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The Other Colonial Booty: The Exploitation of Indigenous Knowledge during 16th Century from a Cognitive Materialist Perspective

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Abstract

This paper examines the exploitation of Indigenous knowledge during Spanish colonisation in the sixteenth century, offering a distinctive perspective on the economic dimension of non-European knowledge as a means of capital accumulation in modern Europe. Unlike previous studies that emphasise the unacknowledged contributions of Asian, African, and American peoples to modern science, this work investigates more closely the relationship between knowledge and the economy. It introduces a novel theoretical framework–cognitive materialism–to analyse this connection and incorporates insights from decolonial theory, given the specific colonial context under consideration. In addition, the paper provides two conceptual clarifications: first, it distinguishes the exploitation of knowledge from other potentially ambiguous categories; second, it addresses the effects of scientific mediation. Drawing on this theoretical approach, the study analyses sources from the early colonial period and identifies six cases of Indigenous knowledge exploitation.

Keywords: Knowledge, Exploitation, Colonialism, Modernity, Spanish America, Cognitive Materialism.

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El otro botín colonial: la explotación del conocimiento indígena durante el siglo XVI desde una perspectiva materialista cognitiva

Resumen

Este trabajo analiza la explotación del conocimiento indígena durante la colonización española en el siglo XVI, ofreciendo una perspectiva única sobre la dimensión económica del conocimiento no europeo utilizado para acumular capital en la Europa moderna. A diferencia de estudios anteriores que subrayan las contribuciones no reconocidas de los pueblos asiáticos, africanos y americanos a la ciencia moderna, este trabajo profundiza en la relación entre el conocimiento y la economía. Emplea un novedoso enfoque teórico denominado materialismo cognitivo para analizar esta conexión e incorpora reflexiones desde una perspectiva decolonial debido al singular contexto colonial. Además, se hacen dos precisiones conceptuales: una para distinguir la explotación del conocimiento de categorías potencialmente confusas, y otra para describir los efectos de la mediación científica. Basándose en este marco teórico, el documento examina fuentes del período colonial temprano, en las que se han identificado seis casos de explotación del conocimiento indígena.

Palabras clave: Conocimiento, Explotación, Colonialismo, Modernidad, Hispanoamérica, Materialismo cognitivo.

O outro saque colonial: a exploração do conhecimento indígena durante o século XVI sob uma perspectiva materialista cognitiva

Resumo

Este trabalho analisa a exploração do conhecimento indígena durante a colonização espanhola no século XVI, oferecendo uma perspectiva única sobre a dimensão econômica do saber não europeu utilizado para acumular capital na Europa moderna. Diferentemente de estudos anteriores, que destacam as contribuições não reconhecidas dos povos asiáticos, africanos e americanos para a ciência moderna, este trabalho aprofunda a relação entre conhecimento e economia. Emprega uma abordagem teórica inovadora denominada materialismo cognitivo para analisar essa conexão e incorpora reflexões a partir de uma perspectiva decolonial, devido ao contexto colonial singular. Além disso, são feitas duas precisões conceituais: uma para distinguir a exploração do conhecimento de categorias potencialmente confusas e outra para descrever os efeitos da mediação científica. Com base nesse quadro teórico, o documento examina fontes

do período colonial inicial, nas quais foram identificados seis casos de exploração do conhecimento indígena.

Palavras-chave: Conhecimento, Exploração, Colonialismo, Modernidade, Hispano-América, Materialismo cognitivo.

Introduction

At the end of the fifteenth century, and especially in the sixteenth, a process of global expansion began with Europe at its centre. Conquistadors, missionaries, and naturalists explored various continents, encountering diverse cultures. The arrival in the Americas was the most significant event. Colonisation or trade facilitated the circulation of knowledge toward European metropoles, which benefitted on many levels. Epistemologically, this enabled Europeans to construct, for the first time, a global understanding of human affairs and natural phenomena, foundational for modern philosophy and science. They also absorbed medical, botanical, cartographic, and other forms of knowledge from different regions, accelerating the accumulation of cognitive capital. This process fostered Europe's scientific and technological superiority and reinforced its political expansion.

Scientific and imperial centrality emerged as intertwined dimensions of Euro-centred modernity/coloniality. Yet a third, less studied dimension also deserves attention in the flow of knowledge from emergent peripheries to metropolitan centres. This dimension concerns the economic value of knowledge in relation to the specific European context of the transition from feudalism to capitalism that characterised modernity. The emergence of a new socio-economic system was marked by a mercantile axiology centred on the pursuit of profit. In this framework, entities were increasingly understood through their exchange value, a commodification that began with colonial expansion in the fifteenth and sixteenth centuries and has persisted to the present.

This paper examines the relationship between economy and knowledge within modernity/coloniality from a specific angle: was non-European knowledge economically exploited from the outset of European expansion, contributing to the wealth that enabled capitalism's rise? Do historical sources reveal mercantile assumptions in attitudes toward such knowledge? Beyond natural resources and cheap labour, was there another form of plunder–productive knowledge–extracted through imperial expansion? To explore these questions, the study focuses on the Spanish conquest of the Americas, asking whether Indigenous knowledge was exploited during the first century of colonial rule.

This study analyses sixteenth-century sources, including the works of naturalists Nicolás Monardes and Francisco Hernández, the *Relaciones Geográficas de Indias*, and reports by Spanish officials and conquistadors. While widely used in historiography, they are here re-examined through new frameworks–cognitive materialism and the decolonial perspective–whose intersection provides tools to understand the economic exploitation of knowledge under colonial asymmetry.

The article is organised into five sections: the first situates the research within the state of the art and outlines theoretical-methodological tools; the second clarifies

key concepts, distinguishing knowledge exploitation from related categories; the third presents case studies from primary and secondary sources; the fourth analyses them through cognitive materialism; and the fifth summarises findings and conclusions.[1]

Theoretical Framework

In recent decades, social studies of science have shifted from theories and canonical thinkers to analysing practices, contexts, and representations in the production and circulation of knowledge. This perspective highlights political, ideological, economic, and colonial dimensions, challenging the idealised view of science as purely disinterested. Modern science's presumed universality is now seen as a historically situated construction shaped by specific practices and socio-cognitive devices (Daston, 2000; Latour, 1987; Shapin, 1996).

Recent research in the history of science has challenged the "Big Picture" narrative, showing that the so-called "Scientific Revolution" did not arise solely in Northern Europe in the seventeenth and eighteenth centuries but can be traced to the Iberian sixteenth century. Studies of the Atlantic world have highlighted alternative sites, actors, and undervalued fields–such as cosmography, navigation, and natural history–beyond the traditional canon. While these perspectives dismantle the ideological construct of the "Scientific Revolution," they often retain Eurocentric elements, overlooking knowledge produced by non-European peoples. Among Spanish and Portuguese scholars, this tendency reflects efforts to reassert Iberian contributions and displace Northern Europe's epistemic primacy. Thus, the boundary of modern science was shifted from the Pyrenees to the Atlantic (Álvarez Peláez, 2000; Cañizares-Esguerra, 2006; Portuondo, 2013).

In other cases, contributions from Islamic, East Asian, and American knowledge systems are acknowledged. For instance, Raj (2007) stresses Asia's role in modern botany and cartography, while Fontes da Costa and Nobre de Carvalho (2013) recover Indian medicinal knowledge via Garcia de Orta. Moller highlights Islamic science and philosophy in the Renaissance and Modernity, and Bleichmar et al. (2009) examine American contributions. Together, these works exemplify a broader effort to recover non-European knowledge and its contributions to modern science and medicine.

These antecedents help reconstruct an alternative cartography of knowledge. The critique of the "Big Picture" has highlighted valuable knowledge produced outside Europe, but mainly in terms of its incorporation into modern science and medicine. This bias raises questions: why should modern science serve as the standard of validity, and why recognise contributions only when absorbed into European knowledge? Beyond this discussion, this paper instead examines the economic dimension of non-European knowledge, rarely considered in recent historiography, viewing it

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as cognitive wealth exploited by imperial centres. Notable exceptions include Barrera-Osorio (2002, 2006), Nieto Olarte (2000, 2008, 2022), Liaudat (2021), and Pardo Tomás (2002, 2017).

This article contributes to the study of knowledge exploitation in colonial contexts–distinct from that of nature or bodies–by combining cognitive materialism and the decolonial perspective. It also draws on two additional fields: i) studies of the Atlantic world and European explorations in modernity, and ii) social studies of science and technology for categories on the production, circulation, and use of knowledge. As the latter traditions are well established, only the conceptual contributions of the first two approaches are highlighted here.

Cognitive materialism

This framework, developed to analyse in particular the relation between knowledge and the economy in contemporary world (Zukerfeld, 2017; Zukerfeld & Liaudat, 2025), also applies to earlier historical periods. Its distinctive feature is the treatment of knowledge through its materiality, positing that all knowledge depends on material supports. On this basis, it offers a typology of objective, biological, subjective, and intersubjective bearers. The following paragraphs briefly outline these, as the broadened notion of knowledge they provide is key to understanding its economic exploitation.

Objectified knowledge refers to that which is crystallised outside living beings, materialised in a wide variety of goods. Two forms of objectified knowledge may be distinguished. Technological knowledge is concretised in the form assumed by a given good for an instrumental purpose. Codified knowledge, by contrast, is materialised through a specific form of codification embedded in an objective bearer, that is, inscribed in inert matter.

Biological knowledge designates the codified data flows that circulate as genetic, neural, or endocrine information within all living beings. A further distinction may be drawn between organic flows (such as the genetic information carried by a seed derived from a natural fruit) and post-organic flows (such as the information carried by a seed produced through genetic engineering). Post-organic biological knowledge is mentioned as part of the typology, although this type of knowledge emerged with genetic engineering. It did not exist in the 16th century.

Subjective knowledge comprises the knowledge located in the individual mind, which has traditionally occupied a central place in most theories of knowledge. It encompasses both explicit, conscious knowledge and tacit or implicit forms. *Intersubjective knowledge*, by contrast, is the most difficult to grasp empirically. It is constituted within intersubjectivity, emerging from human interaction. While it is materially situated in individual minds, it pre-exists particular individuals, endures beyond them, and, to a large extent, escapes their direct control.

Five types of intersubjective knowledge may be identified: linguistic, recognition, organisational, axiological, and normative. Linguistic knowledge refers to the knowledge embedded in human languages. Recognition designates the knowledge through which a subject becomes incorporated into human groups by recognising

others, being recognised by others, and recognising oneself. Organisational knowledge operates in the collective coordination of productive processes, whether economic or extra-economic. Axiological knowledge refers to beliefs shared intersubjectively within a community. Finally, normative knowledge denotes the intersubjective internalisation of behavioural patterns reinforced through various forms of sanction (see Table 1 below).

Table 1. Typology of Knowledge on the Basis of their Material Bearers

Material Bearer of Knowledge	Type
Biological	Organic
	Post-organic
Objective	Technologies
	Codified
Subjective	Explicit
	Implicit or tacit
Intersubjective	Linguistic
	Recognition
	Organizational
	Axiological
	Normative

Source: rearrangement based on Zukerfeld, 2017, p. 82.

In addition, cognitive materialism introduces the category of translation to analyse the flows of knowledge between material bearers (a notion that should not be conflated either with its use in Actor–Network Theory or with its everyday meaning). In brief, translations involve complex processes, since movement across different material supports 'imposes its conditions', adding to or subtracting from the knowledge. In other words, the material bearers through which knowledge circulates are not neutral, and translations are never perfect. In particular, the material support into which knowledge is translated has significant consequences for the conditions of access to it.

Within the studies conducted under this approach, several categories devised to analyse the economic uses of knowledge stand out. Different forms of cognitive exploitation have thus been distinguished: the role of knowledge piracy in the history of national development has been highlighted; the cognitive appropriation of publicly funded knowledge through intellectual property rights has been examined; and practices of inclusive appropriation, along with other business models that profitably exploit knowledge flows generated without profit-making purposes, have also been analysed (Zukerfeld and Liaudat, 2025). In the following section, we shall clarify which category is most appropriate for the purposes of the present study.

Decoloniality

With regard to the corpus of decolonial perspectives, this body of work encompasses reflections on the forms assumed by social relations as a result of colonialism. Thinkers such as Aníbal Quijano, Boaventura de Sousa Santos, Enrique Dussel, Ramón Grosfoguel, and Walter Mignolo, among others, have contributed to a profound understanding of modernity/coloniality. It is not possible here to reconstruct the entirety of their framework; however, it is sufficient to draw on a specific concept that provides a useful background for this study: the category of epistemic coloniality.

According to Fernando Garcés (2007), European modernity recognised only scientific knowledge produced within specific parameters as valid. One of these conditions is that science must be expressed in 'civilised' (i.e., European) languages, while all other languages are regarded as subaltern. The historical origin of this phenomenon lies in colonialism, as the expansion of imperial bureaucracy gave rise to processes of linguistic diglossia–that is, the coexistence of two or more languages within the same territory, fulfilling differentiated and asymmetrical functions. On the one hand stood the language of the European colonial officials, associated with political and economic administration, as well as with the sciences and the arts. On the other hand were the languages of the subjugated peoples, relegated to labour functions in general, and particularly to manual and domestic work, which were less socially valued.

This linguistic subalternisation went hand in hand with *epistemic coloniality*. By analogy with the linguistic process, Garcés observes that an epistemic diglossia operated at this level, whereby differentiated circuits of knowledge were formed within the same territory, in which the dominant culture subordinated the knowledge of the colonised. As a consequence of this epistemic subordination, the knowledge of peoples in regions peripheral to capitalist modernity came to be regarded as non-scientific, invalid, primitive, or even altogether non-existent. Such devaluation constitutes a precondition of what Grosfoguel (2015) and Santos (2014) term 'epistemicide'.

What is most relevant for this research is that this Euro-/ethnocentric valuation enabled, among other things, the exploitation of non-European knowledge as colonial booty. Such knowledges were treated as 'no man's knowledge', in the same way that conquered territories were regarded as 'no man's lands', and were therefore left at the mercy of Europeans to be scientifically appropriated and economically exploited. From a cognitive materialist perspective, epistemic coloniality can be understood as a form of intersubjective knowledge shared among Europeans, through which access to the knowledges of non-European peoples was regulated as free (in much the same way that a mountain or an indigenous person was deemed free to be exploited).

Contributions to Conceptual Precision

This section develops two points to specify the exploitation of knowledge in colonial contexts. First, it introduces scientific mediation to describe the effects of scientific activity in contact with non-European knowledge. Second, it defines knowledge exploitation and distinguishes it from other forms, with greater attention given to this second point to clarify the study's central concepts.

The category of *scientific mediation*, proposed by Liaudat (2021), combines cognitive materialism and the decolonial perspective. It stresses the irreversible effects of translating indigenous knowledge into scientific terms; consequences often unnoticed by the actors themselves. Once transformed into a scientific object, such knowledge enters the domain of capitalist rationality: for instance, knowledge of a plant shifts from indigenous use value and its connection with the transcendent to exchange value and instrumental logic.

Scientific mediation thus converts subjective and intersubjective knowledge into codified forms regulated by scientific and imperial centres. These translations into new material supports have immediate effects, mobilising actors and interests around the "discovered" object at regional and international levels. Such mediation marks a turning point for indigenous knowledge, allowing peripheral elements to become central. Scientists, as mediators of circulation, thus played a key role in cognitive exploitation, regardless of their awareness or personal gain. It should be clarified that "scientist" is a term that emerged only in the 19th century to designate a set of professional activities that previously had other names, such as "natural philosophy" (Shapin, 1996). In this research the term "scientific mediation" is also applied to the highly regulated and rationalized work of colonial officials who must record indigenous knowledge (Barrera-Osorio, 2002).

In colonial contexts, scientific mediation often relied on drawings. Translating subjective and intersubjective knowledge into images broadened its circulation, as images were more intuitive than scientific languages. Explorers could use them, for instance, to persuade the Crown to fund expeditions. Thus, images made new knowledge accessible to those unfamiliar with the language of science and allowed, say, knowledge of a plant to move beyond bureaucratic and scientific domains into wider spheres (Bleichmar, 2012; Liaudat, 2021; Sánchez, 2009).

Second, it is necessary to distinguish exploitation from related terms often used interchangeably (appropriation, expropriation, and extractivism) to describe relations around knowledge between central and peripheral actors. Such indiscriminate use obscures the specificity of economic exploitation. These concepts derive from property relations over physical goods, where one actor's gain implies another's dispossession. Knowledge, however, is a non-rival good in economic theory, usable simultaneously by multiple actors. A good is *rival* when its use by one consumer prevents others from using it. A *non-rival* good, by contrast, can be used simultaneously by many without diminishing it; in the case of knowledge, use may even enhance its value.

One might object that intellectual property rights enable the appropriation of knowledge. This is true, as they transform knowledge into a rival good. Yet in the period studied here such rights did not exist: although antecedents date to the fifteenth century, their modern form emerged only in the late eighteenth, was institutionalised in the nineteenth (Paris Convention, 1883; Berne Convention, 1886), and expanded globally in the twentieth. Thus, the objection is inapplicable.

We therefore propose abandoning these concepts for the modern/colonial period. When colonisers acquired indigenous knowledge, it did not become their property, nor was it lost to indigenous communities. Hence, it is problematic to speak

of appropriation, expropriation, or extraction when those supposedly dispossessed continued to possess the knowledge.

To replace these confusing categories, we propose the concepts of *exploitation* and piracy. The former, rooted in Marxist theory, describes an asymmetrical exchange in which the exploiter extracts surplus value from the exploited. Cognitive materialism adapts this framework to knowledge-value, analysing how subjective, intersubjective, and objective knowledges are exploited within unequal relations (Zukerfeld, 2017; Liaudat, 2021). Here, the exploiter accumulates capital without dispossessing the other of knowledge. In colonial contexts, however, such accumulation by the colonial system deepened asymmetry, turning the exploitation of knowledge against indigenous peoples by reinforcing domination.

Exploitation requires asymmetrical exchange, a condition structurally present in colonial relations. Such exchanges need not be strictly economic: in return for knowledge, colonisers might offer protection, favours, recognition, or material resources. The key is whether indigenous subjective, intersubjective, objective, or biological knowledge was employed in a mercantile way–if so, it constitutes cognitive exploitation.

A related but distinct process occurs when knowledge is taken without producers' consent: cognitive *piracy*. The difference lies in consent, however limited under colonialism. Piracy refers to copying knowledge without consent and putting it to economic use–for example, seizing codices by force or extracting information under torture. Though outcomes may be similar, the distinction is analytically relevant. In what follows, only exploitation is used, as the sources examined show no cases of piracy.

European law legitimised the extraction of benefits from indigenous knowledge. In sixteenth-century Spain, Crown missions were backed by state norms and institutions that recorded native knowledge and supported explorers and mediators (Delbourgo & Dew, 2008; Schiebinger, 2004). This legal–bureaucratic framework excluded indigenous peoples, who endured it as part of colonisation. Exploitation and piracy of knowledge were thus embedded in institutions created to secure economic usufruct.

To conclude, two clarifications follow. First, when a naturalist or missionary recorded indigenous knowledge, this did not automatically constitute exploitation or piracy. Not every act of gathering knowledge made its agent an exploiter–though, as noted with scientific mediation, such actions could still have irreversible effects.

Second, it is necessary to distinguish four roles: (i) producers of knowledge; (ii) intermediaries, who only facilitate relations; (iii) mediators, who both facilitate and contribute knowledge; and (iv) exploiters, who derive economic usufruct and are the final beneficiaries of the chain. These roles may overlap (for instance, a mediator can also be exploited) but exploiter and exploited cannot coincide in the same individual. By contrast, the roles of exploited/pirated and exploiter/pirate (situated at opposite ends of the knowledge flow) cannot overlap within the same individual. Finally, within this typology of actors, scientific mediation positions the scientist as a specific subtype of mediator. Often, an intermediary contributes some knowledge, except in cases of mere transfer of objectified knowledge (such as passing on a book). The difference between mediator and intermediary lies in the type of knowledge incorporated: a mediator adds specialized knowledge, while an intermediary contributes widely diffused knowledge.

Source Analysis

Numerous studies have examined the collection and processing of knowledge during the Iberian expansion of the sixteenth century. Our aim is not to repeat this work but to highlight the economic dimension of knowledge relations between coloniser and colonised. Accordingly, we reinterpret well-studied sources from a new perspective. Even when economics is considered, research has focused almost exclusively on botanical and medicinal knowledge, since it was explicitly published, regulated, and recorded. While this field will be addressed, we also seek to uncover other forms of productive knowledge–equally exploited but less recognised.

The sixteenth-century Spanish world generated abundant material for reconstructing mechanisms of knowledge exploitation in the Hispanic Indies, especially documents by civil servants. This study analyses passages from the *Relaciones Geográficas de Indias* (reports based on a 1579 Council of the Indies questionnaire that included information on indigenous peoples) as well as writings by officials and conquistadors such as Juan de Matienzo (1520–1579) and Pedro Cieza de León (1520–1554). These sources describe nature, indigenous knowledge, and how Spaniards employed it.

The century was also prolific in works by naturalists. Particularly useful here are the writings of Nicolás Monardes (c. 1508–1588) and Francisco Hernández (1514–1587), who systematically treated American herbal and medicinal knowledge. Their cases are especially revealing as they represent divergent mechanisms of acquiring indigenous knowledge.

Monardes was a naturalist who never travelled to the Indies. Living in Seville, the key hub between metropolis and colonies, he gathered information and plants from returning merchants, sailors, officials, and missionaries. He systematised this material in *Historia Medicinal de las Cosas que se traen de Nuestras Indias Occidentales* (1574), a work that achieved notable editorial and commercial success in Europe (Lozoya, 2008; Ogilvie, 2003). Hernández, by contrast, led the first major royal expedition, commissioned by Philip II, to study the natural world of the West Indies. After seven years in New Spain, he documented animals and plants and accessed indigenous knowledge directly from its producers. Yet his work saw little success during his lifetime: the *Index medicamentorum Novae Hispaniae* appeared only twenty years after his death (Pardo Tomás, 1996; Varey & Chabrán, 2000).

Finally, another source is the most emblematic case of indigenous contribution to documentary and pictorial material related to "natural philosophy" in the sixteenth century: is the *Libellus de medicinalibus indorum herbis* (1552), better known as the Codex De la Cruz–Badiano, compiled by Martín de la Cruz and Juan Badiano, indigenous physicians at the Colegio de Santa Cruz, under Franciscan supervision (Barrera-Osorio, 2009).

From our theoretical framework, we analyse fragments from these sources to demonstrate the economic use of indigenous knowledge across six case studies.

Balsam

The case of Antonio Villasante (1477–1536) and balsam (*Myroxylon balsamum*) illustrates our framework. Villasante, possibly arriving with Columbus, learned of balsam in the 1510s through years of contact with natives, particularly his wife, Taíno chieftain Catalina de Ayahibex. He promoted its benefits to Governor Diego Colón, obtained a licence for its exploitation, and in the 1520s secured a Crown monopoly in exchange for a detailed report on its properties. Villasante functioned as an intermediary, acquiring knowledge directly from indigenous peoples; as a mediator, adding expertise through experiments and reporting to the metropolis; and as an exploiter, profiting from the commercial monopoly created by balsam sales in Iberia (Alegre Pérez, 2006; Barrera-Osorio, 2002; González Bueno et al., 2022; Pereda López, 2022).

The balsam case, among the best studied of the sixteenth century, clearly illustrates exploitation, where the roles identified by cognitive materialism–from producers to exploiter–are visible. The Crown also profited indirectly through taxes on balsam's trade. Alongside Villasante's activities, scientific mediation occurred as naturalists and physicians described the plant's properties and uses, broadening the circulation of knowledge first produced by indigenous peoples. Hernández's account, for example, records not only balsam's medicinal qualities but also native technical expertise in its processing.

> They cut the bark of this tree into small pieces and leave them to soak in water for four days. After removing them, the pieces are left to dry in the sun for a time; once heated, they are pressed to extract a liquid very similar in virtue to balsam, and highly useful for many purposes. Within a month, a balsam-like product is obtained through a process of distillation. From the leaves of this tree, they also extract a liquor of very pleasant taste, valued for its medicinal properties in curing many illnesses. The twigs, moreover, serve to clean and strengthen the teeth, while the Indians also employed them to fashion the sharp points of their arrows.[2]

Additionally, Monardes provides a technically detailed account of the indigenous methods used to process balsam in order to obtain the healing oil:

> [The Indians] take the branches and trunks of the tree, cut them into the smallest slices possible, and place them in a very large cauldron with plenty of water. They boil them for as long as they deem necessary, then allow the mixture to cool, and skim off the oil that rises to the surface with shells; this is the balsam.[3]

2 "[Ellos] cortan la corteza de este árbol en menudas piezas, y déjanlas en remojo cuatro días en agua, al cabo de los cuales las sacan y dejan al sol por algún espacio cuanto se calienten se sacara de ellas en una prensa un licor muy semejante en la virtud al bálsamo, y muy útil para muchas cosas, el cual se hace en espacio de un mes, por vía de destilación, sacan también de las hojas de este árbol un licor de muy agradable sabor, utilísimo para sanar muchas enfermedades, y aun las mismos ramitas limpian y fortifican los dientes, de los cuales será bien digamos esto de camino solían antiguamente los indios poner agudas puntas a sus flechas" (Hernández and Ximénez, 1888, p. 22).

3 "[los indios] toman las ramas y troncos del árbol y hacen las tajadas las más menudas que pueden y échanlas en una caldera muy grande, con mucha cantidad de agua, hierve allí lo que ven que basta y después déjanlo enfriar y cogen el aceite que nada encima con unas conchas y aquello es el bálsamo" (Monardes, 1574, p. 30).

The work of the latter, in particular, owing to its wide dissemination, helped to publicise the benefits of balsam to a broader audience, thereby contributing to its commodification.

Coca

The coca plant (primarily *Erythroxylum coca*, though three other species were also used), which had been consumed in South America for centuries, provides another case through which a process of knowledge exploitation in the sixteenth century can be reconstructed. On this subject, Hernández observes that the natives:

> They mix the chewed leaves with burnt clam shell powder, shape the mixture into pills, and then dry them for later use. When taken and swirled in the mouth, it is said to quench thirst, nourish the body remarkably, suppress hunger in times of scarcity, and relieve fatigue during long journeys.[4]

As can be observed, the stimulant properties of the plant were rapidly recognised by the colonisers and the Crown, facilitated by processes of scientific mediation. The use of such stimulants, of course, was already widespread among American peoples prior to the conquest. The novelty lay in their incorporation into capitalist logic, which extracted from them a double benefit: on the one hand, the enhancement of indigenous labour performance, and on the other, profits derived from the plant's commercial exploitation. In this regard, the conqueror, explorer, and chronicler Pedro Cieza de León remarked upon the considerable profits obtained from coca by the Spaniards in the regions of Upper Peru:

> This coca was taken to be sold in the mines of Potosí, and so much was invested in planting it and harvesting its leaves that, although its price has since fallen, it will never cease to be highly valued. Some have become wealthy in Spain from the profits of coca, by selling it, reselling it, and trading it in the 'tiánguez' or markets with the Indians.[5]

In a similar vein, Juan de Matienzo, a jurist and Crown official, observed in 1567:

> The Indians say that coca is so delicious and profitable, giving them strength and preserving their teeth, and they value it as much for this as for its use as currency. The

4 "[Mezclan] las hojas masticadas con polvo de almejas quemadas, y dan a esta mezcla forma de píldoras que ponen a secar y usan después. Llevadas éstas y removidas en la boca, dicen que extinguen la sed, nutren extraordinariamente el cuerpo, calman el hambre cuando no hay abundancia de alimento y bebida, y quitan el cansancio en las largas jornadas" (Hernández, 1959, p. 238).

5 "[Esta] coca se llevaba a vender a las minas de Potosí, y diéronse tanto al poner árboles de ella, y coger la hoja, que es esta coca que no vale ya tanto ni con muchos más nunca dejará de ser estimada. Algunos están en España ricos con lo que hubo del valor de esa coca, mercándola y tornándola a vender, y rescatándola en los tiánguez o mercados a los indios" (Cieza de León, 2005, p. 248).

> Spaniards cultivate it and profit from it, as they have done up to the present, on the farms that are now established.[6]

These "señores de la coca" (coca lords), as Philip II referred to them, engaged in disputes with the Church over the allocation of this substantial income. What is particularly revealing about this conflict is that it provides access to the monetary figures enjoyed by the colonists through their coca estates (Numhauser, 2004).

Thus, Andean coca emerges as one of the most emblematic cases of knowledge exploitation in the early colonial period, serving both as the principal stimulant for mining labour and as a highly profitable commercial enterprise for the colonisers. There is no doubt that the first producers of knowledge concerning coca were the Indigenous peoples of the South American Andes, who had used the plant for centuries. The intermediaries were the conquistadors, bureaucrats, and missionaries who initially engaged with the natives. Scientific mediation soon followed through the work of naturalists such as Hernández. Ultimately, those who exploited this knowledge were the Spanish planters and miners, with the Church and the Crown benefiting indirectly.[7]

Cochineal

The case of cochineal (*Dactylopius coccus*) likewise allows for a full reconstruction of the evolution of the exploitation of indigenous knowledge, since–on the basis of sophisticated processing techniques appropriated from the natives–it became a major colonial export product. In the *Relaciones Geográficas* of 1586, there are testimonies documenting the recording of this knowledge:

> There are certain thistles that grow in the temperate lands, about the size of a hand, which are cultivated with great care. Their fruit produces a very fine maroon colour used to dye textiles–such as cumbi and other finely crafted garments worn by the Indians. It is also said to have the virtue of restricting the flow of blood. When the thistle bears its fruit–namely a very small, lively, and highly colourful insect–the owners of these estates, who are Indians, take great care to collect all kinds of bones, which they keep burning night and day. With the smoke and heat produced, they claim, the insects are bred, and it is from these that the valuable dye is obtained.[8]

6 "[La] coca de que dicen los indios es tan deleitosa y provechosa para les dar esfuerzo y conservación de la dentadura, y estímanla tanto así por esto, como por usar de ella como moneda y los españoles la labren y beneficien como hasta aquí lo han hecho en las chácaras que al presente están puestas" (Matienzo, 1910, p. 102).

7 The other important stimulant in the Americas was tobacco. Consumed by the natives, it was known to Europeans since Columbus' voyages at the end of the 15th century. In 1574 Monardes notes that "the Indians of our West Indies use tobacco to remove fatigue, and to take relief from work, as in their 'arreytos' or dances they work and get so tired, they are unable to move, and to be able to work another day, and return to do that foolhardy exercise, they take through their noses and mouths the smoke of tobacco and remain as if they were dead, and being thus rested in such a way that when they come round they are so rested that they can return to work again, and they do so whenever they need to, because with that sleep they recover their strength and are very encouraged" (Monardes, 1574, p. 108). Monardes was thus, together with other naturalists such as González Fernández de Oviedo, scientific mediator of an exploitation that developed on a large scale from the 17th century onwards with the creation of the Royal Tobacco Factory of Seville (Fresquet Febrer, 2001; Rodríguez Gordillo, 2005).

8 "[Hay] unos cardones que se dan en la tierra que es templada, del grandor de una mano, los cuales se cultivan con

Hundreds of years before the arrival of the Spaniards in America, the native peoples of Mesoamerica were already familiar with the properties of the grana cochineal, known in Nahuatl as *nocheztli* and in Mixtec as *ndukun*. Over this long period, they developed extensive knowledge of the insect's reproduction, methods of processing it, and its subsequent use as a raw material for dye production. Shortly after the beginning of the Spanish colonisation of Central America, however, capitalist interest in this product quickly emerged.

The first reports of cochineal reaching Europe appeared shortly after the conquest of the Aztec Empire by the Spanish conquistador Hernán Cortés in 1521. As early as 1523, Emperor Charles V wrote to Cortés, noting that he had received accounts of a red dyestuff–referred to as grana–from Mexico, and urging him to send shipments to Spain, given its potential importance for the royal treasury (Marichal Salinas, 2018).

The monarch's commercial foresight proved accurate. With some fluctuations, cochineal dye ranked second among New Spain's colonial exports from the late sixteenth century and throughout the viceregal era, surpassed only by precious metals. As Sánchez Silva and Suárez Bosa observe, grana cochineal held the foremost position among the world's dyes during this period (Sánchez Silva and Suárez Bosa, 2006).

The prominence of cochineal in transatlantic trade was mirrored in its large-scale production in New Spain, a fact reflected in the numerous references to its cultivation, commerce, and taxation in the *Relaciones Geográficas* of the late sixteenth century. Given the scale of production and exports, it is unsurprising that the Spanish Crown required the same safeguards for its trade as for shipments of silver and gold to the metropolis (Coll-Hurtado, 1998).

We are thus faced with another exemplary case of the exploitation of indigenous knowledge. Its original producers were the Mesoamerican peoples, who had long utilised the insect for dye production. The first intermediaries were the king's informants–likely Crown officials–whose reports prompted Charles V to urge Hernán Cortés to send shipments of grana to Spain. These intermediaries were soon joined by the scientific mediation of specialised bureaucrats responsible for compiling the *Relaciones Geográficas*. Subsequently, a group of colonists and traders entered the scene to exploit the production of grana in New Spain, thereby appropriating and profiting from indigenous expertise in this domain.

Achiotl

Another natural dye was achiotl (*Bixa orellana*), described in detail by Hernández. He noted its multiple uses, but emphasized the methods developed for processing the plant into a "good medicine for dyeing":

mucho cuidado; su fruto es grana colorada finísima con que se tiñe la ropa, que en esta tierra se hace, de cumbi y otras cosas curiosas para el vestido de los indios; tiene virtud de restriñir las cámaras de sangre; y cuando ha de dar su fruto el cardón, que es unos gorgojitos muy pequeños, vivos y muy colorados, tienen los señores de estas heredades, que son indios, gran cuidado de juntar todo género de huesos que noche y día estén ardiendo, con cuyo humo y calor dicen se crían los dichos gorgojuelos, que es la dicha grana" (Jiménez de la Espada, 1881, p. 124).

> The wood is used to produce fire, like flint, by rubbing one log against another; the bark is used to weave ropes stronger than hemp; the seed is employed by painters to obtain a scarlet colour, by throwing it into moderately cold water. To prepare the dye, they take the ripe grains, throw them into hot water, and stir them continuously and in the same manner until nearly all the colour has seeped into the water; they then allow it to settle and form it into cakes, similar to those of indigo (mohuitli) taken from the xiuhquilitl, to be used when needed. This kind of dye is so tenacious that, once applied, it can scarcely be removed, no matter how vigorously it is washed.[9]

Indeed, the qualities of achiotl proved outstanding, and an international trade of this product quickly developed. A seventeenth-century source, Friar Antonio Espinosa, in his *Compendio y Descripción de las Indias Occidentales* (1628), notes that it was regularly exported from New Spain to China, where it was highly valued for dyeing silk and other uses. Recent research further emphasizes that, since the mid-sixteenth century, commercialization between America and Asia was already underway, using the Spanish colony in the Philippines as a trading hub. Datiles et al. (2021) observe that "the spice was imported as a colorant for yellow silks, a finishing dye, and a red pigment alternative to the one produced by the far more costly cochineal," and that it became a "regular part of the pigment trade that rose in the mid-sixteenth century and continued through at least the end of the eighteenth" (p. 7).

Cinnabar and Ichu

Another case that allows us to trace the path from indigenous knowledge to its economic exploitation concerns the most significant productive activity of the Hispanic colonial system: mining. Around 1560, natives of the former Inca Empire informed the Spanish coloniser Enrique Garcés of the location and availability of cinnabar deposits in the Chaccllatacana mountain. This knowledge was of immense value, as mercury was an indispensable input in the refining of gold and silver.

In 1564, exploitation began under the Spaniard Amador de Cabrera, who was granted property rights over the mine, named *La Descubridora*. A decade later, owing to its importance, the mine was expropriated by Viceroy Francisco Álvarez de Toledo on behalf of the Crown and renamed the *Todos los Santos* mine (known since the eighteenth century as Santa Bárbara). It should be stressed that these quicksilver deposits were the only ones known in the Americas until the discoveries in California in the mid-nineteenth century. Without them, the costs of colonial mining production would have been considerably higher (Brown, 2016; Robins, 2011).

In the first decade of exploitation, mining producers faced a severe bottleneck: the shortage of firewood required for smelting the extracted ore. Situated in a chain

9 "[La] madera sirve para producir fuego, como el pedernal frotando un leño con otro; la corteza para tejer cuerdas más fuertes que las de cáñamo; la semilla sirve a los pintores para extraer el color escarlata, echándola en agua moderadamente fría. Para preparar la tintura toman los granos ya maduros, los echan en agua caliente, y los agitan continuamente y siempre del mismo modo hasta que casi todo el color ha pasado al agua; lo dejan después asentarse y le dan forma de panecillos, como los del añilo mohuitli que se saca del xiuhquilitl, para usarlos en su oportunidad. Y es de tal modo tenaz este género de tintura, que una vez untada apenas podrá quitarse por más fuertemente que se lave" (Hernández, 1942, p. 85).

of rocky mountains, the region lacked sufficient fuel resources familiar to Europeans. The crisis reached such proportions that the mine was on the verge of being abandoned due to the prohibitive costs of transporting firewood from distant locations.

It was in this context that Rodrigo de Torres de Navarra (1533–1618), who had arrived in the Americas as part of the expedition of Gil Ramírez Dávalos, entered the scene. After serving in various military and administrative posts in different colonial enclaves of the Andes, Torres de Navarra settled in 1569 in what would later become Villa Rica de Oropesa (present-day Huancavelica, Peru). According to the *Relaciones Geográficas*, it was he who resolved the fuel shortage by drawing upon the knowledge of the indigenous population:

> Thirteen or fourteen years ago, Rodrigo de Torres Navarra, one of the oldest and wealthiest miners in this town, having observed that the natives cooked salt water in their ovens and amalgamated it with straw, sought to determine whether he could smelt quicksilver ores in the same way. He succeeded so effectively that this discovery became the foundation for the remarkable increase in revenue it has since yielded for the royal treasury and for the enduring stability of these mines.[10]

As can be seen, Torres de Navarra learned from the indigenous people about the use of a puna grass known as ichu (*Stipa ichu*), abundant in the vicinity of the mine, as an effective fuel. On this basis, the Spaniards replaced the firewood previously employed, obtaining even better yields since ichu generated greater thermal energy. This innovation led to a considerable reduction in mercury production costs and, consequently, to the enrichment of Torres de Navarra and other miners who settled in the area.

In this case, indigenous knowledge was central both to the identification and availability of the mineral, and to the use of a particular grass as combustion material. The intermediaries were the Spanish colonisers and miners, who simultaneously acted as exploiters of this knowledge. As the sources reveal, the royal treasury also profited from its exploitation. Scientific mediation, expressed in the technical-bureaucratic records of colonial officials who compiled the *Relaciones Geográficas*, facilitated the dissemination of this knowledge. The strength of the economic interest was such that it contributed to a severe demographic decline in the region, driven by the brutal *mit'a* labour regime and the high mortality associated with mercury mining (Rendón, 2020).

Mechoacan

Whereas most of the previous cases involved knowledge applied primarily within American territories (even if the ultimate destination of capital accumulation was the metropolis), the following example illustrates the commercialisation of a medicinal product in Europe derived directly from indigenous knowledge.

10 "[Habrá] trece o catorce años que Rodrigo de Torres Navarra, uno de los más antiguos mineros y ricos de esta villa, habiendo visto que los naturales en sus hornillos cocían el agua de la sal y la cuajaban con paja, hizo la experiencia si podría fundir con ella los metales de azogue, [y] le sucedió tan bien, que fue causa del grandísimo acrecentamiento que de ello ha venido a la Hacienda real y a la estabilidad de estas minas" (Jiménez de la Espada, 1885, p. 304).

In the 1520s, a group of Franciscan missionaries arrived in the region later known as Michoacán, in New Spain. When they fell ill, an indigenous cacique offered assistance. This was Cazonci Tzintzincha Tangaxoán II, leader of the Purépecha/Tarascan Empire, who provided the services of an indigenous physician. The doctor administered a powder derived from a root, known as mechoacan, and all the missionaries recovered from their ailments. The Franciscans subsequently reported the efficacy of this medicine to their brethren in Mexico City, who began prescribing it to the sick. It rapidly gained popularity in the New World and was included among the medicinal plants described in the Codex De la Cruz-Badiano.

The diffusion of mechoacan's medicinal benefits in Europe, however, followed a different trajectory. In the 1530s, when its use was already well established in Mexico, the Genoese trader Pascual Cataño brought it to Seville. Having arrived in the peninsula in poor health, he consulted the young physician Nicolás Monardes, who prescribed the purgatives then known in Europe. When these proved ineffective, Cataño resorted to the American remedy he had carried with him. The treatment was so successful that Monardes himself began to promote the virtues of the plant. A few decades later, the naturalist would write:

> Its use has become so widespread that it is now imported as a principal commodity, in great quantity, and sold for very large sums. Indeed, a druggist once told me that, apart from what he had sold within the city, he had dispatched more than ten quintals of it in the previous year to places outside the city. Everywhere it is requested under the name of rhubarb of the Indies, for it has become so familiar that there is scarcely a village where it is not employed as a most reliable medicine, producing remarkable effects.[11]

The mechoacan (*Ipomoea purga*) shared medicinal properties with Chinese rhubarb, which had been in use in Europe since the 14th century. This similarity led Monardes to designate it as the "rhubarb from the Indies." Notably, the therapeutic – and consequently commercial – use of mechoacan continued in Europe well into the 19th century (Pardo Tomás, 2017).

In this case, knowledge was originally produced by Mesoamerican Indians concerning the plant's medicinal applications. The Franciscans, Pascual Cataño, and the indigenous physicians responsible for the Badianus Manuscript acted as intermediaries in transmitting this knowledge, while Monardes served as its scientific mediator. The ultimate exploiters were European druggists and, to some extent, Monardes himself, since one of the main reasons for the commercial success of his work was that it demonstrated the equivalence of American remedies with Asian ones (Pardo, 2002).[12]

11 "[Es] tanto el uso de él, que lo traen por mercadería principal, en mucha cantidad, que se vende por gran suma de dinero: y es tanto que me dijo un droguero que allende de lo que había vendido para los de la ciudad, había vendido para afuera de ella, en el año pasado más de diez quintales de ello, y lo que le piden es ruibarbo de las Indias, porque ya es tan familiar que no hay aldea donde no lo usan como medicina segurísima y de grandes efectos" (Monardes, 1574, p. 30–33).

12 A case that is outside the scope of our study, since it began in the 17th century, but where the different facets analyzed in this article are shown, is that of quinine (*Cinchona officinalis*). Also called "cascarilla" or "Jesuit powder", it is another emblematic case of the exploitation of a product whose curative properties were transmitted by the indigenous people. Literature deals extensively with the history of this plant that became a national symbol of Peru. In this case it was the Jesuits who acted as mediators by transferring the knowledge about this plant from the Indies to Europe, where they

Discussion

Drawing on the concepts of cognitive materialism, the cases analysed may be interpreted as flows of knowledge that ultimately become subject to exploitation, each beginning with the indigenous peoples. The intermediaries varied across cases–missionaries, naturalists, explorers, conquerors, officials, miners, among others. Depending on the context, these figures either acted merely as transmitters, without contributing new knowledge, or as mediators who incorporated additional cognitive production into the flow. The final stage, where the benefits of knowledge are appropriated and economic exploitation takes place, was generally represented by European producers and traders, some of whom simultaneously functioned as intermediaries or mediators. At this phase, the Spanish Crown–and sometimes the Church–also profited through taxation and other mechanisms of extraction.

Scientific mediation was evident in all the cases examined, though it was not always directly linked to the initial processes of exploitation. In some instances, it occurred simultaneously with, or subsequent to, the onset of exploitation, and therefore cannot always be considered an integral part of it. Nevertheless, in general terms, it may be affirmed that scientific mediation served to enhance the circulation of knowledge flows and, consequently, to insert that knowledge into a horizon of meaning distinct from its original one. Importantly, scientific mediators also constituted a crucial part of the sources on which this research relies, enabling the reconstruction of the cases presented (see Table 2).

empirically demonstrated its healing power when applied to important personalities. From there, the product was successfully commercialized by the Spanish crown (Brack Egg, 2021; Nieto Olarte, 2000; Rivera, 2022).

Table 2. Cases of Exploitation of Knowledge

Case	Kind of Knowledge	Producers of Knowledge	Intermediaries and scientific mediation	Exploiters of knowledge	
Balsam	Medical use and processing methods	Taino Indians (Caribe)	A. Villasante, F. Hernández, N. Monardes	A. Villasante	Spanish Crown (at times the Church)
Coca	Work use and processing methods	Indigenous People of Upper Peru	F. Hernández, P. Cieza de León, J. Matienzo, Spanish officials	Producers and traders of coca, miners of Upper Peru	
Cochineal	Textile use and processing methods	Zapotec Civilization (State of Oaxaca, Mexico)	Spanish officials, H. Cortés, *Relaciones Geográficas*	Exporters from Oaxaca, European traders	
Achiotl	Textile use and processing methods	Natives of Veracruz, Yucatán, Tabasco, Chiapas	Spanish officials, F. Hernández	Achiotl producers in New Spain, European traders	
Ichu and cinnabar	Material of combustion and location of mineral	Indians of Huancavelica region in the Southern Andes	E. Garcés, A. de Cabrera, R. Torres de Navarra, *Relaciones Geográficas*	Spanish miners	
Mechoacan	Medical use	Purépechas / Tarascan People	Franciscans, M. de la Cruz, J. Badiano, P. Cataño, N. Monardes,	European traders, drugstores, N. Monardes	

Source: Authors' elaboration.

According to the typology of material bearers of knowledge, what was at stake in these cases was different forms of knowledge. In relation to the indigenous peoples, subjective and intersubjective knowledges were present in all instances. Subjective explicit knowledge appears when an indigenous group knows, for example, the uses of a plant or the location of a mineral deposit. Alongside this explicit knowledge, there was also implicit knowledge, such as the ability to recognise a plant among others, to orient themselves within the natural environment, or to process a natural product using specific techniques.

At the intersubjective level of a community, several forms of knowledge can be distinguished: i) linguistic knowledge, evident in the taxonomisation of a plant in the native language according to its uses; ii) organisational knowledge, reflected in the distribution of tasks that enabled the collection, processing, and utilisation of the plant; iii) recognition knowledge, operating in community interactions and in relations with external actors; iv) axiological knowledge, which involved valuing the plant in relation to a particular worldview; v) normative knowledge, according to which access to knowledge about the plant was free, with no sense of exclusive ownership.

The only situation in which indigenous codification can be identified, as a form of objectified knowledge, is in the elaboration of the Codex De la Cruz-Badiano. In none of the six cases analysed there is evidence of indigenous technological

knowledge objectified in devices and subsequently exploited by Europeans (apart from utensils already familiar to them, such as cauldrons or spoons). Even in relation to methods of processing raw materials, the knowledge concerned remained unobjectified outside the subjects themselves. In other words, it was primarily intersubjective organisational knowledge and, above all, implicit subjective knowledge (technical expertise in practice). Indigenous peoples neither produced codified manuals for these procedures nor developed specific technological devices in these instances. There may, however, have been instances of knowledge embodied in biological supports, in situations where an artificial selection of natural species was carried out; although it remains unclear whether the cases under analysis involved such enhancement of species.

As for the intermediaries and mediators, they were responsible for translating indigenous knowledge into a wide range of material bearers. This process ranged from the adoption of European denominations (a passage from one type of intersubjective knowledge to another) to the codified recording of knowledge through words or drawings (the translation of intersubjective and subjective knowledge into objectified knowledge). In the case of scientific mediation, these translations into the material supports of scientific knowledge involved the incorporation of specific terminologies. Most commonly, this required the use of Latin as the language of science or the bureaucratic idiom of colonial administration. It also entailed the integration of indigenous knowledge into a new form of axiological intersubjective knowledge, increasingly characterised by empirical observation and systematic rationality.

Finally, cognitive exploiters also mobilised different bearers of knowledge, particularly those that involved translation into material supports objectified as commodities. In such cases, the preceding flow of knowledge was incorporated into a commercial product (medicinal, textile, and so forth). Within the framework of cognitive materialism, these products may be understood as technologies, insofar as the knowledge is embedded in a specific good with an instrumental purpose. In other instances, exploiters made use of prior knowledge as an input within their own productive processes, thereby engaging in a more indirect form of knowledge exploitation.

Conclusions

Combining the proposed frameworks helps trace how indigenous knowledge was exploited in the early colonial period. Cognitive materialism reveals the diverse forms of knowledge absorbed into capitalist production, while the decolonial perspective shows how colonisers treated native knowledge as *res nullius* (“no man’s knowledge”). This conception, distinct from European regulation, was crucial to what we foreground here: another form of colonial booty. Alongside the appropriation of nature and exploitation of bodies, capital accumulation in Europe also relied on the systematic appropriation of American knowledge.

We have shown that, beyond the well-studied botanical and medicinal fields, indigenous productive knowledge was systematically exploited across many activities. Sometimes scientific mediation linked this knowledge to commodities; in other cases, colonial agents–officials, miners, or missionaries–acted as intermediaries or

mediators. In short, indigenous knowledge entered the capitalist sphere through diverse pathways, though with similar effects. Even when mediation was not initially scientific, its later translation into scientific language was typically undertaken by naturalists or bureaucrats.

A possible objection is that knowledge circulation was not one-way. While American knowledge entered European economic and extra-economic processes, indigenous peoples also absorbed–and at times exploited–knowledge from colonisers. Yet the overall balance favoured the European metropolises, enriched through structurally asymmetrical relations. Nevertheless, this point suggests the need for a more comprehensive analysis, one that systematically considers the circulation of knowledge in both directions.

Despite this caveat, evidence interpreted through cognitive materialism and decolonial critique supports the view that indigenous knowledge was another form of colonial booty, systematically exploited by colonisers with varying degrees of awareness. Recognising this dimension adds an often-overlooked factor to the history of capital accumulation in Europe during the modern period, alongside the consolidation of capitalism and the Eurocentric reordering of the world.

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