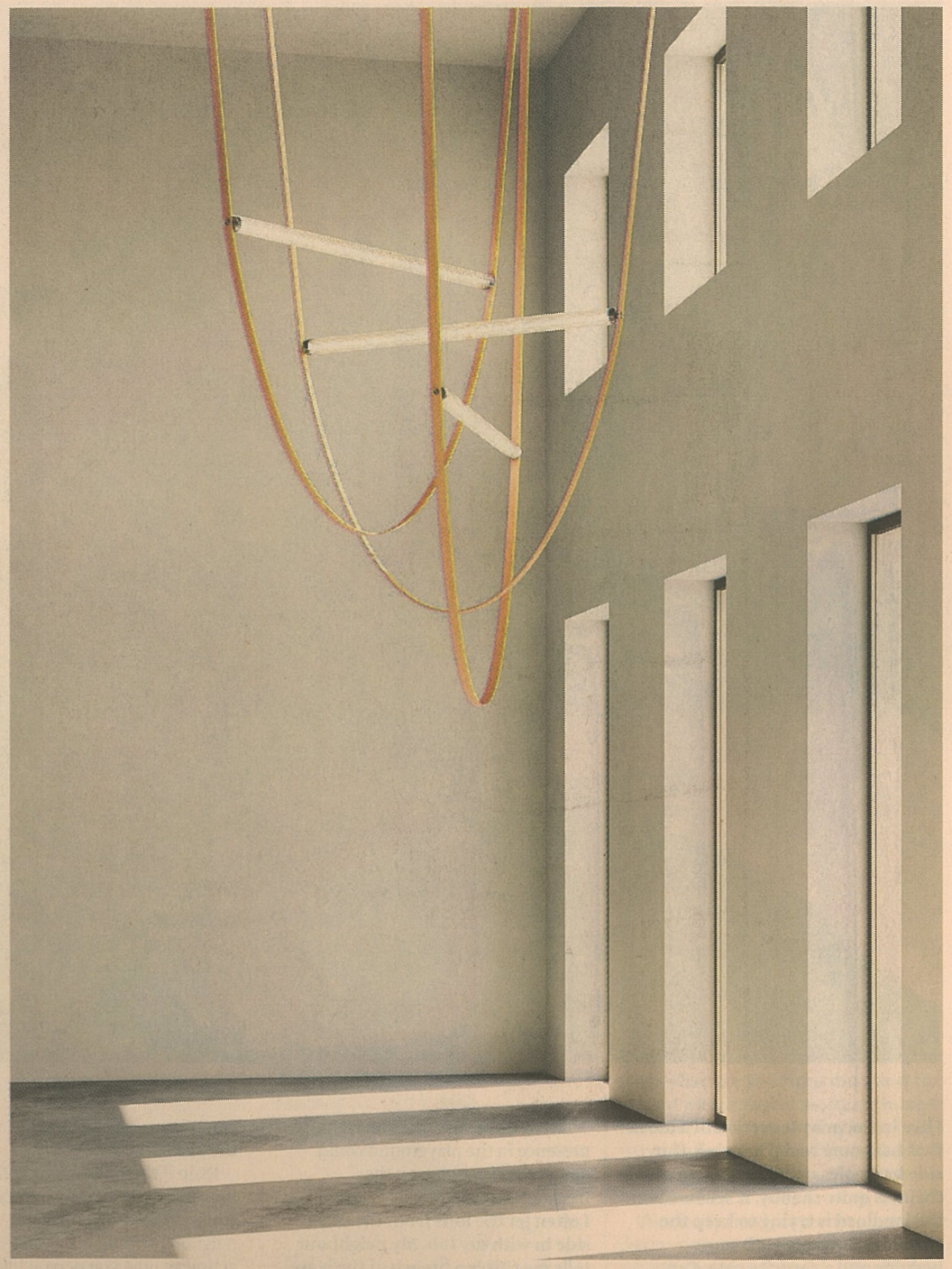
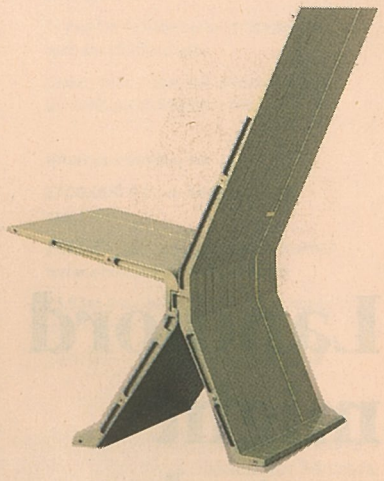
House&Home

A rich seam to mine

Materials | Formafantasma recycles precious metals recovered from electronic waste to enhance its range of furniture. By *Louis Wustemann*





Chair from the Ore Streams range

According to the World Gold Council, reserves of the precious metal yet to be mined are dwarfed by the quantity we have already extracted. By the end of the 21st century the volume of some other metals and minerals will similarly be greater above ground than in the planet's crust.

It was the use of precious metals in tiny quantities in electrical and electronic goods that provided the inspiration for Amsterdam-based Studio Formafantasma. They designed tables, chairs and office workstations that draw on recycled electronic waste (e-waste) and propose ways of reducing the world's fastest-growing waste stream.

Studio Formafantasma is Simone Farresin and Andrea Trimarchi. The couple met in Florence in the 1990s as undergraduates and moved to the Netherlands to gain their master's degrees at the Design Academy Eindhoven.

Their interest in alternative materials and resource conservation surfaced in their earlier Botanica collection of pots and bowls made from natural alternatives to petroleum-derived polymers, such as shellac and bois durci, and in their WireRing wall lights for Italian lighting company Flos that minimised components by setting LEDs into what resembled a loop of electrical flex.

The catalyst for their interest in waste metal was a commission four years ago to design furniture for the collection of the National Gallery of Victoria (NGV) in Melbourne, Australia.

Since minerals extraction is important to the Australian economy, the pair initially looked to mining for inspiration but were quickly distracted by the volume of precious materials embedded in the equipment we add every day to the stream of electronic waste.

"We started focusing on what's happening above the surface of the planet rather than below," says Farresin.

Their preparatory research into the "above-ground mining" of metals from e-waste included interviews with electronics manufacturers, recycling firms, environmental regulators and campaign groups. They found that only about 40 per cent of e-waste generated in Europe is collected for recycling locally. Much of the rest is shipped illegally to developing countries to be dismantled, often by unskilled workers in poor conditions. They learnt about the difficult and sometimes hazardous business of recuperating tiny amounts of gold in circuit boards, silver in keyboard membranes and platinum and palladium in mobile phones. "The recyclers were the most happy to open their doors to us," Farresin says. "They are the first to realise there is no dialogue between designers, producers and themselves."

(Above) WireLine; (far left) Simone Farresin and Andrea Trimarchi next to Ex-Cinere, refined volcanic ash-glazed tiles
officinemimesi; Marco Cappelletti and Delfino Sisto Legnani

After more than a year's study, they produced a set of furniture designs for the NGV under the title Ore Streams.

Even though many of their components are recycled, there is nothing make-do-and-mend about the furniture in the Ore Streams collection. Its high-tech lines and coated steel and aluminium finishes evoke the aerospace industry but the strongest impression the pieces give is of props from a late-1980s fantasy of a pared-down future.

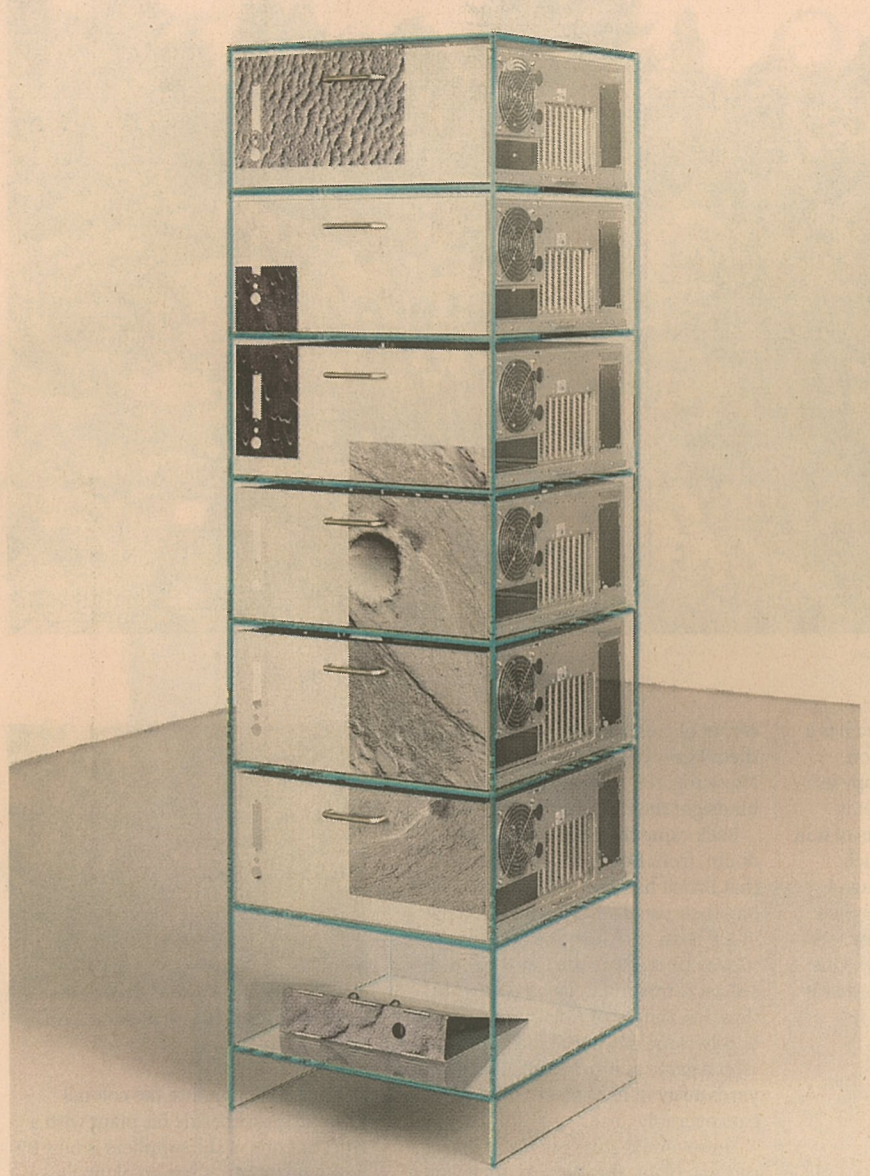
Most of the explicit references to e-waste are subtle: a mobile phone's constituents are embedded in the aluminium back panel of a cantilevered chair; a tabletop is supported by a discreet stack of iPhones visible only from underneath. Gold, supplied by a Belgian company that specialises in recovering it from circuit boards, recurs sparingly as applied leaf or plating.

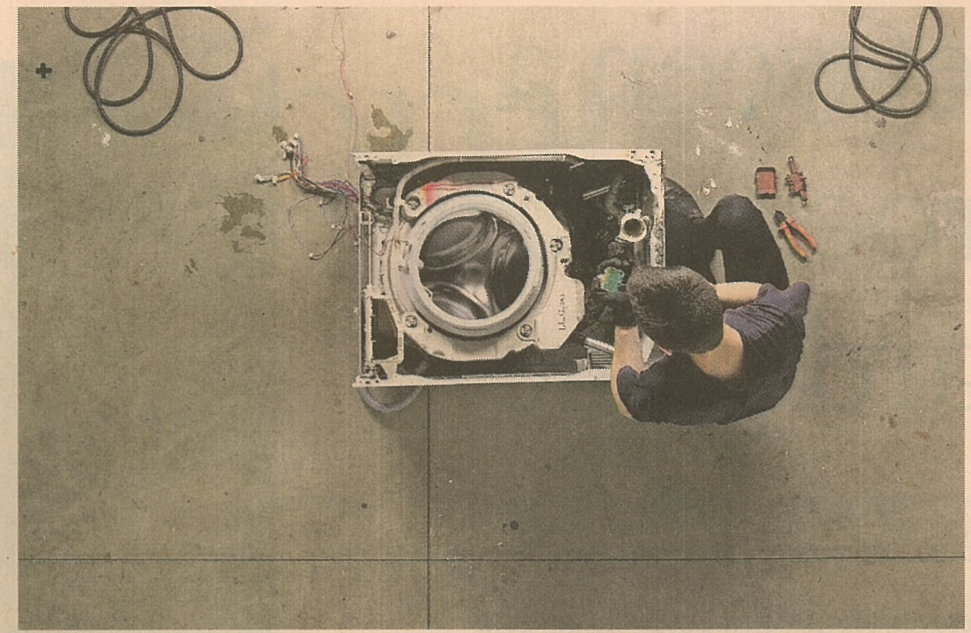
'The recyclers realise there is no dialogue between designers, producers and themselves'

Many of the computer and phone components they sourced were pristine, extracted from dead stock — machines that were scrapped without ever being used because a batch was faulty or the model was superseded. The recycled steel sheet and aluminium in the table, chair and office cubicle were less easily attributable to a previous existence.

"We don't know exactly what they come from," says Farresin. "It could be a

Botanica V (2011)





(Left) Cabinet (2017); (above) the studio disassembles electronic objects; (below) Cubicle 1 table, (2017)

washing machine or an oven or a computer."

The most striking item in the collection is a totemic glass storage cabinet that incorporates vented desktop PC casings as a repeated decorative element but also carries images on its doors of the cratered surface of the planet Mars. The latter is a reference to the theory that the Earth's deposits of precious metals such as gold and platinum came from Mars 4bn years ago in meteorite showers, known as the "late heavy bombardment".

"When we think about where materials are coming from it gives a larger perspective to the work," says Farresin.

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The pieces were made to their designs in small workshops in Friuli in north-east Italy, each with its own speciality, such as CNC (computer numerically controlled) aluminium milling. The pair crafted one early piece themselves, a wastebasket in the form of a leather bag lined in glowing reclaimed gold leaf, but "it was a disaster — the gold came off".

Ore Streams was exhibited at the NGV's first biennale exhibition in 2017 and in an expanded range at Milan's Triennale museum in 2018.

Though the objects have sold steadily since — especially the glass cabinet — the volume of e-waste used in the collection is small. But Formafantasma had bigger ideas for the project from early in the research stage. "We stretched the commission," says Farresin. With the blessing of the NGV, they diverted some of its funding to create a website — orestreams.com — displaying all the source documents, their research interviews and animated videos, one charting the journey of precious metals from the earth's crust to the innards of our communications devices, another summarising their ideas for cutting e-waste streams and more efficient recycling.

This manifesto for better husbandry of materials includes proposals for more careful handling of unwanted electronics equipment so it can be used for spare parts, universal colour coding for toxic materials and a "digital passport" for each machine, accessible via a QR code inside the case that provides recyclers with a list of its constituents and how to segregate them.

Farresin gives short shrift to any suggestion that reforming the waste industry is a long step from the original brief to design furniture for the NGV. "If we as designers were involved more in questions regarding production, not just the shape of things, or even in the systemic organisation of companies, we could have a larger impact," he argues.

Studio Formafantasma has other projects demanding Trimarchi and Farresin's attention, including an invitation to curate an exhibition next year at London's Serpentine Gallery. Its theme is likely to be the design of systems and environments that suit other species as well as humans.

But Ore Streams lives on through the website and sales of the pieces. Trimarchi and Farresin teach at their alma mater in Eindhoven and try to pass on the project's lessons to their students.

They are also hoping to convene a panel of legislators, producers, designers and recyclers to discuss the problem of e-waste at the design biennale in Shenzhen, China, in December.

Beyond that, Farresin says there is a limit to how much further they can take the work, "unless we are to make that all that we do and become activists or lobbyists rather than designers".

Nevertheless, what started as a request to fashion a few objects for exhibition in a Melbourne museum has acquired a significance and social value beyond its original brief.

Ore Streams is available from Giustini / Stagetti Gallery, giustinistagetti.com