Designers are finding new ways to highlight the challenges facing our planet.

Stare into the intense blue depths of Brodie Neill's circular Gyro table and behold its horrifying beauty. The immensity of the ocean, the earth, the flickering stars are all conjured in Neill's 180-centimetre-diameter reflecting ''pool''. But the awe this sublime view of nature induces soon gives way to shock.

Gyro takes its name from the great whirlpools of waste that gather in the five ocean gyres; 18 million kilograms of plastic floats in the North Pacific Ocean alone. Contrary to expectations it's not so much large plastic waste that does the most harm, but the confetti-like microplastics eaten by sea creatures. More than half a million fragments of micro-plastic constitute Gyro's material cosmos. Billowing plumes of potentially lethal matter ripple out from its centre.

The bitter irony in Neill's resonant colour palette is that its blue-black hues and cloudy whites are the bits fish reject. "Fish are more attracted to red, yellow and orange [microplastics]," he says. "Those warmer colours are consumed by fish, so there is an abundance of white, blue and black. There is no end to the level of human disappointment when you unravel and peel back layers. It's shocking."

The Tasmanian-born, now London-based industrial designer created the Gyro table in conjunction with the National Gallery of Victoria for the inaugural London design biennale in 2016; it is now on display at the NGV's art and design Triennial.

The exhibition also includes a commission by Dutch-based Italian design duo Formafantasma. Where Neill went to sea, Formafantasma went to ground, tackling mineral and e-waste. Ore Streams reinterprets the modernist office, creating strange hybrid forms of streamlined efficiency using recycled hi-tech electronics. Filing cabinets, for example, are constructed from superseded parts – aeration grills, laptop shells.

"Not a lot of this work is going on and we want to see more of it," says Ewan McEoin, NGV senior curator of contemporary design. "[As a design department] we have to be proactively engaged with showing how design can interrogate and improve the world around us. It also challenges designers to consider ways in which we all must participate."

Displaying the designers' research is part of the gallery's MO. Along with Formafantasma's office equipment, Ore Streams includes interviews with electronic producers, Interpol, recyclers, academics and engineers.

While not the biggest producer of waste, electronics is the fastest-growing, according to Simone Farresin, one half of Formafantasma. "Electronics is seen as innovative, but in terms of recycling it's not innovative at all. A global economy needs a global system of recycling. While there are directives on how to recycle
products, there are no clear directions on how to design products for a global system. We're trying to show what design could be doing. They are often very simple strategies.”

Largely those strategies revolve around removing obstacles to recycling. With electronics, many of the problems stem from miniaturisation, which requires more glues, making things harder to pull apart. Uniform screws would allow easy disassembly using fewer tools. Labelling could be clearer to identify toxic materials; and batteries (which can explode during shredding) need to be easily accessible.

Designing products with greater awareness of where the materials are sourced from harks back to a more craft-based workshop system, according to Farresin. “Our work is craft-based and still is,” he says.

Neill, too, looks back to tradition. Gyro reinterprets the “specimen table” popular during the colonial era and inlaid with exotic timbers and stone from around the world. “The Gyro table is a contemporary rendition of that, with a sinister underbelly,” Neill says. “It’s looking at waste in a different way, upscaling the materials from something worthless to museum-worthy.”

Neill has worked with recycled materials before. His 2008 peanut-shaped chaise longue, Remix, is made from reclaimed building materials. He has also upscaled production of Gyro’s material process into the Ocean Terrazzo range and is in talks with a Scandinavian manufacturer to develop it further. While the Gyro will stimulate discussion around waste, Neill admits, “we are literally a drop in the ocean”.

Nevertheless, these designers aren’t afraid to think big. Not only do their works deal with the impact of the Anthropocene epoch, they allude to the cosmos. For Neill, the Gyro table reflects the earth, sea and stars. Embedded in Formafantasma’s office furniture are satellite images of Mars’ barren surface, a reference to distant geological time when precious metals travelled to Earth via meteorites. Its implications for the future are far-reaching. “Subliminally it has to do with looking at a planet that is completely empty and consumed,” says Farresin. “It evokes an unliveable planet.”

NGV Triennial runs until April 15, 2018; ngv.vic.gov.au

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(Clockwise from main) Brodie Neill's Gyro table (2016); O'Neill is looking at waste in a different way; Studio Formafantasma's Ore streams (2016-17), in development; Andrea Trimarchi and Simone Farresin of Studio Formafantasma.

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