Governing mined landscapes through memory: Afro-centred approaches to post-extractive transitions

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ABSTRACT

This article examines the heritage-making of the Du Veloso Mine, located in the Quadrilátero Ferrífero—one of Brazil's most strategic mining regions—as a process of post-extractive, Afro-centred governance led by community actors in a context of institutional absence. Grounded in Evolutionary Governance Theory (EGT), the study interprets heritage-making as path creation, in which symbolic disputes, material legacies, and institutional reconfigurations are mobilised through a lens of historical justice. The research adopts a qualitative approach that combines interpretive analysis of the guided tour, an interview with the site manager, and the complementary application of the Relevance Determinancy Analysis (RDA) and Competitive Performance Analysis (CPA) frameworks, used as auxiliary tools to capture public perceptions and symbolic effects. The findings indicate that the site's symbolic legitimacy is primarily shaped by its Afro-centred narrative, the role of community mediation, and the emotional connection experienced by visitors. Du Veloso Mine's development reflects a new approach to heritage that challenges technocratic and Eurocentric frameworks, reimagining the subsoil as a space of memory, Black agency, and territorial transformation. The study suggests that policies for post-mining areas should give greater attention to symbolic and emotional aspects as integral parts of resource governance, particularly in historically marginalised settings where state presence is limited.

1. Introduction

The hybrid nature of mining heritage allows it to be qualified in multiple ways, depending on the analytical lens adopted. As industrial heritage, the focus is on the physical remnants of extractive activity and the technical landscapes associated with labour (Verde and Picón, 2010; Blažková and Matoušek, 2013; Pashkevich, 2017; Bole et al., 2024). In the field of cultural heritage, attention is drawn to the memories, knowledge, and local identities linked to mining (Tomíšková, 2011; Ferreira, 2017; Różycki and Dryglas, 2017; Jelen, 2018; Díaz-Acha et al., 2019; Schauer et al., 2021; Viana, 2022). From the perspective of geoheritage, emphasis is placed on the interaction between geodiversity and human agency, revealing how subsurface resources have been historically appropriated and transformed (Ruchkys et al., 2007, 2017;

Ruchkys and Machado, 2013; Paula, 2013; Ferreira, 2017; Mata-Perelló et al., 2018; Prosser, 2019; Mazadiego et al., 2019).

These interpretative layers converge in the four landscape categories proposed by Bloxam (2009), which expand the understanding of values embedded in mining contexts. Socially constructed landscapes reveal how natural elements are appropriated by communities, acquiring cultural and identity-based meanings over time. Contact landscapes highlight the networks of circulation of materials and knowledge, in which geodiversity establishes cultural, economic and territorial connections. Historically associated landscapes link mining sites to historical processes and milestones, recording geological, political, and technical transformations. Lastly, dynamic landscapes express the continuous reconfiguration of these spaces through abandonment, reuse, urban reintegration, and the valorisation of tourism or education. The

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coexistence of these industrial, cultural, and geological dimensions broadens the possibilities for heritage recognition and territorial reconversion.

In mining regions with historical links to enslaved labour — as is the case in many Brazilian gold-producing areas — these heritage layers become even denser and more politically sensitive. The heritage recognition of sites associated with slavery requires approaches capable of addressing symbolic disputes and difficult, dissonant memories (Tunbridge and Ashworth, 1996; Macdonald, 2009; Morais, 2019). Ghana's experience with the Elmina and Cape Coast castles, for instance, reveals the challenges of mediating traumatic memory and the potential for resignification in dialogue with the African diaspora (Yankholmes and McKercher, 2015).

In Brazil, where slavery has been naturalised and often rendered invisible in heritage policy, the valorisation of the Mina Du Veloso in Ouro Preto represents a singular initiative of narrative reconstruction led by local actors. In the absence of clear institutional guidelines, this process has been sustained by community-based practices that activate Afro-centred memories as a means of reshaping the mined landscape and claiming historical recognition. Located in the Quadrilátero Ferrífero — the central mineral province in southeastern Brazil —the Du Veloso Mine expresses tensions between heritage legacy, mineral exploitation, and the invisibilisation of Black memory.

In light of this, the article aims to integrate these heritage perspectives into the emerging debate on post-extractive governance, with a focus on the symbolic dimensions of resource politics. In a global context of increasing mine closures (Bainton and Holcombe, 2018; Alonzo et al., 2024; Measham et al., 2024), community-led heritage-making may function as a strategy for territorial reconversion and symbolic activation — even in territories deemed peripheral or stigmatised — complementing technical-strategic approaches to Post-Mining Land Uses (PMLUs) (Amirshenava and Osanloo, 2022; Worden et al., 2024).

Within this context, emergent heritage regimes challenge technocratic governance models by demonstrating that resource politics involve disputes over the meanings attributed to territory, memory, and identity (Worden et al., 2024; Ruchkys et al., 2025a). The mined landscape, once seen as industrial residue, has increasingly been reconfigured as a symbolic foundation for community-based future-making, as occurred in Roşia Montană, Romania (UNESCO, 2025; Musteaţă & Cozma, 2020).

To grasp this symbolic dimension of governance in mined territories, this article adopts the Evolutionary Governance Theory (EGT) as its central analytical framework. EGT conceives governance as a dynamic and co-evolutionary system, in which actors, norms, discourses, and material structures are mutually transformed over time (Van Assche et al., 2013; Partelow et al., 2020). Its strength lies in the ability to integrate formal and informal elements, articulating institutional, discursive, and material dimensions in situated ways. This approach proves particularly fruitful in mining (Yasmin et al., 2024) and post-extractive contexts (Ruchkys et al., 2025a), where industrial legacies directly influence future trajectories. By emphasising contingency, temporality, and meaning-making as constitutive axes of institutional action, EGT offers a robust framework for analysing heritage processes in territories shaped by symbolic disputes.

Against this backdrop, the article examines heritage-making as an emergent form of symbolic and territorial governance, drawing on the case of Mina Du Veloso in Ouro Preto, Brazil. This trajectory mobilises the memory of enslaved labour as a tool for territorial revalorisation, institutional innovation, and the formulation of symbolic public policies. In this process, heritage interpretation plays a central political role (Silberman, 2013), operating as a practice of contestation, reinterpretation, and projection of historical meaning.

The research is guided by the following question: How can the heritage-making of mining sites associated with slavery constitute a process of path creation and memory activation as a vector for future-making, particularly when driven by local actors in contexts of institutional absence or neglect?

Based on this question, the article aims to analyse how the symbolic valorisation of Mina Du Veloso contributes to the construction of an emergent heritage regime, aligned with demands for memory, racial justice, and local development. EGT, in this sense, provides a robust theoretical-methodological framework attuned to contingency, time, and discourse — central aspects for understanding heritage processes in territories marked by extractive legacies and symbolic contestation.

The methodological approach is qualitative, structured by EGT and complemented by interpretative analytical tools. To enhance empirical insight into the symbolic effects of heritage-making, the study incorporates two matrices developed initially in the field of destination management: RDA (Relevance–Determinance Analysis) and CPA (Competitive Performance Analysis). RDA enables the identification of symbolic and functional attributes according to their relative importance in shaping visitors' overall experience. At the same time, CPA introduces a comparative perspective by positioning the site about regional competitors. Although derived from a distinct disciplinary tradition, these tools are adapted here as auxiliary interpretative strategies in dialogue with the tenets of evolutionary governance.

The case of Mina Du Veloso is thus analysed as a situated manifestation of an emergent governance regime (Yasmin et al., 2024), whose symbolic, material, and institutional effects reveal the potential for territorial reconversion in post-mining and racially marked contexts. By illuminating a heritage trajectory led by local actors in a post-extractive and racialised setting, this study contributes to the international debate on the symbolic uses of mined territories. It expands the applicability of Evolutionary Governance Theory to contexts of difficult memory and territorial justice.

2. Methods

This research adopts Evolutionary Governance Theory (EGT) as its central methodological framework, guiding the formulation of the research problem, data collection, and interpretation of results. Understood as a conceptual framework for analysing institutional arrangements in dynamic and contingent contexts, EGT enables heritage-making to be understood as a process of path creation, in which normative legacies, symbolic disputes, and institutional rearrangements are interwoven. Governance is thus conceived as a co-evolutionary arrangement between actors, norms, discourses, and material structures, and is sensitive to local narratives and contextual ruptures that shape institutional transformation (Van Assche et al., 2013; Beunen et al., 2015, 2022).

Based on this framework, the study was structured as a qualitative, exploratory case study, organised around three interrelated empirical axes: (i) reconstruction of the institutional trajectory of Du Veloso Mine, focusing on heritage mediation practices; (ii) interpretive analysis of the guided tour and the locally constructed symbolic narrative; and (iii) assessment of public perceptions of the heritage experience, based on spontaneous visitor comments. These axes were mobilised to operationalise four analytical categories derived from EGT—path creation, path dependency, bifurcation points, and reality effects—used as interpretive tools for identifying the meanings attributed to heritage in post-extractive and racially marked contexts. In particular, path dependency was unpacked into four types—trajectory dependency, goal dependency, interdependency, and material dependency—based on the typology proposed by Van Assche et al. (2021). Each type of dependency was used as a qualitative coding axis to identify how symbolic legacies, future expectations, and physical constraints influence the heritage-making of Du Veloso Mine.

The reconstruction of Mina Du Veloso's trajectory was carried out through the analysis of institutional documents, promotional materials, field observations, and a semi-structured interview with the site's manager. This interview plays a central role in the research, not only as a source of data but as a living expression of transformative agency within

the post-extractive context. The interviewee, co-author of this article, acts as a key protagonist in the processes of re-signification and patrimonial activation of the site, assuming a position that goes beyond that of a mere informant. His active involvement in the symbolic, institutional, and productive reorganisation of the mine — now understood as a place of memory and collective action — positions him as a structuring agent of the emerging governance. This direct participation in both the formulation of interpretations and the very constitution of the empirical object justifies his co-authorship, in alignment with the principles of the Evolutionary Theory of Governance, which acknowledges the creative role of local actors in the (re)production of territorial arrangements, particularly in contexts of transition. The history of Mina Du Veloso is well-documented in research that highlights its centrality as an Afro-descendant heritage site and as a locus of symbolic transformation in the post-extractive setting (Nascimento, 2020; Viana, 2022).

The guided tour of Du Veloso Mine was analysed through the lens of heritage interpretation as political practice (Silberman, 2013), understood as a communicative process of symbolic negotiation and public deliberation. This perspective shifts the emphasis from the mere transmission of historical information to the co-construction of meaning between mediators and audiences. The analysis examined tour scripts, mediators' discourse, visual materials used along the route, and public feedback on the experience. Special attention was given to how the historical narrative of the mine—centred on the memory of enslaved peoples, Black resistance, and territorial reconfigurations—acts as a vector of symbolic activation, generating cognitive and emotional shifts among visitors.

The analysis of public perception was based on a qualitative reading of 234 spontaneous comments published on TripAdvisor between 2018 and 2024. Due to the absence of formal visitor records—such as guest books, ticketing systems, or booking systems—the platform served as the primary empirical source for understanding the audience experience. Recent literature acknowledges the interpretive value of such spontaneous records, particularly in community-based heritage-making contexts, where institutional data production is limited (Taecharrungroj and Mathayomchan, 2019; Yan et al., 2022; Ricardo et al., 2022). Moreover, TripAdvisor has emerged as a legitimate source of qualitative data in tourism studies, given its widespread use by visitors and its potential to reveal more subjective and affective evaluations of the experience (Scalabrini et al., 2024). The comments were systematised in a spreadsheet and coded using the Relevance Determinancy Analysis (RDA) and Competitive Performance Analysis (CPA) matrices, adapted qualitatively for the context of tourism in post-mining sites (Mikulić and Prebežac, 2012; Armis and Kanegae, 2021). The analysis followed the standard matrix logic, with scores ranging from 1 to 5, and adopted a mean threshold of 3.5 to identify critical attributes.

The RDA matrix enabled the identification of symbolic, emotional, and functional attributes of the heritage experience, assessed in terms of their relevance (frequency and intensity of mention) and determinance (influence on overall visit evaluation). The arithmetic mean of the scores (relevance = 3.52; determinance = 3.49) was used as a threshold to identify high-leverage symbolic attributes. The CPA matrix, in turn, allowed for comparison between the experience offered by Du Veloso Mine and other tourist mines in the region (such as Passagem Mine, Jeje Mine, and Chico Rei Mine), identifying narrative differentiators and inflection points about conventional heritage trajectories. Scores were assigned for perceived internal performance (3.54) and perceived relative performance (3.47), organising attributes into comparative quadrants based on visitors' spontaneous comments.

Although originating from fields outside EGT, the application of RDA and CPA was designed as a complementary empirical strategy subordinated to the logic of evolutionary governance. Their function is not to replace the core method of the research but to enhance its empirical capacity to capture the symbolic effects of heritage-making. Each tool was linked to specific EGT categories, as summarised in Table 1: path creation and reality effects were operationalised through the interview

Table 1
Linkage between analytical tools and EGT categories.

Tool	EGT Categories Operated	Function in Empirical Analysis
Interview with the mine's manager and interpretive analysis of the guided tour	Path Creation Reality Effects	Reconstruction of the institutional trajectory through community mediation and symbolic activation of the territory
RDA (Relevance–Determinance Analysis)	Reality Effects Path Dependency	Identification of the most relevant affective, symbolic, and operational attributes of the heritage experience
CPA (Competitive Performance Analysis)	Bifurcation Points Path Dependency	Comparison of Du Veloso Mine with conventional tourist mines; identification of narrative ruptures and interpretive differentiators

and interpretive analysis; path dependency and reality effects, through the RDA; and bifurcation points and path dependency, through the CPA.

This combination of methods and empirical sources constitutes a qualitative triangulation strategy consistent with the principles of Evolutionary Governance Theory (EGT). By articulating discursive evidence, institutional narratives, affective perceptions, and empirical comparisons, the study seeks to map the processes of symbolic stabilisation and institutional reconfiguration currently unfolding at Du Veloso Mine. The emerging heritage governance is thus analysed as an expression of post-extractive trajectories led by local actors, whose communicative and organisational actions operate as vectors of institutional transformation and the construction of possible futures.

As with all qualitative investigations grounded in interpretive triangulation, this research acknowledges methodological limitations. Firstly, the analysis of public perception was based on spontaneous comments posted on the TripAdvisor platform, which entails risks of self-selection bias and a lack of control over the respondents' socio-demographic profile. While this source enables the capture of highly interpretative affective and subjective evaluations, it lacks statistical representativeness and data standardisation. Secondly, the absence of formal quantitative indicators on visitation rates and economic impact limits the potential for cross-analysis between symbolic and operational dimensions of the heritage experience. Finally, the active involvement of the site manager as co-author — although consistent with the epistemological premises of EGT — requires explicit recognition of the reflexive and performative character of the research about the very process it describes. These limitations, however, do not compromise the interpretative validity of the study, whose central aim is to understand the symbolic and institutional dynamics of an emerging heritage trajectory, rather than to measure its outcomes through conventional performance metrics.

3. Results: symbolic governance and emerging post-extractive heritage trajectories through the lens of EGT

This section presents the empirical findings through the analytical categories of Evolutionary Governance Theory (EGT), with a focus on the symbolic and institutional reconfiguration of mined territories in post-extractive contexts. The analysis draws on evidence from diverse sources and tools—including interviews, field observations, institutional materials, and public perceptions—organised around the four key EGT categories: path dependency, path creation, reality effects, and bifurcation points. These categories guide the interpretation of local heritage-making as a form of situated governance, shaped by community ties, narrative disputes, and alternative trajectories of symbolic recognition.

The case of Du Veloso Mine in Ouro Preto is analysed as an

expression of a post-extractive and Afro-centred trajectory, in which the co-evolution of inherited material structures, local interpretive agency, and gradual institutional transformation becomes evident. In contrast to state-led or technocratic models of mined-area rehabilitation, the process examined here highlights the emergence of an alternative heritage regime rooted in symbolic justice, historical reparations, and the activation of memory as a vector for future-making.

3.1. Colonial legacies and silencing: historical foundations of path dependency

The occupation of the Minas Gerais region, particularly the area now known as the Quadrilátero Ferrífero—one of Brazil's most strategic mineral provinces—gained momentum at the end of the seventeenth century, when confirmed reports of alluvial gold deposits along the Rio das Velhas signalled the beginning of Brazil's "golden age" (Russell-Wood, 1977, 1982, 1997). This event marked the first gold rush of the colonial period, launching a cycle of intense mineral exploitation that profoundly transformed the local landscape. Mining settlements, villages, and roads emerged, intricately connected to the Portuguese metropolis and Atlantic trade routes (Russell-Wood, 1997; Ruchkys et al., 2007; Andrade and Rezende, 2013). The city of Ouro Preto, then known as Vila Rica, stood out as a centre of this activity, attracting thousands in search of fortune and becoming one of the most critical urban hubs of the colony.

Eighteenth-century mining involved a complex network of knowledge, techniques, and tools, materialised in numerous structures that remain preserved in Ouro Preto today. Mundéus (sluices), sarilhos (winches), aqueducts, cisterns, underground galleries, and drainage systems made up the mining engineering of the period. These elements shaped the daily routines of workers and structured the spatial organisation of both urban and rural areas. Many of these remnants are still visible today, forming a historical landscape that bears witness to past modes of subsoil exploitation and territorial organisation. At the same time, these vestiges expose the human and social dimension of colonial mining, marked by the forced labour of enslaved Africans (Lima and Miranda, 1996; Sobreira and Fonseca, 2001; Sobreira, 2014; Ferreira, 2017; Barbosa, 2021).

A large portion of the labour force employed in the mines was composed of enslaved men, forcibly taken from the African continent. Mining demanded skilled labour, including carpenters, craftsmen, stonemasons, and blacksmiths. It was predominantly carried out by enslaved individuals referred to by the Portuguese as Minas—a generic term for Africans captured along the Mina Coast, a region extending from Cape Palmas to Cameroon, covering areas of present-day Côte d'Ivoire, Ghana, and Benin. These individuals were particularly valued for their physical strength, technical knowledge, and familiarity with mining practices, originating from societies such as Denkyira and Adansi, where gold dust served as currency and shaft mining techniques were widely mastered. They also possessed advanced metallurgical knowledge, including the skill of alloying gold with other metals, revealing a sophisticated technical repertoire.

Mining labour in the Gerais imposed extremely harsh conditions, with extended hours in cold water under intense sun, exposure to diseases such as dysentery, malaria, pleurisy, and pneumonia, as well as risks of accidents and lung infections in underground tunnels. Under such conditions, physical exhaustion was rapid, and mortality rates were high. The technical expertise of enslaved individuals from the Mine Coast underscores their significance not only as economic agents but also as cultural contributors within the colonial mining context (Russell-Wood, 1977, 1982).

However, this legacy was silenced for decades by a monumental and Eurocentric approach to heritage-making, which prioritised Baroque aesthetics and colonial elites. Path dependency, in this context, is expressed not only in the surviving physical landmarks but also in the normative and discursive frameworks that have shaped the public memory of mining. This framing has limited the emergence of alternative interpretations of the past, contributing to the marginalisation of Black experiences, local knowledge systems, and peripheral territories, such as the São Cristóvão neighbourhood, where Du Veloso Mine is located.

With the progressive depletion of the mines and the economic transformations that began in the 1940s, Ouro Preto embarked on a process of reinvention centred on the valorisation of its colonial past. Tourism came to play a central role in the local economy, driven by the city's designation as a National Heritage Site in 1938 and its subsequent inscription on the UNESCO World Heritage List in 1980. Within this context, former mining structures began to be rehabilitated for tourist visitation. From the 1980s onwards, underground mines such as Passagem and Chico Rei were adapted to receive visitors, offering a sensory experience of the subsoil and evoking narratives about the history of mining and slavery. This shift gave rise to a new form of heritage use, combining memory, tourism, and identity (Sobreira, 2014; Ferreira, 2017; Viana, 2022).

Although these initiatives represent essential advances in reconfiguring the mining landscape, they often reproduce pre-existing institutional logics—centred on conventional tourist itineraries, the neutralisation of historical tensions, and the absence of community leadership. Du Veloso Mine, opened to the public in 2014 and located in the São Cristóvão neighbourhood (Fig. 1), emerges as a turning point in this field by offering a counter-hegemonic reading of the mining past. Nevertheless, it carries with it the marks and limitations of a long process of social and symbolic invisibilisation.

It is precisely within this inherited terrain—shaped by silences, material legacies, and institutional exclusions—that local actors have undertaken a deliberate effort of symbolic and institutional reconfiguration. This effort can be understood through the lens of path creation, which captures the capacity to forge new trajectories through practices of mediation, memory activation, and the collective construction of meaning.

3.2. Path creation: The Afro-centred trajectory of Du Veloso Mine

The heritage-making of Du Veloso Mine represents an emblematic case of path creation, as proposed by Evolutionary Governance Theory (Van Assche et al., 2013, 2021). It is a process initiated outside conventional institutional frameworks, led by Eduardo Ferreira, a Black resident of Ouro Preto, who transformed an abandoned mining gallery into a space of Afro-centred memory and deliberative heritage action.
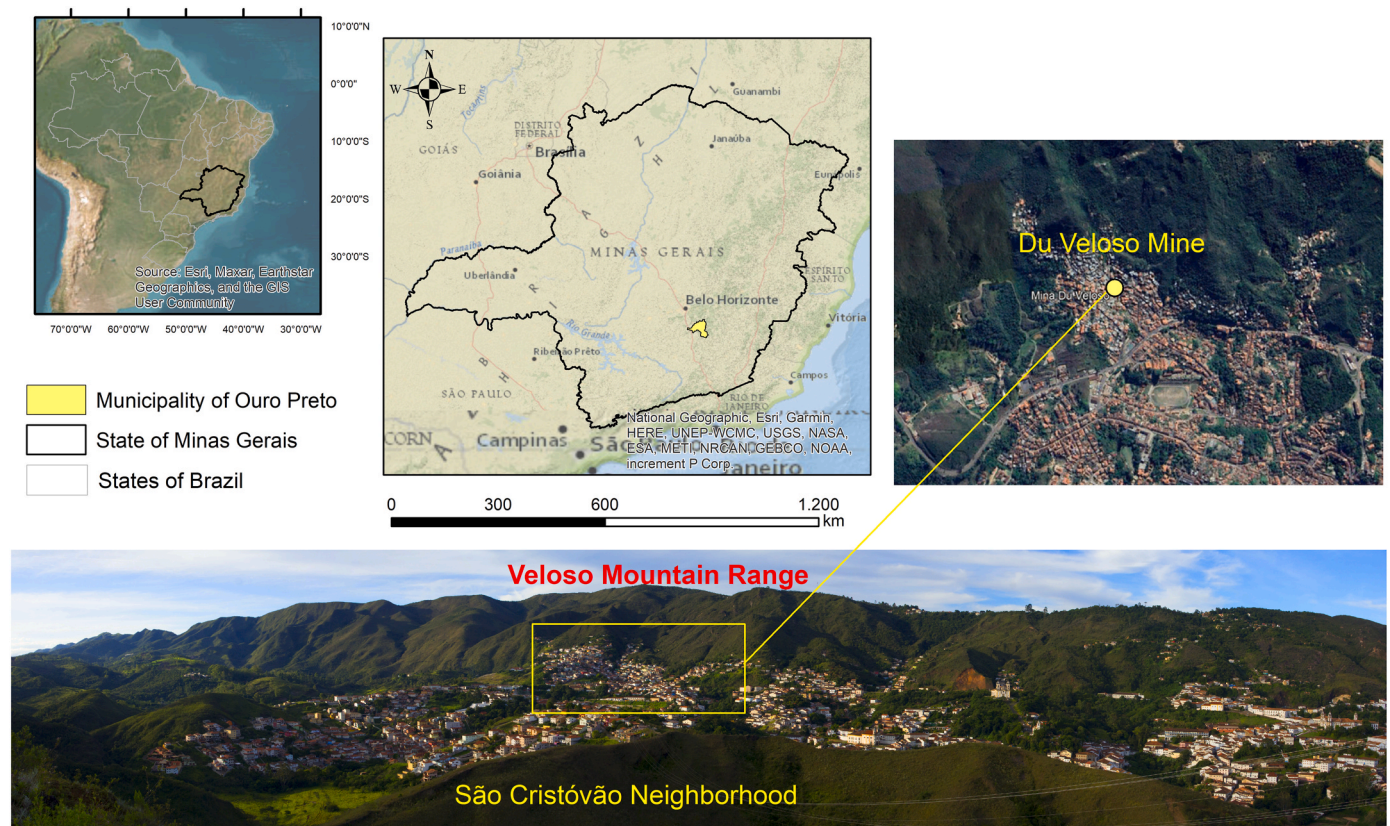
His initiative materially and symbolically reconfigures a territory that has been historically marked by stigma, dispossession, and social invisibility. The acquisition of the property, followed by the physical restoration of the mine entrance and the development of an original narrative, marked the beginning of a new institutional trajectory grounded in a project of identity rooted in symbolic justice, community memory, and ethnic recognition (Van Assche and Gruezmacher, 2023).

In contrast to classical heritage models guided by aesthetic or monumental criteria, the trajectory of Du Veloso Mine emerges from individual decisions and community ties that reframe the local history of slavery and, through affective and interpretive mediation, reconstruct a new place for Black memory within the urban space.

This process of path creation also constitutes a form of emerging symbolic governance, in which the local actor operates not merely as a property owner or site manager but as a meaning-maker, cultural mediator, and political agent. His initiative produces discursive and institutional shifts by asserting the historical presence and technical knowledge of enslaved Africans in eighteenth-century mining, knowledge often erased in the dominant heritage discourses of Ouro Preto.

The heritage mediation proposed at Du Veloso Mine aligns directly with the new interpretive paradigm described by Silberman (2013), which conceives heritage as a field of symbolic dispute and a public arena for collective deliberation. The guided tour transcends the mere

Fig. 1. Du Veloso Mine is located in Ouro Preto, Minas Gerais, Brazil. The figure presents the study area at different scales: the map of Brazil highlighting Minas Gerais; the state map highlighting the municipality of Ouro Preto; a satellite image indicating the location of Mina Du Veloso; and a panoramic view of the São Cristóvão neighbourhood, at the foot of Serra do Veloso, where the mine is situated. Image source: Google Earth.

transmission of historical information, instead offering a sensory, ethical, and political experience that invites visitors to critically reflect on the continuities of the colonial past in the present.

Elements such as interpretive signs, archaeological objects recovered from the surroundings, and the mediators' own narrative gestures function as devices for activating collective memory, allowing heritage to serve as a space for identity reconfiguration. The choice of an Afro-centred narrative—grounded in the denunciation of slavery and the valorisation of Black resistance—breaks with the city's traditional itineraries, which are centred on Baroque aesthetics and the glorification of the gold cycle.

The tour shifts the boundaries between those who narrate and those who are narrated by mobilising multiple interpretive voices (Hvenegaard et al., 2016), thereby expanding the field of representation and democratising the meanings ascribed to heritage. In this context, path creation occurs not only at the institutional or economic level but also at the symbolic, affective, and narrative levels, revealing the transformative potential of heritage practices rooted in territory and guided by historical repair and social engagement.

However, even innovative processes of path creation do not occur in a vacuum. They are constantly shaped and constrained by inherited structures, legacy goals, material conditions, and interdependent relationships. In what follows, we examine how these constraints manifest through the multiple forms of path dependency that shape the emerging governance of Du Veloso Mine.

3.3. Path dependency and its institutional unfolding in the heritage-making of the Du Veloso Mine

The historical legacies previously described not only shape the materiality and narratives surrounding the Du Veloso Mine but also establish institutional constraints that directly influence the ongoing trajectory of heritage-making. In light of Evolutionary Governance Theory (EGT), such constraints can be understood as different forms of path dependency — that is, inherited institutional and symbolic linkages that either restrict or guide the creation of new trajectories (Van Assche et al., 2021).

In the case under analysis, four primary forms of dependency are identified: trajectory, goal, material, and interdependence-based. Below, we describe how each of these forms manifests within the symbolic governance of the Du Veloso Mine, producing effects on the process of heritage institutionalisation (Table 2).

Trajectory dependency is associated with the historical legacies of colonial mining and slavery in Ouro Preto, which have shaped both the materiality of the site — with its manually excavated galleries — and the symbolic stigmas that marked the neighbourhood and the former mine entrance. The previous use of the gallery as a dumping ground and a space of social exclusion is part of this past. The heritage-making process, by reinterpreting this legacy as a site of resistance and Afro-descendant memory, seeks to reverse a trajectory of silencing. This dependency acts as a symbolic and institutional filter, conditioning the range of meanings that can be activated in the present.

Goal dependency refers to the future visions projected by the actors involved — particularly the local site manager — which orient the management of the site as a space for symbolic justice, heritage education, and community empowerment. Although not formally embedded in public policies, these aspirations guide practical decisions, such as the design of Afro-centred interpretative routes and the welcoming of school groups and African diaspora visitors. In this case, projective dependency operates as a strategic driver, aligning present actions with the construction of possible futures.

Material dependency relates to the inherited physical conditions of

Table 2
Types of dependency and reality effects observed in the heritage-making of the du Veloso mine, based on evolutionary governance theory (EGT).

Type of Dependency	Description Observed in the Du Veloso Mine Case	Associated Reality Effects
Trajectory Dependency	Legacies of mining and slavery, manually excavated galleries, and decades of lacking official recognition.	Reactivation of the site as a heritage site, reinterpretation of the enslaved past, and shifts in local community perception.
Goal Dependency	Future visions are linked to community-based tourism, heritage education, and symbolic justice.	Development of a sensitive interpretative route; increased visitation by school groups and the African diaspora.
Material Dependency	Physical conditions of the mine, including preserved galleries, restricted access and lighting, and conservation challenges.	Limitations on expanding the tourist circuit; need for safety adaptations; valorisation of site authenticity.
Interdependencies	Relationships between the site manager, residents, visitors, local institutions, and cultural/tourism agencies.	Strengthening support networks, aligning with public policies, and fostering community engagement.

Table 3
Reality effects observed at the du Veloso mine according to evolutionary governance theory (EGT).

Dimension of Effect	Observed Examples	Relation to Path Creation
Material	Restoration of the mine entrance, construction of a reception area, and drainage works	Generates basic infrastructure that enables visitation and reinforces the site's new function
Social	Grassroots preparatory course, partnerships with social movements, and school visits	Mobilises and engages the community, strengthens social ties, and activates new actors in the process
Symbolic	Reframing of the mine's public image; valorisation of Black memory; institutional recognition (IPHAN)	Confers legitimacy to the heritage narrative; expands the project's reach and recognition.

the mine, which serve both as a symbolic asset and an operational constraint. The authenticity of the underground experience — highly valued by visitors — is directly linked to the preservation of the original structure. However, limitations such as the absence of handrails, inadequate sanitary facilities, and barriers to accessibility also result in discomfort and exclusion. This dependency, therefore, imposes constraints on technical feasibility and management, requiring creative solutions that balance conservation, safety, and inclusion within a context of scarce resources.

Interdependencies involve collaborative networks with the Residents' Association, social movements such as Levante Popular da Juventude, and institutions like UFOP, IFMG, and the Civil Defence. These relationships constitute a hybrid and informal arrangement of institutional and community support. The site manager acts as an institutional entrepreneur (Van Assche et al., 2021), mobilising support, legitimacy, and strategic collaborations, such as for land regularisation or educational initiatives.

This combination of dependencies reinforces the understanding that heritage governance does not emerge on a tabula rasa, but instead on inherited and contested ground, requiring continuous negotiation between past, present, and future.

Although these forms of dependency operate as constraints, they do not undermine the project's transformative potential. On the contrary, it is precisely through the articulation between inherited structures and innovative practices that the so-called reality effects emerge — tangible and symbolic transformations that reconfigure local dynamics of memory, belonging, and territorial use.

3.4. Reality effects: symbolic, social, and material transformations

In Evolutionary Governance Theory (EGT), reality effects refer to the tangible and symbolic transformations that result from territorial steering in situated contexts, whether these transformations are material, perceptual, or relational (Van Assche et al., 2021; Van Assche and Gruezmacher, 2023). In the case of the Du Veloso Mine, such effects are evident in the reconfiguration of the site's public image, the mobilisation of social networks, and the institutional recognition arising from the locally driven heritage-making process. These tangible and symbolic changes are distributed across three main dimensions — material, social, and symbolic — as summarised in Table 3.

The first observable effect is the re-signification of the space. Previously regarded as a dumping ground and associated with urban vulnerability, the site came to be recognised as a heritage and educational space. This transformation began with the intervention of the Civil Defence and was consolidated through community appropriation, led by Eduardo Ferreira, who assumed the role of site manager and guardian. The physical and symbolic transformation of the place redefined its position within the collective imagination, altering the way it is perceived by both residents and external visitors (Fig. 2).

Among the social effects, the educational initiatives promoted by the mine's team — in partnership with the Residents' Association and social movements such as Levante Popular da Juventude — stand out. The Du Veloso Mine Popular Preparatory Course, for instance, has become a space of support and encouragement for the neighbourhood's youth, offering assistance for access to higher education and strengthening identity-based bonds. A mapping of UFOP students originating from the local community was also conducted, aiming to inspire educational appreciation and aspiration among young residents (Nascimento, 2020) (Fig. 3).

Symbolically, the project builds a heritage narrative that honours African ancestry and reframes forced labour in the mines as a legacy of resistance (Nascimento, 2020). This perspective challenges the dominant monumental and Eurocentric discourses in Ouro Preto, positioning the mine as a site of memory and Black agency. The reception of this narrative — both by the local community and by external visitors — contributed to the project's public legitimacy, culminating in national recognition through the Rodrigo Melo Franco de Andrade Award (IPHAN - Instituto do Patrimônio Histórico e Artístico Nacional, 2019).

These reality effects, as they accumulate and gain legitimacy, tend to alter the possible trajectories of the heritage process, creating bifurcation points that may consolidate or redirect its course. The analysis of these bifurcation points thus becomes essential to understanding how narrative ruptures and symbolic differentials have repositioned Mina Du Veloso within the broader field of post-extractive reconversion, articulating heritage uses, demands for historical justice, and local strategies for territorial revalorisation.

3.5. Bifurcation points and public mediations: the empirical contribution of the RDA and CPA matrices

The RDA and CPA matrices were employed as empirical instruments to identify bifurcation points — moments and attributes that signal significant deviations from conventional heritage trajectories. Additionally, they enabled the capture of symbolic effects and operational limitations associated with ongoing path dependencies and reality effects.

The RDA matrix (Fig. 4A) organised the attributes of the visit into two axes: the perceived relevance of each aspect and its direct influence on overall visitor satisfaction. The results indicate that the most prominent elements in symbolic and affective terms were the Afro-centred historical narrative (4.9 | 5.0), the ambience of the underground mine
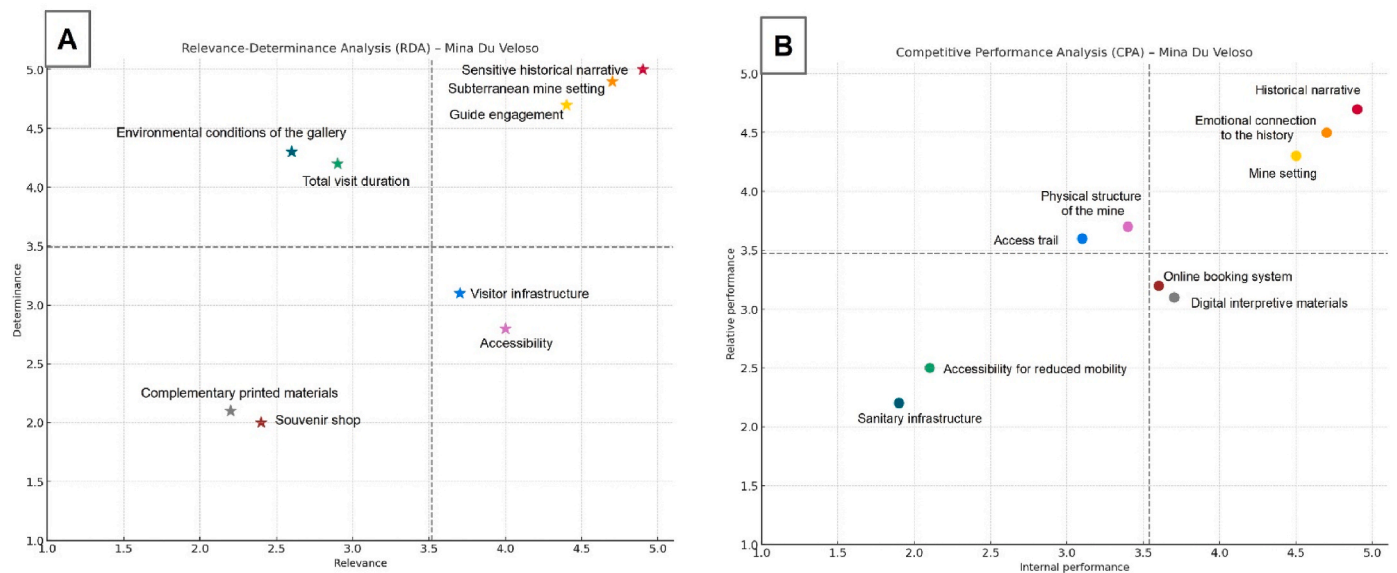
Fig. 2. Transformations in the urban space of São Cristóvão neighbourhood and heritage-making of the mining landscape in Ouro Preto (MG), Brazil. (A) Ruined house, representing the abandonment and precarious condition of the land when acquired by the current owner; (B) Construction site for the visitor reception facility at the mine; (C) Containment and drainage works around the mine area; (D) Entrance to Mina Du Veloso, a heritage site linked to the memory of Afro-descendant labour in mining; (E) Visitor centre built using traditional construction methods.

Fig. 3. Use of the site for educational and cultural activities. (A) Cultural event held in partnership with local collectives and university initiatives; (B) The mine's traditional stove featured in a culinary class on feijoada organised by a local gastronomy program; (C) Guided visit with children from a public school in the neighbourhood.

Fig. 4. A) Relevance-Determinance (RDA) Matrix of the tourist experience at Mina Du Veloso and B) Competitive Performance Analysis (CPA) Matrix of visitor experience at Mina Du Veloso.

(4.7 | 4.9), and the emotional engagement of the guide (4.4 | 4.7). These attributes were frequently described with expressions such as "impactful", "made me cry", and "a live history lesson", functioning as cognitive and affective displacement devices that generate reality effects at the level of experience and belonging, as proposed by Silberman (2013).

By contrast, aspects such as site access (4.0 | 2.8) and reception

infrastructure (3.7 │ 3.1) were rated as relevant but with low determinacy, revealing operational limitations linked to material path dependency. Other attributes — such as souvenir shop (2.4 │ 2.0) and printed materials (2.2 │ 2.1) — were considered of low relevance. In contrast, factors such as visit duration (2.9 │ 4.2) and environmental conditions within the gallery (2.6 │ 4.3) showed high negative determinance, pointing to areas where adjustments could be made without compromising the symbolic core of the experience.

The CPA matrix (Fig. 4B) facilitated a comparative assessment of the symbolic and functional performance of the Du Veloso Mine in relation to other mines in the region. Narratives such as "better than the others" and "a unique experience" reflect the perception that the project constitutes a bifurcation point when compared to conventional tourist circuits. The Afro-centred narrative (4.9 │ 4.7), the immersive ambience (4.7 │ 4.5), and the emotional connection to history (4.5 │ 4.3) were identified as key symbolic differentials.

Conversely, aspects such as accessibility (1.9 │ 2.2) and sanitary facilities (2.1 │ 2.5) were negatively rated, both internally and in comparison to other mines, revealing recurring operational weaknesses that hinder the inclusion of diverse audiences. Items such as the online booking system (3.6 │ 3.2) and digital materials (3.7 │ 3.1) performed reasonably well. However, they fell below the regional average, indicating room for improvement without undermining the attraction's narrative and community-driven character.

The cross-analysis of the matrices reveals that symbolic and affective attributes — particularly the Afro-centred narrative and emotional mediation — constitute the core elements of differentiation and legitimation that position the Du Veloso Mine as an alternative heritage trajectory. These attributes function as bifurcation points by displacing the dominant Eurocentric and informational logic of regional tourism.

Conversely, infrastructural weaknesses — though marked by strong path dependencies — do not diminish the project's transformative potential. On the contrary, they reveal the constitutive ambivalence of evolutionary governance: a process in which symbolic innovation and inherited constraints coexist, interact, and mutually reshape one another. The case thus provides a relevant empirical contribution to EGT by demonstrating how narrative-driven bifurcations in heritage-making can catalyse institutional transformation even in contexts of limited state support and deeply rooted historical legacies.

4. Discussion

The results presented demonstrate that Evolutionary Governance Theory (EGT) offers a robust analytical vocabulary for understanding heritage-making processes in post-extractive contexts, particularly when driven by local actors. The case of the Du Veloso Mine illustrates how institutional legacies, dissident narratives, and material structures interact co-evolutionarily, producing new symbolic arrangements and emergent institutional trajectories.

The analysis reveals that the mine's patrimonialisation constitutes a process of path creation, oriented by symbolic justice, racialised memory, and community agency. It reflects a form of situated evolutionary governance, operating at the margins of conventional state frameworks and combining local knowledge, narrative practices, and affective devices to produce heritage-based institutionalities. This dynamic reinforces the insights of Van Assche et al. (2021), who argue that resource governance involves co-evolutionary arrangements among actors, formal and informal institutions, discourses, and material structures — all in constant reciprocal transformation.

The inclusion of the Du Veloso Mine in Brazil's Ministry of Tourism's Afro-Tourism Guide (Brasil, 2025) exemplifies the reality effects generated by this Afro-centred heritage-making process. More than tourism recognition, this institutional act represents a symbolic milestone that legitimises the site as a public policy of memory and racial inclusion. In this context, the mine is not merely a visitable space, but an institutional organism in formation — one in which the colonial past is

reconfigured as living material for constructing inclusive futures.

Unlike other attractions listed in the guide, the Du Veloso Mine represents the only experience explicitly linked to a post-extractive and colonial mining context. As such, it repositions the field of Afro-Brazilian heritage beyond traditional references — such as quilombos, Afro-Brazilian religions, or cultural festivals — by introducing sites of forced labour, pain, and technical knowledge as legitimate spaces for historical reinterpretation and future projection.

In this sense, the site materialises the connection between the local history of gold mining and the broader world-system of enslavement to which it belonged. The memory of mineral slavery is not treated as a concluded past, but as a living legacy that links Ouro Preto to the Transatlantic Slave Trade Route (TAST) (UNESCO, 1997), establishing ties with other heritage experiences in the African diaspora — such as the former Gold Coast and the mines of Elmina and Cape Coast in Ghana (Yankholmes and McKercher, 2015). The heritage-making of the Du Veloso Mine thus inscribes the underground as a space of Black resistance and re-existence, in contrast to heritage regimes that have traditionally silenced such connections.

The data gathered through the RDA and CPA matrices reinforce this interpretation. Attributes such as the Afro-centred narrative, community-led mediation, and the subterranean ambience were the most valued by visitors, indicating that the symbolic value of the heritage experience can precede — and even surpass — its functional value. Conversely, limitations related to infrastructure and access were recognised as barriers. This asymmetry underscores a key aspect of EGT: in post-extractive territories, institutional recognition may be triggered by the symbolic power of local narratives, even in the absence of robust technical expertise. In line with Bainton and Holcombe (2018), the case challenges the dominant logic of resource policy, which prioritises material metrics and often neglects symbolic impacts as legitimate dimensions of governance.

The governance process underway also reflects the most advanced stage of community involvement, as described by Alonzo et al. (2024), namely the transfer of leadership. The local community not only participates but also leads the meaning-making process, mediates the heritage experience, and builds external support networks. This agency represents a regenerative form of governance that can transform stigmatised territories into places of belonging, learning, and identity affirmation.

The contribution of Barbosa (2021) and the Minas Antigas Platform highlights that the subterranean legacy of the gold cycle in Ouro Preto is vast but historically underutilised. The Du Veloso Mine fills this gap by re-signifying the underground not as technical ruin, but as a site of racialised memory. By articulating inherited materialities (galleries, tools) with contemporary symbolic practices (tours, events, narratives), the local community activates a form of resource governance that transcends the physical domain and enters the realm of cultural policy.

From a theoretical standpoint, the case provides a precise application of the co-evolutionary mechanisms proposed by EGT. Elements such as Afro-centred discourses, peripheral institutional networks, local interpretive practices, and sporadic state actions (such as the Rodrigo Melo Franco Award or inclusion in the Afro-Tourism Guide) interact in adaptive cycles. Local symbolic policies stimulate external recognition, which in turn strengthens the institutional narrative, reinforces community governance, and expands strategic alliances.

The case's main empirical contributions to Evolutionary Governance Theory, along with their analytical and policy implications, are summarised in Table 4 below.

In sum, the trajectory of the Du Veloso Mine reveals that heritage-making in post-extractive contexts can take the form of a co-evolutionary governance arrangement, grounded in memory, community agency, and the symbolic reinvention of territory. The case demonstrates that even in scenarios of institutional discontinuity and absence of specific public policies, it is possible to construct legitimate and innovative forms of heritage governance, in which inherited

Table 4
Symbolic post-extractive governance: Empirical contributions to evolutionary governance theory (EGT).

EGT Category	Empirical Expression at the Du Veloso Mine	Analytical Implications	Relevance for Public Policy
Path Dependency	Legacy of colonial mining and slavery, urban stigma, and inherited materiality	Reveals how historical legacies shape symbolic, material, and institutional constraints	Reinforces the need to acknowledge the legacy of slavery in territorial reconversion plans; highlights the risk of repeating historical silences
Path Creation	Deliberate action by the community manager; Afro-centred narratives; symbolic activation	Demonstrates local agency as a driving force behind new institutional trajectories	Justifies support for community-based initiatives as catalysts for symbolic reconversion and urban regeneration
Bifurcation Points	Break with Eurocentric tourism models; centrality of Black narrative	Shows how symbolic innovations create turning points in heritage trajectories	Encourages revision of heritage and tourism guidelines to incorporate dissident narratives in post-extractive landscapes
Reality Effects	Physical, symbolic, and social transformations; engagement with cultural policies	Confirms the tangible impact of symbolic heritage-making in institutional production	Highlights how symbolic power can anticipate and legitimise institutional interventions in historically neglected mining areas

resources are not merely technical liabilities to be managed but cultural and political assets to be contested, reinterpreted, and activated. In this setting, EGT proves particularly fruitful for capturing the simultaneous movements of rupture, continuity, and regeneration that characterise territories in transition.

5. Concluding remarks

Post-mining transition has become a key topic on research and policy agendas, in response to the progressive closure of mining operations on a global scale (Measham et al., 2024). In this context, the experience of the Du Veloso Mine demonstrates that heritage-making processes led by local communities can constitute legitimate and innovative governance arrangements, even in the absence of institutional support. By transforming mined landscapes into territories of memory, belonging, and symbolic reinvention, such processes reframe inherited resources not as technical liabilities, but as affective, cultural, and political assets — capable of structuring possible futures.

While strategic models of reconversion — such as those focused on defining Post-Mining Land Uses (PMLUs) — offer consolidated parameters (Amirshenava and Osanloo, 2022), the trajectory of the Du Veloso Mine suggests that effective alternatives can also emerge from place-based dynamics and the agency of historically marginalised actors. In line with Worden et al. (2024), post-extractive governance requires multi-scalar strategies that recognise the symbolic and temporal complexity of mined landscapes.

Based on this analysis, two complementary directions for public action are proposed. The first concerns the legal and political recognition of post-extractive territories as spaces of memory and community agency. The first proposed course of action includes the creation of funding mechanisms to support local heritage initiatives; the development of legal frameworks for the recognition of "territories of memory" — particularly those linked to slavery and Afro-descendant heritage — and the incorporation of symbolic and affective indicators into mine closure planning. The second direction focuses on strengthening collaborative networks among communities, universities, and public institutions to reinterpret mining legacies through the principles of historical justice, epistemic pluralism, and decolonial perspectives.

The community leadership observed in the case of the Du Veloso Mine shows that, even on the margins of the State, it is possible to build legitimate forms of heritage governance that mobilise local knowledge, affective ties, and narrative practices to revalorise stigmatised territories. This insight becomes even more significant in the context of the Quadrilátero Ferrífero, where successive extractive cycles — from gold to iron — have left deep material, social, and symbolic imprints. In such a mined and overlapping landscape, thinking about post-mining is not merely about planning for the "after", but about activating legacies as living material for identity and political reconstruction.

Furthermore, the experience highlights the urgency of articulating public policies across different sectors — mining, culture, environment, tourism, and territorial development — whose fragmentation undermines the integrated management of mined territories (Ruchkys et al., 2025b). The adoption of geoethics as a transversal principle may

offer a promising path forward, by recognising the subsoil not only as an economic asset, but as the symbolic foundation for rooted and plural future-making projects.

Finally, this is a qualitative and exploratory study, centred on a single case and focused on the symbolic and narrative dimensions of post-extractive heritage-making. Although it does not claim statistical generalisation, the case of the Du Veloso Mine reveals the transformative potential of situated arrangements of symbolic governance — and affirms, unequivocally, that mined territories can also be rewritten by those who bear their deepest memories.

CRediT authorship contribution statement

Úrsula de Azevedo Ruchkys: Writing – original draft, Visualization, Validation, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Eduardo Evangelista Ferreira:** Writing – review & editing, Validation, Investigation, Formal analysis, Data curation, Conceptualization. **Múcio do Amaral Figueiredo:** Writing – review & editing, Investigation, Formal analysis, Conceptualization. **Alice Ruchkys:** Writing – review & editing, Visualization, Investigation.

Statement on the use of generative AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) and Grammarly to enhance the clarity, coherence, and grammatical accuracy of the English version of the text. Following the use of these tools, the authors reviewed and edited the content as necessary and take full responsibility for the final version of the publication.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The research is based on publicly available data. The sources are cited in the manuscript.

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