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The Rough Hand of the Market. Extracting Semi-Precious Stones in Namibia for Global Supply Chains

Hugo Queminn, Antoine Latarge, Kaarina Efrain, Marie Forget and Mélanie Duval

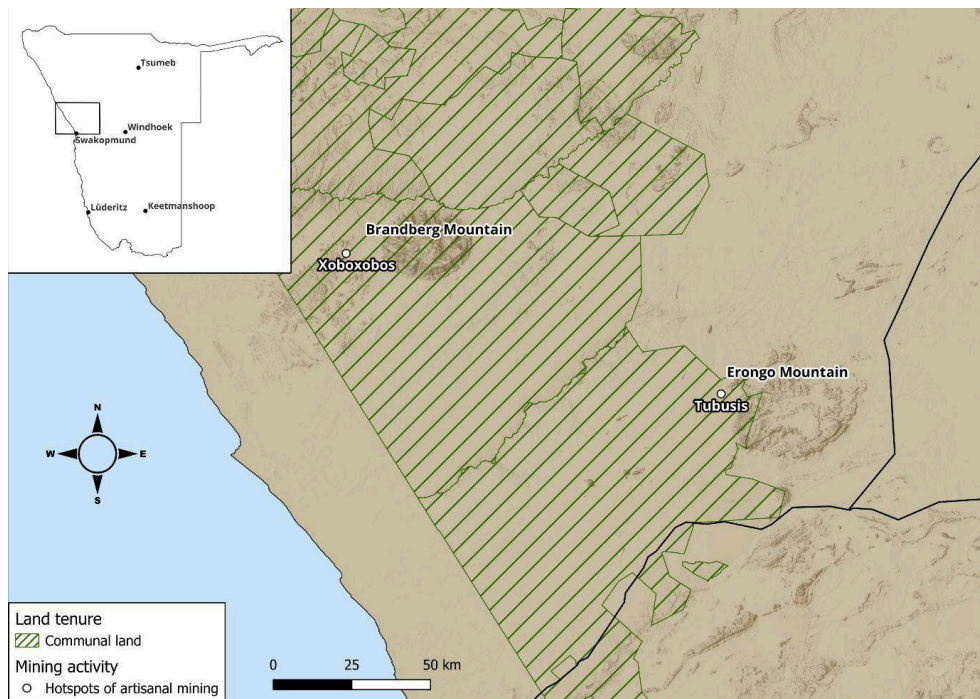
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- 1 Consider a starting point: an isolated, weathered encampment, shaped by tensions, encounters, dreams, and economic uncertainties. It is here that the supply of goods such as precious and semi-precious stones originates. This process, seemingly mundane, is far from simple. Now imagine a raw semi-precious stone, freshly extracted from a remote mining pit. It is embedded in a world of local imaginaries and know-how: desires for wealth, calloused hands, rudimentary tools, lively discussions about prices along a dirt track. It changes hands. A few kilometers later, it has already lost part of its context. It passes to another intermediary, then yet another, until, somewhere in a city or a port area, it becomes one sample among many—a product ready to enter a global supply chain. Until it changes name, form, and value. Until it becomes a jewel displayed under dimmed lights in European, American, or Asian showrooms, an object of luxury, ornamentation, or spiritual symbolism, telling a very different story—that of globalized consumption, of controlled, sanitized exoticism.

- 2 Tourmaline. Aquamarine. Amethyst. Quartz. Fluorite. Garnet. Tiger's Eye. Malachite. Pietersite. Diopside. Sodalite. While these semi-precious stones are often familiar to the general public, the significant deposits in Namibia's Erongo and Kunene regions are far less well-known. Many of these semi-precious stones have been extracted artisanally since the country's independence in 1990, by a growing number of non-White Namibians driven by the need to provide for themselves and their families (Latarge *et al.*, 2025). This artisanal mining movement, also observed in South Africa (Mutemeri & Petersen, 2002; Ledwaba & Mutemeri, 2017), Zimbabwe (Mawowa, 2013), Burkina Faso (Konkobo & Sawadogo, 2020), Madagascar (Canavesio, 2009), the Sahara (Gagnol & Tchilouta, 2021), as well as the Democratic Republic of Congo (Geenen *et al.*, 2021), Ghana (Hilson & Gatsinzi, 2021), and Guinea (Bolay, 2014, 2016), intensified during the COVID-19 pandemic, which exacerbated economic precarity and reinforced the attractiveness of the informal sector. In 2023, nearly 5,000 artisanal miners were officially recorded in Namibia, with many others remaining uncounted. In these informal camps—now developed into structured villages, such as Tubusis and Xoboxobos (Figure 1)—artisanal mining has rapidly taken root as an alternative livelihood in a country marked by high unemployment and limited opportunities (Latarge *et al.*, 2025). The semi-precious stones they extract artisanally ultimately circulate on a global market, where they are sold in processed form under new names. Yet behind the apparent simplicity of this process—extraction, sale, circulation, consumption—lies a complex territorial embeddedness, woven from labor relations, situated values, aspirations, and dependencies, in which numerous intermediaries play a key role. Artisanal mining and the associated supply chain, at the heart of a booming sector in Namibia, raise several questions: how can geography apprehend the territorial embeddedness of supply in the era of free-market capitalism? How do supply chain actors shape the trajectories of these stones, from the rocks in which they are extracted to the display cases of major metropolitan centres? And how do their practices reconfigure the boundaries between local and global scales, between territorialization and deterritorialization, between economic rationality and collective imaginaries, or between gift exchange and market economies?

Figure 1: Tubusis and Xoboxobos, two artisanal semi-precious stone mining territories, Erongo region, Namibia



Latarge, 2025.

- 3 It is worth returning to the beginning. Why these stones? Why these territories? And according to what dynamics have these configurations been established? Shaped by territorial practices embedded in local contexts of labor, know-how, and informal regulation, yet oriented by global logics of valorization, market demand, and aesthetic norms, the supply of semi-precious stones to global markets constitutes, just like industrial extraction, a genuine geographical process (Forget, 2015). Yet for several years, certain dominant currents in political economy, economic geography, and global value chain studies have privileged a vision of supply as globalized, fluid, and interconnected, often reducing the entire mechanism to simple logistics of transporting goods through invisible stages (Bair, 2005). By diffusing this logic, these approaches end up reproducing the strategy of deterritorialization—that is, a tendency to erase the social, cultural, and spatial specificities of extraction sites—implemented by supply chain actors such as traders, exporters, or international buyers. Territories are then relegated to the status of mere points, anonymous and indistinguishable from many others, on the world economic map. This is where the concept of *supply chain* becomes crucial, offering an analytical framework more sensitive to the relational and territorial dynamics of supply processes. Thinking about supply in terms of a chain highlights the mechanisms that structure the production, circulation, and transformation of resources, while rendering visible the local anchors that shape these trajectories. Such an approach aligns with several theoretical currents: political economy of resources (Ferguson, 2005), studies on global value chains (Gereffi, 2005; Ponte, 2019), as well as the anthropology of market circulation and mining territorialities (Appadurai, 1986; Cook, 2004; Tsing, 2015; Geenen, 2019). Each contributes, in its own way, to shifting the focus, emphasizing not the fluidity of flows but the complexity of the relations that make them possible. This shift in perspective is

not limited to a theoretical reconfiguration: it profoundly redefines the place of territories within supply logics. It is no longer only a question of tracking the movement of goods, but of investigating the very sites from which they originate, analyzing the ways in which they enter global circuits, and understanding how, in turn, these circuits transform the territories. In short, it is about understanding how a territory becomes a point of departure.

- 4 The fieldwork, conducted over a cumulative period of six weeks in 2023, 2024, and 2025, enabled an extended immersion in the extractive territories of Xoboxobos and Tubusis. Stays in several workers' camps enabled unstructured and semi-structured interviews with miners, intermediaries, and traders. These interviews were complemented by participant observations at extraction sites, aimed at analyzing daily mining practices and living conditions within the camps. Beyond these field observations, additional interviews were carried out with relevant ministerial bodies, including the Ministry of Mines and Energy and the Ministry of Environment and Tourism, as well as with national institutions such as the Geological Survey of Namibia. The objective was to examine existing regulations, resource management strategies, and institutional discourses framing the extractive sector. In addition, interviews were conducted with various intermediaries within the supply chain, including traders, exporters, and jewelers, in order to better understand the marketing circuits of the stones, the modalities of their circulation, and the processes of valorization on international markets. Finally, this work also draws on a review of both grey and academic literature, situating these situations within a broader reflection on contemporary extractive supply chain
- 5 This article is organized around the following question: how are semi-precious stones, artisanally extracted in specific territories, integrated into globalized markets? To answer this, the first section examines the territorial embedding of semi-precious stone extraction, analyzing how territorialities shape the emergence and evolution of the supply chain. The second section focuses on the transition from extraction to circulation of the stones, highlighting the role of the middleman, a key figure navigating both local and global logics. Finally, the third section offers a broader reflection on processes of deterritorialization, investigating the mechanisms through which stones, initially embedded in territorial contexts, are progressively integrated into global commercial circuits. In many respects, the supply of Namibian semi-precious stones invites reflection on contemporary extractive supply chains, their contours, and their effects. It is here that geography, with its analytical focus and methods, finds its full relevance—not merely to trace flows, but to understand the territorial embeddings that underpin them.

Of Extractive Territorialities

- 6 A few months ago, as the sun rose over the foothills of the Erongo Massif, we followed a dusty road winding through the arid landscapes of the Namib. In the morning light, the desolation of Tubusis [pronounced “Toubousis”] took on an unexpectedly gentle hue. On the outskirts of the village, in a semi-permanent encampment, a small group of miners gathered around a sturdy man standing beside his tent. Together, they were preparing to climb the slopes of the massif to extract semi-precious stones from the heights—perhaps for several weeks. What distinguished this man's presence on the

local scene, beyond his faded workwear, was his tendency to speak of “pockets” with an almost mystical fervor. For him and his companions in hardship, these underground cavities filled with semi-precious stones were as much tangible realities as vessels for projection and hope. Within the precariousness of daily life, the prospect of discovering a “pocket” capable of transforming one’s destiny infused the group with a shared sense of hope.

Figure 2: One of the many extraction sites located on the heights above Xoboxobos



Forget, 2024.

- 7 A few kilometers away, we took the road to Xoboxobos [pronounced “Roborobos”], another miners’ camp nestled in the heart of the Goboboseb Mountains. The highland landscape resembled a ploughed field. Surfaces once deemed promising—now devastated and abandoned—had given way to uneven ground, scarred by countless excavations (Figure 2). As we approached, several groups of miners came into view, tools in hand, digging in search of hidden cavities within the soft rock. Perhaps they were among those tattered men wandering across southern Africa, their blunted pickaxes striking both the echoes of the colonial past and the constraints of modern capitalism. Once dislodged from their rocky cradles, the precious crystals ended up in patched pockets, while heaps of waste rock tumbled down the slope. The atmosphere of extraction seemed to depict a familiar scene: that of arduous labor feeding into a global economy whose benefits largely elude the territory itself. Descending the path back toward the tents, exchanging greetings with groups already returned from the heights, it became apparent that what was at work in these territories reflected specific logics of commodity production: there was far too much contingency and variation here to imagine that a simple calculation of supply and demand could account for what unfolded before our eyes. If all forms of labor—particularly under precarious conditions

—mobilize dreams and social ties, it is neither market studies nor financial investments that have produced these clusters of corrugated iron, but rather logics of mutual aid, proximity, and imaginaries of resourcefulness and success. Yet immersion in such spaces does not place one outside the world of capital, class, and competition. These are no places to search for utopia.

- 8 Recognizing this ambiguity was a starting point for understanding the mechanics of semi-precious stone supply. In Tubusis as in Xoboxobos, everyday life is marked by a striking duality: local rootedness coexists with the economic and physical hardships of extractive livelihoods. This pervasive tension—between the harshness of living conditions and the assertion of autonomy grounded in the land—is vividly expressed in the miners’ narratives.

“We are free here,” said a miner from Xoboxobos, gesturing toward the camp. “No one tells us what to do or when to start. If I want to work, I work. If I want to rest, I stop. But it also means that if I find nothing, I don’t eat.”

- 9 This atmosphere draws its force from a central element of artisanal mining, one often over-looked: freedom. As numerous studies of artisanal extraction around the world have shown (Grätz, 2002; Werthmann, 2009), this form of labor is frequently associated with a desire to escape other modes of social or economic domination—even if that freedom is ambivalent, traversed by uncertainty, dependence on intermediaries, and physical risk. Far from the structured routines of formal employment, the miners engage with and shape the landscape in a remarkable degree of autonomy—redefining, in their own terms, the contours of their existence (Figure 3).

Figure 3: A few miners move about the main camp at Xoboxobos, while most are working at the extraction sites on the heights



Duval, 2024.

- 10 For many of them, artisanal mining represents far more than a mere economic activity; it embodies an escape from the constraints of wage labor.

“I used to work on a farm,” recounted a miner from Xoboxobos. “There, a white man gives you orders all day long, and you can’t say a word. And you’re paid nothing. Here, even if it’s hard, I’m the one who decides.”

This autonomy extends beyond the individual. It carries over into the collective sphere, where networks of solidarity and mutual assistance take shape.

“It’s not easy to work alone,” explained a miner from Tubusis. “No one survives here on their own. You need help from other people.”

These relationships—often grounded in kinship, shared language, or friendship—transform the mining space into a site of intense sociability, allowing miners to pool skills and risks, and optimize their scarce resources (Figure 4).

Figure 4: A semi-permanent camp of artisanal miners near Tubusis, on the foothills of the Erongo Massif



- 11 Duval, 2024.

“At the moment, two young miners are part of the group,” confided a miner from Xoboxobos. “One joined last month, the other three months ago. They have no experience in mining, so I’m teaching them where and how to dig.”

- 12 In this way, miners manage to create more livable conditions, illustrating another fundamental dimension of this freedom: the ability to choose with whom and how to work (Latarge *et al.*, 2025).

“We share the same tent. We’re brothers,” said another miner. “When you spend that much time with them, they become part of your family.”

- 13 These interpersonal ties—these collective gestures of cooperation and mutual aid—inform a distinctive form of territoriality: one that transcends the isolated repetition of extractive acts to encompass affective, relational, and spatial dimensions.

14 At the heart of this everyday life, one element dominates both narratives and imaginaries: the *pocket*. This term, referring to a cavity filled with semi-precious stones, structures the miners' discourse and practices alike. Every miner dreams of finding a *pocket*—a hidden chamber of precious stones, discovered by methodically following a mineral vein through the rock, often over long periods of time. Sometimes the *pocket* lies near the surface; sometimes it is buried dozens of meters deep. The mere mention of the term lights up the miners' eyes: a *pocket* can yield a fortune, yet there is no guarantee of finding more than one in a decade—or even in a lifetime.

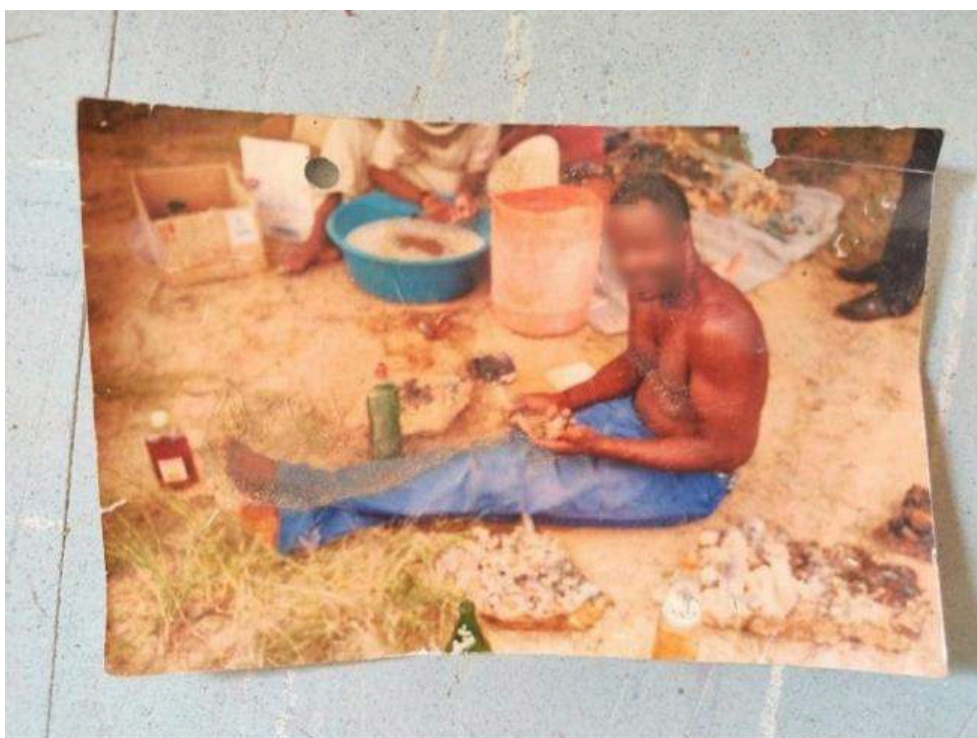
“My brother has been mining here for years and has never found one,” confided a miner from Xoboxobos who joined artisanal mining on a family member's advice. “I hope I'll be luckier.”

15 This myth of the *pocket*—of the miraculous find—recurs across extractive frontiers (Carter, 2021). Whether dreamt of or discovered, the *pocket* embodies a promise of social mobility, a tangible future that legitimizes the uncertainty of the present. The dream of the *pocket* is thus far from a trivial pastime of mining life. As a central element of miners' language, it materializes a collective imaginary that transcends ethnic and linguistic boundaries, binding together a handful of precarious lives into a community of shared value. In the camps, stories of *pockets* circulate beneath the corrugated-iron shelters, relaying tales of sudden success.

“There's a guy who found a pocket last year,” recalled a miner from Tubusis. “He made N\$100,000 [€5,200].”

16 For some, finding a *pocket* means financing education, paying for medical care, or briefly escaping destitution. For others, it represents an opportunity to invest in equipment and organize mining teams. Such investment may increase their social standing and local influence, sometimes even granting them political weight within their community (Figure 5). For others still, the discovery may end in swift ruin, as their gains dissolve under the weight of accumulated expectations.

Figure 5: Archival photograph of a miner cleaning stones freshly extracted from a *pocket* he has just discovered. With the income generated, he invested in purchasing machinery and hired others to mine for him. Today, he serves as the headman (local chief) of Tubusis



Duval, 2024.

“I’ve seen guys spend everything they earned in just a few months,” reported a miner in his thirties. “They buy a nice car, a fancy phone. They forget that it only happens once.”

- 17 Beyond individual trajectories and the rarity of the so-called *retirement pocket*—that subterranean cavity rich enough in semi-precious stones to allow one to live without working ever again—all share the same pursuit, the same attachment to a geography that offers them a place in which to hope.

After all, “where else would you go?” asked a miner from Tubusis rhetorically. “There’s no more work in town,” added a miner from Xoboxobos.

- 18 Since the mining boom of the 1990s in Namibia—and even more so after the successive lockdowns of 2020 and 2021—a growing influx of disadvantaged populations has been drawn toward these geologies of hope. The prospect of finding a *pocket* largely explains this significant enthusiasm, rewriting the geographical trajectories of an increasing number of individuals of all ages: a way of inhabiting in which circulation, hope, and cooperation constitute the defining attributes of an *extractive territoriality*, vividly expressed in the everyday scenes of work—such as the sharing of tools or the collective assessment of stones (Figure 6).

Figure 6: A daily life scene at Xoboxobos : Two miners take turns cutting a geode with an angle grinder



Forget, 2024.

- 19 The notion of *extractive territoriality* encompasses the full range of forms of life—behaviors, practices, narratives, aspirations, and relationships—rooted in a specific mining space. This concept resonates with the work of M. Bolay (2016) and J. Bohbot (2023), who have shown that informal mining spaces are characterized by profound ambivalence: they embody significant degrees of freedom and autonomy vis-à-vis the productive expectations of higher levels in the value chain. Yet, at the same time, they are traversed by the logics of capital, as they depend on the deterritorialization of the products of extractive labor subsequently integrated into global commodity circuits. In other words, these extractive spaces are at once points on the global economic map of semi-precious stones and territories whose geographies—both real and imagined—become resources that are simultaneously material and relational. The existing literature remains curiously silent on the connections between these territorialities and the subsequent circuits of transformation and trade. More broadly, research examining the intersections between territorial dynamics and contemporary supply mechanisms remains scarce. To paraphrase Saskia Sassen (2006), the global is configured through local geographies—“pivot territories” that connect local embeddedness to transnational logics. Borrowing this notion, one can see that the socio-geographical imaginary of the *pocket* plays a pivotal role in sustaining Namibia’s pivot territories within the semi-precious stone supply chain. This imaginary legitimizes long days without tangible discoveries, compelling miners to devote their time, effort, and resources each day to an uncertain quest. Moreover, through their search, miners actively contribute to the exploitation of natural resources and the expansion of the semi-precious stone market. At the same time, their practices are embedded within a legitimizing narrative—that of the struggle against poverty—thus

justifying the unregulated appropriation of resources while generating new spaces for the production of capital. These extractive territorialities are therefore not merely refuges for miners facing hardship; they constitute the very foundation upon which profits at the upper levels of the value chain flourish.

- 20 While several recent works have drawn attention to the territorial dimensions of artisanal extraction (see in particular the special issue “*Artisanal Mining: Power and Territorialization in the Global South*” (*EchoGéo*, 71 | 2025)), *extractive territorialities* remain insufficiently conceptualized in their complexity and diversity—especially in relation to global supply dynamics. This marginalization can be explained quite simply: for decades, understandings of supply have rested on logics often perceived as a-territorial and non-relational (Bair, 2005). Many theorists have circulated the idea that capitalism results from a spontaneous order guided by the rational pursuit of individual self-interest, defending a conception of the rational individual as the fundamental unit of the capitalist system (Hayek, 1944; Rand, 1957; Friedman, 1962). While some have explored the irrationality of production excess (Bataille, 1949) or the desires of consumption (Baudrillard, 1970), few have moved beyond a rationalist reading of production (or extraction) itself, which remains widely conceived as a process organized to maximize profit (Marx, 1867). It must be acknowledged that artisanal extraction, unlike industrial activity, fits poorly within the theoretical models that have dominated these debates. Even today, many scholars overlook the idea that supply is grounded in specific relational and territorial forms of life. When they address irrationality, they typically present it as a systemic or structural condition—indeed, a contradiction (for example, the logic of infinite accumulation confronted with physical or social limits) (Harvey, 1982, 1990; Boltanski & Chiapello, 1999; Bauman, 2000; Graeber, 2011)—but rarely extend such analysis to the everyday practices, motivations, and imaginaries that shape production or extraction (Lordon, 2008). Consequently, within many analytical frameworks, *extractive territorialities*—the dreams of *pockets* and the locally relational ways of life that accompany them—are relegated to the margins of analysis, treated as ethnographic curiosities rather than as meaningful components of supply mechanisms. By setting territorialities aside, such approaches fail to examine *how* supply chains are materially and socially enacted. This examination forms the focus of the remainder of this article.
- 21 *Extractive territorialities* thus open new analytical perspectives. The mechanics of supply cannot be fully understood without attending to the territorial foundations upon which they rest (Tsing, 2015; Sassen, 2006). Recognizing the importance of this grounding means shifting focus away from economic rationality and from the deterritorialization of production, and acknowledging that the semi-precious stone supply chains are articulated primarily—and perhaps increasingly—through micro-geographies. Artisanal semi-precious stone extraction in Namibia illustrates this clearly: *extractive territorialities* give meaning to the extractive labor that sustains the supply chains dependent upon it. Miners, far from being either entirely excluded or fully integrated, live, socialize, and work at the margins of a sector of which they nonetheless constitute the essential foundation. The function of *extractive territorialities* within the supply chain is therefore fundamentally ambivalent. They are at once engines of global supply and relegated to its periphery, they embody local forms of organization that enable miners to preserve a degree of autonomy amid precarity, while simultaneously ensuring the continuity of the supply chain.

Zooming in on Supply

- 22 Let us continue our exploration of the extractive chain. Dreams have guided the miners of Xoboxobos and Tubusis, who have joined forces to extract semi-precious stones—whether on communal or private lands, and whether extraction is legal or not (Latarge et al., 2025). They then reach a decisive stage: selling. From this point, the stones begin their circulation, passing from hand to hand in a pattern that is often similar. The miners sell their stones directly from the camp to buyers—the *middlemen*—who in turn resell them to wholesalers or to agents working for wholesalers in the region. These *middlemen*, whether independent or tied by contracts to wholesalers or importers, occupy a position both decisive and ambiguous within the supply chain.
- 23 Before the arrival of modern communication technologies, miners had limited access to sales platforms beyond their camps. A few buyers would occasionally cross the desert expanses to reach them (Figure 7), and miners sold their semi-precious stones under their makeshift shelters (Figure 8).

Figure 7: View of Xoboxobos from the southwest, with Brandberg Mountains— hosting Namibia's highest peak – visible in the background



Forget, 2024.

Figure 8: A miner displays some of his latest finds under a tent to a Chinese woman, likely employed at one of the concessions near Uis



Forget, 2024.

- 24 This informal trading space—dependent on the occasional visits of buyers—turned the camp into a small, improvised marketplace where the highest bidder prevailed. Exchange mechanisms were structured by the absence of instant communication tools. Everything happened in the moment. A tent of patched canvas. Semi-precious stones spread over a dusty piece of cardboard. And miners waiting without knowing whether anyone would come. Buyers hoped to stumble upon a rare stone—the one that would make a difference. It was a fragile, uncertain market. Then came the smartphones. In 2019, a signal tower was installed in Xoboxobos, following an agreement between the camp council and a Russian prospecting company. In Tubusis, messages had already been circulating for some years through an old line linking two towns. Change had arrived. Offers were now sent in seconds. WhatsApp. Facebook. Instagram. “Found a nice stone today. Interested?” A photo. A price yet to be fixed. The stones began their journeys in pixels.
- 25 The arrival of communication technologies transformed transactions. While some buyers still travel to purchase stones directly in the camps, miners now organize smoother sales, putting their stones on quasi-instant markets freed from the spatial and temporal constraints of camp life. Yet this apparent “disembedding” (Polanyi, 1944) of the local stone economy is mostly illusory. Transactions still depend on the miners’ sales strategies according to the perceived quality of the stones. After extracting a remarkable stone, some miners choose to contact only one potential buyer at a time, in order to avoid direct competition between buyers—knowing that this one may arrive within hours of the message. This strategy preserves the trust-based relationship with the buyer, granting them priority access over a unique stone that could otherwise slip through their fingers. Such purchase primacy is especially valued

within collector cultures, where exclusivity and rarity play a key role in negotiations. In return for this gift of primacy, miners may expect a counter-gift: higher prices, the purchase of less attractive stones, transportation to town, or the delivery of essential goods that are costly locally—all framed within expectations of future exchanges. These transactions are thus not purely motivated by economic calculation but by an implicit expectation of reciprocity (Mauss, 1925), which sustains cooperation and loyalty (Guyer, 2004). Of course, buyers' actions are not limited to reactive counter-gifts. They can also take a proactive approach, initiating the exchange by providing essential goods to sellers without expecting immediate compensation—thereby strengthening ties and gaining concessions such as gifted stones or discounted prices. This relational dynamic strongly shapes interactions between miners and buyers, privileging certain contacts over others. However, only miners with smartphones and the right connections can truly take advantage of these new opportunities. For them, access to this relational trading platform is double-edged: trust can easily erode if a stone's quality fails to meet expectations—especially after a buyer has traveled long distances. Maintaining these relationships therefore requires continuous care and mutual understanding: the miner must know the buyer's needs and preferences, while the buyer must understand the miner's reliability, circumstances, and difficulties. Therefore, although wholesalers and importers may appear to focus primarily on logistics, their work in fact depends on a deep understanding of local networks and interpersonal relationships. They cannot sustain this relational labor without the help of intermediaries—the *middlemen* (Figure 9). These actors are essential in building and maintaining trust, ensuring the circulation of stones between extractive territories and global markets (Zelizer, 1994). For both miners and buyers, success depends not only on the number of contacts established but above all on the quality of the relationships maintained with *middlemen*. None of these transactions can be understood without analyzing the relational matrix in which they are embedded.

Figure 9: A *middleman* examines a miner's recent discovery

Latarge, 2024.

- 26 The introduction of communication technologies has profoundly transformed the trade in semi-precious stones, embedding within it a system of gift exchanges that extends far beyond the material sphere (water, food, free stones, transport, etc.), to encompass complex immaterial transactions (priority, trust, availability, etc). Although these practices may appear to foster good relations between parties, marked by loyalty and mutual support, it would be naïve to see them as mere acts of disinterested generosity. These exchanges of gifts are carefully calculated tactics designed to consolidate commercial relationships and secure advantageous future transactions. In this sense, the “gift exchange” is a euphemism (Bourdieu, 1980), a fiction of disinterest concealing strategy and long-term calculation (Osteen, 2013). Buyers and miners participate in a system in which gifts create reciprocal obligations, thereby ensuring a regular supply and stable prices. Together, they form a relational fabric essential to maximizing sellers’ profits while satisfying the acquisitive interests of buyers. In this context, competition does not disappear but rather shifts to a new terrain: it moves from the transactional field (a pseudo-objective market state) to that of establishing and maintaining relationships. Miners and buyers, on each side, compete as much to forge reliable contacts as to consolidate existing ties. Like the principles of a market economy, this trade in semi-precious stones indeed generates capital, reinforces class differences, and unfolds within ongoing competition. And yet, it contradicts the non-relational theoretical foundation upon which a classical understanding of supply rests. Are we, then, faced with an exception?
- 27 Theorists tend to dislike enigmas—and the more such enigmas invoke specific geographies and social settings, the more readily they tend to look away. The enigma here is the following: why does such a relational factor emerge in this context and not

elsewhere? One way to approach this question is to turn our attention to the mechanisms of semi-precious stone supply through the notion of *scalability* (Tsing, 2012). Scalability—the capacity of a process to be applied at different scales without losing efficiency—is a key feature of modern economic practices (Tsing, 2021). Scalable economic practices are those that can be extended, replicated, and applied to larger contexts while maintaining efficiency coherence. Such practices, often grounded in accounting and standardization, are fundamental to modern commodity chains, as they make it possible to homogenize processes across scales and territorial contexts. For instance, semi-precious stone wholesalers frequently apply the same devices and criteria for purchase, management, control, or financial monitoring in very different extraction contexts, using standardized methods and value grids at a global scale. However, these mechanisms of scalability rapidly encounter their limits during the very first transaction. While no semi-precious stone is intrinsically identical to another, most are perceived by buyers as interchangeable. Conversely, certain more “specific” stones are recognized in their singularity. This categorical threshold, succinctly put, determines different criteria for sale and thus distinct processes through which stones move upward along the commodity chain to eventually become consumer goods. This strong variability—observable not only between the stones themselves but also in the judgments buyers and sellers make about a single stone—highlights the mismatch between objectified market standards (type, weight, size, etc) and buyers’ subjective criteria for these “specific” stones (beauty, faceting, inclusions, etc). This situation resonates with a broader dynamic in which the trade of semi-precious stones exhibits “complex evolutions [...] in demand (due to the highly subjective nature of the stones’ value)” (Canavesio, 2011: 11). Thus, “common” stones integrate into a market dynamic more firmly based on competition among sellers, as they are treated as simple exchangeable units—they are scalable. In contrast, “singular” stones call for a relational transaction, since their singularity resists reduction within a standardized transactional framework—they are non-scalable.

- 28 It is the *non-scalability* of certain stones that explains the relational configurations of these exchanges, leading to the persistence of such relationships across a large share of scalable-stone transactions. Neither scalability nor non-scalability are inherent properties; rather, they are different modes of presentation of the same object, which shape the configuration of the sale. The price at which a non-scalable stone will be sold depends more on the relationship between a seller and a buyer than on a competitive regime among sellers or a market-based price determination. Gift exchanges ensure the mutual interest of both parties by keeping them away from a mutually disadvantageous objectification, creating the possibility of a transaction in the shadow of scalability. Such transactions are particularly prized among collectors of semi-precious stones, for whom the value of secrecy in exchange is itself golden. The miners’ expertise—both in their knowledge of the stones and in their command of sales networks—is thus crucial in securing profitable transactions. Since buyers’ purchasing criteria differ (not all seek the same kinds of stones), miners must strategically manage the decision of which *middleman* to contact in order to maximize profits, or to avoid damaging a relationship through lack of expertise or misreading of expectations.
- 29 Things change, however, when selling to non-experts. Their threshold of scalability is much more flexible. In a Namibia increasingly visible on the map of European tourist destinations, a growing flow of tourists—transported by tour-operator buses—converges on semi-precious stone retail points (Figure 10). No expert would find a

remarkable stone on these stalls (Figure 11). Yet during these transactions, sellers—often the miners’ wives—intentionally render a much broader range of stones *non-scalable* in order to maximize their profits, notably through narrative anchoring, where each stone is linked to a territory, a particular story, or energetic virtues.

Figure 10: Tourists visit the Crystal Market, a community market for semi-precious stones, after a long bus ride



Duval, 2024.

Figure 11: Inside the market, where stalls display raw, polished, and necklace-mounted stones



Duval, 2024.

- 30 This technique of *non-scalabilization* with tourists— as common as the stones they sell—relies on the sellers’ perception of tourists, who are regarded as non-experts. Yet it also draws upon the imaginary that tourists project onto these sellers: that of “poor

artisanal miners” selling directly the fruits of their labor. This vision, however, obscures the far more complex networks of intermediation that structure this trade. In certain retail sites—such as the Crystal Market near Usakos, the largest community-run marketplace—the supposedly “local” stones often come from an intermediary who purchases stones across the country, roughly polishes them at the back of his shop in Swakopmund, and then resells them to selected miners. Some so-called “direct” sales outlets thus capitalize on the assumed territorial embeddedness of the stones, presented as extracted by local miners, even though they may in fact originate elsewhere. Tourists, unfamiliar with local specificities, are therefore particularly receptive to the social narratives attached to the stones, eager to return home with a “unique” souvenir they are unlikely to find again—except, perhaps, in one of the many retail outlets located at the other end of the supply chain, in their own countries of origin.

“Look at this stone. Very beautiful and rare,” a miner explained to a tourist in a coastal resort town, pointing to one of those small, ordinary, black tourmalines, extracted from surface granites.

A Semi-Precious Stone’s Journey through the Supply Chain

- 31 A fracture in the rock. One final strike of the chisel. Barely extracted, the stones turn in their hands. Among those collected that day, one in particular catches the miners’ attention. They do not know its exact value, but its subtle gray hue—almost misty—suggests a good price. In this game of tacit evaluations, a *middleman* enters the scene. Independent or under contract, he is already well established locally. Known for his generosity and his keen interest in collectible smoky amethysts, he has long maintained privileged relations with certain miners, guaranteeing his priority access. The next intermediary—his employer, or the one who buys the stone from him—capitalizes on these relational skills, purchases this amethyst among others, and incorporates the stones he has just acquired into a set of *scalable* economic practices. He then resells them to other wholesalers or exporters who, in turn, sell and ship them to importers based in Germany, the United States, China, Taiwan, Turkey, and elsewhere, before they are distributed across various points of sale. Why so many intermediaries?
- 32 This mechanism is characteristic of contemporary supply chains, where intermediaries do not seek to discipline labor directly. Instead, they capitalize on local extractive know-how and limit their role to managing purchase and inventory through global management systems that move products from extraction sites to the next link in the chain (Tsing, 2012, 2015). To ensure a steady supply, intermediaries—often with the explicit support of government authorities (Latarge et al., 2025)—encourage the maintenance of local territorial forms of extractive labor organization. These extractive territorialities thus ensure the repetition of the extractive gesture while absorbing part of the economic and social instability generated by the supply chain. It is only under these conditions that the stability of projections, practices, narratives, and interpersonal relations can be maintained—those very elements that make extractive territories potential sites of accumulation. Yet this situation also generates a growing complexity in supply processes, since they depend, at the outset, on unstable territorialities. This instability—characterized by the precarious living and working

conditions of miners, their dependence on chance discoveries, and their vulnerability to price fluctuations—paradoxically contributes both to the fluidity of supply and to the fixation of profits elsewhere along the chain. It produces a flexible extraction dynamic (Figure 12), capable of responding rapidly to market variations, specific demands, and low-cost purchasing strategies by upper-chain actors, where the stones will be valued at prices bearing no relation to the miners' earnings. Within this asymmetrical relationship, the instability of extractive territorialities is therefore indispensable to the stability of supply and to the deterritorialization of extraction products. Put more bluntly, the extractive territorialities of Xoboxobos and Tubusis are essential to the entire supply chain, as they meet its need for value production through the articulation between capitalist systems and forms of life grounded in informality, cooperation, subsistence economies, or local political autonomy—that is, practices rooted in their geographies that do not directly follow the logic of capital accumulation, yet contribute to it indirectly (Tsing, 2013). This capacity for integration testifies to the inherent flexibility of contemporary supply chains and invites us to move beyond a strictly dualistic conception—opposing the local and the global, territorialization and deterritorialization, accounting rationality and imaginaries—to embrace the complexity of extractive territorialities.

Figure 12: Satellite view of numerous artisanal mining sites on the heights of Xoboxobos



Source: Google Earth.

- 33 To imagine a uniform supply mechanism, in which actors—driven by strictly rational exchanges structured by the market—operate across a space where extraction is a constant, is an illusion. The supply of semi-precious stones demonstrates that economic value does not emerge from a homogeneous process but rather depends on the friction between standardized procedures and the values and relations that compose extractive territorialities (Tsing, 2009). Yet it would be equally illusory to assume a consistent recognition of extraction contexts throughout the chain: as the supply chain progresses, territorial embeddedness dissolves. *Middlemen* are responsible for managing

this complex transition. Unlike the wholesalers with whom they later negotiate, *middlemen* constantly navigate between territorial logics and the global demands of standardization. As translators between *non-scalable* and *scalable* values, these experts in scalability are not rational economic agents. Their work consists in converting extractive products—emerging from relations and aspirations anchored in specific territories—into deterritorialized commodities ready to be integrated into the next links of the chain, where scalability is the rule. Their role may thus be understood as a passage between two worlds: one of territorialities, marked by relational expertise, and one of a-territorial processes governed by the rationality and competitiveness norms of the global market. In this sense, scalability is neither a univocal nor a linear process. It results from a tension between extractive territories and the upper links of the supply chain—a reduction of the very territorial forms of life essential to resource valorization.

- 34 Recognizing the importance of extractive territorialities in the supply chain thus requires acknowledging that this chain is always striated—composed of relational phases and standardizing phases. Between the initial extraction and final consumption, the mechanics of supply can be understood as alternating between “hot” and “cold” phases: hot phases where territorialities—interpersonal relations, gift exchanges, imaginaries, and collective narratives—prevail, and cold phases where the market—scalability, economic value grids, and an objectified competitive order—dominates. There is, therefore, no such thing as a purely cold, calculative, and impersonal supply process. Nor is there a purely hot one, ruled exclusively by interpersonal relations, gifts, dreams, or contingencies. These are only cold and hot phases, at varying temperatures, succeeding one another throughout the supply chain according to actors and contexts. Stones initially *non-scalable* at the start of their journey become *scalable* at another stage; they remain the same stones, yet the intermediate steps of the chain have gradually eroded their singularity. Ultimately, at the end of the chain, these stones once again become local market goods—comparable to so many others, or rendered *non-scalable* anew, depending on the seller, ready for this or that buyer.

Discussion

- 35 This analysis highlights the need to place territories back at the centre of our understanding of contemporary supply chains. It would be mistaken to regard the territorial embeddedness of supply chains as a primitive survival. These freedoms, dreams, relationships, and transactions do not unfold in some imaginary time prior to capitalism. By adopting an increasingly productivist vision centred on the genericity and reproducibility of goods, supply chain theorists have given rise to a variety of fantasies. They have come to assume that everything on earth can be motivated, scaled, and ultimately exchanged solely through market value, thereby producing more scalability—or at least its illusion. Our understanding of supply has been built on generic products, made by and for humans in specialised places. What we have understood less, however, is that other goods, produced in other contexts, may travel through alternative processes before being absorbed into the chain. This is particularly true for the extraction of singular resources—valued precisely for their uniqueness—that global supply systems are ill-equipped to digest. It is precisely at this juncture that the *middlemen* come into play. As essential links in the global and standardised supply

of semi-precious stones, these translators operate on the ground, navigating between incompatible regimes of value according to the prevailing rules of the game. Their presence manifests a fundamental tension within supply chains: the integration of the unique and the non-scalable into a mechanism designed to absorb the homogeneous and the reproducible. They stand at the heart of supply mechanisms—among the most formidable producers of precarity worldwide—and yet, what are *middlemen* if not experts in territories, in gift exchanges, and in non-scalability?

- 36 While geographers have long documented the territorial embeddedness of extractive activities—particularly in the Global South—these dimensions have often been less emphasised in studies of global value chains, which have tended to privilege networked or logistical readings. This tendency can partly be explained by methodological and epistemological biases within these approaches, which prioritise global flows, scalar relations, and overarching structures, often at the expense of a more attentive consideration of the mechanisms of transition and dependency between different segments of the chain. Understanding the impact of contemporary supply chains on territorialities therefore requires moving beyond short-term or exclusively global perspectives. It entails retracing distant and often fragmented connections between the actors of supply, while questioning the apparent simplicity of the relationships between production, circulation, and consumption. In the context of small-scale semi-precious stone extraction, stones mined on the margins of control centres by communities facing economic and environmental precarity enter global circuits that transform them into luxury, ornamental, or esoteric commodities. Yet this apparent fluidity conceals complex geographical processes: on the one hand, the incorporation of territorialities into market dynamics; on the other, an extractive logic that exacerbates the ecological and socio-economic vulnerability of these territories. To think through these realities, we need conceptual tools capable of holding together the fragmentary and the systemic, the affective and the structural. Following commodities means following stories, uncertainties, makeshift arrangements—but also normalised forms of violence. In this sense, the geography of supply chains cannot be reduced to a functional mapping: it can become a situated reading of all those forms of life that no logistical metric will ever be able to fully absorb.

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ABSTRACTS

This article examines how semi-precious stone supply chains in Namibia are territorially embedded and integrated into global markets. It highlights the local dynamics of artisanal extraction in the Erongo region and analyzes the requalification processes that transform these stones as they move from extraction to circulation. The study is based on fieldwork conducted between 2023 and 2025 in the mining sites of Xoboxobos and Tubusis, combining participant observation and interviews with miners, intermediaries, and small-scale mining professionals. It first explores the territorialization of mining practices, then examines the role of intermediaries in the circulation of semi-precious stones, and finally interrogates the mechanisms of deterritorialization that integrate these resources into global supply chains. By jointly mobilizing the concepts of extractive territoriality and scalability, this article shows how the local anchoring of semi-precious stone extraction in Namibia structures market dynamics. It also reveals how supply chains adjust their procurement practices to integrate into global circuits.

INDEX

Keywords: supply chains, territorialities, small-scale mining, artisanal mining, semi-precious stones, value chains, scalability, extraction

AUTHORS

HUGO QUEMIN

PhD student, member of the EDYTEM laboratory (UMR 5204), Université Savoie Mont Blanc, Campus Scientifique, Pôle Montagne, 73376 Le Bourget-du-Lac, France
hugo.quemin@univ-smb.fr

ANTOINE LATARGE

PhD student, member of the EDYTEM laboratory (UMR 5204), Université Savoie Mont Blanc, Campus Scientifique, Pôle Montagne, 73376 Le Bourget-du-Lac, France
antoine.latarge@univ-smb.fr

KAARINA EFRAIM

PhD student, University of Pretoria; Curator, Department of Archaeology, National Museum of Namibia, Windhoek, Namibia
kaarinaefraim@gmail.com

MARIE FORGET

Associate Professor, member of the EDYTEM laboratory (UMR 5204), Université Savoie Mont Blanc, Campus Scientifique, Pôle Montagne, 73376 Le Bourget-du-Lac, France
marie.forget@univ-smb.fr

MÉLANIE DUVAL

CNRS Research Director, EDYTEM Laboratory (UMR 5204), Université Savoie Mont Blanc, Campus Scientifique, Pôle Montagne, 73376 Le Bourget-du-Lac, France; Rock Art Research Institute, GAES, University of the Witwatersrand, Johannesburg, South Africa
melanie.duval@univ-smb.fr