

Making metals flow: scrap metals and their international traffic**1. Research overview**

The proposed research aims to study the emergence of a resource frontier in scrap metal from the perspective of financial actors and metal exchanges that set trends in global resource management. In contrast to my previous research which was located in urban scrapyards in Ghana and thus on the peripheries of global circulation of scrap metal, the proposed research will focus on the role of a major institution - the London Metal Exchange (LME) - in shaping the discourses and practices around the circulation of scrap metals. The LME publishes reference prices for scrap and ore metals, allows investors to hedge their risk and owns warehouses around the world. The proposed research is specifically concerned with how the LME perceives and organises differently the trade of ore versus scrap metals. How is the competition and complementary between these two types of metals understood? What are the different risks associated with them? How does the exchange conceive of and integrates the perspective of the actors lower down the scrap chain to its work?

The study will take place at a critical historical juncture. Our present times are sometimes referred to as 'the mineral age' (Jacka, 2018: 62) due to a rapid expansion in the production of mineral resources from the late 1990s onwards that correlates with growing metal consumption, be it for transportation, building, clean energy or digital technologies. Rather than decreasing in importance, the mineral age is forecast to intensify amid clean energy transition. According to the estimates of the World Bank (2017) internationally adopted temperature reduction scenarios such as the Paris Accord will require a massive increase in production of relevant metals. Meanwhile, the mining industry has not seen a significant investment in the last decade to meet the forecast demand (e.g. Jowitt et al., 2020). As development of new mines takes around five years, investors are predicting a 'supply crunch' (e.g. Snowden, 2021). Such predictions have resulted in the uncertainty in financial markets about the immediate future and the emergence of two correlated pressures: on scrap metal to prevent the forecast crunch and on metal exchanges to increase the predictability of the international metal traffic. This is meeting a key challenge, namely scrap markets are highly fragmented, multi-directional, and abound in person-to-person exchanges that do not use metal exchanges¹. This creates a paradoxical situation in which scrap is ubiquitous, seen as an important short-term solution to forecast problems, but unruly from the perspective of key players in resource management.

Scrap metal is metal that is derived from the process of discarding. It has different sources: infrastructure, industrial production and waste, and household consumption. To create a parallel between scrap and other metals, academic literature has been drawing two types of distinctions: between primary and secondary resources and between mining and urban mining, where the latter signifies the process of recuperation of secondary resources from discards. Given that ever more people including in places like Ghana make their living from urban mining and partake in international commodity chains in scrap metal, there is a need for a better understanding of exactly how risk circulates in these markets, what is the scope for transparency and

¹ Commodities are traded 'on the market' or 'over the counter'. The former creates a public contract within a metal exchange such as the LME, whilst the latter means that traders enter a private agreement between the parties.

fairness within them, and how to distribute investments to benefit people down the chain. The project aims to combine methods of 'studying up' with 'studying down' (Gusterson, 1997; 2005) in order to create knowledge that is useful both for scrap dealers in places like Ghana and financial actors.

The fellowship will lead to the following outcomes: conducting new fieldwork research in London that examines the work of the LME amid the historical juncture; the writing of a book manuscript about the globalisation of scrap metals that combines new research and previous doctoral research; the writing of an academic article based on the new research that focuses on how decarbonisation and sustainability scenarios are affecting metal markets. The resulting scholarship will contribute to debates about commodity chains, metal demand, and sustainability.

2. Research Project

2.1. Current state of research in the field

Whilst there has been much research on primary resources and mining as a distinct political economic system, the worlds of scrap have seen comparatively limited academic engagement in social sciences (Reno and Alexander, 2012; Saleh, 2016; Zimring, 2005) and some non-academic writing aimed at popular audiences (Minter, 2013). Scrap metal tend to be studied more as waste objects rather than new types of resources (e.g. Gabrys, 2011; Lepawsky, 2018; Reddy, 2016). We have seen new vocabularies to capture the emergence of new extractive sites including 'planetary mining' (Labban, 2014) or 'urban mining' (Graedel, 2011) but they tend to describe a new geography or process rather than propose distinct arguments about its political economy. Meanwhile, the analysis of the political economies of these new forms of mining oscillate between critiques of 'best of two worlds' programmes that seek to pair metal collectors in the global South with recycling companies in the global North (Lepawsky et al., 2017) and the flexibility that characterises urban mining as actors can move in and out of any geographies as they do not have to invest in mining exploration (Knapp, 2016). According to the reviews of the relevant literature (e.g. Golub, 2014; Gregson and Crang, 2015) the less studied areas are the specific challenges of waste as a resource when it comes to its geopolitics and commodity chains. To fill the gap, the proposed research aims to build and contribute to three bodies of literature: on commodity chains, on extraction regimes and resources, and on financialisation.

Arjun Appadurai (1984) proposed a term 'commodity ecumene' to bring to the foreground the relevance of commodity chains to social scientists and anthropologists in particular. The term signifies 'a transcultural network of relationships linking producers, distributors, and consumers of a particular commodity or set of commodities' (Appadurai, 1984: 27). The majority of 'commodity ecumene' literature de-fetishises commodities by connecting them to their spaces of production, thus asking questions about the relationship between consumers and labourers, marketing representations and production realities, transformation of value along the commodity chain, and the social effects of global capitalism (e.g. Mintz, 1985; Freidberg 2004; West, 2014; Tsing, 2015). These studies have become crucial amid the realisation that, in the neoliberal and securitised world, it is easier to move commodities than people and it is easier to feel a tangible line of connection to someone far away not through redistribution of wealth but rather consumption of fruits of their labour. This is why commodity chains have become crucial sites for considering difference, social inequality,

and wealth. According to Tsing (2009), their relevance is for the study of “the human condition”. Studies of commodity chains focus on those commodities that pass from extraction or production to consumption and discarding. Scrap metals flow in the opposite direction and thus follow the less trodden commodity paths raising questions about their distinct nature when it comes to the circulation of value and wealth, and the creation of inequality (Çalışkan and Callon 2009). The work also builds also on existing research on resource materialities. Richardson and Weszkalnys (2014) focus on how resource come into being as a consequence of “physical stuff, extractive infrastructures, calculative devices, discourses of the market and development, the nation and the corporation, everyday practices (...) that allow those substances to exist as resources” (Richardson and Weszkalnys 2014: 7).

The vast majority of mineral resources come through large-scale, state or corporate mining.² These are mining contexts based on dialectic operations of capital and labour that create regimented labour conditions, consolidate capital’s power that translates into political leverage and ensure that the engineering operates to make the mine predictable (e.g. Golub, 2014; Welker, 2014; Jacka, 2018). In contrast, anthropological literature on artisanal mining see it through the prism of embodied skills, communal synchronisation of labour, extended networks of middlemen, and what Robyn d’Avignon, in the context of West African gold mining, calls ritual labour combined with technological expertise (d’Avignon, 2017: 21) (e.g. Cuvelier, 2016; Rosen, 2020). The proposed research is inspired by the studies of extractive regimes that propose arguments about the relationship between different actors, notably artisanal or other miners and the corporate worlds that benefit from and mobilise their labour. Such research is crucial because the contexts of extraction vis-a-vis contexts of capital to sponsor that extraction are characterised by massive discrepancies of power and money. Such discrepancy is often presented as a logical or natural consequence of difference in financial means, technological expertise or legal status when in fact it is the result of explicit actions aimed at preserving inequalities. Specifically inspiring studies for such argument have looked at inequalities between commodity trading and mining contexts (Kesselring, Leins and Schulz, 2020) and the corporate use of the knowledge of artisanal miners about mineral deposits in West Africa despite such artisanal miners being dismissed as ‘primitive’ and illegal (Rosen, 2019; D’Avignon, 2022). James H. Smith’s (2015; 2021) recent work shows the connection between the Silicon Valley digitalisation and the artisanal mines of the Congo highlighting that the miniaturisation of the digital devices that is often seen as the effect of technological genius starts much earlier during the process of metal extraction by the miners. Yet the miners are rarely valued for their ingenuity. These works have two important takeaways: (a) the process of alienating metals from their labour requires explicit devaluation and (b) devaluation is done by recognisable actors or processes. These distinctions can be mapped onto scrap metal where scrapyards and scrap collectors in places like Ghana experience radically different lifeworlds vis-a-vis risk, wealth and hazard compared to financial institutions in London that relate financial products to these base commodities.

² Specific metals and minerals have dispersed ASM supply chains - majority of gem stones come from artisanal mining, some twenty percent of gold, twenty percent of diamonds, and ASM represents an important contribution to supply chains to metals used in precision industries of computers and mobile phones (amid others).

Financialisation is a spectre that haunts most present-day work on commodities. The majority of commodity markets have experienced de-regulation in the 1980s which triggered a series of processes that led to a discrepancy between commodity understood as a material form versus commodity as its financial representation. The consequent price volatility is both the effect of the growing importance of financial markets and the reason for their enduring power. More and more actors participate in financial markets not to cushion risk related to trade across space and time but to make profit out of betting on price changes (see Hann and Kalb, 2020). Anthropology studied financialisation and financial markets as distinct processes and types of *habitus*. As Brenda Chalfin (2019) points out while engaging with Caitlin Zaloom's (2004) scholarship on risk, waste work is 'speculative rather than directly productive'. This leads to questions of how risk and wealth are experienced differently when it comes to the urban scrapyards versus on the metal exchange.

2.2. Current state of your own research

While my doctoral research focused on scrap from the perspective of scrapyards and scrap labour, the proposed research follows scrap further up its chain considering the perspective of the metal exchange. Paradoxically, there are numerous synergies between these two spaces that my research will explore, notably the hedging of risk, the circulation of discourses and practices of sustainability, and bringing to a single location a number of different metals. This is a research that aims to combine 'studying up' with 'studying down' (Gusterson, 1997; 2005).

My doctoral research is based on an extensive fieldwork in Ghana's scrapyards, five-year long engagement (2014-2018) with political life in the informal settlement in which the scrap dealers live, and observations in an Asian company that buys metals from informal scrap dealers, as well as work with a developmental agency that organises intervention in Ghana's scrap markets. The research has been written up to a thesis that focuses on the worlds of scrap in Ghana and in the West African hub. To be able to make stronger theoretical claims about the specificity of scrap metal compared to ore, I would like to position my research at the London Metal Exchange. The previous research should expedite my ability to carry new ethnographic work and interviews.

In the time between my doctoral defence and this application, I have been reading extensively on resource management trends in the context of decarbonisation. Some of this new research has translated into a forthcoming book on anthropological perspectives on circular economy (under contract with Zed Books).

I have also established academic networks in the UK at the LSE and with members of my thesis committee, notably Professor Mette High (Director, Centre for Energy Ethics, University of St Andrews) and Professor Andrew Sanchez (Cambridge University) working on related subjects and thus are able to provide ongoing feedback on my research ideas and the process.

2.3. Detailed research plan

The research is split into three major aims: new fieldwork in London; writing an article that presents the fieldwork research; and writing a book manuscript on scrap metal and the globalisation of its flows.

The fellowship is intended to begin in September 2022. This is when in consultation with Gisa Weszkalnys and drawing from her own experience of work with actors in the financial markets and government institutions, I will chart the details of my ethnographic research. I will begin by a desk research of the London Metal Exchange's publications and participation in its regular events which include the LME Metals Seminar and the LME Sustainability Morning. This initial research will lead to a better understanding of how the LME perceives the key challenges of resource management and how it understands and assumes its responsibility in the context. I will pay specific attention to discourses and practices of sustainability, decarbonisation, metal demand and scrap metal. This will allow me to conceptualise key thematic lines for the interviews.

From January 2023 until October 2023, I intend to begin participant observation and interviews. To start with, I will interview academics in economic departments throughout the UK who work on the LME to pose anthropological questions about the exchange's functioning. I will specifically seek to understand the information gatekeeping structure of the LME and the accessibility of different actors directly associated with the work of the Exchange. I will also seek to gain access to the LME's weekly courses as a participant observer. I have reached out to the LME to learn about the extent to which a waiver of fees are allowed. I will seek to interview specific works at the LME notably financial analysts and corporate responsibility officers to understand how they conceive of the LME in the changing world.

Based on this research and parallel to the fieldwork, I shall write an article that is directly inspired by the new fieldwork research and shows how the major financial exchange conceptualises and compares the commodity chains of scrap metals versus other metals and one additional article on how it promotes specific visions of sustainability as a tangible practice, a financial promise, and a historical juncture. In that time, I shall also work on sending a book proposal to publishing houses in the UK and the US. I have already been contacted by Rowman and Littlefield based on the interest of their editor in my conference presentation at the American Anthropological Association conference. However, members of my thesis committee have encouraged me to send my book proposal to other academic publishers in the US and the UK.

From October 2023 until the end of my stay at the LSE in August 2024, I will work on the book manuscript and my aim will be to submit it prior to my return to Switzerland. The book manuscript will bring together my research on scrap in Ghana with my understanding of macro-scale understanding of scrap formed during the fellowship.

Scientific exchange and advice

During my stay in the Department of Anthropology at the London School of Economics, I will be working under the mentorship of Professor Gisa Weszkalnys. Her regional expertise is in Europe and West Africa. Her

work examines the politics of resource management as well as conceptualisations of the future in extractive governance. She has written key academic contributions on speculation, resource materialities, and how material things become resources. This is why she is the perfect fit for my intended research subject. She agreed to mentorship sessions and fostering my inclusion in academic networks at the LSE through speaking at departmental seminars and in relevant courses. She is also expecting to have two more post-doctoral students in the period of my proposed fellowship which would allow for growing daily academic exchanges with peers at the same stages of their careers and working on related topics.

In addition, I chose the London School of Economics as my work resonates with the research interests of the different Faculty members. The Members of the Faculty of the Department of Anthropology have been an important inspiration for my research. Beyond the work of Professor Weszkalnys, I have been influenced by the work of Professor Deborah James and Professor Laura Bear. Professor Laura Bear's work on relationship state policy and capitalism contributed to my current thinking about metal markets and anticipation. Professor Deborah James' work on relations mediated through money and the role of middlemen has inspired my work on middlemen in scrap economies in Ghana and how scrap dealers conceive of economic gain. I have exchanged with Professor James in the past and I invited her to speak in the University of Lausanne in 2019. Professor James organises the programme in anthropology and economy which is a working group of researchers on topics related to my own.

I intend to present my new research as part of the brown bag series and my past research on scrap economies in Ghana on relevant platforms, notably the LSE African Political Economy working group.

2.4. Schedule and milestones

Time	Activity
Sept 2022 - January 2023	- desk research for fieldwork - building new academic networks at the LSE by participating in seminars, working groups, and exchanges - reaching out to other researchers conducting work on sustainability, resource management, and commodity chains in the UK in order to explore potential for future panels and special issues - completion of ongoing articles from doctoral thesis Milestones: developing an academic network in the UK, fostering good working relationship with Professor Gisa Weszkalnys, presenting research proposal at research seminars to gain feedback, constituting exchange networks with academics working on similar topics to provide ongoing support in writing
January 2023 - October 2024	- fieldwork at the London Metal Exchange and data analysis - interviews with actors in economic departments and actors in the financial institutions with regards to the functioning of the LME and primary versus secondary resource markets - writing of an article about discourses and practices of sustainability in metal markets - writing of a book proposal Milestones: submitting one article and sending out a book proposal

Feb 2024 - Aug 2024	- writing-up a book manuscript and an article that introduces the material to a wider audience - organising of a conference panel on metals and sustainability Milestones: submitting a panel for the AAA conference; submitting one article; completing
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2.5. Relevance and impact of the research

My aim for the research is to have an impact in academic debates and influence policymakers' work on urban mining and secondary resources.

Academic debates: There has been a very limited anthropological engagement with the London Metal Exchange especially as it relates to its importance for the scrap trade. Demet S Dinler's doctoral dissertation (2015) has probed the subject. The thesis focuses mostly on the historical evolution of the London Metal Exchange and its everyday work. However, it does not explain how the exchange deals with new pressures of metal demand and sustainability or how the market is structured differently with regards to the competition and complementarity between scrap and ore metal markets. My research will shed light on the London Metal Exchange not only through describing its work but analysing its impact and relationship to scrap metal markets in Ghana. My research will contribute new theories about commodity chains through analysing the atypical commodity of scrap metal. It will also offer theoretical contributions to the understanding of resources and resource-making as it relates to secondary resources. It will also theorise about risk and its circulation in metal markets.

Popularisation of research: While the needs of decarbonisation require that we focus on how energy is produced and used, there is equally an importance to examine how materials are produced and used. We have seen that the two are not often taught together. For example, critics (e.g. Pitron, 2021) point out that some of our decarbonisation models focus so much on energy transition that they leave concerns with materials to the side. There has been a wide interest in anthropology with the study of the energy transitions leading to such branches as energy ethics, energy infrastructures, energy politics. I strongly believe that there is a need for a parallel reflection on material ethics, material circulations, and material politics. Having done research in Ghana's scrapyards, where I have observed how people's communities and lives are transformed by metal demand. I believe there is a need for a book that considers how far our systems are able to meet the demand. There are existing popular works on how more metal exploration will create security and environmental risks. In comparison, scrap metal is often cast in the positive light. However, little is known about the scalability of scrap, its ability to garner investments, and the specific ways in which wealth, risk and hazard are distributed across its world spanning commodity chains. This is why a timely study on the subject is needed not only from the academic point of view but also to inform popular debates about metals and prospects of sustainability. Together with Gisa Weszkalanys and other academics who work on resource management (e.g. Appel, 2019; Hecht, 2012 & 2018; Pierre, 2019), I believe that resource management poses crucial questions about social inequality and racial divides. Many of our techno-optimistic or progressive political proposals that promise technological innovation to overcome challenges of climate

change tend to overlook that technologies are made of metallic building blocks and conjuring those blocks requires sacrificing new landscapes, habitats and livelihoods to metal extraction. My study will contribute to the widening debate about the new spaces of metal extraction and their organisation across scales.

2.6. Relevance for personal career development

I would like to publish a book in order to be able to assume an academic position and apply for further research projects. After the completion of the fellowship, I would like to spend the return grant period in applying for major research projects. These projects would build on the previous research but analyse the geopolitical question of non-ferrous metal demand. I would like to look at the question from the perspective of changing territorial development in Europe. Despite being one of the biggest mining locations in the 19th century, Europe's mining has decreased dramatically in the 20th century. However, recent years have seen a growth in the granting of mining concessions and exploration authorisations in different countries in Europe. This has been related to new concerns about supply chain security and access to metals needed for key technologies. Many of our theories of mining have been inspired by the colonial and post-colonial territories of its extraction based on huge power discrepancies, regulatory arbitrage, and conflict between indigenous populations and mining interests. The prospect of mining back to Europe opens the need for new theories of mining in heavily regulated contexts where citizens have been organising around environmental issues. The new research will pose questions such as: Is development of mining landscapes and communities in Europe different to its historical antecedents? Due to my native language skills, I would like to study this subject through the perspective of Poland's decision to develop new mining sites at home and increase its influence as the largest deposit of copper in Europe.

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