of gardens, even if not in all lots, guarantees a permeability rate above the minimum required by law (20% for most places).

The floodplain territory and immediate surroundings of the Souza Aguiar Street are still sufficiently permeable. This permeability is especially secured by the residual area that was turned into a common garden. Of the 143 studied areas, 53.84% have gardens that represent a permeability of 34.44%. The residual area alone represents 26% of the entire permeable surface area.

The concave ravine territory is also fairly permeable. Of the 144 studied areas, 52% have a garden. The percentage of permeable surface areas in the ravine is 36.78%. There is a spring and an area with significant preserved native vegetation next to a banana plantation. However, an informal occupation has been advancing over the spring. This advance is a subject of negotiation between the family that cultivates bananas and the residents of *Beco da Grota* (ravine alley).

The concave surface, located on the thalweg of the São Geraldo stream, which is fully channeled, has a significantly lower permeability rate: 49% have a garden. The permeable area of such gardens is 18.63%. Gardens are present in lots, and in three of them, there is an upwelling of spring water. The watercourse is completely disregarded in the urban planning legislation.

On the convex surfaces, the permeability is the lowest observed: 48.31% have a garden. The permeability ensured by these gardens is

7 Some lines taken from the interviews were introduced throughout the text in quotation marks.

FIGURE 3
Graphic signs on the territory: plaque with the history of the banana tree.

FIGURE 4
Garden presence map.

significantly lower than the rate imposed by law, representing 15.64% of the studied territory. In the highest area of the school, this rate is slightly higher, 16.85%. In the surroundings of the Silva Alvarenga Street, the rate is even lower, at around 14.98%.

The gardens are located mainly at the entrance to the lots, 315 gardens, and second, at the yards or backyards, 280 areas. However, in most private lots, a garden is present in several spaces. The existence of public and common gardens on the street, though

FIGURE 5
Garden at a lot entrance with permeable fencing.

scarce, brings the garden into the city more evidently. Some houses with visually permeable fencing also play this role (Figure 5).

All the following results were compiled from 65 ethnographic interviews. The average income of the head of the household is under five minimum salaries (IBGE, 2010). The average level of education is incomplete high school, and the professions vary highly.

The perception of water at some level and the recognition of this agent are present in 69.23% of the interviews. This perception varies according to the territory in which the interview is carried out. The ravine, the thalweg of the São Geraldo Stream, the floodplain, and the Souza Aguiar street are territories where the perception of the water, river, basin, and natural cycles linked to them was more frequent, and its correlation with the studied gardens is more direct. On the convex surfaces, the perception is much lower.

The hydrological cycles were mentioned in 75% of interviews at the floodplain. They were mentioned by 91.66% of people at the ravine, seven of them only positively and four of them both positively and negatively. There was no solely negative mention of the water. On the concave surface of the covered thalweg of the São Geraldo Stream, the perception of the water appeared in 100% of interviews; however, they were all negative. On the convex surfaces, these questions were answered only in 40% of interviews. The agency of water is less intense in convex territories and, therefore, less noticed.

The majority of gardeners are women, 56.92%, whereas 29.23% are men. Of all gardens, 13.85% are managed by both. The women are the ones who take care of plants, animals, and life daily.

Most gardens are cared for by adults, 49.3%, and also by elderly people, who represent 41.5% of gardeners. Young people represent a small portion of gardeners, below 10%. One of the most common arguments is the abundant time of the elderly and the company that these plants represent to them.

Of the gardeners of the São Geraldo neighborhood, 61.6% were born in Belo Horizonte; 35.3% were born in the countryside of the state, and only a small fraction of the people are from out of state.

The average age of the cataloged gardens is 27 years; therefore, they are mostly older. Some of them are as old as the neighborhood.

Of the people who take care of gardens, 52.3% do it individually. Collaborative care happens with 38.46% of respondents. For a minority of people, there is an alternation between individual and collaborative care. However, taking care of gardens builds exchange and sharing networks in the neighborhood, becoming a common action for various people in terms of the transactions they provide. The cultivated public spaces are created collectively; however, there is always a designated person who starts it and calls others on the task.

Public spaces represent 9.3% of the studied gardens. Private spaces correspond to the majority of spaces, at 75%. There are also places of common use, 5%, but their property is not well defined or is private.

The main motivation for 98.46% of the gardeners is the pleasure of taking care and "of picking a flower, of seeing it grow as if it was your child." The beauty is also highly mentioned, as well as the perfume of the flowers and the attraction of birds. Personal consumption of edible species and medicinal herbs is also an important motivation to 60% of gardeners, closely followed by 56.9% who donate flowers, teas, and food. The exchange represents a smaller portion of motivations—26.15%. However, the exchange network is also formed by donations without immediate repayment, as indicated by many interviewed. These networks are responsible for the transmission of personal tastes, species, and knowledge and for building the territory. The commercialization is only mentioned by 4.6% (Figure 6). The presence of ornamental plants in almost all gardens reaffirms

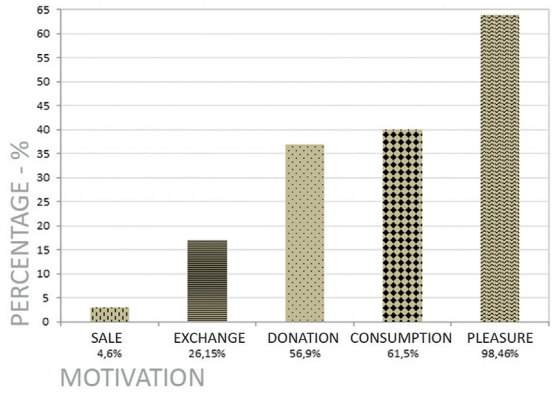

FIGURE 6
Graphic: motivations for gardens.

pleasure as the main motivation. The majority of gardens have ornamental plants, i.e., 98.46%. In many of them, other plants are also cultivated: edible in 80%, medicinal in 60%, and of power in 56.9%.

Plants of power are those which have some connection to a mystic religious world. The most common ones are the snake plant, pepper, rue, and boldo. They also mention *erva de nossa senhora*, guinea henweed, marcela, basil, pequi, dumb cane, honeyweed, guaco, maidenhair fern, false aralia, and elephant apple. There are many medicinal plants, and oftentimes, the limits with ornamental and plants of power are not very precise, as the same species occupies both definitions in different interviews. The names included were those defined in the interviews. In several gardens, it is possible to see the presence of lemon grass, lemon balm, bitter melon, sweet basil, stonebreaker, anise, fennel, aloe vera, spiral ginger, and rosemary and the use of these herbs of indigenous, black, and European traditions, viewed as medicinal and religious.

Trees are the most mentioned agents from public gardens. In private gardens, flowers received more mentions, followed by flowerless greens and fruits.

As for animals, 45% of respondents have pets. The most common domestic animals are cats and dogs, but parrots, chinchillas, small birds, turtles, peacocks, and chickens were also mentioned. These pets often walk freely on the streets. Animals created for human consumption and transportation also roam freely around the neighborhood. It is easy to see goats, chickens, cows, and horses on the streets.

The variety of animals cited as visitors is numerous (Figure 7). Birds and insects are the main ones in addition to the pets. Birds are seen as welcomed agents as they participate in plant dispersal, and this action is understood as a big facilitator for gardens. Descriptions such as "buddies," "bothers," "helpers," and "beloved" are frequent. Another emphasized point is the annunciation of water cycles by birds.

In contrast, insects are handled with hesitation. They are frequently called "pests," "invaders," "infestation," and also, disease vectors. Some humans admire their beauty. Butterflies are cited for their colors and as biological markers. Insects are also appreciated for their participation in the food chain. Ants, although considered pests, are admired for their behavior. Bees are also welcome, not only for the way they behave but also for their role in honey production and pollination. As for the arachnids, many species were mentioned as partners in combating dengue fever and also as food for marmosets. Only two people showed concern about their bites.

FIGURE 7
Graphic: animal at gardens.

FIGURE 8
Common gardens built and maintained by neighbors.

Some wild mammals are found in the gardens, such as marmosets, opossums, squirrels, and Brazilian guinea pigs.

Absences, disputes, and contradictions were also evident in the interviews. The presence of exotic plants is a problem for native species, as they have an advantage in the ecological competition. Some of them, such as the signal grass, are seen as weeds. Other species, such as the mango tree, are not seen as invaders and are already incorporated, but they occupy the native fruit category. Many of the fruit trees are exotic: mango, yellow plum, lemon, banana, orange, and pomegranate. Others are native, such as *jabuticaba*, queen palm, *jussara*, guava, *pitomba,* and strawberry guava.

The river is seen as not only the "flood villain" but also as a "path" and "life force" and the water as "a serious problem" and "a necessity and a blessing." Some of the interviewed are able to connect the flooding to the paving, to the type of urbanization and modernization that fail to take people into account, but many consider the channeling of watercourses as positive.

The biggest factor in suppressing gardens in the houses is the need to build shacks for their married children. These spaces later represent an extra income for the family. The construction of garages is also mentioned. The lack of space for planting is solved by some residents with the use of vases. Vases are also important for their mobility, especially in rented houses.

In public gardens, the absence of the municipality is a highly questioned issue. They believe that common gardens are more interesting when made by local people (Figure 8).

In the interviews, a few other names were given to what the research calls "garden." They are house, scrubland, woods and bush, grove, countryside, pharmacy, beauty, God's garden, paradise, blessing, spring garden, swamp, water house, and water.

Many unregistered springs were found in the lots. At the spring on Janaitiba Street, native and cultivated species coexist in the three lots of the house, and there is arboreal vegetation. The lots have a spatial gradation that starts with an ornamental garden cultivated near the house, passes through fruit trees, and reaches a few native species. The other spring is located at the ravine and has the same gradation. Near the construction, there are ornamental and fruit species. There is also a big banana plantation. However, the native vegetation is better preserved at the ravine with the presence of queen palm, cecropia, *capixingui*, and *farinha-seca* near the water. Three other lots had more anthropized springs.

Some human behaviors are attributed to plants and animals. They were defined as protectors in five interviews and as soldiers in one of them. That happened where there were plants of power. People also said in the interviews that they have the habit of talking to the plants and that "they listen, talk, and respond" to this dialog and "become beautiful" as a relational response. Furthermore, they are companions to gardeners. The words "friends" and "friendship" appear in 22 interviews. "Companion" appeared in 13. "Family" appeared four times, son or daughter six times, mother twice, and brother appeared eight times. "Love" is also used in seven interviews and "darlings" in two of them.

4 Discussion: the cosmopolitical worlds

From the interviews' collected data, cosmopolitical worlds of gardens were revealed. They are discussed here from agents and agencies identified at the gardens.

4.1 Water

Water is a relevant agent, and its participation in the conformation of gardens varies according to its location. The positive aspects of water are closely related to memories, cultural management, the existence of springs within the city—even near central areas—and its contribution to plant growth, as we can see by the answers. “The Arrudas River was basically clean.” “I used to see fish while crossing the wooden bridge.” “The rain does the best irrigation! Chlorine-free water.” “Have you seen the water that sprouts inside here [the ravine]?" The interaction between gardens and water cycle is also especially perceived on concave surfaces and valley floors.

The negative aspects are related to flooding and river pollution. River channeling is seen as a positive factor by the majority of respondents, who claim “it reduces flooding” and “controls bad smell.” However, it is also considered as a way of “moving the problem away” and of being good “only for the asphalt.” The changes promoted by urbanization are mentioned with wariness, and the devastation of streamside vegetation is a cause for regret. Urbanization and the river’s covering are questioned, which shows some understanding on drainage policies.

In relation to this agent, a contradiction is present between its perception and management and its influence on territory and climate. Rainfalls and the river are seen as “a blessing for the plants and animals” and as “a villain for cities” since “the rain brings everything down,” and “when the river overflows, it is a catastrophe. It takes everything with it.” It is also noticeable that the experience with natural cycles and their changes constitute a relevant element for the organization of gardens and life. Expressions such as “nowadays everything has changed,” “back in the day it was not like that” and “it has been raining less, it is harder for the garden to remain pretty since water is so expensive” are mentioned in the surveys. They reveal the several material and symbolic losses caused mainly by urbanization, which instigated the collapse of relationships that contributed to the existence of gardens and of a way of living.

The relief units (CARVALHO, 2001) help in explaining surface runoffs and their effects on the territory. The perception of this process confirms that where the river is physically present and its agency is clear, this perception is more positive. This happens especially when it comes to springs and where there is relevance of gardens as a memory of water, and the preservation and use of these springs is incorporated into the territories of planting and care. In the thalweg of the São Geraldo Stream, where the water body is enclosed and its presence is ignored by the law, negative aspects prevail, such as floods and landslides.

As expected, the floodplains are at greater risk of flooding, but the presence of a large permeable area of the common gardens on the Souza Aguiar Street contributes positively to mitigating the impacts of urbanization. This does not happen in the thalweg on the concave surface, where the stream is channeled. Where the riverbed used to flow, the floods and the strength of the water that runs over the paved streets are the main perceived aspects. The water causes disruption where the river was erased from the territory, and it survives as a presence only in springs in private lots and in memory. Urbanization acts against the water cycle, while gardens, due to their everyday cosmopolitics, shelter the springs or have less influence on it. The hilltop convex surfaces are safer and more suitable for urban settlement (CARVALHO, 2001). There, gardens are important elements in the characteristics of occupation, but they have less influence on soil permeability, and the perception of the hydrological cycles is lower.

4.2 Women and men

Historically, gardens were conformed through female care. Data show that in the Possible Gardens, this has not changed. Women still select and maintain plant species and have knowledge about traditional medicine and the religious and mythical developments involved in this care. Women are frequently attributed with “good hands” because the earth “where they touch everything grows.” Being a woman in the garden has “many of these advantages, a woman is like a river that changes every month,” facilitating communication “with these cycle things” since they keep in their bodies the same “more natural” possibilities that move certain energies.

The feminine, linked to social skepticism given the construction of the role of women in modern capitalism (FEDERICI, 2017), verticalizes its attributes in the domestic space, where these attributes, related to the land and also to the mythical religious universe, are accepted and valued. The memory of a multispecific relationship among women, plants, and animals remains in the researched gardens. This is assured by the cultivation of ornamental plants and plants associated with folk medicine; their relevant role in establishing relations between humans and nonhumans, to the point of making them friends, partners, and part of the family; the concerns with their human and also nonhuman children; and the subtle relationships with the sacred and with themselves. However, women use exactly these characteristics to place themselves also in the world of public coexistence, bringing along with the spaces they cultivate their experience of care and affection.

Men also take care of gardens. There is no monopoly of a gender over the experience and values associated with it. In the public gardens researched, men stand out for the association of their act with a cosmopolitical action of building common places. However, in the domestic gardens, women are the majority, and they expand their domestic gardening agency to the relational coexistence within the neighborhood. This realization opens important perspectives for understanding the feminine role in the organized ecological movement and the cosmopolitics of Possible Gardens. The dissolution of boundaries between the competitive world and the world of coexistence in gardens may indicate that, for this reason alone, women occupy a privileged position in the ecological fight. However, the involvement of women and feminist struggles in the ecological fight also relates to a political experience that transcends the domestic exclusivity and behaviors attributed to women. It is the result of the process of conquering other spaces and relevance in the public world.

4.3 Memory

An initial hypothesis that gardeners had provincial origins is refuted in the interviews. This indicates an incomplete process of

modernization in the creation of the capital of Minas Gerais. The city of Belo Horizonte has its own rural origins, and so does the neighborhood. Despite the modernization project undertaken, the attempt of redesigning spaces and behaviors was not enough to completely erase this rural memory. This was an important component in that process and is still alive in the world of Possible Gardens.

The memory of places (ASSMANN, 2011) inscribed in the city gardens is a way of understanding this agency. From gardens, the memory of places is a comprehensive memory that integrates all actors, whether humans or nonhumans, and is inscribed in the territory. The singularity of garden spaces is the possibility of becoming bearers of memories and endowed with a remembrance that surpasses human ones, as other creatures are part of the construction of meaningful memory spaces (ASSMANN, 2011, p. 318). This is due to embodiment as a continuity that overcomes the brevity of individuals.

For Assmann, there is no memory essence. It is a dynamic, plastic, transdisciplinary phenomenon. Remembering is not a prerogative of individuals. Groups and the most diverse collectivities also do remember. It includes not only a voluntary memory but also an involuntary collective memory, rooted in tradition and in communication, very present in narratives about gardens. Rituals belong to the field of cultural memory, "just like symbols, icons, and representations as memorials of the space" (ASSMANN, 2011, p. 321). This highlights the spatial dimension to the detriment of the temporal one and the reconstructive possibility of memory, which allows the distortion, renewal, and resignificance of something remembered. Thus, memory is a relevant agent in the studied territory and building and rebuilding modalities of multispecific relationships.

4.4 Bonds and motivations

Since most gardens are private, the relations they articulate take place within homes and routines of families. Even so, they articulate a strong network of exchange and of seedling and seed donation, which narrows the bonds within the neighborhood, as well as the bonds with the territory, expanding its configuration from the private to the common.

The motivation for gardening is more related to pleasure, memory, religiosity, coexistence, and with an exchange based more on affections and affinities than on economics. In the interviews, four people mentioned that planting gardens in public areas was a way to avoid littering. Five gardeners take care of their gardens in memory of a relative. Two others have mainly a religious motivation.

As Krenak (2020) warns us in his book's title, "Life Is Not Useful," neither are the researched gardens. In Possible Gardens, there is no modern capitalist use of other beings as profitable assets. Gardens are understood as relational territories of life, living organisms themselves, with relational dynamics and desires beyond consumption. This is a daily life microcosm, which is reality for a little more the half of the researched territory and beyond it. This understanding can be amplified to Earth, to the living and breathing Gaia with which we need to relate (STENGERS, 2018; LATOUR, 2020). This understanding opens the possibility of questioning concepts such as sustainability and sustainable development, nature as an excluding category, and the amplitude of these concepts in cities. Other creatures present themselves as agents and not as mere resources.

4.5 Medicinal, edible, and power plants

Gardens and their edible and medicinal plants are elements that support a nutrition based on the natural cycles and not on consumption. The pleasure of growing one's own vegetables, fruits, and teas is constant. It is a knowledge learned from relatives (Figure 9). In several gardens, it is possible to see herbs of indigenous, Black, and European traditions, viewed as medicinal and religious. In some stories, such as those from Henrique de Xangô and Cigano, the imbrication of gardens as a form of survival of the Afro-Brazilian culture in the urban environment is constructed through the plants of power. The garden develops, in these cases, primarily from religiosity.

Both power and medicinal plants are associated with generations of knowledge about the uses of these plants and the recipes for a multitude of ailments, either for the body or soul. They hold knowledge attributed to the memory of multispecific affections. In these mythical–religious relations, humans cultivate the land, but also, in reciprocity, the plant cultivates the humans and heals their ills and amplifies their power in an energetic symbiosis. There is familiarity and the construction of a partnership in a reciprocal acceptance. There are teas for everything. Sacred plants of Afro-Brazilian and Catholic religions catalyze strength, joy, and good marriages, forming a sociability network that involves common precautions. These are subtle actions that signify affinities amalgamating the matter of things to the supernatural through sensitivity and, because of that, through the imaginary cultivated in these Possible Gardens.

4.6 Plants

In public territories, the shadow is relevant in the correlation of forces that shape gardens, whether in the spatial configuration, hierarchy, or motivation. Thereby, trees play a prominent role. Flowers are commonly associated with the Virgin Mary and with catholic religiosity; they are more frequently present in domestic gardens but also in public ones. Medicinal plants and plants of power bring respectability. Moreover, worship spaces were found in two gardens: a chapel of the Virgin Mary surrounded by flowers and an image of Oshun near the ravine spring. The plants are friends; they are sacred and embody the presence of God.

The plants "do not have faces, members or, in general, any recognizable feature that resemble animals, which makes them nearly invisible" (MANCUSO, 2019, p. 132). Such invisibility is real in a world where utility and fast production rule life. In the Possible Gardens, that does not occur since the presence, action, and visibility of trees, flowers, medicinal plants, and plants of power are highly mentioned in the interviews.

FIGURE 9
Gardens of the Marias known as neighborhood doctors.

4.7 Biodiversity and democracy

The species are arranged without a clear hierarchy between them, unlike some landscape designs. Many species are placed together, evoking the wisdom of "grandparents' gardens." The sociability among species is an element mentioned by some gardeners. These blended plantings increase the ecological relations and the supply for pollinators, preventing the proliferation of pests and promoting the communication among them, a strategy widely applied in agroecology.

To Mancuso (2019), plants also have memory. The memory of plants must be seen only for what it is—the capacity to retain data about the past to guide actions in the future. A vegetable can learn from experience. Furthermore, the biologist presents plant mimesis, which is the ability to send signals to each other. Plants communicate, and therefore, nothing is more natural than placing them close together in gardens. Vegetal specimens organize themselves as a collective intelligence, with individual modules that form the whole.

The crucial difference between the social organization of animals and plants is that the latter operates in a decentralized system with joint decision making. For animals, the adaptive response is escaping when facing danger. Plants need to adapt despite the threat. For such, the fractal development that takes place in the roots as a collective organism where proximity is beneficial is important. This turns "plants into organisms capable of using properties arising from interactions between groups to respond to problems" (MANCUSO, 2019, p. 104). In gardens, humans collaborate with this interaction by creating proximities and combinations of species, intuitively using culturally incorporated knowledge.

If urbanization and the use of gardens as a modernization strategy undertaken in Belo Horizonte promote a strongly regulated monocultural garden, the gardens researched are biodiverse (Figure 10). The Possible Gardens' spatial cosmopolitics is one of diversity. In that sense, Shiva (2003) questioned the unilateral thinking installed in the world, referred to as the process of monoculture of the mind. In the official production of cities, this process becomes space for instance in isolated scenic gardens. Monoculture starts in the mind to only reach the soil afterward.

FIGURE 10
Garden biodiversity.

When a group or system self-proclaims its superiority and creates mechanisms to expand its ways of thinking and being superior to other societies, local systems of knowledge suffer a series of violence, such as being considered insignificant and having their way of existence made impossible. The presence of territories with many gardens planted in local systems and a mixture of species, similar to agroecological plantings, is a resilient repository of biodiversity in the middle of the city. They are part of the cosmopolitical fight for biodiversity and life. In these gardens, the reciprocal management of species is the way in which different agents interact, instead of the violent and exclusive selection of monoculture.

In a provocation, Mancuso (2019) points to the contemporary democratic system as a political mechanism that reflects the vanity of few individuals who long for power and erase other experiences, at this stage a concept very close to coloniality. To him, a more decentralized social organization, like the one of the plants, as well as architecture and cosmology, could be more efficient to human beings and other animals with the construction of multispecific social pacts. A more sustainable world is not only one where there are more plants but a world that thinks like a plant. In that way, it is possible to consider a more active participation of plants on the analyzed network.

4.8 Animals

The existing animals are perceived as companions, friends, and agents of the space. The city is seen, in the imaginary of the interviewed, as exclusive places for humans and pets. The presence of wild animals is understood as a consequence of deforestation and urban expansion. Most gardeners do not scare these animals away, and oftentimes, they feed them.

4.9 Natural cycles

Far from being an isolated perception in gardens, change in natural climate, animal migration and reproduction cycles, and hydrological cycles, which are consequences of the urbanization, has become more evident. This perception in gardens goes beyond the evidence exclusively studied by climate science at the Anthropocene, represents a noticeable frequently narrated shift in the day-to-day, and exceeds individual perceptions.

Even so, whether it is by tradition or by a smaller insertion in modern techniques of planting, in most gardens, the ecological management techniques prevail. The use of some chemical defender was mentioned in only four interviews. The cultural handling of water and the river is also seen in practice in the impoundment of rainwater, promoting the infiltration in public gardens, in the construction of cisterns to store water, in landslide prevention with plants with net roots that hold the soil, and in the use of spring water for irrigation. The multispecific relations that are developed at the slope put in perspective some aspects of practices that have real ecological implications. The animals and plants are seen as partners and, more importantly, as friends in this process.

4.10 Naming

In the interviews, some other names were given to gardens. For research purposes, it is interesting to understand these namings and the unfolding of these words. The garden territory presents itself from them as a microcosm of possible symbologies.

The word “house” was mentioned in 11 interviews. The association of the word “house” to “garden” shows the recognition of the importance of this space, not hierarchically, in people’s lives. There is no separation among the spaces to sleep, eat, to plant, and interact with other species. The Possible Garden, among all other spaces, is the house. The house is common to humans and nonhumans, where everybody lives together. The house is also the place to raise a family, the home where the members of the family live. This familiarity with individuals of other species is built on Earth, a living macrocosm, as an ecological manifestation.

The memory key refers to the ancestry as the exercise of memory by itself. Such ancestry has life as a relationship bond common to everything inhabiting the living Earth, everyone’s home (KRENAK, 2019). The familiarization of living creatures plays an important role in memory and in the construction of this ancient house. For Krenac, it would be possible to share this memory and stimulate this familiarization bond with ancient values. The outlined familiarity traits between plants, animals, and people indicate that this memory is in the house space, not different from the garden, and it shelters all the individuals of the family.

People also named gardens as “forests” or “the woods,” especially in areas with many plants, near the springs, and where there is native vegetation because the anthropic intervention is minor and the action of other creatures is better perceived. “Bush” also appears in speech as a memory, taste, nostalgia, or from the knowledge of popular medicine and cosmetics “from the bush” in reference to an Afro-descendent background. The use of words related to water to define gardens also appeared in the interviews, and a perception of it as a present and active element in the territory represents an evident structuring element.

The composition of vegetation, water, spring, animal and memory brings the recollection of the Atlantic Rainforest and of the altitude *cerrado* that one day populated this place. They make us aware, in the imaginary and vocabulary, of the forest that the city and the urbanization subtracted. If the urbanization was, historically, the opposite of barbarity, the city is, in this sense, the antipode of the woods and wild forests. However, it is latent in the Possible Gardens, and it lives under the asphalt. When remembering that the forest is a big garden historically built by native peoples (KRENAK, 2019) by multispecific interactions that happened in them and still happen with mutual interference, attributing to the woods, the bush, and the forest what the research calls “garden,” means that humans are present in this interaction. If modern humans that only recognize themselves in the cities inhabit and build their space from an urban planning that pushes people away from other beings, the humans that plant and create cosmopolitical worlds in their gardens do not recognize themselves in this city. In the imaginary and living practices, other cities, other possible and really sustainable ecological worlds survive.

Some human behaviors are attributed to plants and animals, such as protection, partnership, and friendship. The words more

frequently used to define, name, and qualify not only mainly plants and animals but also water, land, and the sun are related to friendship and relatedness. The love, friendship, and collaboration between beings of different species were present in 83% of the interviews. This love and friendship can be analyzed based on some concepts such as "topophilia" (TUAN, 2012) and "biophilia" (WILSON, 2002), but ultimately based on the understanding of love as a condition for life to exist (MATURANA, 2001; MATURANA, 2002).

4.11 Bonds created in gardens

Topophilia is a neologism defined as "the emotional bond between the person and the place or the physical environment, diffuse as a concept, but vivid and concrete as a personal experience" (TUAN, 2012, p. 19). The study focuses on the subjective, cultural, and personal aspects, considering the spatial experience. It associates to the geographic sense of space, the scale of experience. It is noticeable, therefore, that the term topophilia associates feelings with the environment with the aim of promoting the idea of place. Furthermore, the fundamental influences of cultures, genres, races, and historical circumstances about the perceptions are emphasized. From the concept of a sense of space, Tuan explains how several people and cultures build life with the concept of memory associated with a topophilic spatial action as a decisive factor.

Another aspect to consider, with the Possible Gardens in perspective, is how the loss of space implies the threat of identity loss. So, identity becomes the center of ecology. The proposition of a loving relationship with Earth raised by the term "topophilia" enables the consideration of affectionate manifestations. In this sense, the term expresses the person's association with the place of living as an inclusive relationship. Tuan also highlights topophilia as a counterpoint to the homogenizing cultural forces.

Another neologism from which we can understand the love and friendship relations in the Possible Gardens is the term "biophilia." According to Wilson (2002), it is the emotional connection that human beings have with other living organisms. Wilson says that this connection is genetic and has evolutionary roots of life preservation. Also, biophilia is affected by personal, social, and cultural experiences in which the person is inserted and lives since early childhood. The emotions activated by the contact with others vary from attraction to aversion, from admiration to apathy, and from peace to anxiety. These perspectives also support some ecological movements. Biophilia creates a hierarchy and gives different importance levels to other beings.

Both terms—topophilia and biophilia—are defined by the emotional bond, and to a lesser or greater degree, they can be applied in understanding the relations that develop at the Possible Gardens.

4.12 Love and cooperation

For the Chilean neurobiologist Maturana (2002), Maturana (2001), the constitutive emotion of human life is love. Love is "the biological condition that is the basis of humanity" (MATURANA, 2001, p. 186). It is the spontaneous, dynamic condition of acceptance from a living system of one's communal existence with another living system. Love is a biological phenomenon that promotes socialization. That way, it would be the foundation of the social phenomenon and not its consequence. "The anthropological origin of the *Homo sapiens* was not based on competition, it was based on cooperation, and cooperation can only happen as a spontaneous activity through mutual acceptance, therefore, through love" (MATURANA, 2001, p. 185). However, emotions are not what we call sentiments. From a biological standpoint, emotions mean "dynamic physical dispositions, and they define different action domains." Maturana also emphasizes the denial of this praxis due to the insistence on rationality as a delimiter of human praxis. According to the author, opposed to love, there is rejection. Rejection negates the other and culminates in separation, and love builds coexistence. It is a daily phenomenon, and there is nothing special or occasional about it. The denial of alterity of other beings, as well as of their existence, would be on the baseline of planet devastation and ecological crisis.

The human being cannot live alone. We live with other living creatures, and therefore, we share our vital process with them. The history of humanity shows that love is always associated with survival, once it is only possible to survive with cooperation. Thus, loving implies occupying yourself with the wellbeing of others, respecting their space for them to exist in plenitude. To this sense of love, the word "friendship" will be incorporated, which was widely mentioned in the interviews and, therefore, will be the basis of understanding. So, love reaches all living beings and also places and contributes to a perception of multispecies collectives. Love and friendship, cooperation between different species, and the coexistence validated by this love are what turn the Possible Gardens multispecies families with fathers, mothers, and siblings, a coexistence of confluence and conflict, hierarchy, and proximity.

These agents and agencies uncovered in the Possible Gardens territory build politics from the worlds they create. Identifying and recognizing them, not only as existing elements but also as agents which build multispecific relationships, allows expanding the politic circle in cities. It enables us to envision other politics that make more sense in daily life, from other cosmologies than the ones perceived by hegemonic planning or urban policies.

5 Conclusion: Possible Gardens as a cosmopolitical ecological example

Gardens structure political actions in the daily lives they come from and also on the formal structure of urban planning, for example, of the common garden at the floodplain. The agents' narratives reflect their cultural point of view and delineate the world from the relations of the place from which it is seen and by whom it is seen. Gardens, on a smaller scale, spread on the urban space as a "global garden," a "garden of resistance" (CLEMENT, 1997), and as patches of collective multispecies (TSING, 2019), are on the aspect of the ordinary and the mundane. These places settle on the territory and create strength on their capillarity. Therefore, they conform themselves as cosmopolitical devices inherent to another production of cities, one based on more horizontal practices. From this possibility of recreating territories given by Assmann's cultural memory and by Escobar's "Thinking-feeling

with the Earth," this becomes important as an action for the task of any "critical thinking in the current conjecture, to which we will refer as the reconstitution of worlds" (ESCOBAR, 2016, p. 10).

Resuming the definition of "garden" as a microcosm of infinity, a representation of a world, and a cosmology, the world of Possible Gardens is one of interaction among friends of all kinds. It is a living organism, a microcosm of the living Earth. According to the magical animist point of view of the shaman Kopenawa and Albert (2015), life and the living earth speak, feel love and pain, and bless or curse, and above all, they are the absolute founding condition of life.

Returning to a multispecies and cosmopolitical perspective, the use of the term Possible Garden allows reassuring the meaning of garden as metaphor. It is also important to clarify some advances achieved. By this study, it is possible to understand these are worlds of a lived experience that unites humans and nonhumans and migration of plants and knowledge that enable thinking about cities and rebuilding the understanding of their environmental history, which can be perceived as an R-existing space. In them, coexistence, cooperation, predation, competition, mutual learning, and exchanges of affection and aggression are visible. These are some of the relationships at the core of the production of community life and in the gardens, a community that cannot be restricted to humans. They are territorialized spaces that shape a world of socio-biodiversity and counter-hegemonic ways of living.

The gardens' worth is inserted on the cosmopolitical struggles, without a confrontational appeal. They are worlds that exist and resist for their common and individual memory, humans and nonhumans, of friends who cooperate, spatialized in plant and animal species, objects, management systems, and ecological knowledge that constitute them. This observation contributes to a rethinking of the anthropocentric device that operates in urban thought and that delimits human life as a qualified, political life, to the detriment of other lives as unqualified and mechanical ones. It also brings possibilities for expanding an ecological urban thought that does not subordinate itself to the kind of reductionism present in the classical opposition between culture and nature. It highlights the perspective that social and environmental always go together in gardens.

According to Latour (2004), it is necessary to broaden our political circle including nonhuman agents. The parliament of things (LATOUR, 1994) is a view of what this could be. This proposition elicits the understanding of how this action can be performed and what kind of politics this is. Stengers (2018) suggests cosmopolitics as a way of expanding what kind of political circle we would be able to build if we could think about things and politics beyond the human elements on a clearly animist approach. A possible way of addressing the ecological catastrophe, for Stengers, would be along the lines of (cosmo)political ecology, incorporating the political view of all humans, from the political ecology to the ability to not only recognize the action of new beings but also to treat as legitimate the different ways in which the ecological matter is imposed to several living beings.

Considering what has been developed so far, this study presents some limitations given by the specificity of the social, cultural, and geographic context of the sample, as well as by the territorial scope reached. Furthermore, Possible Gardens constitutes a little-explored analytical category yet.

Nonetheless, the study also points to new directions for a current problem: reinstalling nonhumans as political agents equipped with alterity and not as fragile elements to be protected or as resources to be exploited, which means recognizing and inventing other ways of living, establishing a more harmonious coexistence beyond the dichotomy contained in the idea of nature. Therefore, searching the confluences and the allies on the territories of the city to think about the cosmopolitics was this research's path, and from this possibility, the Possible Gardens presented themselves as examples of cosmopolitics where ecological confluences take place that can be the catalyst for environmental policies, architecture, and urbanism.

In conclusion to what has been presented here, the results open other ways to approach the term garden in urban territory, foreseeing other "possible" resistant examples to imagine other worlds.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material; further inquiries can be directed to the corresponding author.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

LB contributed to the conception and design of the study, organized the database, performed the statistical analysis, wrote the manuscript, contributed to manuscript revision, and read and approved the submitted version.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fenvs.2023.1234178/full#supplementary-material

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