From the scrapyard to the ELV center

When the old car becomes a global resource[1]

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Introduction

On 7 October 2021, we finally arrive at the scrapyard we were looking for. It is located on the outskirts of the Greater Paris area, facing fields and logistics zones. The drivers are working- class men and are often of foreign origin. They arrive by car, enter the scrapyard, get out from it to grab their toolboxes from their trunks and then get back inside.

Our first attempt to speak with the scrapyard boss fails. We make various hypotheses about practices that might be used in the scrapyard, which might explain his distrust of us... in a context where the presence of the junkyard arouses negative reactions from the municipality. Scrapyards are still perceived through stereotypes, often fostered by cinematographic representations (for example, *Max and the junkmen*[2]), which present them as underworld places where stolen vehicles are stolen and money is laundered. Our investigations will encourage us to go beyond these initial impressions and to consider the place of scrapyards within the global economies of ELV waste recycling.

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1. This article rely on a research program, *Global Car*, funded by the Agence Nationale de la Recherche (France) and Fapesp.

2. French film (*Max et les ferrailleurs*) by Claude Sautet from 1971 which evokes the world of scrap metal and its crossroads with illegality.

We were beginning to trace the trail of car parts, after conducting for several years an ethnography of street mechanics. Indeed, some mechanics explained to us that they used second-hand parts that they extracted from vehicles discarded in scrapyards. Street mechanics is an informal activity conducted in former industrial wastelands undergoing conversion or in the car parks of social housing areas (Collectif Rosa Bonheur, 2017 and 2019; Ndiaye, Mamou and Deboulet, 2019; Jacquot and Morelle, 2019). These workers operate in a situation of precarity, sometimes discouraged from working in the formal sector in which they are often exploited. These mechanics respond to a need expressed by working class populations to have their second-hand vehicles repaired at low costs (Jacquot and Morelle, 2020), giving rise to popular service centralities (Rosa Bonheur, 2019). Thus, our investigation of the scrapyard industry was intended to broaden our study to that of work in popular economies in a post-industrial context, through the study of the economics of second-hand cars, parts and end-of-life vehicles. The advent of the consumerism to the ecological transition, in a context of climate change, is accompanied by a change in the representations, uses and legitimacy of the automobile (Aguilera and Cacciari, 2020).

Firstly, the car is becoming a marker of social difficulties in working-class and suburban areas. Low income households are heavily dependent on their vehicle (Demoli, Sorin and Villaereal, 2020), which requires more and more repairs as it gets older, and therefore becomes increasingly expensive to run over time (Doulet, 2018).

Car production and mobility-related urban planning are also changing in the name of the ecological transition (Bannister, 2011; Godillon and Lesteven, 2020). The ban on the sale of new combustion engine cars is planned for 2035 at the European Union level (approved on 8 June 2022 in Parliament), in favour of the electric car. Restrictions on the circulation of vehicles considered to be the most polluting are being implemented in several cities, and is combined with the implementation of low emission zonez (LEZ)[3]. More broadly, car-related public policies have changedin Europe (Newman, Kosonen and Kenworthy, 2016), and include policies prohibiting the circulation of cars in cities (Deleuil, Barbey and Sintès, 2017). At the same time, in countries of the South, imports of polluting vehicles can be the object of regulation.

The promotion of circular economy in the name of environmental preservation also affects the management of automotive waste and of scrapyards. For a long time, this industrial activity remained confined to the outskirts of urban areas, and often involved informal activities.

3. Laws of 7 August 2015 on the energy transition for green growth, of 24 December 2019 on the orientation of mobility, and of 22 August 2021 on combating climate change and strengthening resilience.

A first question concerns the regulation of the treatment of end-of-life vehicles, examined from the perspective of public and ecological policies, and justified by the fight against informality and the environmental risks it generates. Scrapyards are now referred to as ELV centres (end-of-life vehicle centres). Industrial groups are also interested in the sources of recycled materials that end-of-life vehicles represent, in line with principles of circular economy, promoted as an economic model (Eude, 2019). These groups aim to transform waste into secondary raw material through material recycling (Lupton, 2018) in a context of competition for access to resources (Léchevin, 2014). Starting with scrapyards, there has in recent years been an attempt by capitalist interest groups to take control of an activity that has historically been situated at the borders of the formal economy, as a manifestation of a recycling economy (Cirelli and Florin, 2015). This shift has occured in the name of a green economy, and supposedly with a view to reconciling growth and environmental protection (Bourdin and Maillefert, 2020). We study the socio-economic and political dimensions of ELVs when they are (re)converted into parts, materials or waste (Garcier, Rocher and Verdeil, 2017). Does this tendency constitute a dilution of artisanal and partially informal activities into capitalist and highly technical mechanisms, justified by circular economy objectives? We note an emergence of conflicts around the appropriation of ELVs, recognized as a resource by various actors with asymmetrical positions, as in other conflicts around other types of waste throughout the world (Cavé, 2015), an issue investigated in the the field of waste studies (Gille and Lepawsky, 2022).

A second issue concerns the scale at which this automotive recycling activity is structured. For a long time, the automotive industry was considered at a French national scale. The relocation, in the last decades of the 20th century, of parts of the production (Doulet, 2018) was aimed both at moving closer to emerging markets and at reducing production costs, which resulted in the globalization of the automotive industry (Sturgeon, Memedovic, Van Biesenbroeck and Gereffi, 2009). With this globalization of production, at what scales is the treatment of used vehicles, and of the parts and materials extracted therefrom structured? They also circulate on a global scale, between European and African ports (Kablan, 2010; Rosenfeld, 2018), or even between countries in the South (Tastevin, 2015). Globalization is one of the ways in which used vehicles or auto parts are put back on the market, which is challenged by national regulations and the desire to promote short supply chains in the framework of a circular economy. Thus, our study focuses on the intersection between the informal and/or micro-entrepreneurial rationales of transnational circulation and the national restructuring aimed at creating regulated waste markets. We have chosen to start this article with the analysis of regulatory policies in order

to identify what they do not cover. Examining transnational flows of vehicles and parts also raises questions concerning the future of urban informality in the context of reconfigurations and regulations.

We conducted observations in several scrapyards in the Greater Paris area and in France. In 2022, we also conducted interviews with actors in the sector of ELV recovery (scrapyard managers, representatives of public and trade union institutions, freight forwarders involved in the export of used vehicles). In the first section of this article, we focus on the bringing up to standards of scrapyards, which have now become ELV centers, and which are part of the broader field of waste treatment. In the second section we will study scrapyards from the perspective of a political economy of waste. This will lead us to examine the discrepancies between the local, national and European rationales underpinning their management.

From the scrapyard to the ELV center

France was one of the world's leading producers and consumers of cars during the 20th century. However, cars are consumer goods with a rather short lifespan, a lifespan made even shorter by strategies of planned obsolescence. In the 1950s, it was estimated that 150,000 to 200,000 vehicles were scrapped each year (*Le Monde*, 11/01/1955), and about 700,000 twenty years later (*Le Monde*, 03/11/1970). According to Ademes (2021), 1.6 million end-of-life vehicles were collected and processed in 2019, in addition to vehicles exported or coming from informal channels. Historically, these cars were collected by scrap dealers. These junkyards have become ELV centers, due to the industrialization of the process and reinforced public regulations at the French and European levels.

Scrapyards and shredders: recycling auto parts and materials

The origin of scrapyards lies, first of all, in the recovery of scrap metal and other materials: "the trade was created by recovering metals; the specificity of cars, since their invention, is that they are made of 75% metal, whether ferrous or non-ferrous" (national professional institution, 2022). This activity coexists with the sale of parts: "At the time, in this business, we recovered cars to dismantle them, to extract materials, and we sold scrap metal, copper; as for parts [...] it has always existed [...] in the 70's, my father used to go to flea markets; he sold Citroen DS bumpers" (scrapyard, Great Paris, 2022). As an actor in the sector points out, "we had an old adage that said that a car is like a pig: everything is good..." (national professional institution, 2022).

Thus, vehicles in scrapyards also constitute sources of car parts, intended for use by mechanics or private individuals, sold in stores or, nowadays, on the Internet, and possibly in free access. Local residents, often in working-class neighborhoods, go to scrapyards to repair their old cars at a lower cost. The manager of a scrapyard in the Great Paris area talks about the vehicles in question: "people don't have much money... we're not talking about big cars... they are cars like Clio 4... C3... a... small cars in fact... that all people use... so it's true that there's too much demand for parts... because people only have access to that... in their area" (scrapyard, Great Paris, 2022). These two activities (metal recovery and auto part sales) will gradually separate, due to the industrialization of metal recovery, which requires heavy investments. Once all the parts are dismantled from a vehicule, the remains are crushed in a press, but the scrap metal thus produced remains mixed with non-ferrous metals, making it difficult to use. The processing of car wrecks was industrialized in the 1960s with the development of shredders by the United States. In 1966, the CFF (Compagnie Française de la Ferraille) installed the first shredder in Athis Mons (in the Paris region), which helped to better meet the needs of the steel industry. These shredders crush car wrecks from which the engine, the seats and the tank have been removed.

Thus, scrapyards operate upstream of the process of scrap metal production; they collect ELVs and deliver them to shredders, which can shred several tens of thousands or even hundreds of thousands of dismantled car wrecks per year. The profitability of these operations is determined by the highly fluctuating prices of materials on the international markets.

A double movement is at work: thousands of scrap yards are scattered across the country; the operators collect vehicles located in their area, and make a living by reselling the parts or materials extracted from vehicles. The number of scrap yards has tended to decrease recently (in 2019 there were 1,635 approved ELV centers – Ademe, 2021, compared to an estimated 2,500 approved and non-approved centers at the beginning of 2000 – Ademe, 2003). There is great disparity between scrap yards. Some diversify their income by buying and reselling used vehicles, or by collecting other waste materials; others earn significant incomes from the recovery and resale of car parts.

The dozens of scrap yards operating in each French *département* supply a smaller number of shredders (59 approved shredders in 2019), which belong to large groups that specialize in waste processing and recycling. The French leader in this sector, namely the Derichebourg group, is an off shoot of the CFF created in 1956 for metal recovery.

These groups are therefore supplied by ELV centers on the basis of international prices. However, this system does not only work vertically. Some ELV centers send

dismantled car wrecks to neighbouring countries, such as Belgium, where scrap prices are higher than in France. Others process car wrecks further in order to sell the materials recovered at a higher price. In the past "everyone left us alone, and we each did our own thing"; (national professional institution, 2022) but new environmental regulations are transforming the ELV processing industry.

Are scrap yards a solution or a problem?

The automobile industry produces waste that accumulates and gradually becomes a public problem. A 1969 article in *Le Monde*, entitled "Cars are harder to destroy than to build" (Jean Benoit, 05/08/1969), mentioned the existence of "car cemeteries". Scrapyards for recovery purposes (of parts and especially scrap metal) emerged in the inter-war period (for example in Niort in 1932). The advent of the mass production of automobiles in the second half of the 20th century lead to the mass use of cars. Some emblematic "casses" or scrapyards were founded in the 1960s, such as Casse Auto in 1969 in the Paris region, or Dogimont in Fléac in 1964. They organized themselves in the 1960s with the creation of the "wreckers" section of the Chambre Syndicale de la Construction et Réparation Automobile (which became the Conseil National des Professions de l'Automobile, in 1990 and then Mobilians in 2022). They both wished to distinguish themselves from operations that modified and sold stolen vehicles, and to obtain support for their activity (their bosses demanded a control of vehicles in circulation in order to recover them before they become total wrecks). The issue of end-of-life vehicles became a public problem in the 1970s, initially from the point of view of the impact on the landscape. Governments then started considering scrapyards as a solution to the problem of abandoned vehicles.

On the other hand, from the emergence of the environmental question from the 1970s onwards lead to the implementation of more restrictive regulations and standards, resulting in an in-depth transformation of the activity, from the mid-1990s onwards. "Awareness in France isn't that old; [...] we could dump everything, oils... wash water in the ditch; nobody said anything; people used to... they drained engine oil and ditched everything on the ground; it was not a problem; until the 90s; then the environment, France became aware, and Europe, [...] cars were put under the spotlight of scrutiny" (national public institution, 2022). The environmental issue was reflected in two dimensions: respect for the environment in the exercise of activities (recovery of waste water) and performance in terms of reusing parts, recycling materials and recovering waste (with objectives expressed as a percentage of the vehicle's weight). The demolisher branch of the National Council of Automotive Professions (CNPA) anticipated European regulations by setting up an

"ELV treatment" certification in 1995, with depollution, recycling and traceability objectives. This was the beginning of the transformation of scrap yards into ELV centers (end-of-life vehicles centers).

Finally, the successive stages of regulation revealed the informal or even illegal dimensions of certain scrapyards. Some are thought to not be up to standards, due to a lack of investment, which raises the question of controls and of the authorization process: "there are still companies that got the authorization, and sometimes we wonder how, to be very honest with you..." (national public institution, 2022). The institutions involved in their regulation consider that the smaller operations will not be able to make the investments required to achieve environmental objectives. "To do this kind of work [to bring the scrap yard up to standards], it must cost a minimum of 200 to 300000 €... these are colossal amounts... and the small ELV centers that have been around for decades don't have the means" (scrapyard, Great Paris, 2022). Here it is not so much the historical suspicion that car wreckers had relations with dubious and illegal activities that is at work, but rather their reputation as polluters. These discourses also show the process of informalization that can result from these regulations.

The informal dimension is also related to what happens toillegally recovered vehicles. In many cities, posters are displayed on traffic lights' poles by auto wreckers offering to collect old vehicles free of charge, so as to recover the parts or car carcasses to resell them directly for scrap, or to resell the vehicle once repaired. Yet, legal ELV centres are the only ones authorized to issue certificates of destruction. Thus calling onto an informal car wrecker to dispose of a car exposes its owner to the risk of remaining responsible for a car that might still be in circulation. Thus, two issues remained to be resolved: "in order, we had to get rid of the illegal sector, and then effectively tackle the legal operators that did not respect the regulations" (manufacturer's network, 2022).

Bringing ELV centers up to standard

The institutionalization of ELV centers is motivated by the issue of automotive waste disposal, giving rise to the European directive of September 18, 2000, known as the "ELV directive", which was then transposed into each national legislation[4]. This directive sets out several principles, including the absence of any costs for the owner other than that related to towing his vehicle to an approved treatment cen-

4. For France: decree n. 2003-727 of 1 August 2003 on the construction of vehicles and the elimination of end-of-life vehicles; order of 15 March 2005; decree n. 2011-153 of 4 February 2011.

ter (in order to improve the sourcing of the ELV), the obligation to depollute, and the eco-design of the vehicles. Above all, the directive sets targets for reuse (using parts taken from the vehicle), recycling (tires, scrap metal, non-ferrous metals...) and recovery of 85% of the average weight of ELVs by 2006, and 95% by 2015. ELV centers are subject to approval procedures and must comply with the obligations of depollution and recycling.

These ELV centers set up several types of operation as part of car processing: depollution (removal of oils, cooling liquids), dismantling of parts and car body components for reuse, dismantling of various materials for recycling, deregistration of the vehicle from the National Registration Database. Following these operations, the scrap vehicle is sent to a specialized center, to be shredded and crushed, before further sorting of materials can be carried out, such as separating ferrous metals, aluminum, copper, foams for recycling or incineration for energy production).

The scrapyard is thus the starting point for the physical and economic processing of ELVs, involving a diversity of flows and actors. These operations give rise to economic transactions: parts are resold for car repair, and what remains of the car wrecks is sold by weight. The Ademe (French Agency for Ecological Transition) is in charge of monitoring the performance of the ELV sector and of "assessing the economic stability of the ELV sector". Indeed, ELV centers are responsible for the processing of vehicles, and are remunerated through the sale of parts and materials. Thus, while the justifications are environmental, the challenge is to develop a recycling and recovery sector for automotive waste. Recycling and recovery requirements represent economic opportunities.

The management of automotive waste through the lens of producer responsibility?

The management of end-of-life vehicles is part of the broader context of implementation of waste management. It follows the dual principle of "extended producer responsibility" (EPR), i.e., management that goes beyond public actors to involve producers (Durand and Braconnier, 2021), and the development of circular economy. Circular economy is supposed to encourage the reuse of goods and materials, promoted in France by the 2015 law "on the energy transition for green growth" (Eude, 2019) and the Agec law of February 10, 2020. EPR sectors go beyond the polluter-pays principle according to which the producer is responsible for the end-of-life of products placed on the market (Micheaux and Aggeri, 2019). In France, eco-organizations have been set up to act on behalf of producers (who pay contributions to them). Specific eco-organizations already collect waste from ELV centers, including used tires since 2004, batteries since 2009 and oils since 2022.

Until now, the treatment of end-of-life vehicles has been based on a different principle, and has functioned without an eco-organization. It is the ELV centers, independent of the manufacturers, that collect the vehicles. However, the Agec law provides for greater involvement of producers, as in other EPR sectors, either through the creation of an eco-organization or through individual systems for each manufacturer.

According to the actors we interviewed, the competition between car manufacturers is leading them to favor an individual system, which will involve the setting up by manufacturers of specific networks for the collection of end-of-life cars of their own brand. The scrapyard managers we interviewed fear that they will lose their autonomy, as manufacturers might be able to impose the ELV centers they will work with. The unions that represent them are also opposed to this transformation of the sector. For example, the Mobilians Recyclers branch published a white paper in March 2022 calling for ELV centers to remain independent of the eco-organization which would have a technical and financial role (compensating for any deficits in waste processing) without an operational role (i.e., vehicle collection). What emerges from the interviews conducted in 2022 with representatives of the professional groups other than manufacturers is that there is no need for this reform, because "the sector lives on its own; it remains, for the most part, autonomous" (national public institution, 2022). To date (end of 2022), negotiations are continuing on a national and european scale between the various stakeholders (public authorities, recyclers' unions and the automotive industry).

This reform project also reveals issues concerning the management of end-of-life vehicles.

A political economy of car waste

The scrapyard is not the end of the journey for end-of-life vehicles, but the starting point of many recovery modalities, leading to flows of materials and parts, at various scales. Automotive waste is approached as a resource (Cavé, 2016). It fosters the objective of establishing a circular economy, involving various categories of actors: ELV centers, but also large recycling groups with large treatment capacities, insurance companies, and finally car manufacturers. We consider that a political economy of automobile waste is at play, and is leading to competition between actors for the legal or informal monopolization of these resources, both upstream (via the collection of vehicles, described as "sourcing") and downstream for the parts and materials. This political economy of waste develops at various scales, from local supply chains to transnational chains.

Collecting the vehicles

The challenge for each scrapyard is therefore to recover enough vehicles, and therefore parts and materials.

Overall, public policies play a role in the evolution of the volume of cars that go to scrap, by defining obsolescence criteria, by the introduction of technical inspections in 1992, and the "scrappage bonuses" (primes à la casse), which have become "conversion bonuses" (primes à la conversion) for the replacement of an internal combustion engine vehicle with an electric vehicle. Finally, the implementation of low emission zones[5] in several areas of mainland France also promotes the renewal of the vehicles in use.

Approved ELV centers have a monopoly on the recovery of end-of-life vehicles (art. R543-156 of the Environmental Code), but this does not guarantee that all vehicles reach them. Informal operators still collect end-of-life vehicles in working-class neighborhoods, and sometimes resell or export those vehicles. Above all, the administrative data seem to indicate that an important number of ELVs do not reach ELV centers. Many actors underline a discrepancy between the number of vehicles recovered by ELV centers and the expected volume: "Logically, if we put 1.8 million or 2 million cars in circulation, there should be a minimum of 1.8 million end-of-life cars... And yet, that we collect only 1.1 million. So where is the difference... that's our problem. Historically, we thought that it was a lot of ELV centers [...] and now that we are very well informed about this problem of the Antwerp platform, we think that the largest volume goes there [...]" (national professional association, 2022). In other countries, such as Germany, the difference between the theoretical volume and the volume recovered is even higher. Thus, the gap of several hundred thousands between the number of cars put on the market and the number of cars reaching ELV centers shows that a large quantity of car wrecks are processed outside the legal channels.

The vehicles that reach ELV centers come from different sources: private individuals (43.6% of the ELVs processed by approved ELV centres in 2019 according to Ademe, 2021), dealers and professionals from manufacturers' networks (16.3%), insurance companies and mutual insurance companies (14%), garages and other mechanics (13.7%), and impound facilities (8.5%).

The data does not integrate the fact that many vehicles that theoretically arrive in scrapyards are sold for export. They represent a legal and formal source of the international circulation of used cars. A significant percentage of vehicles is supplied

5. In french: zone à faibles émissions.

by insurance companies (14% of vehicles) that contract with specific ELV centers. These damaged vehicles are important for ELV centers. They are more recent and have more economic value than those at the end of their life, either because the parts collected better correspond to the needs of the market, or because they can be resold afterwards or for repair. However, vehicles must be appraised by the insurance company. Two notions determine the value of the vehicle: the technical reparability (a burned car is not repairable) and the economic reparability (the cost of repairs exceeds the value of the vehicle, given its age). However, a car that cannot be repaired economically in France may be repaired in countries with lower labor costs. Insurers resell certain batches of damaged vehicles to buyers in Eastern Europe, which also causes frustration among scrapyard managers: "I paid for the transport… I'm bringing it back here… I'm going to keep it in the state it is… So, three months later, they put it out to tender; another person comes from Poland, takes the vehicle, loads it and leaves" (scrapyard, Great Paris, 2022). ELV centers that acquire insurance vehicles can also resell them to buyers in Eastern Europe: "they go to Eastern countries because labor is cheaper, parts are cheaper, and the cars become repairable in Poland when they are not in France" (scrapyard, Great Paris, 2022). This leads to new flows, feeding the second-hand market in those countries.

ELV centers do not manage to absord all ELVs, some of which also feed informal and export channels. In addition to this first observation, there is a development of intermediaries linked to manufacturers, seeking to establish networks of ELV centers.

Towards networks controlling vehicle flows?

The distribution of vehicle acquisition methods varies according to the wreckers. In some cases, ELV centers become dependent on certain actors that supply them with ELVs, with the risk of finding themselves in a subcontracting relationship.

This is particularly true for insurance companies and mutual insurance companies, which sign contracts with ELV centers for a specific geographical area. These ELV centers then undertake to collect the damaged vehicles, immobilize them for the time of the expertise, and acquire them at the price defined by the expert (unless the insurance company sells it via a call for tenders). According to an ELV center manager, this leads to an asymmetry because the expert report can lead to an overvaluation of the vehicle, which the ELV center cannot refuse for fear of losing the contract. However, this relationship with insurance companies remains essential. Indeed, the latter provide with more recent vehicles than those usually left in scrapyards by private individuals, which enables scrapyard operators to offer and sell more expensive parts or vehicles, making the trade more attractive. Thus, "in general, the

ELV centers that are under contract with these mutual insurers do not really want to leave them... they do everything to stay with them, because they are, actually, very interesting contracts" (manufacturer's network, 2022).

Car manufacturers play a growing role in "sourcing", i.e. identifying used vehicles and sending them to partner ELV centers. As Indra's director Loïc Bey-Rozet puts it, "Today, as in the past, the lifeblood is the supply of vehicles" (*Recycling Magazine*, 9/10/2021), as it is the prime source of recycled materials and parts.

Since 2011, manufacturers are required to establish a network of ELV centers responsible for recovering end-of-life vehicles, including from their dealership network[6]. Four networks have been approved by the public authorities: Tracauto (for BMW, Mercedes, Volkswagen etc.), Galloo France (for Ford, Suzuki, Hyundai, PSA and then Stellantis), Eco-VHU (PSA and then Stellantis, Opel), and Indra (Renault and Kia). Eco-VHU was founded by Derichebourg, and Galloo is a Belgian group that has created a specific structure for the supply of ELVs (Valorauto). Indra was created in 1985 with the objective of supplying car dismantlers with vehicles, throughagreements with manufacturers. Indra then came under the control of Renault and Suez in 2008.

These networks of ELV centers, whose main suppliers were initially manufacturers' dealership networks (which collect end-of-life vehicles from their customers when they buy new vehicles), are diversifying their supply sources. They enter into contracts with insurance companies and mutual insurance companies and also with private individuals to report their vehicles, in order to direct them to the network's scrapyards.

Thus, these networks are increasingly positioning themselves as intermediaries between end-of-life vehicle owners and scrapyards. The latter must then conclude partnerships with these networks to ensure that their supply does not dry up, which would benefit competitors: "Yes, it is an intermediary... So we work with them because it's true that they have [partnerships with] insurance contracts; they have dealerships working with them..." (scrapyard, Great Paris, 2022). But this increases the cost of acquiring vehicles: "At the time, it was free; Now, Indra or the other centers that have been set up, have talked with dealerships; and they've said... 'we'll buy them from you...' so the dealerships said, 'Well yeah... why should we give it for free when they [...] pay us" (scrapyard, Great Paris, 2022).

Some small entrepreneurs consider that they are losing their independence, and the control of their supply from insurance companies, dealerships, private individuals, estates or impound yards. "Turn it down and I'll give it to someone else... Initially,

6. Decree of 27 June 2011.

we were supposed to be in direct contact…, and today we've accepted to go through the intermediaries… so that they don't kill us… At the end of the day, we have to take everything and anything" (scrapyard, Great Paris, 2022).

However, the will of the public authorities to implement an eco-organization upstream of the ELV sector leads car manufacturers to wish to rely on t alternative networks such as Indra or EcoVHU. These networks would then "be required to manage the issue of end-of-life vehicles from all origins combined, and not only the vehicles coming from dealerships" (national public institution, 2022). These scenarios are a source of concern for the managers of ELV centers and their representatives. Firstly, this could call into question the undifferentiated supply within a scrapyard, whatever the brand of the vehicle, by linking them (the ELV centers) to a particular manufacturer. Secondly, they see these scenarios as a challenge to their right to freely dispose of parts and materials which would remain the property of the manufacturer. One of the actors we interviewed refuses virulently to become "a slave to the producers [car manufacturers]" (national professional association, 2022).

Auto parts and materials: coveted resources

If the supply of vehicles is becoming so competitive and contested between different types of players, including informal operators, it is because they have the issue of recovered parts and recycled materials in mind.

Ferrous metals are re-used by the steel industry, which explains the historical links between the two sectors. Thus, Usinor Sacilor participated in the takeover bid for Compagnie Française des Ferrailles in 1996 (which led to the creation of the Derichebourg group). What was at stake for the French steelmaker was to have better control over the "French deposit" (*Les Echos*, 10/09/1996). International scrap metal prices, which fluctuate widely, are key to the profitability of shredding and recycling operations, and in turn to the activity and profitability of ELV centers.

Manufacturers also aim to recover materials. Renault has set up a subsidiary, Renault Gaia, dedicated to the recovery of batteries, parts and materials; they extract palladium and rhodium from catalytic converters, for example, or copper from wiring harnesses. The goal is to supply the recycled materials to this subsidiary, which would make it easier to set up manufacturers' channels, since a partnership with an ELV center (and therefore the supply of vehicles) could be conditioned by the supply of materials and parts.

Thus, auto parts are increasingly pivotal in the ELV sector, and is arousing new interest. The collection and resale of auto parts play an incentive part in the development of a circular economy. Since 2017, repair centers have the legal obligation

to give their customers the option of using second-hand parts for repairing their vehicles. The various economic actors in the repair sector seem to benefit from this new obligation. "You make a little more money with second-hand parts. Because I get smaller discounts on the prices of new parts" (garage owner, Great Paris, 2022). For the representative of a manufacturer's network, second-hand auto parts also play a key role: "For us, auto parts from the circular economy are clearly the cornerstone of the economic viability of the sector" (manufacturer's network, 2022). The manufacturers also want to ensure control over the auto parts.

The transition towards electric vehicles encouraged by the public authorities makes the issue of the control of materials and parts even more central. Many ELV centers managers are reluctant to accept electric vehicles, which require more restrictive storage and dismantling standards. Nevertheless, in the longer term, the question of the recovery of batteries, is an issue for scrapyards and automobile producers. Thus, according to a union representative, "the producers would like to have ownership of the materials... among other things, they would like to recover the raw material, [...] tomorrow's challenge will revolve around batteries..." (national professional association, 2022). According to another actor, "the economic model will change. Manufacturers seek to have control over second hand spare parts, and thus over the maintenance and repair of vehicles of their own brands so in terms of spare parts, it's a financial windfall" (manufacturer's network, 2022). This scenario fuels the opposition of recycling and dismantling actors to the establishment of individual networks in the framework of the Agec law. It poses the risk of transforming ELV centers into subcontractors, who would lose ownership of the parts and materials collected.

These desires for recycled materials and parts are also part of a geography of trade flows and markets.

Markets and scales: from the local to the transnational

The economy of end-of-life cars and parts is not part of a well-identified chain, or a nested structure organizing changes of scale according to the stages of a valorisation process. Several principles of territorial organization coexist, involving a various actors and crossing industrial and commercial regulations.

The ELV sector is structured primarily on a local scale. The geographical distribution of ELV centers is intended to ensure a balanced territorial coverage, so that owners of end-of-life vehicles have access, within a 50-kilometer radius, to a legal and authorized ELV centers when they wish to dispose of their vehicles. Similarly, most of the scrapyards' customers yards, both individuals and garages, are located

in proximity to the scrapyards. The manager of a scrapyard operating in a densely populated area mentioned the importance of local customers, who buy directly from his store: "I don't necessarily need to put it online, because the goods sell out really fast every day... And if we bring in a car... that some local resident or garage is interested in, the car goes..." (scrapyard, Great Paris, 2022). A garage owner also looks for second-hand parts in priority at the two nearest scrapyards, before turning to other sources.

However, the implementation of supply networks is shifting this principle of proximity: the destination scrapyard for an ELV is not necessarily the closest one, but the one that has contracted with an insurance company, or that which is part of a network of car manufacturers such as EcoVHU or Indra. The flows of vehicles are getting longer and more complex. Similarly, parts are traded over larger territories, thanks to computerized sales platforms such as Opisto. According to a scrapyard manager, this is a requirement from the intermediaries: "Today, the insurance companies, the dealerships, require us to be computerized... otherwise they do not want to work with us...; and computerization is good for us, too, because we can sell online..." (scrapyard, Great Paris, 2022). Some networks are creating their own platform for selling parts online; It is the case of Indra with its platform Precis, aimed at insurers.

This delocalization and circulation of recycled auto parts mainly occur within the national market. However, many parts are also exported, by a wide variety of actors: buyers specializing in imports to countries in the South, ELV centers that specialize in exports, and manufacturers' networks. The export of auto parts is also linked to the export of used vehicles, through different channels (Rosenfeld, 2018). In several scrapyards, we observed actors who buy parts and engines for export, to West Africa but also to Dubai. According to a scrapyard manager, "We have people who come from Africa... North Africa... Then we have people who come from the Middle East... Syria, Lebanon... and then we have another customer who buys from us and sends the parts to Dubai... Dubai has become a platform for Asia, the Middle East and Africa" (scrapyard, Great Paris, 2022).

However, the sale of parts for export is less profitable, as prices are negotiated to the lowest possible levles, and are also part of destocking strategies for ELV centers. According to the representative of a manufacturer's network, exports concern older vehicles: "There is a considerable volume of parts that goes to Africa. And for us, that's part of our business model. Very clearly, on our sites, when you work on an end-of-life vehicle, a real old end-of-life vehicle, you have to work on exports. [...] we work a lot with Morocco and the Ivory Coast, Burkina Faso, a little bit with Senegal; so, in fact, we send, even if only one (one site), up to three or four 40-foot sea containers per month" (manufacturer's network, 2022). Some companies, such

as MultiRex Auto or LDA, have specialized in exporting parts collected from ELV centers throughout France.

Thus, export is a specific and complementary mode of exploitation of used parts. One interviewee takes the example of the Peugeot 206: With the road conditions in France, the rear suspensions of vehicles don't get damaged, so there is no market for this auto part in France, but it can easily be exported to Africa. Export thus becomes a second market, more profitable for ELV centers than the sale of materials: "When we sell... in France, that's where we have the best added value... when we export, it's a second market. It is important because it allows us to be better than the material". On the other hand, for the actors of dismantling (that use a shredder), the export of auto parts constitutes a potential loss of materials, when they are extracted from old car models: "[...] and well, we prefer to keep the material in France...". (national professional association, 2022). This reluctance regarding export is shared by French steelmakers, given their objectives in terms of decarbonization.

Exporting is hampered by the issue of the legal classification of the goods. It is part of a "normative pragmatics" (Boltanski and Esquerre, 2017), the status resulting from the career of the object but also from the form of valorization that characterizes it; in other words, it results from the conventions and modes of evaluation of the object. Characteristic of the "standard form" typical of industrial mass production (Boltanski and Esquerre, 2017), end-of-life vehicles, and the parts extractred from them, legally constitutes a waste,. The modification of this "waste" status has been requested for several years by the various professional unions, in order to promote reuse. A first step was the reclassification of recovered automotive parts as PIEC (french acronym meaning parts from the circular economy), since the law of August 17, 2015 on the energy transition for green growth - LTECV and the decree of May 30, 2016. These PIEC can be considered as "products", once they have been controlled and refurbished. However, the exemption from waste status remains implicit. This "waste" status also represents an obstacle to export. Indeed, the export of waste is governed by international law (Basel Convention of 1989, European Parliament and Council regulation n. 1013/2006 of June 14, 2006), according to several criteria (the hazardousness of the waste, origin, treatment capacity at destination etc.). Some actors bypass export regulations by shipping the goods via the port of Antwerp or by trucking them to Spain before shipping them out of the EU. At the same time, African countries, such as the Ivory Coast, are also beginning to limit the import of old vehicles and waste.

Conclusion

Cars go through several statuses during their life cycle: new, second-hand or end-of-life. This status is also a qualification, involving technical, commercial and administrative procedures, and leading to the definition of a value. These qualifications and evaluations depend on several competing logics.

Second hand automotive parts and materials are now coveted by a number of actors. Regulations at European and national levels, implemented in the name of the circular economy and ecology, are leading to the increasing integration of scrap into industrial and capitalist logics, at the intersection of environmental and fiscal regulation issues and industrial and geopolitical interests. Foundries and steel companies, as well as car manufacturers, are trying to gain control over scrapyards and wreckers in order to recover the used materials and parts. The supply of vehicles remains a crucial issue and has led to the emergence of networks that act as intermediaries. They are developing in the context of the establishment and development of the circular economy, which aims to guarantee access to materials in order to continue producing vehicles according to a 'green growth' model that can be critically studied (Desvaux, 2017). The EU and the states produce a framework that tends to favor those who have the means to invest (in shredders, in the collection of ELVs, in compliance with standards etc.) in the name of issues that are perceived as strictly technical and regulated by market mechanisms (Desvaux, 2017).

What is called into question today is the very survival of small-scale scrapyards in post-industrial urban peripheries, with their bosses, employees, but also the practices of their customers. The place of small scrapyards in the popular economics of car repair and their role in keeping old second-hand cars operational seems to be under threat today, as a result of the reconfiguration of the sector on the one hand, and of the implementation of the EPZs on the other, which render old cars in circulation obsolete.

These changes are not met without resistance. Some scrapyards still operate on the fringes of regulations and without official authorization, and will either adapt or disappear. Even further in the periphery are scrap metal dealers and, more specifically, wreckers whocollect parts and vehicles before they reach ELV centers, and outside of any regulatory framework.

Finally, this green capitalism' of waste must be put in perspective by taking into account scales and territories of circulation of vehicles, parts and wrecks, which are 'diverted' (Appadurai, 2020) These goods continue to cross the boundaries of the formal and the informal, involve buyers, sellers and transporters, and take on variable statuses and values in the course of import-export practices to Eastern Europe

or Africa in particular. It calls for the car and the value chains it supports to be thought of in terms of plural socio-political arrangements, whether or not they are articulated or in friction (Tsing, 2017).

References

Ademe; In Extenso Innovation Croissance; Deprouw, Alice; Gaillard, Déborah; Robin, Arthur & Lecointre, Éric. (2021). *Automobiles – Données 2019 – Rapport annuel*.

Aguilera, Anne & Cacciari, Joseph. (2020), "Living with fewer cars: review and challenges on household demotorization". *Transport Reviews*, 40 (6): 796-809.

Appadurai, Arjun. (2020), *La vie sociale des choses: les marchandises dans une perspective culturelle*. Dijon, Les Presses du Réel.

Bannister, David. (2011), "Cities, mobility and climate change". *Journal of Transport Geography*, 19: 1538-1546.

Boltanski, Luc & Esquerre, Arnaud. (2017), *Enrichissement, une critique de la marchandise*. Paris, Gallimard.

Bourdin, S. & Maillefert M. (2020), "Introduction. L'économie circulaire: modes de gouvernance et développement territorial". *Natures Sciences Sociétés*, 28 (2): 101-107.

Cavé, Jérémie. (2016), "La ruée vers l'ordure. L'essor de l'extraction minière urbaine". *Techniques & Culture:* Réparer le *Monde*, 65-66: 131-141.

Cirelli, Claudia & Florin, Bénédicte (dir.). (2015), *Sociétés urbaines et déchets. Eclairages internationaux*. Tours, Presses Universitaires François-Rabelais

Collectif Rosa Bonheur. (2017), "Les garages à ciel ouvert: configurations sociales et spatiales d'un travail informel". *Actes de la Recherche en Sciences Sociales*, 216-217 (1): 80-103.

Collectif Rosa Bonheur. (2019), *La ville vue d'en bas. Travail et production de l'espace populaire*. Paris, Éditions Amsterdam.

Deleuil, Jean-Michel; Barbey, Emmanuelle & Sintès, Antonin (2017), "Le dévoiturage ou la ville sans (sa) voiture: mobilités plurielles, services numériques et vie de quartier". *Flux*, 108 (2): 80-87.

Demoli, Yoann; Sorin, Matéo & Villaereal, Axel (2020), "Conversion écologique vs dépendance automobile. Une analyse des dissonances entre attitudes environnementales et usages de l'automobile auprès de ménages populaires en zone périurbaine et rurale". *Flux*, 119-120 (1): 41-58.

Desvaux, Pierre. (2017), "Economie circulaire acritique et condition post-politique: analyse de la valorisation des déchets en France". *Flux*, 108 (2): 36-50.

Doulet, Jean-François. (2018), *Atlas de l'automobile*. Paris, Autrement.

Durand, Mathieu & Bacconnier, Sandrine. (2021), "Le service public des déchets: quelles limites?". *Union Rationaliste*, 220 (4): 19-28.

Eude, Marie. (2019), "L'économie circulaire, de la notion économique aux principes juridiques complexes". *Droit et Ville*, 87 (1): 291-307.

Garcier, Romain; Rocher, Laurence & Verdeil, Eric. (2017), "Introduction: circulation des matières, économies de la circularité". *Flux*, 108 (2): 1-7.

Gille, Zsuzsa & Lepawsky, Josh. (2022), *The Routledge handbook of waste studies*. Routledge.

Godillon, Sylvanie & Lesteven, Gaële. (2020), "Déclin et survie des mobilités automobiles? Entre résistances et évolutions". *Flux*, 119-120 (1): 1-4.

Jacquot, Sébastien & Morelle, Marie. (2019), "Mécanique de rue en banlieue parisienne: centralité populaire et migrations". In: Fleury, Antoine; Delage, Matthieu; Endelstein, Lucine; Dubucs, Hadrien & Weber, Serge (dir.), *Le petit commerce dans la ville-monde*. Paris, L'Oeil d'Or, pp. 167-179.

Jacquot, Sébastien & Morelle, Marie. (2020), "De la mécanique 'sauvage' à la mécanique de rue. Changer de regard sur une activité économique informelle dans les quartiers populaires". *Métropolitique*s, https://metropolitiques.eu/Changer-de-regard-sur-l-informel-dans-les--quartiers-populaires.html, consulted 17/10/2022.

Kablan, N'Guessan Hassy Joseph. (2010), "L'invasion des véhicules d'occasion en transit par le port d'Abidjan: le dynamisme ambivalent d'une activité en plein essor". *Les Cahiers d'Outre-Mer*, 251: 365-390.

Le Monde, Paris, 11/01/1955; 05/08/1969; 03/11/1970.

Léchevin, B. (2014), "Introduction". *Annales des Mines: Responsabilité et Environnement*, 4 (76): 5-6.

Les Echos, Paris, 10/09/1996.

Lupton, S. (2018), "Jusqu'où doit-on promouvoir l'économie circulaire?". *Pour*, 4 (236): 87-93.

Micheaux, Helen & Aggeri, Franck. (2019), "Le déchet comme potentiel commun: vers une nouvelle forme de gouvernance de l'environnement". *Annales des Mines, Gérer et comprendre*, 137 (3): 3-15.

Ndiaye, Abou; Mamou, Khedidja & Deboulet, Agnès. (2019), "La mécanique de rue: vertus cachées d'une économie populaire dénigrée". *Métropolitiques*, https://www.metropolitiques.eu/La-mecanique-de-rue-vertus-cachees-d-une-economie- populaire-denigree.html, consulted 01/10/2022.

Newman, Peter; Kosonen, Leo & Kenworthy, Jeff. (2016), "Theory of urban fabrics: planning the walking, transit/public transport and automobile/motor car cities for reduced car dependency". *Town Planning Review*, 87 (4): 429-458.

Recycling Magazine, Munique, Alemanha, 9/10/2021.

Rosenfeld, Martin. (2018), *Car connection. La filière euro-africaine de véhicules d'occasion*. Paris, Karthala.

Sturgeon, Timothy; Memedovic, Olga; Van Biesebroeck, Johannes & Gereffi, Gari.

(2009), "Globalisation of the automotive industry: main features and trends". *International Journal Technological Learning, Innovation and Development*, 2 (1/2/3).

Tastevin, Yann Philippe. (2015). "Bajaj en Egypte ou la diffusion discrète de l'autorickshaw en Afrique". *Autrepart*, 76 (4): 127-146.

Tsing, Anna Lowenhaupt. (2017), *Le champignon de la fin du monde: sur la possibilité de vivre dans les ruines du capitalisme*. Paris, La Découverte.

Abstract

From the scrapyard to the ELV center: When the old car becomes a global resource

This article focuses on the structuring of the end-of-life vehicle processing and recycling (ELV processing) sector in France. First, it traces the emergence and the structuring of scrapyards. It then analyses the gradual introduction of regulations aimed at curbing informality in the sector, and at promoting the development of a circular economy. Scrapyards, which have now become "ELV recycling centers", are gradually absorbed into a capitalist and highly technical apparatus, in the name of a "green economy". The article proposes to discuss the value of end-of-life vehicles, which are often considered as a source of pollution and waste, but can also be a source of parts and materials, at the intersection of national and transnational formal and informal circulations.

Keywords: End-of-life vehicles; Scrapyard; Car part; Waste; Recycling; France.

Resumo

Do ferro-velho ao centro VFV: Quando o carro velho se torna um recurso global

Este artigo enfoca a estruturação do setor de processamento e reciclagem de veículos em fim de vida (processamento VFV) na França. Primeiramente, traça o surgimento e a estruturação dos ferros-velhos. Em seguida, analisa a introdução gradual de regulamentações destinadas a coibir a informalidade no setor e a promover o desenvolvimento de uma economia circular. Os ferros-velhos, que agora se tornaram "centros de reciclagem de VFV", são gradualmente absorvidos por um aparato capitalista e altamente técnico, em nome de uma "economia verde". O artigo se propõe a discutir o valor dos veículos em fim de vida, que muitas vezes são considerados como fonte de poluição e resíduos, mas também podem ser fonte de peças e materiais, na intersecção das circulações formais e informais, nacionais e transnacionais.

Palavras-chave: Veículos em fim de vida; Ferro-velho; Peça do carro; Desperdício; Reciclagem; França.

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