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The aluminium dreams that lost their shine

By
Mimi Sheller (Sociologue)
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Aluminium seduced us with its promise of rapid mobility, speed and lightness, as the ingredient of a new modern age. But it also has a dark side, Mimi Sheller says.

I'm going to talk about my book *Aluminum Dreams: Lightness, Speed and Modernity*. It's a project that began when I saw some beautiful advertising from the Alcoa shipping company, and they were running cruises in the Caribbean in the 1940s and 1950s. And it seemed funny to me that I knew Alcoa was a company that makes aluminium, and I knew that there was bauxite mining in the Caribbean. I got interested in the fact that a company that mines bauxite was also running a cruise ship, and I started to think about the mobilities that connected the United States and North America to the Tropics, how the representations of the Tropics might be connected to the mining industry and to the bauxite industry. So it set me off on a sort of global study of the cultural history of aluminium as a way to think about 20th-century mobilities. The images are of countries like Jamaica and Trinidad and Surinam, and they show the islands as these places that are frozen in time. They're very traditional, and each one has a face, and butterflies, birds, plants, and they're almost like a collection of these special tropical wonders. They seem to be outside of time: they're very slow and backward. To me that seems such a contrast with the image of aluminium, which is associated with modern technologies and transportation systems and speed. It turns out that the cruise ship itself that they had built was made with all the newest aluminium technologies, and attempts to show off how fast these ships could go and how luxurious they could be, using this new metal.

The industry that transformed material culture

So I started looking into the history of aluminum and I learnt not only that it was discovered simultaneously, it turns out, by a Frenchman and an American. They were both the same age; they were 21 years old, one named Charles Hall in America, and one named Paul Héroult here in France. And they discovered this way of smelting aluminium in 1886, and that initiated the beginnings of this industry that drove a whole transformation of material culture, because it got incorporated into all sorts of vehicles, of trains, cars and eventually airplanes. I wanted to start thinking about why aluminum had influenced speed and mobility in the 20th century, and when I looked into it, one thing I found was that it was a very important military material. So the beginnings of air power and air-based warfare depended on the production of aluminum. That's why the countries that knew how to make it, they started to try to create the resource base to have bauxite mines because it would be the way they could wage war. It not only goes into airplanes but it's also used for bombs, and I didn't know this when I began the project, but bombs like hand grenades, an explosive called thermite, and today, more recently, all sorts of things like nuclear bombs and any kind of explosive uses powdered aluminum. So all the great military powers at the time, in the early 20th century, realised this and they started to begin to build

these industries so that they could have the greatest weaponry. So that brought the Alcoa corporation into the Caribbean, where they mined bauxite mainly in Jamaica and Surinam, and later Haiti as well. So this metal was a metal of warfare and also governments and states supported the industry, so the industry grew up in association with warfare. It also created then this inequality between the countries where the mines were located – the bauxite mines to make aluminum – and the countries that were gaining power through producing aluminum.

‘Imagineering’ to find civilian alternatives for war materials

I started to trace this, using these advertising images as a way to think about this history. And in contrast to the Caribbean imagery I found another set of ads from the 1940s as well that were about these dreams of future technology. And because there had been a huge build-up in production facilities during World War I and especially World War II, they realised that after the war they would need to convert all the factories to make civilian goods. That’s when they started to employ designers and inventors and industrial dreamers to do what they call “imagineering”, which was to think about what would the future be like if we used aluminium not for warfare but for civilian purposes. And so they dreamed up all of these new transportation technologies. I have a series of ads from a corporation called the Bohn Corporation in Detroit, and they created images of future rocket-propelled airplanes and giant cruise ships that they called “dream liners”, and images of trains with special glass observation cars and all-aluminium bodies of the train. They wrote in these ads about how the future would be transformed by this metal, and it was called the speed metal, and it would become the way of envisioning a new future of urbanism and of fast transportation. So all of this came out of the war, and it was in strong contrast to the tropical countries where the bauxite was being mined. Today we still, I think, live in the background of that future, that imagination of the future, which was an imagination of speed and lightness. We still have vehicles that are influenced by that aerodynamic, streamlined style, which comes from this period. I have some examples of these vehicles, like an early kind of minivan that was called the Stout Scarab, designed by William Stout. He had a motto: his motto was “simplify and add lightness”. And so he took vehicle design and sort of streamlined it and made it as light as possible. Buckminster Fuller, another car designer, created a car called the Dymaxion car. It was a three-wheeled car, sort of a teardrop shape and it could move very quickly. Originally he planned for it to fly and drive – it would be a sort of amphibious car. Then there were vehicles like the Airstream trailer, which became an icon of American dwelling on the road, dwelling in motion, in these kind of silvery, aluminium-type objects. That influences today’s car designs where we still have the reinvention of the car using more and more aluminium parts, so the Audi A8, for example, or the new Jaguar F series, some cars by Cadillac, they all have increasing amounts of aluminium in them to make them lighter, and they’ve created new alloys that are very strong and light and that are supposed to help us become more fuel-efficient; they’re supposed to help our transportation systems reduce their weight and therefore save fuel. And of course things like bullet trains – the Japanese bullet trains in particular – are known for this kind of single piece of aluminium that they’re made from.

The most energy-intensive metal-refining process

But the important part that I learned in researching this history was that aluminium production is one of the most energy-intensive processes of all metal-refining on earth. It uses about 13,500 kw hours of electricity per tonne of aluminium. To put that in perspective, if you took a six-pack of cans of soda or beer, it takes one quarter can full of oil to make that six-pack. And yet we would only need 5% as much energy to recycle it. If we just melted it down and reused it, it only takes 5% as much energy, and yet we throw away billions of cans every year. In the United States we throw away about 55 to 60 billion cans each year – they end up in a landfill, despite the amount of electricity and power that it took to make them. And in producing that electricity, and in the smelting process itself, aluminium production makes a lot of carbon dioxide and also hydrofluorocarbons and other very strong greenhouse gases that contribute to climate change.

But most people don't know that; they don't think about that when they use aluminium, and we're very wasteful with it, because it seems light and it seems easy – it moves easily. So I started to think in this project about not just how it contributed to vehicles but also it transformed many household objects, things like cans, of course, we all think of the aluminium can, but other things within the house, so various kinds of appliances and furniture were made more movable, more light, and it contributed to this modern style of things and streamlined style. There's also some interesting work on coffee pots, like the Bialetti, the classic little aluminium espresso pot, that says that there's a connection between caffeine and aluminium, because caffeine kind of speeds up our brain, it wakes us up, it makes us more lively, and it's very similar in a way to aluminium, which kind of lightens things and makes things more fast. So they kind of go together, caffeine and aluminium. There's a writer named Jeffrey Schnapp who's written about that.

Aluminium transformed architecture and gave us skyscrapers

So it transformed our vehicles, it transformed our infrastructure of transportation and it transformed things within the home. It also transformed architecture: one of the first buildings to use a lot of aluminium was the Empire State Building in New York. When we think of skyscrapers people usually think of steel and glass as the material of skyscrapers, but what made them light and kind of luminous was the aluminium because it enabled us to make curtain walls with windows set into aluminium frames. On the Empire State Building, if you see it gleaming in the light – you see a kind of shine on the surface of it – that's aluminium. When they used that for the first time it enabled them to build very quickly, and it was a way of introducing speed into architecture. Because the materials were lighter as the floors rose up they could build the Empire State Building in only 14 weeks, which for that time was very very quick. It then went on to be used in many other skyscrapers and architectural landmarks, including the World Trade towers in New York. If you think about those metal fluted lines on them, that's all an aluminium curtain wall that surrounded those buildings. When they were struck by the airplanes on September 11, 2001, they were struck by aluminium airplanes. The explosion of the fuel in those was probably also contributed to by aluminium exploding, which contributed to their falling down. So for me the Empire State Building and the World Trade towers falling are the kind of bookends of the age of aluminum. We're now moving beyond the age of aluminum because we have new light materials like carbon fibre and titanium and other things that are competing with it. But aluminum was crucial, as I said, to vehicles, to changing the home, to changing architecture and also to the age of air travel and flight and the space age. When you think about all of our airplanes, they're made of aluminum, all of our rockets are made of aluminum, all of our satellites – the Earth is kind of circled by a halo of aluminum. And rocket fuel itself, it's explosive aluminum within it, that's what makes the rockets go up in the air and fly. So, beginning with the Russian sputnik satellites in 1957, those were the first things to orbit the Earth and right up until the space shuttles which have just been retired recently, those have I think about 90% of their weight of the space shuttle is made from aluminum. So there was this age of air travel and space flight that this light metal brought to us.

Environmental impacts: the dark side of aluminium

That's what I see as the kind of bright side, and the gleam of aluminium and all the things it enabled us to do. But it also has the dark side, and the dark side is not only the amount of power it takes to create it but also the mining industry, and the way that mining destroys many tropical countries. People don't really know that much about it because we don't think about where this metal comes from; it's just sort of there, and then we use it and we throw it away. Even when we're flying on an airplane we throw away our cans, not even thinking that we wouldn't be there, up in the air, if it weren't for this metal. The environmental impacts are especially in countries like Jamaica and Surinam. These were the biggest bauxite producers in the early parts of the 20th century. And then mining switched to countries like Guinea and Australia, and to some extent India and China. In each place it's open-pit mining, and they've taken down whole forests and left behind this substance that's called red mud. The red mud is a

very caustic and toxic substance and it's just kept in these big pools and just sits there and it can cause all sorts of environmental damage. There's the direct pollution of the mining and then there's the air pollution caused by the smelting process itself. So around the world there are protest movements against aluminium. I attended one in the summer of 2007 in Iceland, called the Saving Iceland movement, because Alcoa, the Aluminum Corporation of America, was building a big smelter in Iceland. And they built a dam, which was the largest dam in Europe, on one of the great wilderness areas of Iceland. People there mobilised against it but they weren't able to stop it; the project went ahead. But they had this series of what they called "summers of protest", where activists from around the world came – and there were people from Trinidad, from Brazil, from India, from South Africa, who were all telling the story about mining and smelting industry in their countries and how they were trying to fight it.

Health and social effects of a metal that is in everything

They also argued that aluminum has health effects on the body, and in fact there was fairly recently a TV programme shown in France, on France 5, and it was a story about the health effects of aluminum, and how it's in many of our foods, it's in our vaccines, it's in makeup, it's in antiperspirants. And some people believe that it has neurological effects on the brain when we get too much accumulated in our bodies. So a part of the movement against the metal is also about its health effects. These are all things that I researched for this book, and I wrote it on an Apple Mac Book, which is of course made from aluminum. Some of us have heard about the problems in the factories in China, where they're making Apple products, and workers have been killed through explosions. Those are explosions due to the aluminum dust, which accumulates in the air when they polish the Mac Book products. Again it's a side of the industry, the dark side, that we don't really think about. Ultimately, I hope in writing this book that it will challenge us to really look at where our things come from, what are they made from. All of the things we depend on to be mobile, and even our mobile communications systems – our computers and our iPhones and our satellite communications – they all depend on this metal. And yet we have no idea, most of us, how it got here and what effects it's having, and we really need to think in the future whether we can continue to use it in the way we are, or whether we need to be much more careful with our use of it, and recycle, and think about reducing the amount of aluminium that we use.

Mobility

For the Mobile Lives Forum, mobility is understood as the process of how individuals travel across distances in order to deploy through time and space the activities that make up their lifestyles. These travel practices are embedded in socio-technical systems, produced by transport and communication industries and techniques, and by normative discourses on these practices, with considerable social, environmental and spatial impacts.

En savoir plus x

Movement

Movement is the crossing of space by people, objects, capital, ideas and other information. It is either oriented, and therefore occurs between an origin and one or more destinations, or it is more akin to the idea of simply wandering, with no real origin or destination.

En savoir plus x

Theories

- History
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Mimi Sheller

Sociologue

Mimi Sheller is a key theorist in mobilities studies. She is Professor of Sociology and founding Director of the New Mobilities Research and Policy Center at Drexel University in Philadelphia. She was co-founder with John Urry of the Centre for Mobilities Research at Lancaster.

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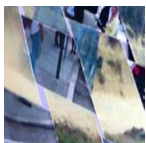
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