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Global Knowledge Hoarding: Technological Development and Global Power Dynamics in the AI Era

Societal Change
Bachelor's thesis
Global Development Studies

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3.6.2026
Helsinki

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Tiedekunta/Osasto – Fakultet/Sektion – Faculty	Laitos – Institution – Department	
Valtiotieteellinen tiedekunta	Politiikan ja talouden tutkimuksen laitos	
Tekijä – Författare – Author		
Aake R. Salonen		
Työn nimi – Arbetets titel – Title		
Global Knowledge Hoarding: Technological Development and Global Power Dynamics in the AI Era		
Oppiaine – Läroämne – Subject		
Globaali kehitystutkimus		
Työn laji – Arbetets art – Level	Aika – Datum – Month and year	Sivumäärä – Sidoantal – Number of pages
Kandidaatin tutkielma	Kesäkuu 2026	20

Tiivistelmä – Referat – Abstract

Tutkielmassa luodaan synteesi tiedon ja datan välille esittäen globaali tiedon hamstraamisen käsite. Aikaisemmin kriittinen datatutkimus on pääasiassa keskittynyt kasvavien datamassojen muodostumiseen ja arvioinut datan keräämisen suhdetta yksilöön. Tämä tutkielma kuitenkin esittää, että tekoälyn aikakaudella on tärkeämpää tarkastella sitä, kuka pystyy muuntamaan datamassat tiedoksi ja käyttämään muodostunutta tietoa omien tavoitteidensa ajamiseen. Tutkielmassa osoitetaan, että globaali tiedon hamstraaminen uusintaa globaaleja riippuvuussuhteita heikentäen globaalin etelän kykyä kehittää omia teknologisia ratkaisuja.

Tutkielma on integroiva kirjallisuuskatsaus, jonka aineistona on kahdeksan vertaisarvioitua artikkelia vuosilta 2016–2024. Nämä artikkelit ovat valikoituneet aineistoksi sekä niiden akateemisen vaikuttavuuden kuin tutkielmaan sopivuuden kannalta. Aineiston analyysi on temaattinen, jota on ohjannut vahva teoreettinen viitekehys jättäen tilaa myös aineistosta esille nouseville yhtymäkohdille.

Tutkielman teoreettinen viitekehys jäsentyy kolmeen tasoon. Ideologia tuottaa toimintaa, mikä uusintaa ja luo rakenteita. Ideologinen pohja rakentuu tietotalouden ympärille. Tutkielmassa esitetään, että tiedolla on arvoa ja käyttökohteita, mikä puolestaan johtaa tiedon hamstraamiseen. Tieto ymmärretään suppeasti vain suhteessa dataan. Globaali tiedon hamstraaminen rakentuu tuomalla johtamistieteiden ja kriittisen datatutkimuksen näkökulmat yhteen ja sovittamalla ne nykyiseen maailmanpoliittiseen tilaan. Tämän toiminnallisen tason nähdään uusintavan ja luovan riippuvuuksia, joita käsitellään Latinalaisen Amerikan kriittisen ajattelun kautta.

Temaattisen analyysin avulla tutkielmassa punoutuu kolme pääteemaa. Tutkielmassa hahmotellaan välitila, joka on datan ja tiedon välissä. Todellinen arvo syntyy vasta kun data muunnetaan tiedoksi. Tässä muunnosprosessissa hyödynnetään teknologisia ratkaisuja, kuten algoritmista analyysiä ja tekoälyä. Tietoa hamstraavat valtiot etenkin valvoakseen kansalaisia ja yritykset, jotta voisivat tehdä voittoa. Hamstraaminen oikeutetaan piilottamalla muunnosprosessi, minkä myötä syntyy myös diskurssi koneen kaikkitietävyydestä. Riippuvuussuhteet jatkuvat muunnosinfrastruktuurin ollessa geologisesti keskittynyt Yhdysvaltoihin, jota tutkielmassa on tarkasteltu. Lisäksi tutkielmassa hahmotellaan episteeminen tiedon kiertokulku, joka valjastaa tavallisesta kuluttajasta työntekijän kehittämään tiedon hamstraamisen infrastruktuuria.

Globaali tiedon hamstraaminen esitetään työkaluna, joka mahdollistaa valtasuhteiden ja riippuvuuksien tarkastelun tekoälyn aikakaudella. Tiedon hamstraaminen luo dynamiikan, jossa valta keskittyy sinne, missä on parhaat edellytykset muuttaa data tiedoksi. Prosessin tarkempi sanoittaminen on hyvä alku riippuvuussuhteista irtautumiselle.

Avainsanat – Nyckelord – Keywords
Globaali tiedon hamstraus; data ekstraktivismi; teknologinen kolonialismi; riippuvuusteoria

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Faculty of Social Sciences	Department of Political and Economic Studies

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Global Knowledge Hoarding: Technological Development and Global Power Dynamics in the AI Era

Oppiaine – Läroämne – Subject
Global development studies

Työn laji – Arbetets art – Level	Aika – Datum – Month and year	Sivumäärä – Sidoantal – Number of pages
Bachelor's thesis	June 2026	20

Tiivistelmä – Referat – Abstract

This thesis synthesizes knowledge and data, proposing a concept of global knowledge hoarding. Previously, critical data studies have primarily focused on the growing masses of data and evaluated the relationship between data collection and the individual. However, this thesis argues that in the era of artificial intelligence, it is more crucial to examine who is capable of transforming data masses into knowledge and utilizing this resulting knowledge to advance their own goals. The thesis demonstrates that global knowledge hoarding reproduces global dependencies, thereby undermining the Global South's capacity to develop its own technological solutions.

This thesis is conducted as an integrative literature review, examining eight peer-reviewed articles published between 2016 and 2024. These articles were selected based on both their academic impact and their suitability for the thesis. The analysis is thematic, guided by a strong theoretical framework while remaining open to emerging themes from the dataset.

The theoretical framework of the thesis is structured across three levels. Ideology generates action, which in turn reinforces and creates structures. The ideological foundation is built around the knowledge economy. The thesis posits that knowledge possesses value and utility, which subsequently leads to global knowledge hoarding. The thesis conceptualizes knowledge as a simplified model, defined specifically through its emergence in relation to data. Global knowledge hoarding is conceptualized by bringing together perspectives from management sciences and critical data studies, aligning them with the current state of world politics. This operational level is seen to reinforce and create dependencies, which are examined through the lens of Latin American critical thought.

Through thematic analysis, the thesis illustrates three key themes. First, it outlines a liminal space that exists between data and knowledge. Actual value is generated when data is transformed into knowledge. This transformation process utilizes technological solutions, such as algorithmic analysis and AI. Nations hoard knowledge primarily for surveillance, while corporations do so to generate profit. Hoarding is justified by alienating the transformation process, which creates a discourse of God-like omniscience. Moreover, dependencies persist as the transformation infrastructure remains geographically concentrated in the United States, which is examined in this study. Finally, the thesis outlines an epistemic circulation of knowledge that harnesses the general public as labourers to develop the infrastructure of knowledge hoarding.

The concept of global knowledge hoarding is proposed as a tool, which should not be taken as an all-encompassing model but rather as a forceful proposition appearing in the literature that aims to move the academic discussion forward. Global knowledge hoarding creates a dynamic where power concentrates where the capacity to transform data into knowledge is greatest. Articulating this process is a vital first step toward breaking free from these dependencies.

Avainsanat – Nyckelord – Keywords
Global knowledge hoarding; data extractivism; technological colonialism; dependency theory

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1 Introduction

Your 10,000 photos, over 100,000 messages, and location data from the last decade are sitting on the servers of the world's largest companies. These digital traces form part of an unprecedented accumulation of data. Through increasingly sophisticated infrastructures, corporations and governments are able to transform vast quantities of data into actionable knowledge. Understanding who controls this knowledge, how it is produced, and what forms of power emerge from it has become one of the defining questions of the twenty-first century.

This thesis is an integrative literature review that provides a synthesis of knowledge hoarding practices. It argues that global knowledge hoarding is a mechanism used to accumulate dominance in the artificial intelligence era, further reinforcing dependency structures and global imbalances.

Economic structures have shifted from the physical world to the abstract, where knowledge is one of the key elements in value creation. In 1975, tangible assets represented 83% of the market value of the companies comprising the S&P 500 index – today, tangible assets represent just 8%, as most of the valuation comes from intangible assets (Ocean Tomo 2025; see also Dominguez Lopez & Rodríguez 2023, 337). This rapid change in capital market component valuation contributes to an increasing interest in hoarding knowledge.

In this market-driven world order, other forms of intangible assets, such as data and information, have also occupied a central role. These three assets are tightly intertwined. In short, data consists of transcribed and stored bits of life. Data collection is not something new, as it can be traced back to the time when writing and calculation became more common. However, as technologies improved, data collection became less expensive, further increasing the depth and volume of the data (Chagnon & Hagolani-Albov 2023, 189). According to Sadowski (2019, 8), “data collection is driven by the perpetual cycle of capital accumulation, which in turn drives capital to […] rely upon a world in which everything is made of data.” Today, data is collected at every possible site of extraction, and data collection is a domain of the capitalist world order.

Data, information, and knowledge form a continuum where value increases as one moves toward knowledge. Hewitt (2019) posits that data becomes information when it is used and brought into a context. For instance, a phone number remains a mere sequence of digits until it is used in a specific social or economic context – such as placing an order at a local pizzeria. Moreover, data can be synthesized into knowledge when placed into a relationship with other information (Hewitt 2019). Accordingly, this thesis conceptualizes knowledge as a simplified model, defined specifically through its emergence in relation to data. Other forms of knowledge are excluded from the scope of this study.

The study of knowledge is fruitful from the perspectives of Global Development Studies, as knowledge is a highly political matter and different groups use it to promote their agendas. Ufodike (2025) as well as Bush and Maltby (2004) have studied colonial structures through the application of knowledge in Africa and propose that knowledge can be used in ways that promote colonial and dependency structures. This suggests that knowledge is neither neutral nor can it be viewed separately from its context, user, or creator. Drawing from these perspectives, this study examines how knowledge is transformed from data, where the generated knowledge is located, and who can leverage it. With this in mind, the study seeks to bring the discussion on the relationship between knowledge and dependencies into the contemporary context.

While critical data scholars considering the linkages between data and dependencies have often looked at the asymmetric flows of data (Kwet 2019; Couldry & Mejias 2019), this study argues that more critical dependencies may be found by reviewing the dependency structures emerging when data is transformed into knowledge, notwithstanding the significant contributions of existing literature on data extractivism.

The thesis is structured as follows: First, it establishes the theoretical framework and introduces the concept of global knowledge hoarding. It then details the methodology and integrative literature review process, followed by a thematic analysis organized into three key themes. Finally, the study draws conclusions and suggests avenues for future research.

2 Theoretical Framework

The key theoretical frameworks in this study are the knowledge economy, global knowledge hoarding, and dependency theory. In Figure 1, their connections with each other are illustrated through three overlapping levels: ideology, action, and structure. The red circle emphasizes the focus area of this study.

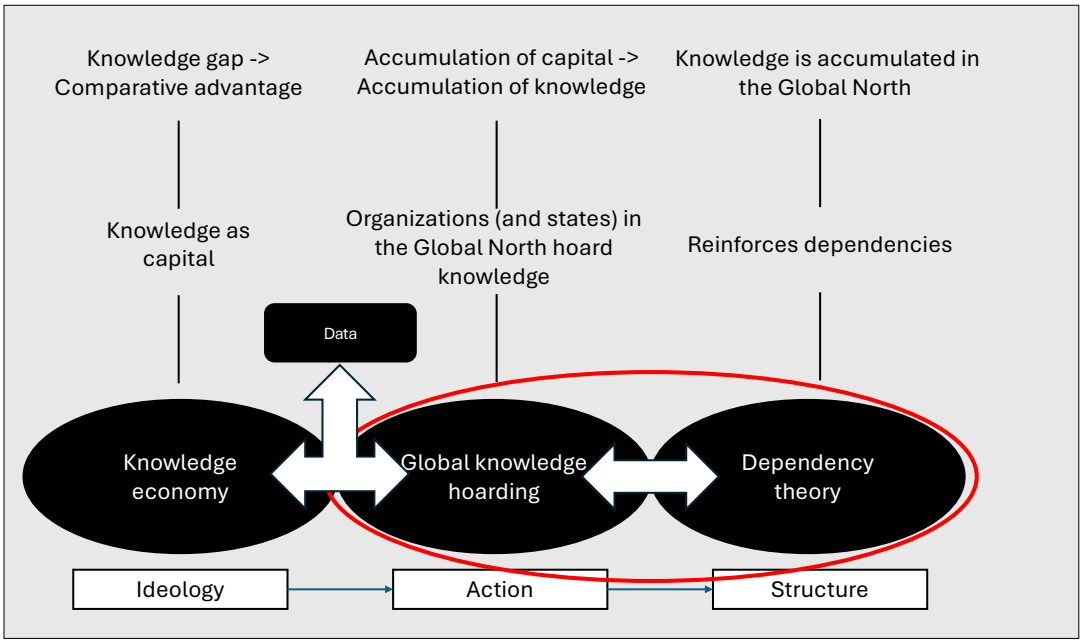

Figure 1

2.1 Ideology: Knowledge Economy

The knowledge economy summarizes well the paradigmatic change in economies. During the last five decades, knowledge-intensive industries, such as services and technology, have gained a foothold in the Global North (Dominguez Lopez & Rodríguez 2023). Knowledge is seen as a new form of capital and is therefore valuable (Olssen & Peters 2005, 330-333). Management sciences often use the term 'knowledge assets' to highlight these as key organizational resources (see Nonaka et al. 2000; Ichijo & Nonaka 2006; Krogh et al. 2000). It is these assets that separate universities, organizations, and states from one another.

Knowledge capitalism differs from the knowledge economy by emphasizing the exploitation, ownership, and accumulation of knowledge (Olssen & Peters 2005, 338-340). Moore (2015) contributes to theorization of capitalism by arguing that capitalism is possible through four cheaps that are exploited – food, energy, labour

power, and raw materials. Moore's argument may be developed even further through the knowledge capitalism framework, as one may suggest that there is a fifth cheap – cheap knowledge. However, critical data scholars have proposed that data, rather than knowledge, serves as this fifth cheap (Couldry & Mejias 2019, 339-341), although some argue that data itself serves as a form of capital (Sadowski 2019). This creates a clear tension between and within different theoretical approaches. This study aligns itself with critical data scholars, proposing that in the era of AI, data serves as the fifth cheap. Since knowledge takes the form of capital, it remains valuable and thus cannot be 'cheap' in the same sense as raw data.

The knowledge economy is a more neutral term, and it is used mostly in this study. Also, using knowledge capitalism may be dissonant with the argument of cheap data, as it may suggest that knowledge is a part of cheap nature. The knowledge economy and knowledge capitalism create an ideological level, where knowledge is valuable and lays the foundation for knowledge as a form of capital. This valuation contributes to global knowledge hoarding.

2.2 Action: Global Knowledge Hoarding

Knowledge hoarding is a concept primarily used in management sciences to describe individuals' knowledge hoarding practices. Employees may perceive themselves to be in a position of greater power by hoarding knowledge. Hoarding involves retaining knowledge for oneself, actively hiding it, and accumulating it over time (Bilginoğlu 2019, 62).

In this study, the concept is further developed. While traditional management literature considers knowledge hoarding from neither organizational nor governmental viewpoints, this thesis argues that hoarding, hiding, and accumulating knowledge is a practice used by organizations and states on a global scale. By synthesizing management science's knowledge hoarding with digital colonialism (see Nothias 2025; Kwet 2019), this research identifies a specific actional level. At this level, organizations and states retain, hide, and accumulate knowledge for both comparative advantage and geopolitical reasons, thereby directly reinforcing dependency structures.

This further developed concept of knowledge hoarding shares commonalities with knowledge management (e.g., Ichijo & Nonaka 2006) and talent hoarding (e.g., Haegele 2024) but differs in a couple of significant ways. Whereas knowledge management focuses on the operational side of knowledge, knowledge hoarding examines the systematic hiding and accumulation of knowledge. Furthermore, while talent hoarding focuses on human capital and the physical ownership of talented individuals – often occurring within organizations between teams by managers (Haegele 2024, 1-5) – knowledge hoarding does not necessarily imply a physical level. Thereby, knowledge hoarding has a more critical lens than knowledge management and extends the conceptual reach of talent hoarding.

This approach is implemented in discussion with current critical data literature, and the study proposes the concept of global knowledge hoarding. In the AI era and extractivist data practices, knowledge is hoarded from large datasets by processing large amounts of data and transforming it into usable knowledge (see also Kwet 2019). The capabilities to hoard knowledge in this vein are geographically concentrated and are visible through multinational tech giants such as Alphabet, Amazon, Microsoft, Tencent, and Alibaba. This concentration of data processing centres affects global power relations and reinforces dependency structures, as the 'new knowledge assets' are in the hands of those who possess the greatest infrastructure for technological innovation.

2.3 Structure: Dependency Theory

The study examines asymmetric relations between countries and organizations through the lens of dependency theory. It proposes that global knowledge hoarding reinforces dependency structures by creating dynamics where one party maintains epistemic authority over another. In this context, epistemic authority translates to a comprehensive power relation where a dominant country can control the development in a dependent one.

In this study, dependency theory is understood through the contributions of Latin American critical thought. Dependency is a relation between dominant and dependent countries. This relation is more often referred to as the core-periphery model. The dependent country can only grow in relation to growth in the dominant country (Acosta & Cajas-Guijarro 2022). Moreover, dependency is a two-sided

relation, as the dominant countries are dependent on the capitalist inputs of peripheral countries (Acosta & Cajas-Guijarro 2022). Dependency is a condition of total subordination, including also political, cultural, and educational aspects (Ghosh 2019, as cited in Acosta & Cajas-Guijarro 2022, 200). In essence, dependent countries can be viewed as an extension of the centres – despite being sovereign nations with independent governments – their internal structures are directly linked to and shaped by the requirements of the core.

Ramón Grosfoguel (2020) deepens the framework of dependency theory by synthesizing epistemic extractivism. Like extractivism, it involves looting, dispossession, theft, and appropriation of the resources of the Global South for the benefit of certain elites in the Global North. However, it emphasizes extractivism as an absolute condition within Western systems of dispossession:

> The aim of epistemic extractivism is to plunder ideas in order to promote and transform them into economic capital, or appropriate them into the Western academic machinery to earn symbolic capital. (Grosfoguel 2020, 208)

Epistemic extractivism is directly linked to the very principles of global knowledge hoarding, which involves the extraction of knowledge from its context, thereby obscuring its origins and framing the resulting epistemic outputs as objective truth. This knowledge is used to develop theories and promote political agendas, and it is sold back to those who generated the inputs in the hope of further extraction.

3 Research Methodology and Literature

This thesis is an integrative literature review (Salminen 2018, 8-9) synthesising the concept of global knowledge hoarding presented above. It analyses 8 peer-reviewed articles (2016-2024) using thematic analysis to explore how the concentration of hoarded knowledge reshapes global power dynamics.

This thesis will be guided by the following research question:

> *How does the transformation of data into knowledge contribute to global knowledge hoarding?*

While also considering:

> *How does global knowledge hoarding reinforce dependency structures in the era of AI?*

Initial keyword searches using "knowledge" proved insufficient in capturing the relevant literature. Consequently, the focus shifted toward data-centric terminology, which yielded more accurate findings. The literature collection was guided by keywords such as data capitalism, data imperialism, data colonialism, data dependency, data accumulation, and data extractivism. Also, the term data was substituted with digital, particularly if such a substitution yielded more fruitful literature from the perspective of this study. Also, it seemed that "information" was not the right word to capture the phenomena as the results stressed communicational aspects. While information may be situated somewhere between data and knowledge, it is not examined in this study.

The literature was gathered using Helka and Google Scholar. The specific articles were selected because of their high visibility and impact in the fields of critical data studies and Global Development Studies.

Thematic analysis aligns exceptionally well with the research's objective of synthesizing a new framework around knowledge hoarding, as it allows systematic integration of diverse theoretical perspectives. The analysis focuses on identifying, analysing, organizing, describing and reporting themes found within the literature (Nowell et al. 2017, 2). The analysis will be conducted by following the theoretical framework described above, while also considering emerging themes from the

literature (Nowell et al. 2017, 8-9). The themes presented in this study are structured by comparing and synthesising the argumentation in the literature. The themes were first outlined with the help of the theoretical background. After that, the thematic focus moved outside the theoretical background and evaluated the junction points between the literature.

The study uses qualitative methods. This implies that the positionality of the researcher is acknowledged, especially when identifying themes. As a student of Global Development Studies, the writer's academic background is rooted in the study of asymmetric power relations. The theorisation of global knowledge hoarding is possible because the writer does not follow a discipline-specific approach but instead combines insights from different theoretical traditions. When the study proposes that global knowledge hoarding reinforces dependencies, it interprets these dynamics through the lens of historical colonial patterns. The study addresses the complexities of positionality through transparency.

4 Thematic Analysis

The analysis identifies three key themes. First, this thesis discusses how data is transformed into knowledge and proposes the concept of a liminal space to describe these processes of transformation. Second, it analyses the logics of global knowledge hoarding, which includes an examination of the hoarding practices described in Section 2.2. This theme also reviews how these processes are justified. Third, the study focuses on dependencies, approaching them in the context of Latin America, and suggests that these dependencies are framed as development. Also, the thesis suggests epistemic circulation which illustrates how data and knowledge work together.

4.1 Liminal Space of Global Knowledge Hoarding

4.1.1 Data vs. Knowledge: Different Values

Large data masses need to be processed, analysed, and fed to the right algorithms before data becomes useful. This technological transformation process refines the fundamental form of data and reshapes it into knowledge. However, the transformation process has no common vocabulary, even though it is acknowledged. While Sadowski (2019) categorizes data as a form of capital that circulates within and between countries, he overlooks the crucial transformation phase – the liminal space – where the actual value creation happens. By not solely focusing on the data, it is possible to review the processes of extraction in a more comprehensive manner.

Data is often referred to as the new oil, though this assertion is somewhat misleading by presenting data as a natural asset to be exploited (Couldry & Mejias 2019; Sadowski 2019). Building on Moore's (2015) cheap nature, it is arguable that data is only one input for capitalism. Data is not fundamentally natural or cheap, but rather it is politically made to take the form of a natural input for the sake of capital accumulation (Couldry & Mejias 2019). Also, economies today need a continuous flow of data (Sadowski 2019), which fills Moore's determination of the continuous need for the cheaps. The inputs do not transfer into valuable knowledge assets or capital just by themselves. The process needs active functioning and real-life implementation (see also Crawford 2021). For example, oil is not valuable just by itself. It becomes valuable in a specific world order when it is combined with

knowledge and used in engines that furthermore promote this world order. In a similar vein, data may be argued to have primarily potential value without an environment where it has a use. To derive actualized value from data, it needs to be processed and made into knowledge.

According to Sadowski (2019), data is used as construction material for new products and services, thereby being valuable as a construction material or a capitalist cheap. Data is indeed an important factor in the value creation process and thus has value in relation to knowledge. Without data, global knowledge hoarding would not be possible. It is noteworthy that while data can have potential value, this study seeks to identify a higher-order value level where data is transformed into knowledge. Value is realized when knowledge is used in real life.

In addition, when data is value-creating, it is rational that those who have access to vast quantities of data also have the possibility to derive the most benefit (Kwet 2019). Whereas Sadowski (2019) examines mostly economic benefits, Kwet (2019) suggests that the benefits are far more reaching, including the power to shape the political sphere. These other benefits become visible only after data is transformed into knowledge.

4.1.2 Liminal Space of Transformation

This section examines the processes of transformation, including algorithmic analysis and the use of AI. It presents a liminal space between data and knowledge to illustrate the mechanisms behind global knowledge hoarding.

When Sadowski argues for data as capital, he also suggests that data should move freely, just like money: "…technology corporations must also be free to store and sell data wherever they want" (2019, 5). However, even if data were accessible to all, the capabilities to derive value from it are profoundly uneven. According to Kwet (2019) and Franco (2024), the heavy use of artificial intelligence and computing power is required to make sense of gargantuan datasets, yet even more comprehensive data is needed to ensure the accuracy of these predictions. This thesis examines the processes of transformation through a liminal space that lies between data and knowledge.

Even though Sadowski focuses primarily on data, he nonetheless describes the complex activities required before value can be derived. By employing active verbs such as 'analysing' and 'processing' (Sadowski 2019, 5-6), he implicitly acknowledges the transformative labour involved. Furthermore, he notes the importance of algorithms and ultimately describes data as a 'processable form of knowledge' (Sadowski 2019, 6). However, all of this is subsumed under the term data.

In contrast, Thatcher et al. (2016) employ big data as a framework to address the gaps in how data is understood. Big data is more densely packed data made by algorithmically linking billions of individual pieces of data together (Thatcher et al. 2016, 991). The framework of big data comes close to the liminal transformation phase as it points out the need for processing data. However, there is a subtle difference. Whereas big data illustrates smart information masses, the liminal space focuses on illustrating the phase – a part of global knowledge hoarding – in which masses are systematically turned into knowledge that is further accumulated, used to drive political agendas, and translated into monetary profit. In this rendering, the liminal space is visible but not explicitly described:

> …the aim of users of big data is not simply to store and retrieve large datasets for their own sake, but to gain knowledge from them via analysis—in order to enhance decision making in the pursuit of efficiencies and profit. (Thatcher et al. 2016, 992).

Big data is a part of the process of turning data into knowledge, but it only becomes knowledge after it is analysed and put into context.

4.2 Logic of Global Knowledge Hoarding

4.2.1 Motives, Uses and Strategic Intentionality

The hoarding of knowledge, including the extraction and monetisation of sensitive human information, may yield substantially different economic and ethical outcomes (Kwet 2019) than, for example, the exploitation of nature proposed by Moore (2015). Global knowledge hoarding is thereby deeply involved in the very essence of humanity, meaning that both nations and corporations want to be part of it. Kwet (2019) theorizes on imperial state surveillance, illustrating country-based motives and applications for knowledge hoarding. Madianou's (2019) observation supports this surveillance aspect, as she points out the partnership between the World Food

Programme and the US technology company Palantir – a firm known for its association with the CIA. The collaboration's objective is to work on predictive policing, advanced biometrics, and immigration enforcement (Madianou 2019, 1).

Technology and global knowledge hoarding are tightly intertwined. Continuous innovation is required to hoard knowledge from constantly growing masses of data. Building on this ground, the US and Europe are increasingly financing and supporting innovation and tech-driven solutionism under the belief that technology could, for instance, provide answers to challenges in the humanitarian aid sector (Madianou 2019). Also, this innovation reinforces the notion of a more competent Global North, as they hold the authority over the production of these solutions.

Global knowledge hoarding seems to be intentional. Firms seek to hoard more knowledge by scaling up their business operations. To hoard more knowledge, firms need to increase their data assets – the raw material of knowledge creation. Literature illustrates two ways to gain access to more data: firms form partnerships with data providers (as seen in the Palantir example) and firms acquire new business frontiers. For example, Facebook provides free, limited access to the internet in African countries in exchange for users' data (Madianou 2019). Furthermore, governments partner with technology corporations in the hope of gaining data and its processing infrastructure (Madianou 2019).

4.2.2 Justification and God-Like Omniscience

Global knowledge hoarding is framed as a natural order – an inevitable path of development. It is based on neoliberal principles that promote free competition and the generalized privatization of state activities (Souza et al. 2023, 30), whereby 'new technologies are often viewed as something that comes out on the market rather than products designed with particular values and power relations embedded in them' (Kwet 2019, 20-21). Valente and Grohmann (2024) further argue that while hegemonic nations (the US, Europe, and recently China) frame technological development as a universal necessity, they monopolize the actual core innovation, thereby reinforcing dependency relations in the peripheries. This notion connects to a much longer continuum of the Cartesian worldview, in which nature is seen as a means to an end (Grosfoguel 2020). Kwet encapsulates the pre-written destiny of global knowledge hoarding practices:

> Western doctrines glorify Big Data, centralised clouds, proprietary systems, smart cities littered with surveillance, automation, predictive analytics, and similar inventions. Commentators may acknowledge potential deficiencies – the loss of privacy, job losses to machines, or algorithmic discrimination – but consider the core technologies an inevitable part of technological 'progress'. (Kwet 2019, 17)

Madianou (2019) elaborates on this, noting that one of the driving forces behind implementing technology and innovation in the humanitarian sector is the expectation that it can provide solutions to complex challenges. It is as if the liminal space is portrayed as sacred entity holding God-like omniscience, which furthermore is given bribes (data inputs) in the hope of deliverance. This brings to the surface the frustration that humanity is unable to solve problems it has created – the machine is necessary. Possibly, due to this assertion, governments and corporations want to get this supernatural force into their own hands:

> Harnessing advanced statistics and artificial intelligence to make sense of enormous troves of data, corporations and governments seek God-like omniscience to manage the population. […] The presence of Big tech multinationals in the Global South extends the reach of surveillance capitalism to its inhabitants – with the US empire at the centre. (Kwet 2019, 13)

The justification of these processes and the worship of God-like omniscience serve as attempts to silence discussion on asymmetric power relations and the continuation of colonial practices. This alienation work is discussed next.

4.2.3 Hiding by Alienation

The processes of transformation, as well as the resulting knowledge, are kept hidden. This is made possible through alienation, for which the framing of the machine as a God-like entity is a prime example. Furthermore, the logic of solutionism (Madianou 2019) creates a moral shield that complicates critical engagement. After all, who would want to challenge an entity that is seemingly dedicated to finding solutions to humanity's most dire problems? This dynamic effectively alienates the subject from the political reality of extraction, reframing a relation of power as a relation of assistance.

Building on this, Grosfoguel (2020) argues that epistemic extractivism is a process which systematically dispossesses the original inputs from the end product. One could argue that the AI era is the era of epistemic extractivism, where nobody clearly

knows how the algorithms function or 'how the production of an individual data point by an individual user of technology becomes a commodity distinct and extracted from the individual' (Thatcher et al. 2016, 995). The generated knowledge is considered valuable and is therefore tightly secured to promote specific agendas. Global knowledge hoarding creates a profound epistemic asymmetry, where corporations possess knowledge that remains inaccessible to the public. This gives some tech corporations an unbeatable comparative advantage and creates transnational dependencies, which are examined next.

4.3 Dependencies in Relation to Global Knowledge Hoarding

4.3.1 Reinforcing Dependencies Through the Framing of Development

This study focuses on the asymmetric resources required to transform data into knowledge. This incentive to extract value from data is not accompanied by a diagnosis of who is benefiting from its capture, treatment, and analysis (Souza et al. 2023, 231). This section sheds light on why the treatment and analysis – digital infrastructure – create dependencies in relation to global knowledge hoarding. These dependencies are evaluated in the context of Latin America.

Mercado Libre, originally an Argentine tech company providing online marketplaces, is now the largest company in Latin America. The firm has access to its customers' personal data and uses this very data to derive value, just like its competitor Amazon. However, structurally, its business model is highly dependent on US cloud services, computing power, and algorithmic analysis. Mercado Libre acknowledges these dependencies but cannot break its way out of them (Franco et al. 2024).

A company can be a successful one, even though it does not have its own infrastructure of transformation. In this example, however, the company cannot derive value from data if it does not have access to its processing and treatment. For Mercado Libre, it is not worthwhile to implement its own solutions – it is worthwhile to be dependent (Franco et al. 2024). Some of the value flows back into the US, which finances the further advancement of the very infrastructure upon which these companies depend.

Another case example of dependencies and the framing of development is the Brazilian artificial intelligence strategy. Given that AI is central to the data

transformation process, its examination in this context is essential. Brasília's strategy itself is very generic, repeating suggestions that the World Economic Forum has given (Souza et al. 2023). Especially, the plan does not consider the AI infrastructure:

> In the EBIA (the Brazilian Strategy for Artificial Intelligence), there is no in-depth diagnosis of AI research in the country, nor an analysis of the main gaps [...] There is also no analysis of the structure of control of private capital in the development of AI, nor the location of the data, research and infrastructure necessary for the development of machine learning and deep-learning technologies. (Souza et al. 2023, 234)

The AI strategy appears to be dictated from above. By supporting neoliberal practices and the interests of hegemonic countries and large transnational companies (Souza et al. 2023, 236), it reinforces the Big Tech mantra. This strongly suggests that the Brazilian government does not have agency over its AI development. Instead, value continues to flow into countries that possess the technological infrastructure to derive value. This indicates that it is more fruitful to examine where the resources to transform data into knowledge are located, rather than where the data itself is located.

Moreover, the implementation of foreign technological solutions reinforces dependencies, as the authority over these systems remains in the hegemonic countries (Valente & Grohmann 2024). The authors propose that liberation from these dependencies is possible if the ontology of the totality of the structures is re-imagined. However, as the case examples suggest, these dependencies are deeply embedded in societal structures, and especially in the case of Mercado Libre, it is simply easier to be dependent.

4.3.2 Epistemic Circulation

To make knowledge more accurate and comprehensive, nations and organizations require continuously growing masses of data. Sadowski (2019) proposes that data collection has a pervasive influence over how organizations and governments behave, further shifting the demand toward the extraction of all data. Moreover, this knowledge is used to develop various kinds of products that accelerate the pace of data extraction. Commercially deployed AI models, for example, have granted companies access to an unprecedented share of personal data. This creates a self-reinforcing feedback loop of constantly expanding data and knowledge.

Knowledge hoarders accumulate more data as the general public adopts these technological solutions. It may be argued that the public is harnessed to work for the benefit of a knowledge hoarder by presenting new technological solutions as societal necessities. This view is supported by Valente and Grohmann (2024), who argue that data extractivists gain the most value, effectively turning the users of technological products into an international labour force. This labour argument connects to a wider research field of platform labour, where users constitute a labour force for someone else's benefit. However, in relation to global knowledge hoarding, it may be further argued that the accumulation of knowledge itself is the ultimate goal. In this light, launching AI models for the public serves primarily as a channel to develop the technological infrastructure needed for knowledge hoarding – while the users themselves remain excluded from the actual value, which is the accumulated knowledge held by nations and organizations. Consequently, this asymmetry may explain why the development of AI solutions has escalated into a global rivalry between superpowers, with the potential to reshape global power dynamics permanently. In addition, the exploitation of this international labour force creates intricate transnational dependencies, binding both parties together.

The circulation of knowledge appears to be epistemically unfair. The Global South strives to catch up with the Global North, while simultaneously making itself more dependent on foreign solutions and improving the technological infrastructure elsewhere:

> Instead, they have been aiming to 'catch up' with the North by seeking to place mainstream digital tech into every corner of society, while training South Africans in digital literacy for assimilation into US products. (Kwet 2019, 5)

One might ask why this epistemic circulation appears to have no end. When examined through the framework of the knowledge economy, the answer becomes clear. Within this framework, knowledge is often portrayed as positive force for economic growth and societal development. Because of this, every effort to generate more knowledge offers a sense of hope for a slightly better tomorrow. Ultimately, this circulation is intertwined with the very essence of capitalism's need for continuous growth.

5 Conclusion

Global knowledge hoarding is a new critical framing of data and knowledge relations in the AI era, which sheds light on the systematic hoarding practices that deepen dependency structures. Global knowledge hoarding creates a global power dynamic in which the technological infrastructure to turn data into knowledge plays a focal role. The US possesses a vantage in these infrastructures, though China and Europe have reacted to these dependencies by developing their own infrastructures. It would be fruitful to further study what kind of roles China and Europe play in these hoarding practices.

The concept of global knowledge hoarding is proposed as a tool, which should not be taken as an all-encompassing model but rather as a forceful proposition appearing in the literature that aims to move the academic discussion forward.

The study suggests that by placing different emphasis on data and knowledge, it is possible to reveal a liminal space between them. In this liminal space data is transformed into knowledge with the help of technological solutions including algorithmic analysis and the use of AI. This transformation phase is not transparent. Actually, the processes are systematically kept hidden in favour of technological solutionism which supports the dynamics of global knowledge hoarding. The knowledge generated through the liminal space is described as having a God-like omniscience, which may be an attempt to justify the implementation of Western solutions elsewhere. Therefore, the suggested liminal space is both a technological transformation phase between data and knowledge but also serves as a ritual that justifies the prompted knowledge.

Global knowledge hoarding grants immense power to those who manage to create an environment of technological innovation while simultaneously supporting dependencies by weakening external innovation. The technological innovations to hoard knowledge are successfully presented as necessities for development, even though they do not always serve local people. This dynamic continues the colonial patterns formulated long ago. A total breakaway of these dependencies may be challenging – especially when the dependencies aren't always unfavourable – but being conscious of the global power asymmetries in the AI era would be a solid starting point for change.

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