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Plastic in Lake Titicaca: Tourism and Management of Non-Biodegradable Waste in the Andes

RESEARCH

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ABSTRACT

Plastic has invaded the rural Andean landscape in recent decades. Its increase is due to the emergence of new consumption patterns, the absence of adequate waste management systems, and the persistence of a logic that incorporates waste into nature—which was appropriate when waste was biodegradable. However, the rural indigenous population is aware of plastic's polluting effects. Tourism, which transmits urban and Western perceptions of cleanliness, is one of the factors that have led to this view. Tourism spreads an ecological perception that supports the sustainability of natural resources. It also spreads a bucolic perception of the landscape. Sometimes, the two discourses complement each other, but they can also clash. From the discard studies paradigm, and based on the case of Amantaní Island (Lake Titicaca, Peruvian Andes), the article shows that tourist demand for a pristine landscape can drive practices that increase the environmental and health risks of plastic waste.

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INTRODUCTION AND OBJECT OF STUDY

In a sibylline way, plastic has taken over the rural Andean space in recent decades. At some point, finding a bag flying at the mercy of the wind or a soft drink bottle blackened by the sun ceased to be an anecdotal finding and became a regular, and later, chronic, occurrence. Nevertheless, with few exceptions (Harvey 2012; Harvey 2017; Tupayachi 2012), the accumulation of plastic in the Andean rural area has not interested social studies researchers. However, its omnipresence in the landscape should raise questions: What changes in consumption patterns have made plastic a ubiquitous packaging in rural Andean societies? How do these communities manage polluting waste that does not assimilate into nature when they have always dealt with biodegradable or inert waste (crockery and glass)? Do they apply the same strategies for plastic and traditional waste? How has their conception of cleanliness changed? Are these changes the result of external influences, or have they developed independently as a result of observing that plastic does not disappear naturally?

Various approaches have been taken to the formation and accumulation of modern waste as an object of analysis in the social sciences. Specifically, from an anthropological analysis, Patrick O'Hare (2019) identifies three approaches: Firstly, following the symbolic-structuralist path of Mary Douglas (2003), anthropologists have analysed changes in classification systems (e.g., Boscagli 2014; Moser 2002). Secondly, another line of analysis had an intersubjective-posthuman approach: That is, how the management and definition of waste influences people's conception and classification (e.g., Hawkins 2018). Finally, a third approach focuses on economic-materialist aspects, such as informal recycling managed by marginalised social sectors or opposition to waste management systems that affect the health or interests of residents (Reno 2015; Drackner 2005). The work of Penelope Harvey (2012, 2017) and Teresa Tupayachi (2012) is in this line: These authors analysed two public waste management projects in the Sacred Valley (Cusco, Peru), and concluded that the government's interest in tackling the problem of inorganic waste was due to the area's dependence on tourism.

The purpose of this paper, which also adopts a conflict perspective of the phenomenon, is to analyse the relationship between the perception of plastic waste, disposal practices, and tourism. The article examines a prevailing argument in the tourism sector: The tourism industry is the cause of serious environmental problems (McKercher 1993), but forms of tourism such as ecotourism and experiential tourism have requirements that make them vectors for sustainability (Budowski 1976; Fennel 2014). We will see through a case study that this relationship does not always hold true. On the contrary, tourism's requirement of a pristine landscape drives practices that increase the environmental and health risks of plastic waste.

The ethnographic case is Amantaní, Peru's most populous island in Lake Titicaca. It has around 4,000 inhabitants, including the registered population and those who live in nearby towns. The entire population is indigenous Quechua and is involved in agriculture. However, due to population growth, the land owned by each household group is insufficient to sustain their economy. Since the 1960s, its economy also depends on other sources of income. The increased budget of local public institutions and the establishment of education and health services have generated government sources of income. In addition, part of the population combines residence on the island with temporary work in urban areas, and Amantaní is one of Titicaca's main tourist destinations.

Whether accompanied by a tourist agency or independently, tourists visiting the island typically head to the port of Puno early in the morning. There they take the boat to Amantaní. Islanders meet tourists at the dock and put them up in their houses. After lunch, tourists spend the afternoon visiting the island. The next morning, the hosts accompany the tourists to the dock. After visiting the neighbouring island of Taquile, they return to Puno in the late afternoon.

Tourism has gone through phases, with different consequences on the social and economic structure of the population. In the late 1970s, the islanders took steps to make Amantaní an official tourist destination. Tourism was seen as a communal resource: only the islanders could use it. Similarly, only island boats were allowed to transport tourists. Indigenous rights legislation allowed these prerogatives.

The first years were not very productive due to difficult access to the island, with only a few underpowered boats available to transport visitors. In addition, Taquile Island was more successful as a tourist destination as it was closer to the departmental capital. Inbound tourism to Peru grew in the early 1980s, and the number of visitors to the island began to increase. However, the armed conflict between the *Sendero Luminoso* (Shining Path) guerrillas and the armed forces brought tourism to a halt. Peru's tourism boom began in the 1990s, when the armed conflict was limited to parts of the Amazon. At that time, the number of visitors to the island also increased.

The fact that tourism is a communal resource does not imply that its benefits are distributed equitably. Rural studies have shown that communities are far from achieving an idealised cooperative and socially homogeneous society. On the contrary, they function according to individual interests (Beltrán & Vaccaro 2017). This is true in the distribution of the benefits of tourism. Until the mid-2000s, the relatively small

amount of tourism to Amantaní was monopolised by a minority of islanders: the boat owners. As the islanders began to diversify their economy, some chose to engage in lake transport. Years later, tourism brought them benefits they had not expected. The boat owners housed the tourists they transported from the mainland in their homes or in the homes of relatives. Netting's (1997) maxim was fulfilled: Those who had private ownership of certain assets (boats) were those who benefited most from the communally owned resource (tourism).

This profit-grabbing was not only possible because they owned the 'means of production' of tourists. Another factor was their control of the island's main political institution at the time, the *Gobernación* (governorate). The benefits of tourism allowed the boatmen to control this institution. The office of governor entailed significant ceremonial expenses, and only the wealthiest islanders could afford it. Moreover, the outgoing governor chose his successor. The boatmen, from the way in which the *Gobernación* was run, prevented any proposal for an equitable way of sharing tourist revenues. Moreover, islanders saw no benefit in insisting on a more equitable distribution of tourists. Their numbers were insufficient for everyone to make the necessary investment to improve housing and meet minimum habitability requirements. Finally, there was the risk of the boatmen abandoning their activity as transporters, which was only profitable because of the benefits of tourism. This would have left the island with poorer communications (Gascón 2005; Gascón & Martínez Mauri 2017).

This situation changed in the mid-2000s for two reasons. First, the number of tourists grew exponentially. Second, municipalities became the predominant political institutions in rural districts, due to the increase in their budget via state transfers (Remy 2005; Asensio 2017). The *Gobernación*, controlled by the boatmen, became less important. Finally, neoliberal policies implemented during the government of Alberto Fujimori (1990–2000) ended the monopoly on lake transport to the islands. Foreign boats could now take tourists to Amantaní. The boatmen began to lose their prerogatives, especially during Mayor Marcelino Yucra's first term in office. He convinced some Puno travel agencies to distribute their tourists on a rotation system. Currently, just over half of the islanders receive tourists through this system.

However, the distribution of benefits remains very uneven. The islanders with the best-prepared infrastructure have bilateral agreements with the most powerful travel agencies. The emergence of websites such as Booking.com is also bringing about changes that facilitate greater access to this same minority. The boatmen continue to keep the tourists they transport in the collective boat that makes the daily Puno-Amantaní trip, but they represent a small percentage of the total number of tourists. In addition, a significant part of the population still does not receive any tourists. Most of these are elderly people, widows, and newly formed couples who do not have housing that meets the Ministry of Tourism's quality requirements. In addition, families who live most of the year in the city or islanders who have other sources of income, such as grocery shop owners, bakers, and master builders, do not receive tourists.

THEORETICAL FRAMEWORK AND METHODOLOGY

This article is part of discard studies, an interdisciplinary paradigm that opposes considering waste as a politically neutral problem that can be isolated from social reality through technology, management, or awareness-raising (Hird 2013; Hird 2016; Gille 2018; Liboiron 2018; Pathak & Nichter 2019). Discard studies see waste in terms of economic systems. Consequently, we will examine how the demands of the tourism sector influence cultural changes in the indigenous population's cleanliness and waste management strategies. We focus on plastic: A durable, long-lasting material that is, at the same time, short-lived and disposable. It introduces new behaviour in markets and in everyday life (Hawkins, Potter & Race 2015; Hawkins 2018).

Discard studies also argue that the formation and accumulation of waste reproduces inequitable relations and social injustices. The correlation of power behind the waste—and the conflict it generates—needs to be analysed (Eriksen & Schober 2017; Borowy 2019). We will see that the accumulation of plastic in the agricultural area has not only become a central concept for reconfiguring what is understood as waste, but it is also a social arena: Stakeholders with different political and economic capacities try to impose their values, strategies, and interests.

Ethnographic methodology with a deductive approach (Bernard 2017) has been used to analyse the social behaviour of the Amantaní community. The techniques used were, essentially, qualitative: Participatory observation, the carrying out of semi-structured interviews (more than 300), life histories, informal conversations, and retrospective assessment of field diary entries. Quantitative surveys were also carried out. The last five decades of minutes of communal assemblies and the archives of different administrative institutions in Amantaní were analysed: Government, Municipality and *Sargento de Playa* (the institution in charge of the control of lake transport).

The analysis was longitudinal, through different stays over more than three decades. The ethnographic research has been carried out from the 1990s on the Amantaní island. During the 1990s, each visit lasted between four and seven months. Shorter visits were made in the 2000s and 2010s. The most recent stay was in 2019 (three months). In all these periods, the researcher resided in

the islanders' homes. In order to take care with personal relations, the researcher avoided stays of more than ten days with the same family.

THE EMERGENCE, MANAGEMENT AND UBIQUITY OF PLASTIC ON THE ISLAND OF AMANTANÍ

THE SPREAD OF PLASTIC

> People have become accustomed to buying anything, bread or sugar, and asking for a bag. Then a lot of rubbish is generated. Those plastic bags (single-use) become rubbish. Bag, bag, bag (Interview with Laura,[1] 2019; Female farmer and shop owner).

Plastic became an everyday consumer material during the first half of the 2000s. The main agent of transmission was *tiendas de abarrotes* (grocery shops): Small establishments that provide the population with basic goods that they do not produce. Another element to consider is the improvement in transport. Until the 2000s, there was only one route connecting the island with the city of Puno by boat. These were wooden boats powered by engines reused from old trucks. It was a long trip of four to five hours. Improved motorboats have reduced the journey time. The opening, in 2009, of a new route between Amantaní and the neighbouring peninsula of Capachica was particularly significant. This trip takes only one hour. From there, in constantly departing vans, it takes another two hours to reach Puno or Juliaca, the administrative and economic capitals of the region, respectively. The town of Capachica, a commercial centre, should also be considered. Many islanders go to Capachica where the prices are lower than in the island shops and there is more variety. Over time, Capachica traders established a twice-weekly market in Amantaní. These markets offer food that is not produced on the island, small household appliances and kitchenware, and clothing.

Increasing transport and trade goes hand-in-hand with an improvement in the economic situation and in the population's purchasing power. Around the year 2000, the recession of the previous decades had been overcome. The macroeconomic growth reflected in the statistics seemed to have reached popular sectors, including the rural-Andean population (Asensio 2017). New government welfare programmes provided a small income for the poorest islanders, turning them into consumers as well. The District Municipality, the island's highest authority, began to manage public funds. A significant part of the budget was allocated to the construction, or restoration, of infrastructure. This involved the use of island labour through the traditional system of community work, which is now remunerated. Consideration of the tourism factor must be added to this picture. Between 2004 and 2018, the number of international visitors that Peru received rose from 1.4 million to 4.4 million (Mincetur 2019). Titicaca and its islands, which are important tourist destinations in the country, noted this growth.

The emergence of new trade channels and increased purchasing power explains the increase in consumption, but not in the everyday use of plastic. Plastic is used as industrial food packaging because of its versatility and low price, and because it is lightweight. The latter two factors are particularly significant in the case of Amantaní. Industrial beverages were marketed in returnable glass containers until the first half of the 2000s. A percentage of the bottles left the circuit due to breakage, but glass is an environmentally inert material. However, grocery shops and the local population adopted plastic as the trade relationship with the outside world increased because plastic reduced the effort required in transport. Bottles have to be carried from the point of purchase to the van stop, then to the boat, and finally on people's backs up the steep slopes of Amantaní. Glass bottles have to be taken on the same route in reverse once they had been emptied. The increased purchasing power of the islanders meant an increase in this hustle and bustle that could hardly be sustained with glass. In addition, the switch from glass to plastic did not increase the price of products. This was coupled with an increase in the number of tourists. The visit to the island consists of long walks through difficult terrain where there are no fountains or drinking water points. For this reason, they buy a large number of bottles of water in grocery shops or in the houses where they stay. In the same grocery shops, they buy other industrial foods marketed in single-use bags, including crisps, biscuits, and chocolate bars. In addition, the emergence of low-cost disposable nappies with polyethylene components has replaced traditional cloth nappies, which were hard to wash.

Another form of industrial waste that is present in the island landscape is aluminium cans. The tin can has been an everyday container for *amantaneños* since the 1980s. Traditionally, cans had a second life as a kitchen canister or a storage container. However, access to cheap industrial plastic containers and the increase in consumption of packaged products means that cans are now rarely reused.

A NEW ELEMENT IN THE LANDSCAPE

> We collect, but they always appear again, those disposable plastic bottles. When I was a child there was no plastic. Now it's everywhere. Everything is thrown into the river and ends up in the lake, and the wind blows this way (Interview with Manuel,* 2019; Older peasant).

Plastic waste is easy to come across in Amantaní, but the same type of plastic is not found everywhere nor is all the plastic distributed in the same way. Three areas with specific characteristics can be identified: open fields and roads, hard-to-reach locations, and the lake.

The first of these is open fields (agricultural and grazing land) and roads. In these spaces, it is common to find food packaging and bags from products that have been consumed on the spot. Plastic waste is also scattered at sacred sites, such as the two temples on the hills.

The second area is hard-to-reach or inconspicuous places such as gullies, torrents, old quarries, abandoned houses, and areas far from populated centres. Closed rubbish bags full of plastic waste and cans, especially single-use packaging and nappies, predominate in this type of area. Many islanders accumulate days' or weeks' worth of household waste in these bags and then abandon them in a secluded spot. The torrents that cross the island from the highlands to the lake are particularly remarkable. They carry water only during rainy season storms. The plastic waste deposited in them is then washed into Lake Titicaca. Islanders respect the boundaries of the ten communities into which Amantaní is divided: They deposit their bags in their own territory to prevent possible inter-community conflicts.

The third area where plastics are deposited is the lake. Waves and tides distribute the waste washed up on the island's shores by the torrents. Cliffs far from populated areas are also used to deposit bags of waste. This waste also ends up in the water due to waves or fluctuations in the level of the lake, which varies throughout the year.

The reasons for the ubiquity of plastic in the Amantaní landscape are diverse, but they can be put into two groups: Factors affecting the spread of plastic use, and factors relating to plastic waste management.

PLASTIC WASTE MANAGEMENT

> Islanders have been burning scrub and plant debris that has accumulated on their *chacras* (agricultural plots) since yesterday. They turn it into compost. Rain is forecast for tomorrow or the day after and burning wet plants is difficult. In addition, these rains must allow the soil to be ploughed and the ashes to be incorporated (Field notes, 1993).

Marcelino Yucra was mayor of Amantaní, the island's highest political office, from 2011 to 2015. In 2018, he won the election again. In his first mandate, he tried to establish a system for collecting and transferring plastics to the city of Puno. He called on islanders to deposit their waste at the main pier. He had rented a boat for transport, but due to the volume of plastics that accumulated, he needed three more. The four vessels carried the cargo to the port of Puno. Marcelino had agreed with the Provincial Municipality that a truck would be waiting for them there. The truck was to take the plastics to the recycling point. However, the vehicle did not show up. After several hours of fruitless paperwork, he hired a truck and took it to the agreed place. The process was long and costly. By the end of 2019, it had not been attempted again. Nevertheless, Marcelino had not abandoned the idea: He planned to apply to the Ministry of the Environment for a project to acquire a plastic compactor, a boat for transferring the rubbish, and a truck in Puno.

However, until this project could be undertaken, the municipality ordered a return to the plastic and can management system that Marcelino himself had set up in his first term in office. Each family had to dig a hole in their land to accumulate their non-biodegradable waste and burn and bury the remains when the volume was significant. The mayor is aware that the most logical and effective strategy is to move the rubbish to the mainland. But it is not possible, at least not in the short term. He has a plan B: Families should make their plastics disappear as much as possible. This strategy satisfies the main objective, which is to maintain the image of Amantaní, not to reduce pollution.

The municipality uses the same system with the plastic it accumulates. It has crews dedicated to clearing roads and other public spaces of plastic. On Sundays, in the *Plaza de Armas* (the main square), the authorities meet with the population in a *Cabildo Abierto*, an open town hall. The municipality places containers to deposit the bottles of drinks that *amantaneños* buy in grocery shops. All of this plastic is taken to the municipal dump, an old quarry, and burned without any mechanism to reduce gas emissions.

The burning of plastic waste is not specific to Amantaní. Incineration is the traditional method of waste management in rural Andean areas (Ruiz-Córdova 2006). The excerpt from the field notes quoted above shows the process used with organic waste: Accumulation on agricultural land, incineration, and deposition of the ashes as fertiliser. The system is not energy efficient, as the conversion of waste into compost through oxidation and decomposition would make better use of its nutrients. However, it is effective at removing organic debris.

A section of the population opposes the municipal order or applies it with variations. Some consider that waste disposal is the Municipality's responsibility and should not be transferred to the private sphere. For this reason, they take their plastic waste to the *Plaza de Armas* on Sundays and deposit it in the municipal containers. Faced with this situation, the Municipality's response is to forget to put out these containers. Even more informally, and explicitly forbidden by the Municipality, other families drop off bags of waste at the main pier on the island. They leave it at the place where the rubbish was deposited in the failed attempt to establish a system of

transferring waste to Puno. In both cases, the strategy is to shift the problem to the Municipality, which must add this waste to its own and burn it at the municipal dump.

As we have seen above, one strategy is to put plastic bottles in a bag and deposit them somewhere out of the way. Another alternative is not to bring plastic into homes and instead to abandon bottles and bags where the products were consumed. Part of the population complies with the order to burn the waste, but not in a hole on their land. They use deep areas of streams, secluded beaches or hidden cliffs. In addition, they do not bury the remains. Finally, some islanders do not differentiate between types of waste, and burn plastics that appear on their *chacras* along with the organic waste. The latter, however, is an unusual practice. It is normally used by elders who continue to apply the traditional logic of eliminating all types of waste by incorporating it into the agricultural cycle. For instance, it was used to burn the accumulated remains in the *chacra* and to deposit the ashes as fertiliser—a traditional agricultural practice. Before the introduction of plastics and cans, this waste was always organic.

In 2018, another option emerged, prompted by a travel agency concerned about the environmental problem of plastic: The use of plastic waste as a raw material for handicrafts. Some islanders have learned to turn bottles into decorative pieces, boxes, and flowerpots. However, this is a short-term solution. It extends the life of the plastic but does not reduce the number of bottles consumed. Crafting from discarded plastics seems to follow Ackerman's (1997) maxim: Recycling is not an environmental good, but a damage control scheme by industry (in this case tourism) to enable its reproduction.

CONTRADICTORY PLASTIC-PHOBIA

New consumption practices and individual waste management make plastic ubiquitous in Amantaní. However, a negative discourse about plastic has gradually spread: Plastic abandoned in the countryside or accumulated on beaches is a problem. It could be argued that there is a contradiction between the individual practice of consuming plastic and disposing of the waste in convenient locations to reduce costs and the dominant discourse on environmental care. This study does not deny that this is the case, but it believes that another factor also plays a role on Amantaní: Islanders are undergoing a process of change in the perception of what is considered pollution and rubbish. This explains why, as mentioned above, it is common to find plastic waste at sacred and ceremonial sites. These ceremonial sites are cleaned only when they are to be used; sometimes this happens once a year. A large part of the population still does not see plastic as a pollutant or as a material that requires management other than that used for organic waste. Antonyms such as pollution and purity, or hygiene and unhealthiness, are relative concepts. The border is established symbolically. They are conventions that establish what should be done and what should not be done (Douglas 2003; Boscagli 2014), and they change over time.

The incorporation of plastic in the rural landscape has two consequences. The first is aesthetic—Pathak and Nichter (2019) speak of 'aesthetic pollution.' We have seen how the plastic cycle works and how plastic waste ends up scattered all over the territory. The second is that plastic generates problems of chemical contamination.

The decomposition of plastic by sun, water, weather, and incineration can reduce the problem of plastic accumulation and the aesthetic effect on the landscape. This is what happens when the remains are buried in accordance with the Municipality's regulations. Nevertheless, the process accelerates the decomposition of this waste into microplastics, fragments smaller than 5 millimetres, and then into nanoplastics that are smaller than 0.1 micrometre. The plastic is then incorporated into the food chain, absorbed by plants (Ng et al. 2018) or ingested by lake species (Mattsson et al. 2017). Reduced to these dimensions, plastic can have a longevity of hundreds or thousands of years (Barnes et al. 2009). Its biological effect on living organisms is still under study, but it is not harmless: Plastic interferes with the functioning of hormone systems (Oehlmann et al. 2009).

Many islanders know, or sense, that plastic has effects on the ecosystem and health. In fact, government awareness-raising campaigns are conducted in schools, with posters explaining this to students and their parents. A 2013 survey indicated that 60 out of 72 households were aware that plastic pollutes the environment in some way (Barrientos 2014). The indigenous Andean population knows this information. Studies of perceptions of climate change among this population show that the Andean people are convinced that inadequate practices, such as the incineration of plastic or its abandonment in the countryside (Walter 2017; Paerregaard 2018), cause disease in humans and non-humans (Bold 2019).

However, in their daily life, islanders seem to neglect this information. They are only interested in dealing with the aesthetic effect of the accumulation of plastic. This is evidenced by their strategies to eliminate plastic: Incineration, disposal in hidden places or reuse in handicraft pieces. This is also the only objective explicitly stated by local public institutions concerned about the possible effect of plastic waste on tourists' perceptions. In relation to the project to move plastics to Puno, the mayor said: 'As a tourist destination, the project is a priority, and it must be given priority.'

The mayor's commitment to tourism is evident. Tourism is the leading concern: It is the main, recurring topic in the *Cabildos Abiertos* and in the projects developed by the Municipality. Mayor Marcelino Yucra, one of the few islanders of his generation with a university education, has a degree in teaching and is an official tourist guide.

Before starting his political career, he wrote a book whose explicit aim was to consolidate the identity of Amantaní to revalue its heritage and boost tourism as the island's main economic activity (Yucra 2008). This approach is not unusual. It is a view shared by most islanders and explains their political success: In a district where there are usually up to ten candidates in each election, Mayor Yucra is the first mayor to win a second term.

THE TOURISM FACTOR

THE MAIN ENVIRONMENTAL VALUE FOR TOURISM: THE LANDSCAPE

> The main problem in Amantaní is the lack of ongoing training and awareness about rubbish. I am working on that now. I am doing awareness-raising talks on the subject of litter and tourist services. I have started in Colque Cachi community. We offer the world experiential tourism....People need to be aware so that there are no complaints (Interview with Esteban,* 2019. Chairman of the Tourism Commission).

In the 2000s, the 'experiential tourism' label began to spread identifying the tourism offered by the rural indigenous population in the Titicaca basin. Experiential tourism emerged as a reaction to conventional tourism. It is a niche market that offers immersion in the life of the local population, living with, or participating in, their daily activities. By the end of the 1990s, the term had already appeared in the sector's technical literature (Smith 2005). This type of offer forces the islanders to carry out a certain performance. For example, when families go to the pier to meet tourists, they dress in traditional costumes, and they remain in costume until the visitors leave the next day. In this theatricality aimed at fulfilling the expectations of tourist imagery, the setting plays an important role: The rural landscape must be natural, agrarian, ...and immaculate.

The quote (above) is from the chairman of the Tourism Commission, elected in April 2019. He is a young islander who graduated as an official tourist guide. The mayor gave him the task of coordinating the island's efforts to promote tourism. Waste is one of the main concerns of the Tourism Commission and the Municipality. The aim is to reduce the visual impact of waste so that it does not affect the island's image.

Economic dependence on tourism, and the type of tourism that the island promotes and attracts, explains the management of plastic waste: Public institutions' and the population's interest in showing a pristine landscape is more important than the risks of food safety and contamination. The desire to display a pristine landscape—in the sense of 'aesthetic contamination,' as put forward by Pathak and Nichter (2019)—is evident in those who are most actively involved in tourism. For example, at the end of 2018, the construction of the electricity network began. The people asked the construction company to bury the cables. They feared that the electricity pylons would spoil the landscape for visitors.

Travel agencies and the tourism sector have an environmentalist rhetoric, but their main concern is aesthetics. For example, travel agencies always carry numerous plastic water bottles on the boats for their travellers, which are left in Amantaní. For their part, tourists act with the appositeness in catering and hotel services: a) They deposit empty plastic bottles in the rubbish bins provided by the accommodation for this purpose; and b) In grocery shops, they leave the plastic bottles and wrappers of the products consumed on the table of the establishment. From then on, they are not responsible for the management of plastic. Neither the islanders nor the travel agencies explain to travellers the complications of plastic management on the island.

When environmentalist rhetoric of the tourism sector is picked up by the local population, the aim is to ensure that plastic does not appear in the landscape. There are no plans to reduce its use. It is part of regular consumption on the island. It is also a requirement of tourists, who buy soft drinks and food packaged in plastic in grocery shops. Nevertheless, islanders do not have effective mechanisms to get rid of this plastic. The strategy is to hide the plastic. However, some of these strategies have the opposite effect. As we have explained, the waste ends up in the lake and on the coast. In addition, plastic is incorporated into the food chain. When incineration is practised, the process of production of microplastics is accelerated.

DIVERSITY OF STRATEGIES AND INTERESTS

> We all deposit our rubbish in one place and burn it. But there are families who put it in bags and throw it in the street, or wherever they want. There is no control by the authorities, by the Municipality. If there were control, we would all burn our rubbish in an orderly manner. There is a lot of rubbish on the island, a lot of rubbish. Now the mayor says: 'Each one must make his own pit to store his own rubbish.' Then the plastic doesn't rot! It is better to burn it, to turn it into ash. That's our idea...for some, not for all (Interview with Toribio,* 2016).

With this statement, Toribio indicates two issues. First, not all islanders show the same concern about plastic. Second, there is no agreement on a plastic phase-out strategy among more concerned islanders. Toribio is an islander very involved in tourism, and he has held the two most responsible positions—governor and mayor. He was governor in the early 1990s, when this position was considered the most important by islanders, and mayor in

the following decade, when the municipality was already the pre-eminent institution. The main objective of his government was to promote tourism. In the 1980s and 1990s, Toribio was a boatman, the sector that monopolised tourism at the time. In the 2010s, he was still actively involved in the business, and his two sons had catering infrastructure and close contacts with travel agencies.

We have seen that islanders use various strategies to dispose of their plastic waste and cans: From dumping them anywhere, without worrying about the visual impact, to burning them and burying them to make them disappear from the landscape. In between these two extremes, there are many other strategies: Incineration without burial, landfilling, burdening the Municipality with the responsibility, etc. This range of strategies is sometimes due to reasons of timing: The way to dispose of the waste differs if a bottled drink was drunk in the countryside, at home, or whether the house is in a populated area or isolated. However, in a period of shifting mentalities due to the emergence of non-biodegradable or inert waste, the conception of what is or is not waste and what can or cannot be incorporated into the ecosystem cycle plays a role. The relationship that each household group has with tourism is an important factor in making decisions about waste management.

Olga and Simón are over 70 years old and do not host tourists. They live off farming, with some occasional help from his children in Lima, and a government subsidy. Olga and Simón complain about the municipality's requirements for plastic management. They believe that these requirements are designed only to please the travel agencies and that plastic management does not affect them because they consume very little plastic. Those who generate plastic are the tourists and the islanders who have money due to tourism. Therefore, they choose to abandon the cans and bottles that they occasionally buy or burn them on the farm.

Olga and Simón belong to a large minority: Islanders not involved in the tourism sector. Forty percent of domestic groups do not host or derive any other direct benefit from this activity. This is reflected in their low plastic consumption and in their concern about plastic and disposal strategies. Those who are least dependent on tourism have no qualms about disposing of their waste. Even throwing away plastic sometimes becomes an act of protest against a tourism model that marginalises them and which—through municipal regulations—forces them to increase their waste management work. In contrast, islanders who are more involved in tourism demand a greater municipal effort and advocate strategies that hide or make the plastic disappear. This concern is due to their interest in maintaining a pristine image of the island and in the fact that they have to manage more waste, e.g., waste generated by tourists that is left in their accommodation. These different discourses on non-organic waste, and the different political and economic interests, explain the variety of strategies and practices of islanders in their management—and which have been analysed in section 3.

CONCLUSIONS

As explained above, discard studies consider waste to be the result of economic systems. In the case of Amantaní, tourism plays a substantial role within the economic model, which has led to pattern changes in the understanding of cleanliness. But the situation has contradictory aspects: Tourism calls for a plastic-free landscape, but tourists and tourism are one of the factors that are responsible for its accumulation. On the one hand, those who are most involved in the tourism economy, and most concerned about plastic waste, are also those who accumulate the most. These islanders have the greatest purchasing power, and tourists consume plastic in their businesses, their grocery shops, and accommodation. In addition, the islanders most involved in the tourist economy opt for solutions, such as incineration, that reduce the visual impact but increase pollution.

It is argued that the demands of certain types of tourism, such as experiential tourism, contribute to environmental sustainability. However, the situation is more complex (Stem et al. 2003). In Amantaní, the imposition of certain requirements on dirt and pollution generates varied, incoherent strategies. The results are the opposite of what is desired: Contamination of the food chain and littering of the landscape. Amantaní is not exceptional (e.g., Harvey 2012; Jitpakdee & Thapa 2012). As discard studies argues, this complexity is the result of social, economic, cultural, and ideological factors intermingling with technological and managerial factors (Hird 2013; Liboiron 2013; Reno 2015).

A second theoretical principle underpinning discard studies is that the formation and accumulation of waste reproduces power correlations and unequal social relations. In Amantaní this occurs at two levels. On the one hand, between island society—indigenous and rural—and global society. The definition of waste is not universal (Reno 2018). Walter Moser (2007) argues that agrarian societies symbolically consider, and materially manage, waste differently from urban and industrial societies. This difference also occurs between western and indigenous societies, however, they are not isolated worlds. Subordination linkages lead urban and western societies to transfer their values to rural and indigenous societies. Thus, concern for non-biodegradable waste has entered the lives of the indigenous Andean population. This has happened through various channels, such as the media, schools, and legislation. In the case of Amantaní, tourism has played a significant role.

Tourism is a vector for the transmission of urban and western perceptions of purity. Certain forms of tourism promote an ecological perception that advocates the sustainability of natural resources. It also disseminates a bucolic, romantic idea of the landscape. Finally, it spreads a conception of domestic and personal hygiene that rejects organic pollution. Sometimes these discourses complement each other; at other times they clash. This is the case in Amantaní. Experiential tourism has an environmentalist discourse, but in practice its concern does not go beyond the aesthetics of the landscape. However, the strategies implemented by islanders to meet these aesthetic demands do not achieve their goal: plastic waste is ubiquitous. They also create environmental and health problems by accelerating the entry of nanoplastics into the food chain.

The second level at which waste materialises the correlation of power is within the island society. Subordination between the urban-western and rural-indigenous worlds in the transfer of values of cleanliness and purity is reflected within the community. The transformation in the concept of cleanliness and purity generated by plastic is not uniform in Amantaní. It depends on the relationship of each islander with tourist activity. In fact, the process is opposed by part of the population, either out of convenience, or as a criticism of an economic model that excludes them. This creates a vicious circle. Those not involved in tourism are more reluctant to adopt the new values of purity and cleanliness, and this rejection allows others to consolidate stereotypes that justify their marginalisation from tourism.

At the end of 2019, the mayor of Amantaní planned to pass an ordinance banning the use of plastic. He was relying on a law regarding plastic regulation passed by the Peruvian Congress in 2018 (Law 30884). It will be an unpopular measure. It will generate opposition from those who do not receive income from tourism: Plastic makes it easier for them to transport drinks and food, and does not affect their impact on the landscape. It will also be opposed by those who participate in tourism, as visitors demand and consume products packaged in plastic. Travel agencies may consider that the measure will reduce the comfort of their customers. Finally, the accumulation of waste is a side-effect of a consumption-based economic model (Gille 2018). The Andean population is aware of the impact of plastic on health and the environment, but as is the case globally (Heidbreder et al. 2019), habits and socio-economic factors are more influential than knowledge of its consequences.

NOTE

[1] In order to respect anonymity, names have been replaced by pseudonyms.

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The author has no competing interests to declare.

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