Raising *the* Dead: Repair *as* Re-appropriation *in* Critical Design

Myf Doughty
Monash University

ABSTRACT

In this article, I examine Dale Hardiman and Stephen Royce's critical design work *Open Garden: Digital Mirror* (2020) to explore their approach to the reuse and modification of electronic waste (e-waste) and proprietary software of the iPhone 8. Drawing on Mark Fisher's theory of the weird, along with Sara Ahmed's concept of 'queer use' and John Scanlan's cultural theory of garbage, I consider how the designers' conspicuously clandestine re-appropriation of the effective and affective properties of discarded devices animates the physical and metaphysical possibilities of repair. I demonstrate how re-appropriation as repair can precipitate a form of weird design that provokes reflection on the possibilities and potentialities of deviance and departure within the discipline.

Keywords

e-waste

weird

reuse

egress

deviant departure

AUTHOR

Myf Doughty—Independent curator and researcher. Her work explores the possibilities of collective and relational curatorial practices as change praxis for art institutions in and amidst crises. After holding a Bachelor of Design (graphics and ceramics) degree from the University of New South Wales, she earned a Master of Teaching (Art and Media) from Deakin University. She is a PhD candidate at Monash University (WonderLab, Department of Design). She served as a curator of contemporary design and architecture at the National Gallery of Victoria, contributing to numerous local and international exhibitions, publications, and public programs. Previous publications include 'Designing for the Deep' (*Horizons Magazine*, 2023); 'All That is Solid' (in *NGV Triennial 2*, National Gallery of Victoria, 2020); and 'Beyond Pretty: The Possibilities of Contemporary Jewellery' (in *She Persists: Perspectives on Women in Art and Design*, National Gallery of Victoria, 2020).

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Myf Doughty
Monash University
Department of Design, WonderLab
Melbourne, Australia
myfanwy.doughty@monash.edu
https://orcid.org/0009-0000-7836-7505

In this article, I examine Dale Hardiman and Stephen Royce's critical design work *Open Garden: Digital Mirror* (exhibited at the NGV Triennial 2020) to explore their approach to the reuse and modification of electronic waste (e-waste) and proprietary software of the iPhone 8. I consider how their conspicuously clandestine re-appropriation of the effective and affective properties of discarded devices into a digital mirror constitutes a weird design process and aesthetic. Anne-Marie Willis argues that design "has to change into a far more ambitious and intellectually informed practice" if it is "to be the means towards a radical change of direction of our ourselves and our made-world" (2013, p. 3). Thinking with her invocation, I combine reflections on my in-person encounters with the *Open Garden: Digital Mirror* with a selection of critical theories, to offer a transcontexual reading of this work. This approach is informed by critical autoethnography and surfaces the 'inter-animating relationship' (Holman Jones, 2016) between our lived experience and theory in ways that contribute to enlivening design's capacity for the 'ambitious and intellectually informed' practices Willis calls for. Commingling Mark Fisher's (2016) theory of the weird with John Scanlan's (2005) cultural theory of garbage, and Sara Ahmed's (2019) concept of 'queer use', animates the possibilities of this project as a weird mode of critical design that departs from the Modernist-productivist narratives and practices that dominate so much of the discipline.

I focus on how designers invite a critical questioning of the political and environmental implications of design in relation to use—what design enables and what it deters. I consider how this work critiques the role of design in normalizing excessive consumption and obfuscating both the material consequences of these practices as well as possibilities for alternative realities. *Open Garden: Digital Mirror* demonstrates how unauthorized repair can trouble this entrenched capitalist logic by dredging up and messing about with bodies and stories that have been buried by design. Bringing this work and the selected theories into conversation demonstrates their generative potential as critique, and crucially, as speculation that pushes design beyond 'problem-solving' toward more critically engaged, accountable, and resourceful practices of design and consumption (Fry & Nocek, 2021).

WEIRD DESIGN

Open Garden: Digital Mirror (2020) by Australian designers Dale Hardiman and Stephen Royce is a curved sci-fi-esque 'mirror' assembled from a bank of thirty-two broken iPhone 8 screens liberated from their rigid cases and resurrected through handmade circuit boards, a tangle of over-the-counter HDMI cables, and open-source code. Designed as an exhibition piece, the work radiates, drawing me into the cool embrace of its circadian rhythm-inhibiting glow.[1] Up close, the flimsy screens are marred by dead pixels that seep like oil stains across the luminous display. *Ad hoc* circuitries are left exposed to reveal their messy detail. When I approach the work, my image and my movements are reproduced thirty-two times from thirty-two slightly different perspectives. The images are glitchy and strangely mesmeric, piquing both curiosity and trepidation—like catching yourself on surveillance monitors. There is no confusion: this piece is made from waste that has been resurrected by design. Hertz and Parikka (2012) describe the excavation and revitalization of dead media through creative practice as 'zombie media' that confronts and critiques the political and material economies of information technology. *Open Garden* sits comfortably in this realm, as a techno-zombie assemblage of the living dead that invites audiences to literally see themselves in the detritus of technological consumption.

Hardiman and Royce chose to work with the iPhone as an iconic symbol of the smartphone revolution, and one of the world's best-selling mobile devices.[2] *Open Garden: Digital Mirror* drags me into its gritty mire, making a stark aesthetic counterpoint to the machined perfection and glossy surfaces of the modernist-inspired Apple/Jony Ive aesthetic. The designers' conspicuous approach to repair raises questions about what lies beneath modernity's material legacy. They pick at the entangled implications of design in the birth (extraction, design, manufacture); death (disuse and disposal); and afterlife (landfill, recycling, leakage) of mass-produced, consumed, and discarded electronics. Standing in the pristine, dimly lit exhibition space, bathed in the blue light of resurrected screens, and observing ghostly digital reflections of multiple selves is where things get weird.

In his book *The Weird and the Eerie*, Mark Fisher (2016) details the emancipatory potential of the 'weird' as a cultural and aesthetic form capable of taking us outside our reality. Although Fisher's (2016) theorization focuses mostly on 'weird fiction', he creates space to extend this concept to design by demonstrating how the weird is simultaneously an affect and a mode: of fiction, music, film—even of being.

He describes the unifying characteristic of the 'weird' across these different formations as a "fascination for the outside, for that which lies beyond standard perception, cognition and experience" (Fisher, 2016, p. 6). In his description of the unique allure of the weird, Fisher explains:

[1] At the time of writing, this work was displayed in the public collection of the National Gallery of Victoria (Melbourne).

[2] Statista reports that since the launch of the iPhone in 2007, more than 1.5 billion units have been sold worldwide (Laricchia, 2023). Other reports have that figure at 2.24 billion (Ruby, 2023).

> It involves a sensation of *wrongness*: a weird entity or object is so strange
> that it makes us feel that it should not exist, or at least it should not exist
> here. Yet if the entity or object *is* here, then the categories which we have
> up until now used to make sense of the world cannot be valid. The weird
> thing is not wrong, after all: it is our conceptions that must be inadequate.
> (2016, p. 9)

In *Open Garden: Digital Mirror*, the weird emanates from a convergence of wrongness: the strange assemblage of bodies that make up a monstrous, yet alluring whole; the usually discrete personal device now operating as a choreographed zombie-mass; and the multi-functional smartphones now throttled, reduced to a mirror. *Open Garden: Digital Mirror's* existence reveals the inadequacies of the categories of useful/useless, valuable/waste that guide so much of how we have been taught to make sense of the world.

        The weird is unsettling because it helps us sense things we might prefer not to. To experience it is to second guess certainty and to ask questions about everything we thought we knew to be real and right. Fisher (2016) is careful to distinguish the weird from other unsettling genres: horror traps its terrors in this world, and fantasy contains itself in worlds far removed from our own. The weird is weird because it opens up pathways of exchange between this world and the outside. In the Netflix series *Stranger Things* (Duffer et al., 2016), the physical ruptures that allow passage between this world and the Upside Down—a perilous parallel dimension—exemplify this exchange that Fisher calls 'egress'. Matt Colquhoun outlines the political implications of such openings:

> The weird, in its probing of the innate instability of subjectivity, as well as
> that of the world around us, has a tendency to uncover our blind spots and
> our unknowns, as well as alternative configurations of those things which
> we may not know are in fact changeable. (2020, pp. 9-10)

A fascination for the outside presupposes a recognition or belief that there are other places, other possible realities beyond this one. Like much critical and speculative design, *Open Garden: Digital Mirror* serves no standard functional purpose—it isn't much use as an actual mirror, nor was it intended to be. As an object made of objects that are not supposed to *be*, I sense it illuminating my blind spots in ways that create openings to perceive the possibility of this type of design contributing to Colquhoun's 'alternative configurations'. In a capitalist world that relies on the constant reproduction and reification of its systems and structures—where 'there is no alternative'—recognizing and playing with its now perceptible plasticity is a radical act. The egress the weird precipitates has a very real potential to not only unsettle hegemony by surfacing its absurd illogics and harms, but to demonstrate

other previously unimaginable ways of living. As Willis (2015), as well as Fry and Nocek (2021), remind us, design plays a significant role in reifying the absolutism of Modernist progress narratives in the service of capitalist economics, with disastrous social and environmental consequences. This is why the weird matters.

INTRUSIONS AND OPENINGS

In his literary excavation of landfills, sewers, and cesspits, cultural theorist John Scanlan (2005) interrogates the slippery nature of filth, shit, and garbage—waste. He presents discarded and mechanically removed waste as specters of multiple meanings and memories, that when returned/recovered/re-presented to those that have discarded them "serve as a stark reminder of what we really are" (Scanlan, 2005, p. 12). *Open Garden: Digital Mirror* is designed to connect us to another world that we—the consumers, largely disconnected from our waste—are not meant to see. Scanlan refers to this place as the 'shadow world', describing how:

> Deteriorating matter (whether in the form of feces or discarded consumer goods) embodies a time that exists beyond our rational time: in this shadow world, time is always running matter down, breaking things into pieces, or removing the sheen of a glossy surface and, therefore, the principal methods of dealing with material waste throughout most of human history—dumping, burning, recycling, reducing the use of virgin materials—are simply ways of ensuring that this fact does not intrude too far into everyday experience. (2005, p. 34)

For Scanlan (2005), the shadow world exists in parallel to this one, where linear conceptions of time are inextricably linked to moralized conceptions of progress which, supported by commercial design, feed and are fed by a voracious appetite for the new. He argues: "The development of new product lines is directed by the idea that new technology will improve our lives (…) that progress to the future entails the overcoming of error, defect and imperfection" (Scanlan, 2005, p. 34). Of course, it is also instrumentalized by sales targets and shareholder accountability. It follows that in the consumer world, repair, as an act and concept that necessitates slowing down and sifting through detritus, invites intrusions from the shadow world. In that way, it is the enemy of progress and profit. Ultimately, the shadow world embodies that which must be 'overcome' on the steady march toward a better future (Scanlan, 2005).

        The modernist Dieter-Ramsian approach to the design of Apple devices beautifully exemplifies how design and aesthetics reproduce this narrative. They appear for us on shelves and online as if from nowhere, nestled in meticulous packaging, untouched and full of promise, with pristine surfaces and purity of purpose. Plastic, glass, and metal are seamlessly (and impenetrably) sealed,

containing whatever magic makes this device (and ideally us as well) better, faster, and more stylish than the last. By resurrecting and reworking discarded devices against their proprietary design, Hardiman and Royce rupture this seamlessness. Observing my glitchy reflection in the ruptured, dead-pixel-smeared screens reminds me of the obvious but often unacknowledged truth that designed things do not come from nowhere, nor do they disappear when they are discarded. They have a very real afterlife.

It is important to differentiate the shadow world as the 'place beyond our rational time' from the places where e-waste ends up, which are very much of this world. Like Scanlan, I write from a place where waste is mechanically removed and processed beyond the sight, smell, and sound of my day-to-day activities. As waste is removed for some, it enters the conscious lives of others. E-waste is the fastest-growing waste stream on Earth, and is shipped in millions of tons from affluent regions like North America and the United Kingdom to countries with few resources to regulate its arrival and processing. Nigeria, Ghana, Tanzania, and Pakistan, in particular, receive the bulk of the wealthy world's e-waste (Maes & Preston-Whyte, 2022). Wherever this waste ends up, it breaks down and is broken down.

Sites where e-waste is landfilled are reported to be 100 times more contaminated by harmful chemicals and heavy metals than residential areas (Ghosh et al., 2015). Similarly, freshwaters and groundwaters in the vicinity of e-waste recycling report high concentrations of heavy metals and high dioxin concentrations in the air. As toxins are taken up and cycled through bodies of multiple species, they bind with enzymes and proteins, interfering with neurology and physiology. These bioaccumulating toxins can cause massive multi-system and multi-generational injury. These realities are not beyond human perception: they are lived. They are a poisonous truth to the capitalist progress narrative, and must be kept at a distance from the most valued consumers—out of sight, out of mind.

The absurd, yet unsurprising fact that e-waste is the world's most valuable waste stream speaks volumes about the illogic of linear production models. In 2019, the United Nations Environment Programme reported there was 100 times more gold in a ton of e-waste than in the average equivalent of gold ore. In theory, it should be more efficient to mine waste than the Earth. The growing tonnage of global e-waste is the inevitable outcome of an over-reliance on perpetual production and consumption as a measure of success, without regard for the lives after the 'end of useful life'. Devices are designed to maximize cost/time efficiency in production which results in electronics that are riddled with inefficiencies when it comes to disassembly, reuse, and recycling (Formafantasma, 2019). Proprietary fixtures, glued or fused components, inconsistent labeling of toxic contents, and materials that cannot be identified by mechanical sorting machines often render

Figure 4: *Open Garden: Digital Mirror*, by Dale Hardiman and Stephen Royce (2020). Left, front view; right semi-lateral view. Photographs: Jonathon Griggs.

commercial recycling 'cost prohibitive' and dangerous. Because of these barriers, resource recovery often occurs manually in unregulated and unsafe sites. Known as 'urban mining', the recovery and recycling of high-value materials such as gold, silver, copper, platinum, palladium, and aluminum constitutes a significant part of the economies and income in regions receiving e-waste. While this informal system does feed back into international markets, reducing the need for new materials, the processes used such as open burning and open acid digestion are highly polluting and poisonous (Maes & Preston-Whyte, 2022).

Scanlan's theory of the shadow world as a place beyond our rational time destabilizes uncritical assumptions and beliefs in linear progress models propelled by moral imperatives to buy and sell new to build better futures. This is a helpful starting point to figure out what the 'outside' at *Open Garden: Digital Mirror* can connect us to. Further fleshing out the implications and politics of use helps us dig deeper into the potentiality of repair, to deviate from this wasteful and poisonous trajectory.

BREACHING THE WALL

The series title *Open Garden* is a play on the term 'walled garden', which is used to describe propriety software and hardware deployed by manufacturers to prevent DIY repairs and updates. The walled garden is designed to enforce the manufacturer's narrative that their garden is all there is, and nothing exists outside the walls. Or maybe we might imagine the walled garden as a defensive strategy—protection from the unruly and unmanageable possibilities that reside on the outside. The walls are built of things like planned obsolescence and proprietary software and hardware. They are reinforced by terms and conditions including limited warranties and warranty voids prohibiting what is aptly termed 'jailbreaking'—the unauthorized expansion, upgrade, or modification of a device. These are all things that make extending the life of an electronic device undesirable, inconvenient, or impossible.[3]

What is made easy or hard has political and environmental implications. Sara Ahmed's (2019) concept of queer use demonstrates how what is easy to use is more likely to be used and so to be reinforced and reproduced. Critically attending to the uses of use makes apprehensible how certain values and behaviors become internalized and institutionalized by design. Ahmed (2019) teases out the relationship between use and what is socially programmed as 'right' (easy) or 'wrong' (hard). Viewing use through this lens reveals its simultaneity— what is easy for some (usually people, behaviors, or values that 'fit' or appear to fit with dominant norms) can also be a deterrent or even dangerous to others. This applies to the design of devices and software as much as buildings, institutions, and social systems.

3 Under 'What is not covered by this warranty?' on Apple's website, they state: (c) to damage caused by use with a third-party component or product that does not meet the Apple Product's specifications (…) (e) to damage caused by operating the Apple Product outside Apple's published guidelines; (f) to damage caused by service (including upgrades and expansions) performed by anyone who is not a representative of Apple or an Apple Authorized Service Provider ('AASP'); (g) to an Apple Product that has been modified to alter functionality or capability without the written permission of Apple (Apple, 2023).

When taking or making a different path is a matter of survival, Ahmed reminds us that "deviation is hard. Deviation is made hard" (2019, p. 42). *Open Garden: Digital Mirror* is an ode to the 'jailbreak'. The hours of labor involved in developing handmade circuit boards and open-source code to breach the walls and unlock the basic functionality of cameras and screens are reflected in materiality. The obviously hacked nature of the work draws attention to the deviations that are made hard. If planned obsolescence and revenue-raising repair are the walls, then the Apple and Apple Authorized Service Provider 'ecosystem' is what sustains the garden. In this world, it is profitable to manufacture the problem and the 'solution'. The shadow world exists outside the walled garden. Here, entropy and decay are not destructive, they are generative forces for design. There is potential in destruction and reconstruction. As Ahmed reminds us, sometimes "the potentiality for change comes from trauma, damage, or crisis, from something breaking down that was previously in use" (2019, p. 42).

This argument resonates with other calls to address the 'issue' of e-waste by reconceptualizing it not as waste but as a resource (Corwin, 2018; Formafantasma, 2019). Julia Corwin (2018) highlights many examples of the potentiality Ahmed speaks of being enacted as everyday practice in the thriving electronic repair and reuse economies in Delhi, India. She describes how:

> The ability of electronic waste to become valuable again, to shift forms and become new products, to arise from its 'death'—is always mediated by inventive and resourceful workers whose labor is central to e-waste's becoming non-waste. (Corwin, 2018, p. 18)

For people such as myself, who are living in substantially different cultural and geographic contexts, Hardiman and Royce's jailbreaking-on-display makes sensible—felt, heard, seen—the openings that an excavation of material consequences of design for endless consumption makes possible. Their inventiveness and resourcefulness invite us first to notice the false logic of a world that designs a waste problem and then 'solves' it by sending it away. Then, the brutal materiality and cold reflections of the work breach the walled garden and offer glimpses of another world, where mess is not moralized, and nothing is waste or wasted. Here, the shadow world is not walled up and willed to be forgotten but embraced, so materials and processes of decay become metabolized into the design and production of different futures.

FALSE PROFITS

The outside that *Open Garden: Digital Mirror* opens up is one that tangles the linear trajectory of consumption-fueled progress. Ahmed (2019) helps us see that what is considered error, defect, imperfection, or garbage can be where the value—and

even survival—lies. In this sense, repair becomes both an act and a concept that commingles past, present, and future. The designers literally pried open cracks in glossy surfaces through which the shadow world intrudes. But repair as deviation does not always guarantee egress.

The mirror-cum-surveillance monitors of *Open Garden: Digital Mirror* capture the viewer through each screen's front-facing camera. Fragmented and faceted, thirty-two moving 'reflections' beam back as a choreographed whole. The aesthetic resonates with that of another example of weird fiction, *The Matrix Reloaded* (Wachowski & Wachowski, 2003). The assemblage echoes the scene where, in a room flanked by monitors, the protagonist, Neo, meets the Architect, the program that has created the Matrix. A lot happens in this scene, but in relation to egress, we learn that the Matrix must be regularly reloaded because of a critical failure in previous iterations of the design—without any hope of escape, the humans cannot survive in the Matrix. In what is now the 6th iteration of The Matrix, the Architect reveals that Neo is not human, but is, in fact, a program designed by the machines to instigate the reboot cycle. Neo finds out that he has been created to embody the false promise of escape the humans need, allowing the machines to keep harvesting their energy while containing 'freed' populations in a second space—Zion. Faced with this knowledge, Neo must choose between two types of egress: a false egress designed by the system, directing discontent and revolutionary energy down a predetermined path, only to return to the same world rebooted; or to depart from this path, not reboot the Matrix, and see what happens. Spoiler: Neo refuses the path laid out for him, his act of free will ruptures the Architect's closed-loop narrative resulting in (literally) a new dawn of peace between human and machine… for now.

Hardiman and Royce were not intentionally making visual references to *The Matrix Reloaded* but by making the connection, an important critique of critical design is raised. That is, the notion of a false egress—of pathways that on the surface look to be leading to the outside but are in fact taking us on a meandering loop back to where we started, safely within the system. The term 'greenwashing' comes to mind here. Apple, which is widely considered a world leader in the recovery, repair, and recycling of its devices, has been accused of this. In 2020, the UK's Environmental Audit Committee (EAC) published a report that names Apple and Amazon as "dodging their environmental responsibilities for the products they sell" (UK Parliament, 2020, para. 9). Despite Apple's efforts in setting up collection and recycling systems, the report cites planned obsolescence, gluing and soldering internal components together, and restricting owner control over their own products as decidedly harmful practices (UK Parliament, 2020, para. 4). The report called for the burden and expense of recovery and recycling to shift from individuals to corporations profiting from manufacturing the problem. It

Figure 2: *Open Garden: Digital Mirror*, by Dale Hardiman and Stephen Royce (2020). Back view (detail). Photograph: Jonathon Griggs.

also called for the 'right to repair' to be enshrined in UK law, which was approved in the UK, the EU, and Ireland in 2021. 'Right to repair' generally means ensuring the ability for consumers to access affordable repairs using their repairer of choice. Variations of this policy exist around the world but have so far done little to stem the flow of e-waste internationally.

It would be great if companies took financial responsibility for the waste and harmful conditions they produce. However, we should also be mindful that communities suffering the bulk of e-waste contamination often rely on resource recovery for income. There is a risk that they will be left with poisoned water, land, sky, and bodies while their revenue stream is taken away – back in the hands of the trillion-dollar companies that inflicted the harm.

In some ways, commercialized or proprietary repair feels like a false egress that exists within the current system without changing the fundamental issues of excessive consumption and extractive, unsustainable production. As Corwin (2018) reminds us, and Hardiman and Royce show, there is a world of possibilities in the afterlife of electronics, but what they are and where they take us will necessarily be localized and context-specific.

CONCLUSION

Open Garden: Digital Mirror is wrong because it should not exist—or at least not in *this way*, operating in *this form*. That it does exist creates an unsettling intrusion of those things that are supposed to be dead and buried—or not to be at all. That is what makes it weird. This opening is an invitation to notice how seemingly mundane things like 'use' and 'waste' can make sensible—seen, felt, heard—abstract entanglements between politics, power, economics, and everyday lived experiences. Attuning to these entanglements makes it possible to mess with them and rethink this world anew; being mindful that one of the great deceptions of 'this world' is that there is one orientation—one path to and picture of success. In fact, as this transcontextual reading of *Open Garden: Digital Mirror* through Fisher (2016), Scanlan (2005), Ahmed (2019), and Corwin (2018) shows, there are many.

My orientation to waste as a specter of those parts of us we prefer to bury is possible because my waste is regularly removed from my proximity. I interpret the aesthetic impact of repair and hacked software in *Open Garden: Digital Mirror* as an interruption or departure because I am largely surrounded by the pristine versions of technologies. I am writing this on a MacBook Pro with my iPhone 11 by my side. For those with different orientations to waste, such as the repair workers in Delhi, the weird will almost certainly be felt in other ways if at all.

For Fisher (2016), what makes the weird so potent is its ability to create openings by destabilizing dominant narratives that work to blind and bind people to this world—in this case capitalist hegemony. If the absurdity of

wasted electronics is a symptom of the all-encompassing, 'too big to tackle' capitalist hegemony that Fisher suggests we depart from, *Open Garden: Digital Mirror* helps me see hope in the localized, the clandestine, and the unauthorized—that which is outside the walls. As Ahmed reminds us, and as people who make their livings with electronic afterlives already know, "to linger on the material qualities of that which you are supposed to pass over (...) is to *recover* a potential from materials that have been left behind" (2019, p. 208). There are possibilities in a world where profit is not the bottom line and consumption is not intrinsic to moral value or self-worth.

Works of critical design will always be modest propositions in relation to planetary problems like ecological decline, exploitation, and capitalist hegemonies. There is also a risk that projects like this become the 'Zion' of egress—a false escape designed to distract while keeping would-be dissenters safely and unknowingly contained in this world. Hardiman and Royce recognize this. Through collective labor and skills, they have created a beautifully monstrous iPhone zombie-assemblage that invites egress-by-jailbreak. It doesn't solve the problem, but it helps to infuse this mode of design with the weird's radical potency. My thirty-two reflected selves are provoking me to imagine life on the outside amidst the possibilities and potentialities of our deviant departures. **D**

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