

Recycled Coil is a performance-based artwork involving body modification and electronics. It engages critically with the cultural figure of the cyborg in the context of the problematics of technological obsolescence and electronic waste (e-waste).

This multi-component output, supported by contextual information, is the outcome of a two-part process: firstly, a research journey to Nigeria, during which e-waste originating from Europe was collected. Secondly, the conception and realization of an artwork with accompanying essay, based on one of the collected components, an electromagnetic coil from a television.


E-waste has emerged as a significant, environmentally hazardous by-product of digital culture. Yet, everyday representations of digital technology remain dominated by smooth surfaces, a sense of perpetual newness and suggestions of immateriality (for example, through concepts like 'the cloud'). Thus, technology consumerism is often experienced as being disconnected from the materiality of waste, ecological damage and dwindling resources. This is also reflected in popular perceptions of the figure of the cyborg — a symbiosis of human and machinic body parts. Cyborgs are commonly imagined as enhanced human bodies, equipped with state-of-the-art technologies.







Recycled Coil challenges this techno-utopian vision by presenting a cyborg that foregrounds the afterlife of technological components. Thus, it constitutes what I call an 'abject digital performance' that raises awareness of the material implications of technological innovation. Instead of state-of-the-art, new components, e-waste was installed in my body: a body piercer sewed copper wire from a discarded television through my abdomen skin. Instead of enhancing my body's capabilities, I added an apparently useless technological function: during a five-day exhibition period, a regularly pulsating electric current was run through the coil on my abdomen. This generated a very weak electromagnetic signal, which was merely made visible to audiences with a magnetometer and not used for any utilitarian purpose.

Recycled Coil



Dani Ploeger

Materials which comprise or support this submission can be found inside the box or on the USB drive  embedded in the box's interior lid. Within this publication, references for components of the submission are found in the right margin using a lettering system A–J. Items marked with an * are components of the output, all other items are contextual.

- A* *Recycled Coil* video documentation of work 
- B Artefact: remains of magnetic deflection coil used in the work, sourced from recycling site in Lagos, Nigeria
- C* Essay: Ploeger, Dani. 2017. 'Abject Digital Performance: Engaging the Politics of Electronic Waste', *Leonardo*, 50(2): 138–42
- D Interview for *We Make Money Not Art* 
- E Article (in German) on VICE Motherboard 
- F Newspaper article on *Recycled Coil* in *Der Freitag* (in German)
- G Editorial from *Kunstforum International* (in German)
- H Interview for *Imperica* magazine 
- I TV programme for Arte TV (in French and German) 
- J Film documentation of e-waste collection on dumping and recycling sites in Lagos, Nigeria 

Further information on these materials can be found on the reverse of the box's interior lid.

Dani Ploeger

RECYCLED COIL

A cyborg to engage the politics of
electronic waste

The Royal Central School of Speech and Drama,
University of London

RECYCLED COIL: A cyborg to engage the politics of electronic waste

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Dani Ploeger is an artist and cultural critic who examines situations of conflict and crisis on the fringes of the world of high-tech consumerism. His objects, videos and apps engage with the materiality of everyday technologies, and question the sanitized, utopian marketing around innovation and its implications for local and global distributions of power. He has travelled to dump sites in Nigeria to collect electronic waste originating from Europe, stolen razor wire from the so-called 'high-tech fence' on the EU outer border in Hungary, documented electronic gadgets on the frontline of the Donbass War in Ukraine and interviewed witnesses of US drone attacks in Pakistan about technologies of violence and sound. Dani is a Research Fellow at The Royal Central School of Speech and Drama, University of London, where he has been leading practice research projects on re-use, recycling and appropriation of discarded electronics in Nigeria, Kenya, Hong Kong and the UK since 2013.

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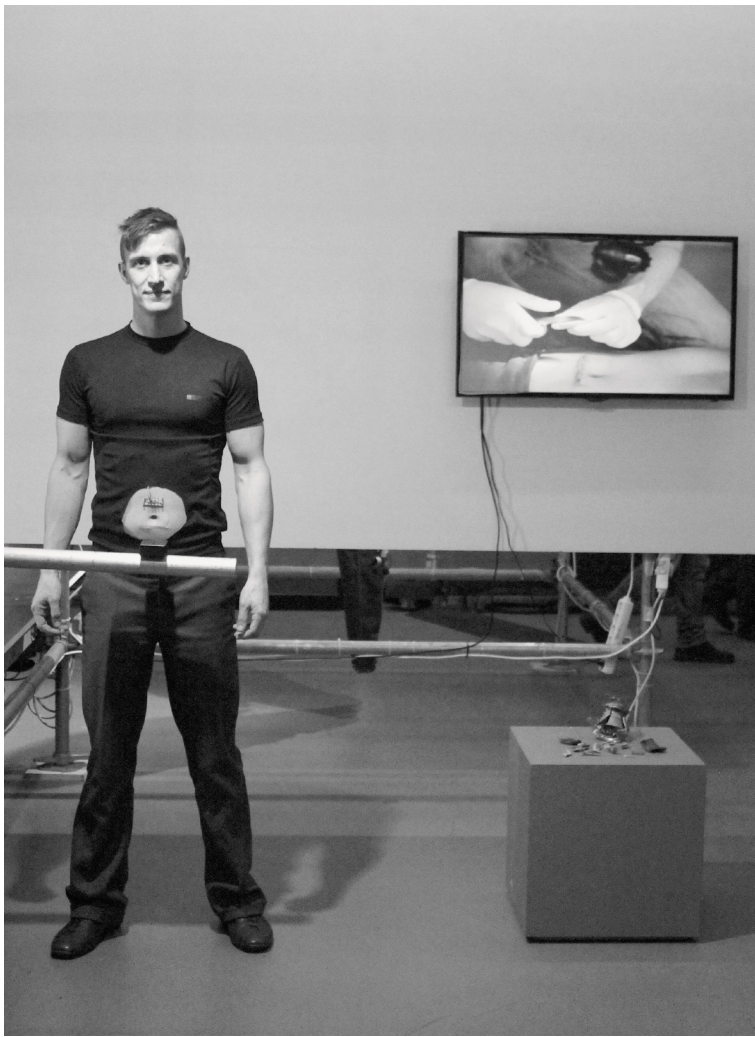


FIG 1 *Recycled Coil*. Installation overview during transmediale festival, Berlin, January–February 2014

I

Overview

This is a multi-component output, supported by contextual information. The *practice-based outcome* (component 1) of the project was created in January and February 2014. Further dissemination of the project took place through multiple exhibitions between February 2014 and December 2017. A peer-reviewed contextual essay (component 2) was published in 2017.

A, B

C

The first component of the submission, the artwork, *Recycled Coil*, was initially presented as a five-day performance installation during transmediale festival in Berlin in 2014. Subsequently, the work has been presented as an installation consisting of artefacts (a physical sample of these is provided with this statement), and a video documenting the realization of the work and the subsequent performance, at a number of venues throughout Europe: Watermans Art Centre, London (2015); RIXC Gallery, Riga, Latvia (2015); Stadtgalerie Bern, Switzerland, during BONE Festival (2016); Le100 in Paris as part of the SEMAINE IMAGIN'ère DE L'ÉCOLOGIE (2017).

B

A

The second component of the submission is a peer-reviewed essay published in *Leonardo*, which presents the theoretical framework within which the artwork was developed, as well as reflections on the broader possibilities and implications of the approach taken in the development of the artwork.

C

The contextual information of this submission consists of interviews and reportages related to the project in *We Make Money Not Art*, VICE Motherboard (Germany), *Kunstforum International*, *Imperica*, Arte TV and *Der Freitag*.

D–I

The artwork was commissioned by transmediale festival in Berlin on the basis of a competitive application process. It was also awarded financial support by the Mondriaan Foundation (Dutch arts council) after peer review by the fund's selection committee.

II Questions, aims and objectives

Electronic consumer devices are discarded by their first users at an ever-increasing speed. As a consequence, the global stream of used electronics and e-waste is expected to continue to grow in the coming decades (Widmer *et al.* 2005). A large portion of European and North American used devices and e-waste are exported to China, India and West-African countries, where they are eventually recycled through environmentally harmful methods or dumped in unprotected areas. This causes severe ecological damage accompanied by a range of sociocultural problems (Chan and Wong 2013; Secretariat of the Basel Convention 2012). Nevertheless, public debate on digital technologies in postindustrial societies has primarily focused on the economic and social benefits of technological innovation, while the problematic aspects of the rapid innovation and obsolescence of consumer technologies have until recently been largely ignored and lie outside most consumers' experience of digital devices.

This aspect of consumer technologies has until recently also remained underexplored in new media and digital art practices. While the late 2000s and early 2010s have seen the emergence of a considerable range of critical artworks and publications that engage with the politics of e-waste and rapid obsolescence (for example, Cubitt 2009; Hertz and Parikka 2012), this work has hardly explored e-waste in the context of digital performance; that is, artwork with digital technology in which the human body plays a central role (Dixon 2007). As a result, little attention has been paid to the relation between human bodies, obsolete technology and the cultural imaginaries surrounding the figure of the cyborg.

In response to this, the project addressed two research questions:

How can digital performance practices engage critically with the problematics of e-waste?

How can reimagining the figure of the cyborg lead to new public perspectives on the relationship between bodies and technological decay and obsolescence?

The project's overall aim was to develop an artistic and theoretically informed framework for a digital performance

practice that engages critically with e-waste. In this context, the role of the realization of the artwork, *Recycled Coil*, was twofold. Firstly, it constituted a practice-based experimental ground in which possible connections and interactions between e-waste and my body were explored. Secondly, it acted as a case study for the written essay that articulated broader implications and possibilities of what I call 'abject digital performance'.

The project was developed through four key objectives: to retrieve a selection of obsolete electronic devices and components — originally imported from Europe — from dumping and recycling sites in Lagos, Nigeria; to develop a conceptual response to popular cultural representations of cyborgs, based on cultural critical analysis; to establish possibilities to integrate found e-waste components into my body; to position the practical work in a broader cultural framework in a written essay.

III Context

In popular culture and art, the figure of the cyborg has been a notable protagonist in visions of a future with uninhibited technological innovation facilitated by seemingly infinite resources. Despite Donna Haraway's (1991 [1985]) suggestion in the 1980s of the feminist potential of the concept of the cyborg as a human-machine hybrid without biological origin, representations of cyborgs in popular culture have largely remained faithful to militaristic or futuristic ideas of enhanced (usually male) bodies. Through the integration of state-of-the-art (predominantly digital) technologies into the human body, its functionality and durability are extended.

Notable examples of this approach are fictional characters in films and TV series, including *Robocop* (1987), *Star Trek* (1966–9) and *Iron Man* (2008), and the work of artists and cyberneticists such as Stelarc (1991), Kevin Warwick (Vice.com 2010) and Neil Harbison (Donahue 2017). While these cyborgs do at times draw attention to the possible dangers of technologizing human bodies, they do not engage with the material-ecological dimension of the cyborgs' technological body parts. As such, they are complicit in a broader representational framework surrounding technological innovation, which tends focus on notions of progress, immateriality and connectivity, while backgrounding material environmental implications in terms of the ecological impact of waste and dwindling resources.

Recycled Coil presents an antagonist to these clean and neatly closed cyborg bodies with high-tech implants in order to draw attention to the inevitable material remains of technological innovation. It departs from the popular cyborg's emphasis on state-of-the-art technological implants. Instead of brand-new technology, the human-machine hybrid in *Recycled Coil* features electronic waste. Instead of an advanced technological function with the latest digital innovations, it performs one of the most basic electric phenomena: electricity run through a coil generates a magnetic field. Instead of presenting a closed and polished technologized body, the implantation procedure of *Recycled Coil* draws attention to the bodily fluids and wounds resulting from the operation (see video and FIGS 4, 5). The work draws from Julia Kristeva's (1982) concept of the abject, applied to both technologies and bodies, in order to draw attention away from ideologies of 'hard', clean, futuristic bodies, toward a more intimate engagement with the vulnerability of the fleshy body and the lasting materiality of the technological commodities it interacts with in postindustrial life.

Thus, the work foregrounds what can be called the 'dirt stage' of technological devices. Anthropologist Mary Douglas (1966) defines dirt as 'matter out of place' and identifies a progression of commodities from their useful lifetime, through a liminal stage of 'dirt' — where matter is rejected but still has symbolic connections to its origin. After this, it reaches a final state of what she calls 'common rubbish,' where rejected matter has lost all aspects of identity. During the dirt stage, a cultural process takes place during which humans engage with the relationship between materiality, decay and cultural artefacts. This process of engagement can contribute to ecological awareness and a considerate approach to the use of finite natural resources.

However, in the everyday experience of contemporary technological commodities, the dirt stage is becoming less and less prominent and is at times almost entirely absent. The consumer experience tends to be sanitized from the moment of acquisition until its disposal. An engagement with the 'dirtiness' of perceptible material decay is precluded. A printer 'breaks' because a chip has been programmed to stop working after a certain number of pages have been printed, while the device still appears new in terms of its material surfaces; a smartphone is often replaced while its circuits and interfaces are still fully functioning, but software upgrades make it no longer operable. As a result, engagement with the materiality of the devices and its possible ecological implications are inhibited.



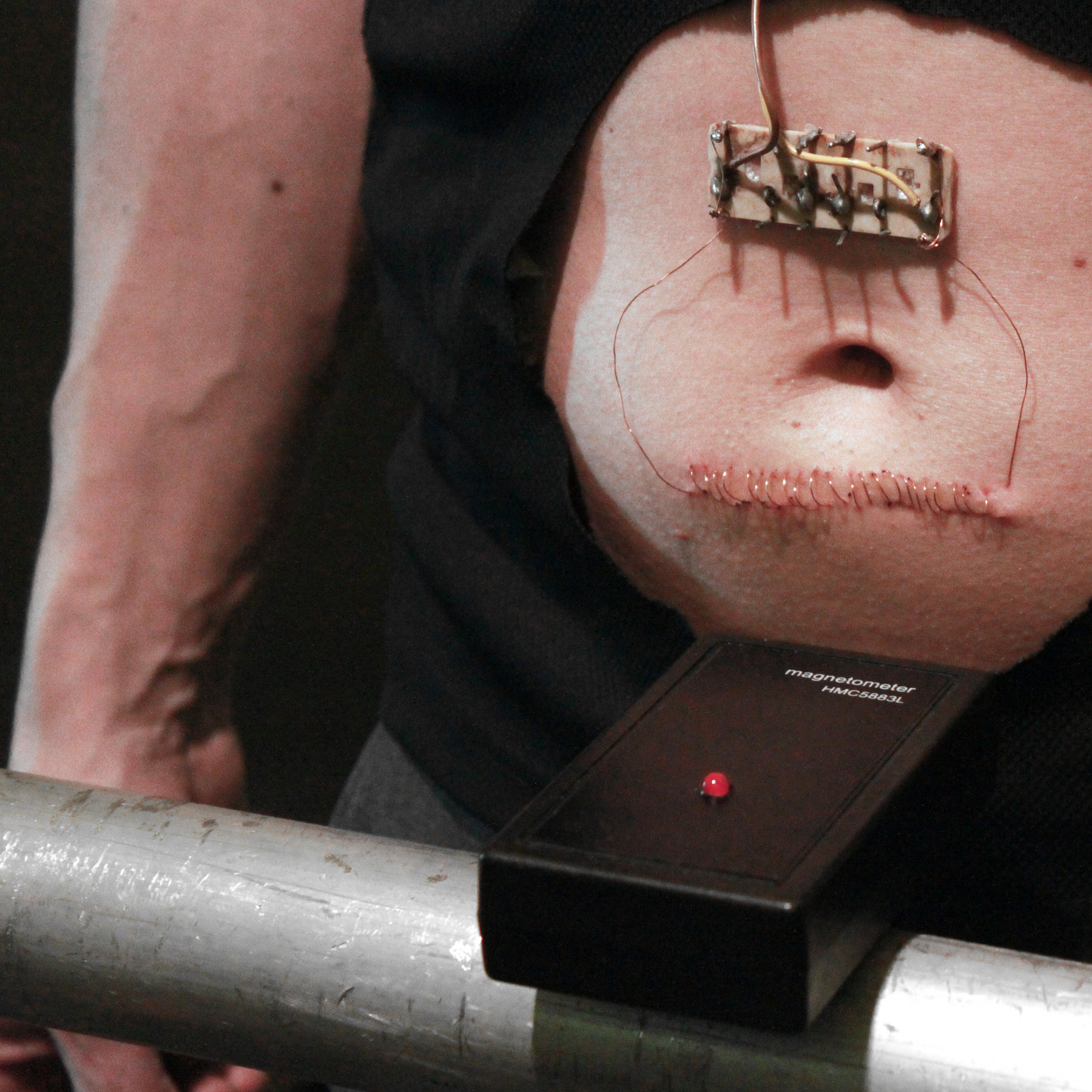
A



FIG 2 Jelili Atiku, Dani Ploeger and an unknown boy from the neighbourhood at an e-waste recycling site at Alaba Market, Lagos, Nigeria

FIG 3 Remains of CRT television coil from which copper wire for abdomen was taken

FIG 4 Close-up of coil on abdomen, next to magnetometer →



magnetometer
HMC5883L

Recycled Coil responds to this development by foregrounding an obsolete component from a discarded device — which would normally remain unnoticed in the everyday of consumer culture in the Global North (an electromagnetic deflection coil from a television) — and highlighting its materiality by integrating it into my body in a way that evokes a sense of viscerality and abjection (copper wire from the coil was sewn into my abdomen, see [video](#)). Thus, the work redirects attention to the technology's and the body's materiality and opposes the smooth, sanitized representations of 'newness' that are commonplace in marketing and everyday perceptions of consumer technologies. As such, the work is conceived as a way to stimulate reflection on and engagement with the increasingly ignored materiality of technological development and its ecological implications.

A

Berlin-based body piercer Dirk Hückler to determine possibilities to insert parts of the coil in or on my body. The Arduino micro-controller is a small programmable computing unit that was used to generate a pulsating electrical current, which was run through the coil that the body piercer had constructed on my abdomen. As a result, the coil emitted a (very weak) pulsating magnetic field (see [video](#) and FIGS 4,5). After the artwork was realized, it formed the basis for theoretical reflection in a research [essay](#).

A

C

A number of findings during the research process were decisive for the form and content of the artwork. The realization of the artwork, in turn, informed the broader theoretical framework for future work as articulated in the [essay](#).

C

The field research in Lagos together with Jelili Atiku led to a detailed experience of the truism 'one man's rubbish is another man's treasure'. While the items we encountered on the dumping and recycling sites initially appeared to us as a fairly uniform accumulation of waste, through our communication with recyclers and hands-on explorations of the materials, it became clear that there are great differences in value between the various objects. Electromagnetic deflection coils from old televisions are actually a small treasure for local recyclers in Lagos (copper is valuable; we had to pay a considerable price for it). The ambiguous notion of value related to this object (it's not just environmentally harmful waste) contributed to my decision to eventually use exactly this item for the artwork. The incorporation of this object in the work opened an additional pathway for future inquiry: when we speak of obsolete technology and e-waste, we should also ask the question 'waste for whom?'

J

The research question 'How can digital performance practices engage critically with the problematics of e-waste?' was, in the first instance, addressed through theoretical reflection on concepts of waste and the figure of the cyborg in culture (see also III. Context). This shaped the work's conceptual form — the development of a 'waste cyborg' — as well as part of its technical realization: the decision to *not* position the coil at the extremities of my body (for example, hands, arms, legs) was informed by an analysis of cyborgs in popular culture. The predominance of the placement of implants in arms, legs and heads in these cyborgs enhances the sense of utility attached to their technological components. Instead, I wanted to focus on a bodily extension that does not suggest such narratives of innovation and progress and instead draw attention to the viscerality of human-machine interaction and the vulnerability of the human body in its encounters with technological artefacts.

B

IV Methodology

The relationship between research and creative practice took various forms throughout the project. The site visits in Lagos, which were conducted in collaboration with Nigerian artist Jelili Atiku (see [video documentation](#)), constituted a practice-based, often playful, exploration of materials through a direct engagement with objects encountered in the sites. This was accompanied by informal conversations with traders and recyclers about the value and uses they identified in these objects. The exploration informed my decision to develop the artwork around a magnetic deflection coil. This component stood out as an artefact of special interest because of the combination of its technological simplicity, media historical relevance and value as e-waste. Its technological function is among the most basic electrical phenomena (electromagnetism), yet it has also been a key component in one of the most significant consumer technologies of the twentieth century (the cathode ray tube television). For e-waste recyclers, it is among the most desired artefacts because it consists almost entirely of copper, a valuable raw material (see [artefact](#)).

The conceptualization and realization of *Recycled Coil*, then, emerged from a combination of three parallel research processes: a cultural critical reflection on the figure of the cyborg in popular culture; practical experimentation with the electromagnetic coil in connection with an Arduino micro-controller, among others; and an exchange with

In order to respond to this research question, it was necessary to develop a practical method to integrate e-waste components into my body, as articulated in the project objectives. The final shape and position of the coil on my body was determined through the collaboration with body piercer Dirk Hückler. Various places on the body were considered (neck, chest, buttocks). The abdomen was chosen on the basis of a combination of my conceptual preferences described in the point above, and Dirk's assessment of technical feasibility and safety. He had never used coated copper wire for a body modification before, so the project also constituted a new development in his practice in terms of skills and knowledge about materials, technique and safety.

Audience responses to the work — both in its live and installation versions — suggested that a visceral sense of abjection, caused by the close-up shots of the operation in the video and the bruised and wounded skin around the coil, was central to many people's experience. This was also reflected in the reaction of the author of the [interview](#) for *We Make Money Not Art*:

I found the video of your work *Recycled Coil* really difficult to watch. [...] I thought it was a violent way to treat your body [...] because you used something we regard as trash. Did you want to get a visceral reaction from people?

The prominence of this aspect in the audience experience of the work was relevant to the research question, 'How can the figure of the cyborg lead to new perspectives on the relationship between bodies and technological decay and obsolescence?' This is articulated in the contextual [essay](#), which describes the conceptual framework for a practice of 'abject digital performance'. In turn, this formed the basis for the essay's broader response to the question 'How can digital performance practices engage critically with the problematics of e-waste?'

v

Timeline

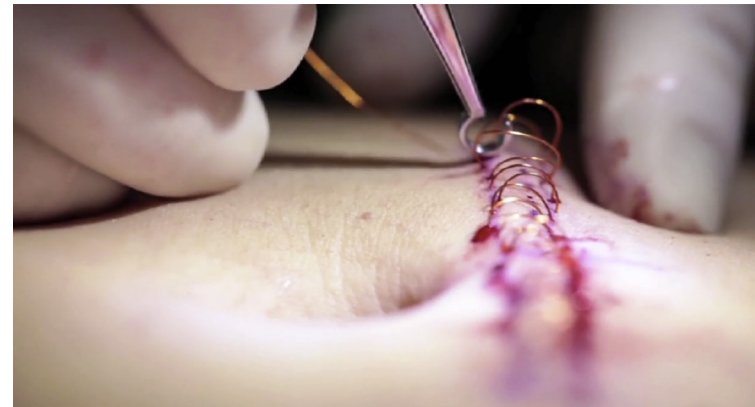
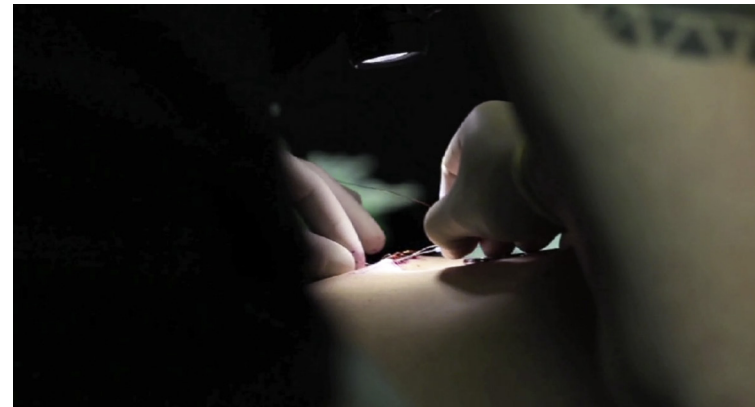
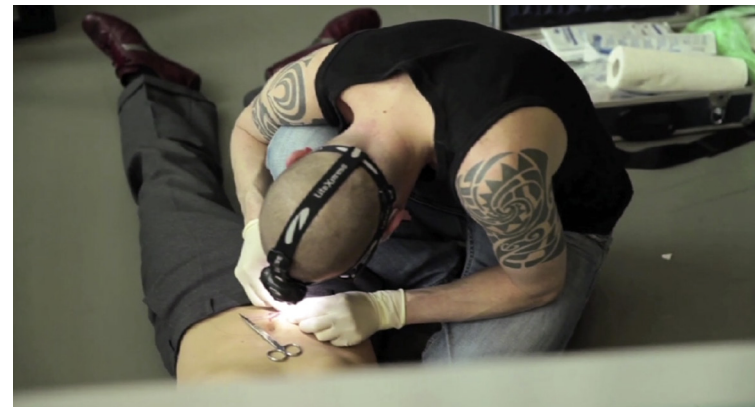
2013	December	Trip to Lagos, Nigeria to visit dumping and recycling sites, speak with traders and recyclers and collect e-waste together with Lagos-based artist Jelili Atiku.	
2014	January	Discussions and experiments with body piercer Dirk Hückler in Berlin, including toxicity tests with coated copper wire in preparation of operation on abdomen.	
	22–29 January	Construction of electronics (Arduino microcontroller connected to relay and battery to power the electromagnetic coil). Operation by Dirk Hückler to install coil on abdomen, attended by live audience. Video recording by camera team of ARTE Creative, to be included in installation.	A
	29 January–2 February	Presentation of work as performance installation during transmediale festival 2014 in Berlin. For several hours a day, I presented myself in the festival exhibition as part of an installation, including a video screen showing the operation, a plinth displaying the left-overs of the coil from which the copper wire on my abdomen was sourced and a magnetometer registering the magnetic field generated by the coil on my abdomen (FIG 1).	
	March–May	Reflection on practical work and writing of essay, published in <i>Leonardo</i> in 2017.	C
2015	May	Interview about e-waste management and research for <i>Yourope</i> on Arte TV in the context of <i>Recycled Coil</i> project, broadcast in Germany, Austria, Switzerland, France.	I
2015–2017	June–December	Exhibitions of installation version of <i>Recycled Coil</i> , consisting of a video accompanied by artefacts (FIG 3) at various venues and festivals (see description of research outputs below).	A

In order to respond to this research question, it was necessary to develop a practical method to integrate e-waste components into my body, as articulated in the project objectives. The final shape and position of the coil on my body was determined through the collaboration with body piercer Dirk Hückler. Various places on the body were considered (neck, chest, buttocks). The abdomen was chosen on the basis of a combination of my conceptual preferences described in the point above, and Dirk's assessment of technical feasibility and safety. He had never used coated copper wire for a body modification before, so the project also constituted a new development in his practice in terms of skills and knowledge about materials, technique and safety.

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D

C

FIG 5 Video stills of installation of coil by body piercer

VI Findings

The creative outcomes of the project concern two versions of the artwork:

- 1 a live operation with body piercer Dirk Hückler (see [video](#)) followed by a five-day performance installation at transmediale festival in Berlin in 2014 (see installation overview FIG 1); A
- 2 an installation including [video](#) documentation and [artefacts](#) (FIG 3), which was presented at various venues between 2014–17. A
B

The main contribution of the project to existing art practices and practice-based research in digital culture has been its novel approach to connecting the figure of the cyborg with issues of waste, decay and the abject. This has been articulated in the contextual [essay](#). In it, *Recycled Coil* is contextualized in anthropologist Mary Douglas's writing (1966) on the ritual function of dirt applied to planned obsolescence in electronics. It discusses how the approach developed in the project challenges commonplace representations of consumer technologies as mere signifiers for abstract notions of connectivity, well-being and innovation. In the presented artistic approach to cyborgs, discarded electronic devices are conceptualized as abject technology — drawing from Julia Kristeva's (1982) writing — that are brought into contact with abject elements of human bodies (e.g., blood and wounds) to establish a practice of 'abject digital performance', which challenges widespread sanitized and immateriality-focused imaginaries of technology. C

The significance of this aspect of the project has become apparent through the broad media coverage that has focused on this element. For example, German art magazine *Kunstforum International* has featured *Recycled Coil* as a key example of 'post-futuristic' performance art, which is characterized by a renewed attention for materiality instead of the pursuit of science-fiction utopias. Arte TV programme *Yourope* included the work in their [reportage](#) on digital culture and ecology, and presented it as the context for my critical commentary on green economy initiatives in digital culture, in which I suggested that we should make visible waste and materiality instead of propagating illusions of 100% recycling. G
I

The project has also contributed a new approach to the use of body modification techniques in digital art. Its use of body piercing methods to construct an electric component on a human body had not been explored in this form before and was discussed in a feature [article](#) about the work in the German weekly newspaper *Der Freitag*. F

The performance installation formed part of the main exhibition of transmediale festival at Haus de Kulturen der Welt in 2014. Transmediale is one of the foremost festivals for digital culture and art worldwide, and the 2014 edition was visited by around 20,000 people. Visitors included members of general publics, academics in the field of media studies and digital culture, and artists.

The installation version of the work was presented at the following venues:

2015	June	Solo exhibition 'The Stuff of Machines' at Watermans Arts Centre, London, which was visited by a general audience from the local area (Brentford in West London), as well as an audience with a specific interest in digital art from London and its surroundings. The total number of visitors was estimated around 1000.
	November	Group exhibition 'North: Transformative Ecologies' at RIXC gallery in Riga, Latvia. The exhibition was opened during the RIXC festival and continued for a month after the festival. RIXC festival is the biggest festival for media art in the Baltic states and draws an audience consisting of artists, curators and academics from all over the world. In addition, the exhibition was visited by local audiences with a general interest in cultural activities. The exhibition was visited by 450 people.
2016	December	<i>Recycled Coil</i> was presented as part of the exhibition 'Dislocated Forces' at Stadtgalerie Bern during BONE Festival. I was also the curator of this exhibition. The BONE festival is an international art event and Switzerland's main festival for performance art. The exhibition was visited by festival-goers, who are mainly people with an interest in the performing arts, as well as artists and curators from across Europe. The festival was visited by around 1500 people.
2017	November	Group exhibition during SEMAINE IMAGIN'ère DE L'ÉCOLOGIE at venue Le100 in Paris. This was a week-long event with presentations, artworks and

public engagement workshops focused on imaginative ways to address ecological challenges. It was mostly visited by a non-expert audience with an interest in ecological themes and environmental activism. The exhibition was visited by around 600 people.

In addition to these presentations of the artwork itself, the outcomes of the project were disseminated through my own writing and broad media coverage of the project. I published a peer-reviewed essay in *Leonardo*. Reports about the artwork and the project have appeared in newspapers, online media, art magazines, and radio and television broadcasts, including Arte TV (broadcast in Germany, France, Austria and Switzerland), VICE News, VICE Motherboard (Germany), Deutschland Radio (Germany), *Der Freitag* (Germany), La Libération (France), *Kunstforum International* (Germany), *We Make Money Not Art* (online magazine), *Imperica* (UK).

C

D-I

VII

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