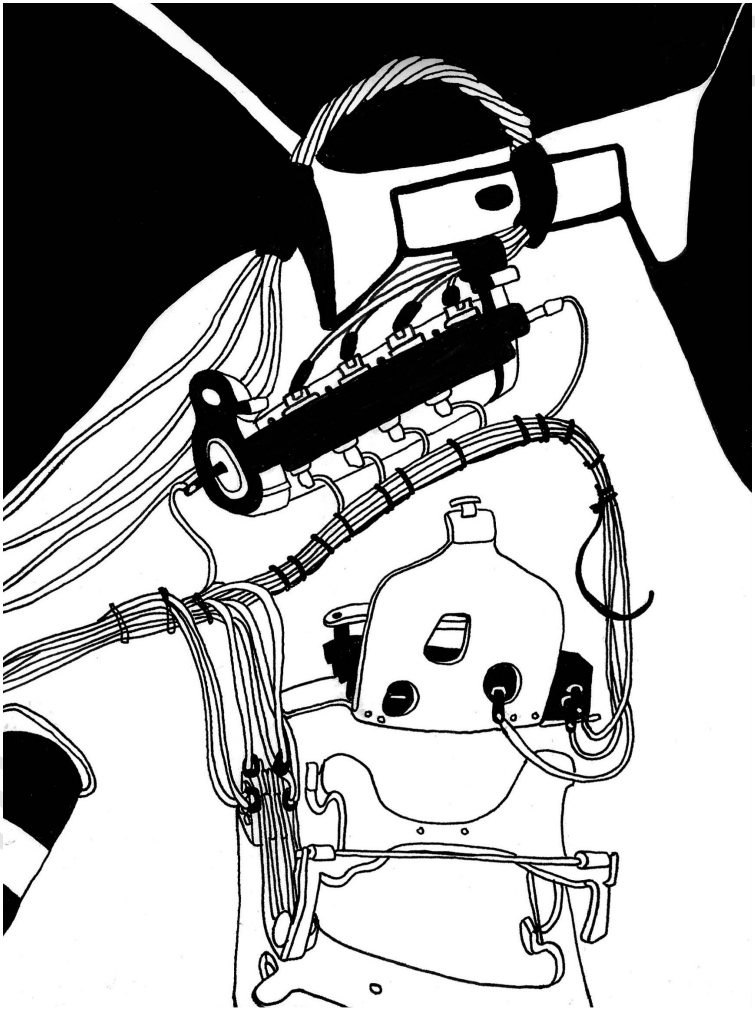
DEAD RINGERS



DEAD RINGERS

RECALLING OBSOLETE MACHINES IN LIVING ROOMS

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Supervisors: Penny Siopis and Svea Josephy

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ABSTRACT

My MFA project involves collecting, deconstructing and reimagining obsolete media machines to blur the lines between functional objects and visual spectacles. Tinkering techniques are employed as an art method to reanimate discarded electronics. Discarded electronic components are salvaged and repurposed, ultimately resulting in hybridised machines. The production evokes Mary Shelley's gothic novel, *Frankenstein, or The Modern Prometheus* (1818). The research draws on cautionary tales of mechanisation and interpretations of monsters as cultural disruptors; thus the project positions rearticulated obsolete machines as agents of resistance against systemised obsolescence. Their disruption conjures spectres, bringing forth unresolved histories. In addition, the artistic production resolves to validate Do-It-Yourself (DIY), hardware hacking and circuit bending techniques as speculative knowledge production. The findings manifest in a sculptural installation comprising altered telephones and fragmented furniture in a domestic space that has been made to seem strange. The installation questions the interplay between humans and machines, offering an interpretation of the cultural significance of technologies which endure despite their obsolescence.

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ACKNOWLEDGEMENTS

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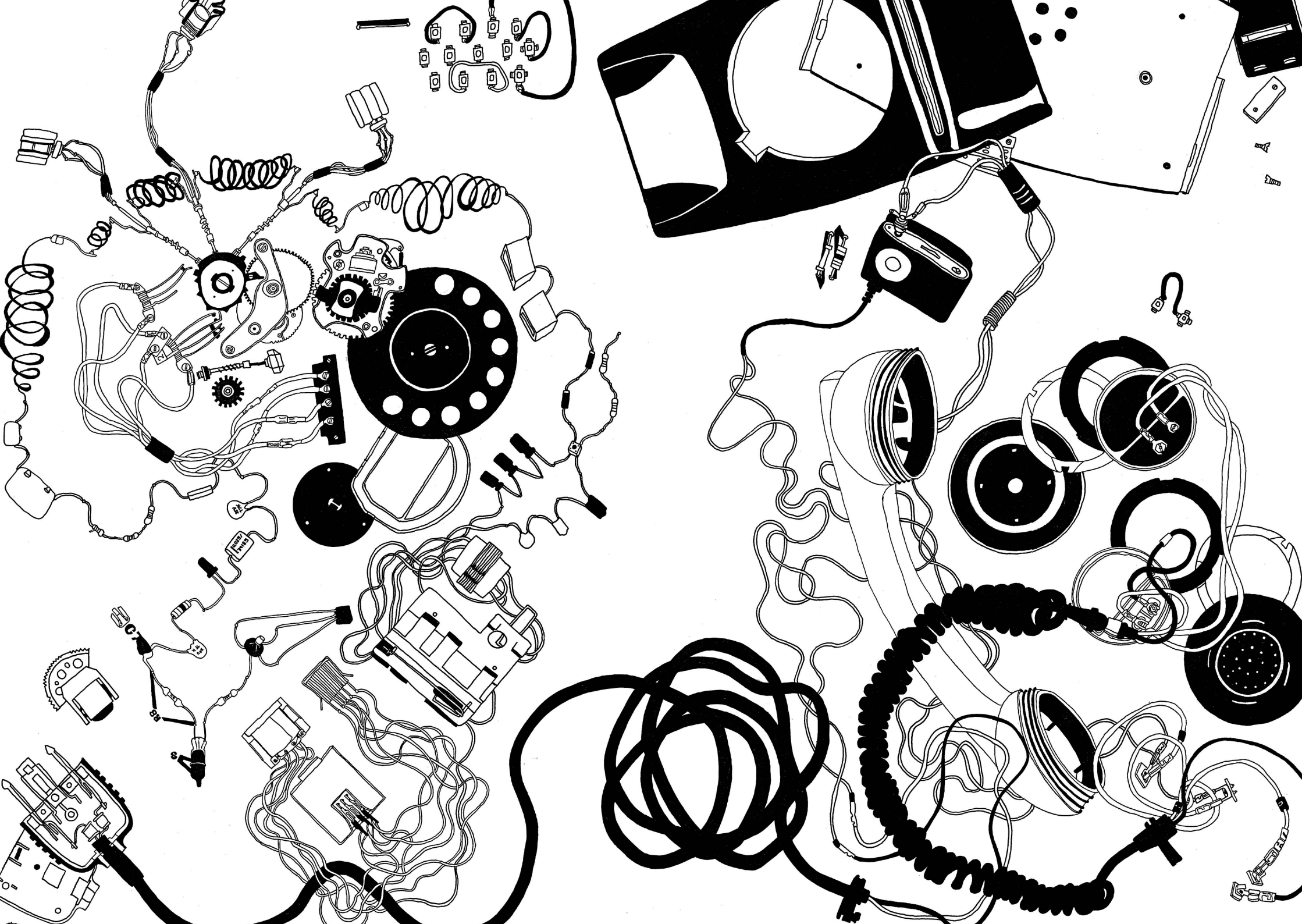


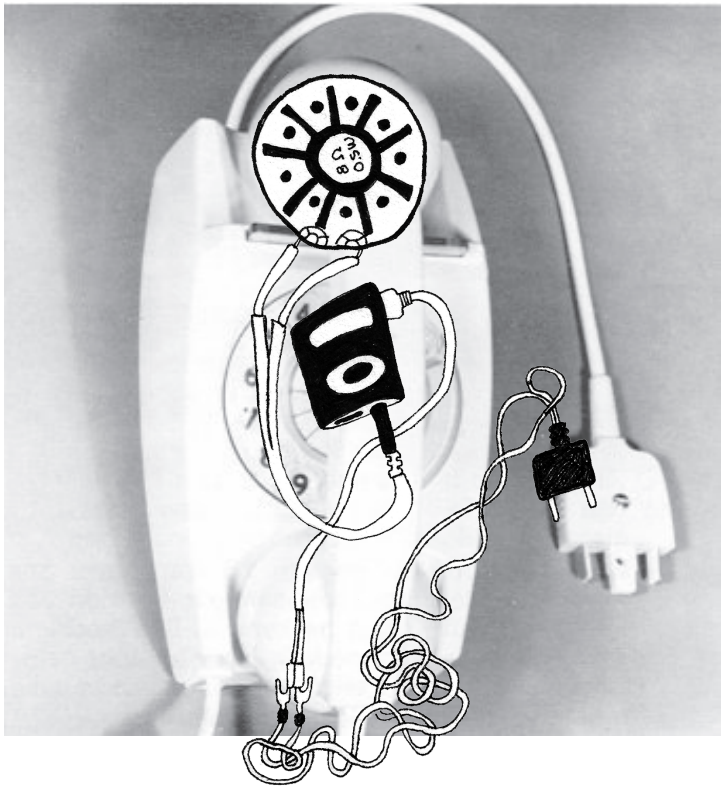


FIG 1. ATE Protea telephone, South African Post office. 1968. [Illustration added by author.] (Bobs Telephone File).

FOREWORD

My research is centred on the media machines[1] that mediate a social history. One phenomenon that initially attracted my attention was the memory-sharing ritual that these apparatuses served. I observed the presence of the slide projectors that hummed while people displayed recorded moments for an audience of family and friends huddled in a living room, the magnetic audiotapes that were posted to loved ones overseas, and the film projectors that whirred as moving images flickered on interior walls.

Prior to pursuing a master's degree, I worked with media machines to tell familial stories. I had inherited a collection of photographic slides, audiotapes, and film reels. After digitising the collection, I edited the sound into idiosyncratic narratives and transferred it onto audio hardware. The atmosphere of the installations aimed to transport the viewer into the absurd interiors and exteriors of an imagined household. In a previous exhibition, I had a carousel slide projector loop a video, still by still, projecting a mishap at a staggeringly slow pace. The

projector hummed and clicked while its bulb slowly disintegrated the contact print inserted in each photographic slide. An 8-track player warped its tape into a distorted rendition of *A Happy Honky-Tonk* (1974). I turned letter correspondence into nonsensical fragments, which became subtitles for repetitive domestic activities performed for film and were then reproduced on portable televisions. Each display corresponded to a media machine and each media machine was instrumental to the display.

The research focused on how a voice, an image or a sound disintegrated or fragmented as their carriers (audiotapes, 8-tracks, film reels, and cassette tapes) decayed over time or distorted when digitally transcribed. One particular sculpture involved a 1970s-yellow ATE Protea telephone (in Figure 1). Two mini-cassettes (in Figure 2), originally inserted into telephone answering machines, held my late grandparents' voices. Strips of brown tape held their breath, their inflexions, their rhythms, and their tones. A stripped-down version of these voices was installed to emanate from the telephone handset. A non-voice was played on a loop. My grandmother's message to her husband now resembled humming sounds on repeat. The 'non-voice' and the 'acousmatic voice' represented a dwindling memory, lost over time.

My past research also revealed an aspect of creating sculptures from obsolete machinal parts that I intended to explore further. The media machines malfunctioned and required intervention to restore minimal functionality. For example, laptops were connected to converters to run portable Telefunken televisions. The signal cables inserted at the back of the televisions were replaced for each exhibition. Garage door relay timers were installed into a carousel slide projector. Rubber bands used in pool pumps were adapted into belts for the pulley system in a Panasonic reel-to-reel tape recorder. Despite the

interventions, the machines remained temperamental from their selection at second-hand markets to their exhibition. I persisted in working with malfunctioning machines because they had unpredictability as electronic sculptures. This could be perceived as liveliness. The machine's altered state gave voice to the intervention needed to produce sculptures.

The preamble toward pursuing the master's project illuminated the potential for a primary focus on the intervention within media machines with special attention paid to their auditory and ocular presence in a state of disrepair. The idea is to decentre content-driven narratives by refraining from a reliance on documentation. Rather, the speculative question is pondered, do media machines retain the material they once witnessed?

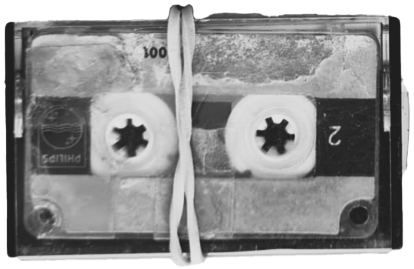


FIG 2. Audio Cassette Tape. 2022. Photograph by author.

INTRODUCTION

My MFA project encompasses a mediation on obsolete media machines, in particular, how they continue to resurface despite their obsolescence. The overarching goal is to explore DIY techniques and maker technology as a method to assist their persistence. In this respect, my practice raises the question: when I reconstruct and repurpose obsolete machines, what do I seek to regain?

My title *Dead Ringers: Recalling Obsolete Machines in Living Rooms* (2024) has multiple interpretations. The idiom 'dead ringer' means an exact duplicate or copy. The association is relevant because a substitution occurs to trick the viewer in my installation. This replacement illudes to responsive or live technology. In a project featuring telephones, the title also suggests that its ringing mechanism prominently shows signs of life and recalls the past. Therefore, the title focalises reviving dead media machines.

This explication recounts my artistic production: it follows the machine as it is excavated from dumpsites and second-hand stores for its peculiar appearance or unique functionality. Then, the machine is opened in my studio. The wires are severed and the components spill across the tabletop. The debris is connected to maker technology or found electronic parts. During a process of constant uncoupling and recoupling, only a few of the original components remain, while others are stored. Then, electricity is reintroduced. The transfigured machine

shudders back to life. My explication details how the reviving process produces a mechanical sculpture which seems to have a will of its own.

THE HUMAN-MACHINE RELATIONSHIP

The obedience or disobedience of machines depends on their compliance with a designated function in a human-centric system. Walter Benjamin (1999:705) quotes Eugene Buret (1839:29) who writes, "Instead of dutifully serving, the machines have behaved like Frankenstein's monster that after acquiring life employed it only in persecuting the man who had given it to him." Buret utilizes Frankenstein's monster[2] as a mechanism to observe how the deviant machines were not subjugated by a human counterpart during the onset of the Industrial Revolution. Benjamin cautions against viewing mechanical objects as subservient and docile (Benjamin, 1999:705). The relationship between humans and machines is described to be reciprocal in nature. In Shelley's novel *Frankenstein; or, The Modern Prometheus* (1818), a revenge plot ensues owing to Victor Frankenstein's refusal to take responsibility for his creation. Thus, the tragedy occurs owing to a lack of a cooperative relationship between the creator and the creation. Therefore, Buret's comparison reveals an inversion of the hierarchy.

Machines which malfunction or disrupt regulated processes are compared to monstrous creations in gothic and science fiction. Therefore, I have drawn upon literary discourse to study disobedient machines. According to Jeffrey J. Cohen (2018:12), a monster trope is often deployed in literature to tell a story about characters which disrupt the cultural apparatus responsible for their conception or creation (Cohen, 2018:12). Moreover, the monster's existence outside of a system reveals the underpinnings of the system (Cohen, 2018:12). If Cohen's argument is applied to the system of planned obsolescence, the

monster would be cast as a commodity, Frankenstein would be cast as the late-capitalism infrastructure, and obsolescence represents the ultimate rejection. Therefore, the reappearance of the commodity despite its obsolescence could be viewed as deviance to a greater systemic issue. In the novel, there is an implied tragedy to the creature voicing his grievances. In my artistic production and installation, the aim is for the machines to resurface and speak for themselves. The tragedy is the inevitable realisation that intervention does not restore the commodity perpetually.

Frankenstein's monster is associated with the 'grotesque body politic' in literary discourse. Mikhail Bakhtin (1965:24) writes, "The grotesque image reflects a phenomenon in transformation, an as yet unfinished metamorphosis, of death and birth, growth and becoming." According to Bakhtin (1965:24), the grotesque image is always in flux. In Shelley's (1818:43) novel, Frankenstein's monster is a grotesque exemplar whose physical deformations evoke disgust and horror. He undergoes a transformative process. Desecrated human remains are joined together to form a single living body. The monster's body bursts at the seams. Its incomplete state embodies the process of inverting life and death. However, the grotesque aesthetic is outside the scope of my research project because my medium does not evoke disgust in response to human flesh or biological processes. Therefore, I dispense with the Bakhtinian notion[3] of the grotesque, in favour of studying the ethos of Frankenstein in relation to technological progress and obsolescence.

In my research, Frankenstein has been utilized as a storytelling device to approach obsolescence and the counter-culture that developed in response to obsolescence. The practice is about blurring the boundaries between an obsessive creator and the desire to pursue creation beyond bounds. My reliance on the story gives words to my desire to access the conversations that

the machines overheard. With the impossibility of this task in mind, I remove the machine's casing to probe the electric parts in an attempt to retrieve a semblance of what the machine witnessed when it was once electrified.

The recombination of arbitrary electric parts does not necessarily illicit disgust or horror (Kayser, 1963:20). According to *The Grotesque in Art and Literature* (1963), the grotesque refers to subverting an order by playful disregarding borders and proportion (Kayser, 1963:21). In ornamental grotesques, form and proportion are left to chance resulting in the creation of an oddity. According to Wolfgang Kayser (1963), these grotesques featured "objects from the familiar world, but rather in the circumstance of this world the natural order of things has been subverted." Similarly, obsolete machines connected to other electric or non-electric objects change the viewer's expectations. In an assemblage, a collection of unrelated ready-made objects is considered as a unified whole. In a bricolage, the materials are collected and connected based on what is readily available (Dezeuze, 2008:32). The rule for both techniques is that "the heterogenous materials remain identifiable" and become "system-oriented" (Dezeuze, 2008:32). Assemblages and bricolages offer a critique of the absolute or finalised object. Born out of improvisation and free play, the recombination of objects into bricolages and assemblages shares the grotesque values of "incompleteness, becoming, ambiguity, indefinability" and absurdity (Clark & Holquis, 1984:312).

OBSOLESCENCE

A perpetual state of innovation, born out of the Industrial Revolution, consequently set in motion utilitarian obsolescence.[4] The onset of late capitalism further aggravated the issue, with increasing rapidity. Various systemic[5] barriers were implemented into the design, production and distribution of electric media machines over time to perpetuate a continuous consumerist trajectory: from design; to store; to home, to dumpsite. These barriers systematically impede the continued usage of the machine (Aharoni, 2021:21). My artistic production attempts to restore the intrinsic value that was afforded to media machines when they were commodities (Aharoni, 2021:22). By adopting a counter-active process against obsolescence, the machines can be reintroduced to the social realm.[6] Hardware hacking and DIY practices work around systemic barriers to assist obsolete machines in adapting to the present day advancements.

HARDWARE HACKING AND DIY PRACTICES

Tinkering is an intuitive method that does not rely on industry-level expertise. As a field of play, it welcomes irrational solutions and impractical outcomes (Russell, 2017:86). Although happy accidents and disastrous mishaps do not necessarily lead to ingenious inventions, the maker community celebrates the dysfunctional and self-destructive outcomes of tinkering. Experiments in Art and Technology[7] (E.A.T.) pioneers, Robert Rauschenberg and Robert Whitman, partnered with engineers, Billy Klüver and Fred Waldhauer, at Bell Laboratories to innovate technology for artistic intentions. For example, Jean Tinguely's *Homage to New York* (1960) served no utilitarian purpose other than to self-implode. This involved planned destruction and unplanned mishaps. Before the machine performed in the MoMA, a pulley was installed backwards. Instead of making a drawing right into the crowd, the machine managed a couple of centimetres (Martin, 2013). Another example of the unplanned happenings included the weather balloon that was meant to blow up and explode. However, the balloon only had enough helium to do the former and not the latter (Martin, 2013). Ultimately, the mistakes made in *Homage to New York* added to the overall collapse of the machine.

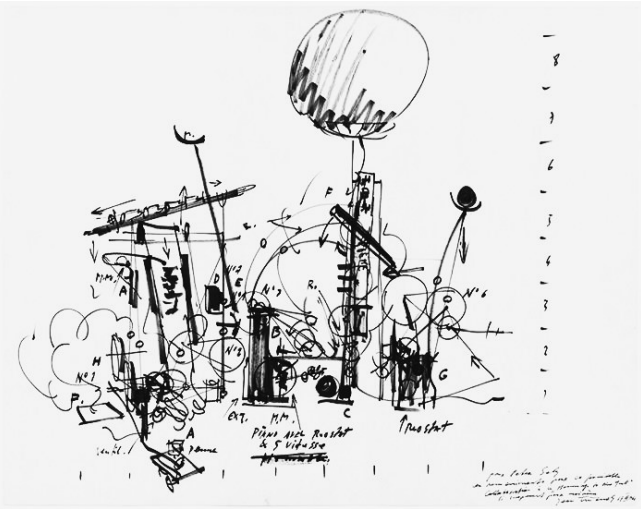


FIG 3. Jean Tinguely, *Sketch for Homage to New York*, c. 1960, felt-tip pen and ink on board, 22 1/8 x 28 inches. (MoMA).

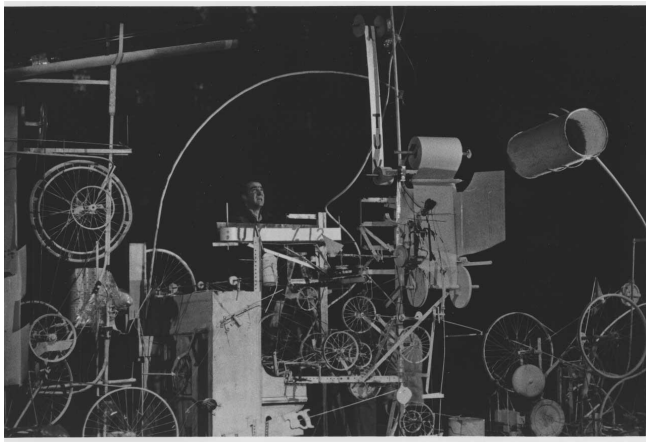


FIG 4. Jean Tinguely, *Homage to New York*, c. 1960. New York. (MoMA).

Tinguely's mechanical performance showcases the chaotic relationship between humans and machines. Pete Schwenger (2006:53) writes, "Paradoxically when a tool turns into an obstacle, we become most aware of its nature as a tool." The tinkered-together machine often behaves unexpectedly. On display, the machine has the opportunity to act temperamentally. However, the E.A.T. group made allowances for the disobedient machine as it showed the very nature of the medium. In the E.A.T.'s time, video artists were already taking up, "the challenge not to try and eliminate the remaining technical defects, but to use them artistically, as the difference between draft and machine" (Ernst, 2002:629). Therefore, the disruption of televisions and other mechanical sculptures was relatively at the forefront of the experimental arts at the time.

In the Internet age, hardware-hacking practices have shifted to online platforms. In many cases, video tutorials replace the artist-expert dynamic. In online forums and comment sections, individuals exchange techniques and expertise. The various platforms foster a goal-free exploratory practice in a community of anonymous individuals. The outcomes are not necessarily as important as the process because the platforms are often utilized as educational material. Coding motors and digital screens are taught through practical learning methods such as video tutorials and step-by-step guides.

A subset of tinkering involves upcycling obsolete media machines and sharing methods to overcome barriers created by obsolescence. This counter-culture to obsolescence operates outside of the consumer market with the intention to persist with outmoded devices (Hertz & Parrika, 2012:426). The ultimate goal is to access media from the past. Jussi Parikka and Garnet D. Hertz (2011:2) write, "By actively repurposing things considered dead – things you find from your attic, the second-hand market, or amongst waste – the zombification of media is to address

the planned obsolescence of media technologies which is part of their material nature." Zombie media is a discursive methodology which is devoted to developing hardware-hacking methods for obsolete media machines. Hardware hacking involves creating techniques and strategies to benefit other creatives in the field. For Parikka and Hertz, the counter-culture is actively working against environmental degradation by up-cycling e-waste (Hertz & Parrika, 2011:2). In my project, the counter-culture to obsolescence helps bridge the gap between maker and obsolete technology.

Often, the tinkered-with machines are not restored to their 'former glory' as household commodities. Rather, they remain bygone oddities. Their obsolescence is almost exaggerated by their new function. Much like Frankenstein's creature, the recycled obsolete machines tragically continue to endure in a state of exclusion and obscurity. Although my artistic production seeks to restore social value to the machines, their reappearance is underpinned by nostalgia and the disruptive tinkering process. In my installation, the artworks comprise a series of irretrievable objects. Their recognisability triggers memories that are forgotten with the disappearance of obsolete objects from the social realm. According to S. D. Chrostowska (2010:52), "With the emergence of consumerism, utopias of newness and dictatorships of speed, nostalgia as it once was became a reactionary vice and risked obsolescence." Nostalgia leads to the desire to acquire objects lost to time. Is it possible to turn back the clock? Is it possible to redial a disconnected telephone line? If the systems of obsolescence are exposed and overcome through tinkering, the objects return, albeit rather different in appearance. Therefore, their oddity in the present and defunct persistence in the future becomes an important aspect of the tinkering process.

SPECRALITIES AND TEMPORALITIES

Attempting to restore discarded and forgotten machines begs the question: what else wakes when an antiquated machine does? Giorgio Agamben argues that spectres are evoked (Agamben, 2013:474). The spectres are the "signs, cyphers, or monograms that are etched onto things," despite being lost, obscured or forgotten in time (Agamben, 2013:474). Although time obscures systemic power dynamics, these apparatuses are still embedded in objects.

My practice involves selecting and joining together found objects into an assemblage or bricolage. In effect, the sculpture portrays a multi-faceted materiality. Agamben (2013:474) writes, "A spectre always carries with it a date wherever it goes; it is in other words an intimately historical entity." When the materiality of a recognisable object is disrupted, locating the object in a historical timeline becomes complicated. The technique simulates technological convergence by integrating related but historically separated objects into a unified machine. For example, I pair a Bakelite base, a polymetric plastic first used in telephone in 1931, with a thermoplastic acrylic handset, a multi-coloured plastic popularized in the 1960s. The assembly could be argued to be a 'poly-temporal assemblage.'[8] My sculptures are anachronistic, defying temporal categorisation while simultaneously, installing a sense of futurity. Thus, the practice is anachronistic and futuristic simultaneously.

In this explication, I propose to expand on my tinkering process while drawing connections to spectral media discourse. The text will introduce three themes: (i) temporality, (ii) spectral media and telepresence, and (iii) the human-machine relationship. In doing so, I attempt to demonstrate how each electronic and mechanical sculpture is composed and installed in my exhibition.

FIG 5. Tacita Dean CBE, *FILM*. c. 2011. 00:10:42. Tate Modern, London. (Tate).

SECTION ONE

GHOST IMAGES AND PHANTOM LIMBS

Persisting with obsolete machines embodies a refusal to accept the machine's descent into obsolescence while benefiting from technological advancements. I consider two artists to observe an overlap between analogue and digital technology in art. Tacita Dean and Otavio Schipper's artistic practices feature obsolete modalities and modes of production on the verge of obsolescence. Dean's video artwork *FILM* (2011) and Schipper's *Litany for Bubbles* (2022) and *Mechanical Unconscious* (2010) are discussed in tandem to observe themes such as contingency, indexical traces, illusion and time.

FILM EQUIPMENT

Tacita Dean's *FILM* (2011) was commissioned for Tate Modern's Unilever Series. An 11-meter-high screen was erected in the Tate Modern's Turbine Hall as a tribute to the soon-to-be-obsolete 16mm film medium.

FILM is a response to the closing down of the KODAK factory in Chalon-sur-Saone, France. In Figure 5, the video artwork displays seemingly arbitrary elements collaged over a window in the background. Perforations along the edge of 16 mm film called sprocket holes flank the left and right sides of the frame. Their position indicates that the video artwork was shot vertically. Vertical videos are associated with the preference for portrait video formats on smartphones, while landscape or horizontal formats are the convention for producing cinematic films and video artworks. Dean's *FILM* breaks the convention to create the effect of falling moving images. You could run a film through a film projector, photographic enlarger or film editor to produce a similar effect. However, the collaged elements would remain static as the film passes through the machine. In Dean's *FILM*, the collaged elements are captured in motion. This indicates that Dean uses practical illusionary techniques to create this effect.

In *Material. Human. Divine. Notes on the Vertical Screen*, Noam M. Elcott discusses the materiality of Dean's *FILM* and the use of a 'phantasmagoria' in video art. Elcott (2019:306) defines phantasmagoria as "the (perceived) assemblies of bodies in real time and space." In Dean's *FILM*, the disparate fragments in the video artwork emulate the nineteenth-century illusion technique Pepper's Ghost where scenery and props or figures are teleported by way of smoke and mirrors onto the theatre's stage (Elcott, 2019:306). The result brings forth a 'phantasmagoria' (Elcott, 2019:306). A sequence of physical or conjured objects - as seen in a dreamscape - appears before the audience (Elcott, 2019:306). During theatrical performances, an actor would "abandon their material support" in the trap room to occupy a phantom copy on centre stage (Elcott, 2019:306). Smoke and mirrors assist the illusion. Similarly, for *FILM*, the window in the turbine hall is obscured behind a single, upright pillar onto which the video is projected. The screen appears opaque

FIG 6. The process of making *FILM*, *Tacita Dean - FILM, TATE*. 2011. Screenshot by author.

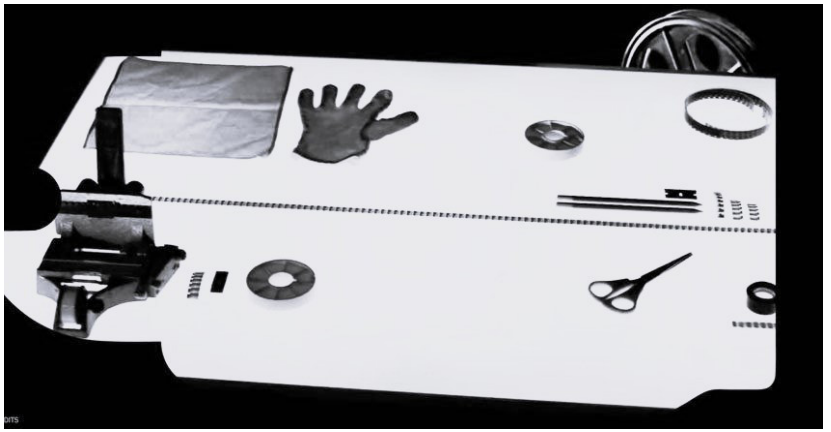


FIG 7. Caylin Smith, *Tate Modern's online catalogue for FILM*. 2012. (nec-sus-ejms).

because the window structure reoccurs as a backdrop and framing device in the artwork. The effect mystifies the viewer as to whether a physical window or a projection is before them. The insubstantial window, made virtual through reproduction, is the equivalent of encountering a physical object. According to Tom Gunning (2013:221),

> "Phantasms or similar intermediaries constituted a realm of images that determined contact between human beings and the world. Within such a worldview, filled with mobile insubstantial images, an atmosphere of virtuality, the experiences of seeing ghosts seems almost natural, rather than supernatural."

In this instance, imagination and illusionary techniques are an intermediary for corporeal vision, tricking the senses.

Film has a indexical quality that functions as a timeline to document successive events (Iversen, 2012:797). Dean (2006:8) writes, "Analogue implies a continuous signal – a continuum and a line." To disrupt the continuum, Dean borrows antiquated filming and editing techniques which contributes to the non-linear cinematic time in *FILM*. Aperture-gate masking is a method which involves blocking out shapes on the emulation for select shots. Once part of the frame is exposed to light, the film is rolled backwards and the mask is placed over the exposed sections. Therefore, the referential traces, accredited to the light-sensitive celluloid material, are disordered and converge along the length of the film strip. The masking technique allows for different times and places to converge on the pictorial plane without cutting and rearranging shots in postproduction.

Contingency is an intrinsic part of analogue practices, particularly for filmmaking. Although the framing, exposure and aperture are selected and controlled, the mode of production

is still prone to contingency. Dean mentions that film is, "the imprint of light on the emulsion, the alchemy of circumstance and chemistry" (Iversen, 2012:797). In postproduction, tinted translucent stencils, glass matt painting and hand painting techniques create optical illusions. The developed film is textured with washes of colour which overlay various scenes. What happens is what Benjamin calls a "spark of chance" (Benjamin, 1972:7). A flash frame breaks from the video, washing the Turbine Hall in colour. This occurrence is captured during the digitising process. Then, it is reproduced over and over again.

Dean borrows from antiquated techniques, in addition to, contemporary audio-visual tendencies to create a video artwork that defies obsolescence. The aspect ratio and orientation mimic the preferred format on smartphones. Yet, the reintroduction of stilled sprocket holes emphasises the mechanical nature of the film medium. Recalling the physicality of analogue media in the era of digital media is akin to a haunting (Fisher, 2014:21). Although a video file requires hardware, its physicality is hidden in the exact copy or digital reproduction (Fisher, 2014:21). Digitising the video for the display in the Tate Modern renders the mechanical interruptions impossible. The digitisation halts the material decay that would have been caused by a hot bulb and sprocket pulleys in film projectors.

As discussed thus far, Dean's *FILM* features a partnership between digital and analogue technology. The production of her artwork showcases the material output of an analogue process and the techniques employed to adapt obsolete film equipment. In addition, the postproduction includes digital means to reproduce the film reels for the exhibition in Tate Modern. Overall, Dean's artistic production celebrates the full capacity of the film medium while relying on modern advancements to persist. With a similar sentiment, the following

FIG 8. Otavio Schipper, *Litany for Bubbles.* c. 2022. Antique Telephone switchboards, software, and sound. Variable dimensions. Kunsthalle Winterthur, Winterthur. (otavioschipper).

artist utilises digital technology to restore and alter obsolete analogue machines.

Dean's work is applicable to my project because the machine's mechanical functions and malfunctions are an intrinsic part of making my telephones ring. I could have made a digital copy of a telephone ringing into an MP3 file to be played through a Bluetooth speaker. Then, a perfect audio replication could be played on repeat. However, I devised a hardware hacking technique to activate the bell ringers and ringer circuits in different telephones. The bell ringers use an electromagnetic system to operate an induction coil and a set of steel gongs (bells). The bells vibrate when they are struck by the clapper (arm). Frequently, the bells unscrew themselves from the base plate due to continual usage. Therefore, contingency is introduced into the equation. The sound differs according to how much the bells have vibrated out of the correct position. The dedication to combining analogue machinery and digital hardware hacking methods produces an authentic experience of how the machine functioned in the past.

SWITCHBOARDS AND TELEGRAMS

Schipper's *Litany for Bubbles* comprises three Antique Telephone switchboards and a desk telephone. In Figure 8, the switchboards are situated at a distance from each other and face different directions. While observing the machines, the viewers can hear mechanical sounds and human voices reminiscent of the switchboards' operation in the past. Prior to installing his solo exhibition *Litany for Bubbles* at Kunsthalle Winterthur in Zurich, Schipper collaborated with the mathematician and musician Sergio Krakowski. The collaboration involved relaying information over a video call between Sao Paulo and Zurich. Starting with open source content,[10] such as telephone dial and ringing tones, the pair oscillated and distorted telephonic sounds in an attempt to

FIG 9. Otavio Schipper, *Mechanical Unconscious*. c. 2010. Telegraph machines, wooden tables, software, light bulb, sound Installation. Variable dimensions. Galeria Anita Schwartz, MOT International. Rio de Janeiro. (otavioschipper).

restore signs of life in switchboards and a desk telephone (Making-of Litany for Bubbles, 2022).

The exhibition title references the American Josef Carl Engressia. Under the pseudonym Joy Bubbles, Engressia transcended mechanical boundaries to hack the telephone systems through his voice. The verbal performance, whistling at the receiver at 2600 hertz, replicates the audio frequencies by the telephonic system to terminate and route calls (Coleman, 2012:102). His ability exposed the potential for other people to enter into the telephone lines and manipulate the infrastructure (Coleman, 2012:103). These specialised hackers, called telephone phreakers, studied and gained access to phone networks and systems by building and using small electrical boxes (Coleman, 2012:101). For example, the Blue Box replicated frequencies as Engressia did. In *Litany for Bubbles*, hardware hacking the now-obsolete switchboards recalls the heyday of phreaking[9] (Litany for Bubbles, 2022). The interventions are essentially a contemporary take on the Blue Box.[11]

Schipper and Krakowski's hardware hacking process seeks to replicate the original switchboard-based telecommunication system. In the past, a metal flag, lightbulb or doll's eye indicator would signal the response, "How may I help you?" Or "Number, please?" (AT&T Archives, 2012). The operator's fingers would plug in jacks and operate dials and switches according to the caller's request (AT&T Archives, 2012). In the installation, the operator, the human counterpart, for the switchboards is inferred. The human intermediary becomes a voice-over and synthetic sounds structured according to the artists' intentions. It is as if the artists have entered into the switchboards and ventriloquized its operation. The outmoded machine resurfaces as a puppet but the operators remain invisible. The viewer perceives the human's non-presence. Thus, the switchboard seems to be operated by phantom limbs.

Schipper and Krakowski's *Mechanical Unconscious* (2010) comprises a collection of Manhattan Electric Supply Company Telegraphs Sounders previously used for long-distance telecommunication. In Figure 9, the mechanisms are shown to sit on miniaturized tables on a suspended surface. Thin electric cords weave around and under the makeshift tables. From beside the suspended surface, the viewer observes the telegraphs' sonic rituals. Four different compositions are triggered according to the moon phases, four days and four nights (Filho & Pan, 2024). The daylight hours bring about synthetic voices which read scientific articles, academic theses, and codes. At night, a single light bulb dims. Then, the telegraph sounders convert electrical pulses along the telegraph line to a local battery. The series of electric pulses travel from the battery to an electromagnet (two vertical wire coils) that causes a lever arm to move up and down. A metallic click sounds when the arm strikes a crossbar at intervals. The clicking telegraphs are accompanied by other electronic sounds.

The timing of telegraphs' clicks is based on the approximate rhythm of human utterances (Filho & Pan, 2024). This mechanical voice mimickes and circumventes the telegraph transmitter and Morse key on the telegraph (Filho & Pan, 2024). It is possible for a morse-code-to-speech decoder to be used to record the artificial voices. In this manner, pre-recorded syntax and vocal fragments could be rearranged according to a script to form speech. The installation draws attention to the correlation between the translation of Morse codes into language and the function of artificial voice generators (Filho & Pan, 2024).

Paulo Venancio Filho writes about the sound design for Schipper and Krakowski's artwork *Mechanical Unconscious.* According to Filho (2014), "The digital signs, the synthesized voices and the electronic noises that ring incessantly and madly mimic the paraphernalia of sound that surrounds us, like a

continuous, insistent and fruitless prayer to the mechanical unconscious." Yet, despite the perceived chaos, the rituals have a fixed schedule. There is little left to chance. Telegraph operators were prone to making mistakes when transposing Morse code messages which could be understood as an early example of the 'broken telephone' game (SAPT, 1937:7). Schipper and Krakowski programmed discrepancies into the translations to factor in the dysfunctional human component (Filho & Pan, 2024). Thus, indeterminacy is artificially created in the installation.

Schipper's works are applicable to my project because we both use electronic hardware and software to automate and animate obsolete telecommunication machines. Through a similar process, I replace the human counterparts for my collection of domestic desk and wall telephones. The telephones ring without being rung. The dial rotates without fingers to turn the dimples. Thus, the telephones are ventriloquized. However, while Schipper's telecommunication machines are intact and the hardware hacking techniques are hidden from the viewer, I uncase and expose my alterations.

To conclude this section, both artists utilise various techniques to recall obsolete machines. In doing so, their practices highlight the intrinsic nature of the machines in their artworks. Dean pushes the machine to its limits in a last-ditch effort to save 16 mm film from falling into obsolescence. Meanwhile, Schipper and Krakowski use programmable technology to bring into being phantom operators to re-enact the machine's social function from the past.

FIG 10. Melissa Wrench, *Second-hand Telephones*. 2024. Photograph.

SECTION TWO

TECHNIQUES IN PRACTICE

In this section, I recount the tinkering process. The process involves collecting, assembling and arranging obsolete media devices.

COLLECTION

My mode of collecting is true to a surrealist attitude toward objects. Collecting obsolete machines harbours the desire to preserve objects that would otherwise decay or disappear. Restoring these machines helps in, "halting the passage of time" (Mauries, 2002:119). Moreover, collecting objects severs the ties with their original context (Buse, 2019:137). The relations changed from a unified whole to fragments, to potentiality. Once collected, the object is dislocated from the collection site and put into a new set of relations in my studio. A transformation takes place when "objects of social practice" in marketplaces move into a "collection in ownership" in a secluded environment (Pearce, 1995:24). Susan M. Pearce (1995:24) writes, "They are wrenched out of their own true contexts and become dead to

their living time and space in order that they may be given an immortality within the collection." Pearce argues that the object is transformed from a mundane object in the secular world to an object capable of generating reverence (Pearce, 1995:24). A further transmogrification takes place when the object is remade in the studio (Roberts & Goodall, 2019:76). The unified whole returns to a multitude of fragments. Then, they are reconnected together to form an unassimilated hybrid. During the tinkering process, the original value of the object is at stake because tinkering methods 'use, pervert and modulate' readymade objects (Parikka, 2019:213).

DRAWING

Before the tinkering begins, I draw speculative designs. Drawing helps me to visualise different ways to reshuffle and reimagine the objects. These "speculative conglomerations" to use Parikka's term entail a meditative process to think about "the past, historical sources, archival inspiration and found objects" in a holistic manner (Parikka, 2019:213). In my practice, the drawings function as impossible prototypes based on the "bizarre, farfetched and unlikely" aspects of the obsolete media machine (Sterling, 2006:60). For a moment, the drawings invent an imaginary future for the readymade. Although the drawings are often fantastical, they are a simulation on paper where the machine transcends obsolescence.

Select drawings are compiled into a book that functions as an artwork. Although the drawings are diagrammatic, no instructions are included to inform the reader. Rather, the illustrations become the disruptive element which subverts the strict order imposed by instruction manuals. The ordering of the drawings is playful and intuitive in a similar manner to the tinkering process. For example, I treat the page like a three-dimensional space and the ink is treated as if it is a physical object. Similarly to my installation, the two-dimensional cables go through holes and appear on the next page. Therefore, the drawings are an extension of my artistic practice.

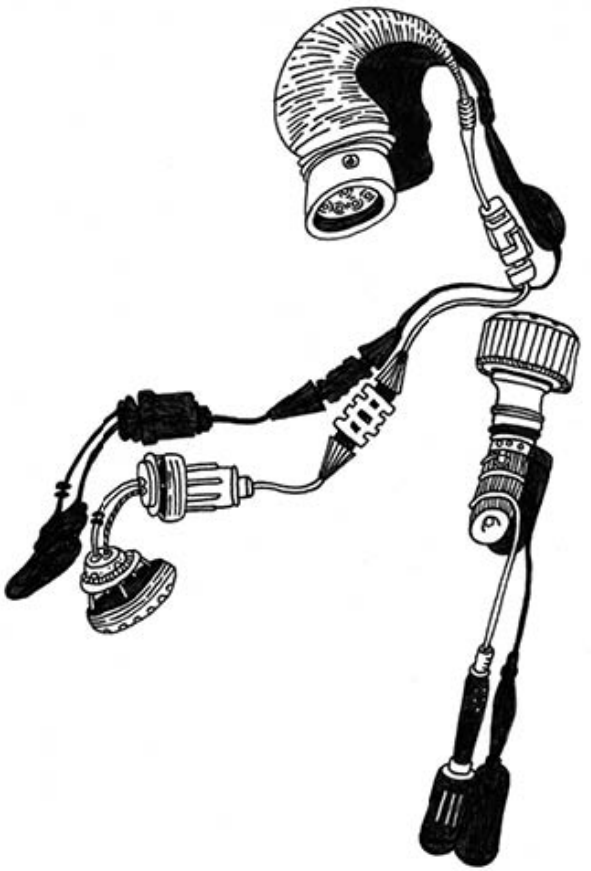


FIG 11. Melissa Wrench, *Speculative design for a telephone handset.* 2023.

SCREWS, NUTS AND BOLTS

My artistic practice requires constant assembly and disassembly. Multiple photographs of the machine's internal parts ensure they are reassembled properly later. Often, I think that I will remember. Then, I find myself surrounded by heaps of miscellaneous parts. I do not know where and how to put them back together again. Photographs at different stages are useful when machines can only be reconnected in a specific order.

FIG 12. Melissa Wrench, *Terminal with missing screws*. 2023.

While tinkering, I often hear a clinking as a screw falls loose which gives me the impression that I will locate the corresponding object if I follow the sound. However, I am sorely mistaken each time. Errant screws delay potential progress with a sculpture. Often, I cannot find spares despite older machines sharing similar parts. A portion of the two-year production process is devoted to scanning the littered studio surfaces for a tiny joining part.

Specific screws connect with select parts in a specified manner which limits the overall appearance of the sculpture. Although each machine is a multitude of fragments that I mean to disrupt, I also mean to have functional and interactive machines. Therefore, the machines need to maintain a certain level of structural integrity.

VINEGAR BATH

My artistic practice also includes cleaning old machinery. First, I unscrew and unbolt electronic components from the base plate. Then, I place the hardware to one side and store the screws in an easily identifiable container. I wipe the dust-coated steel base with a washable or disposable cloth to remove a layer of oily grime on the surface. The lack of dirt reveals discoloured patches on the coated steel plate. The red, yellow or brown rust indicates the severity of the corrosion. If rust is apparent, the plate is submerged in a vinegar and bicarbonate soda bath overnight. If there is no rust, the marks and scratches are polished with steel polish and a soft cloth. The grime, discolouration and imperfections indicate the passing of time. After the vinegar bath, the parts appear almost brand new. I clean the machines to stop the decay and rewind the clock.

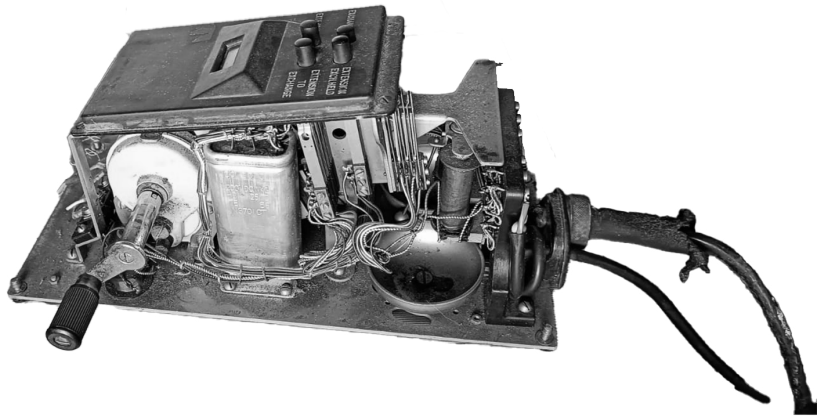


FIG 13. Melissa Wrench, *Exchange telephone in process.* 2023. Found object.

CABLES, CORDS AND WIRES

Electrical cables, wires and cords are a functional and visual component of my artworks. For example, an enlarged orange cable hangs in my installation. The design is based on an exaggerated replica of a 1970 ETA Protea telephone's hardware-to-cable adapter. Then, the attachments are designed on Fusion 360 and fabricated by a 3D printer. Plastic filament constitutes each layer. In the installation, the enlarged cable mimics a used telephone cord with kinks in its coils. Therefore, the artwork addresses an obsolete interaction with telephonic devices. The experience of entangling and disentangling telephone cords is as obsolete as the cord itself.

The 3D printing process solves an aspect of obsolescence that made spare parts unavailable. The missing or broken part can be custom-built and adapted to the obsolete media machine. Maker technology is an established means to fabricate ideas from digital designs to physical objects. The production relies on individual means and access previously reserved for large corporations (Russell, 2017:33). Small-scale maker spaces create a space for tinkerers to meet individual needs according to their requirements. Russell (2017:33) writes, "Makerspaces anchors the nexus between new manufacturing technologies and DIY communities. They are designed to be incubators for collaboration." The shift from mass production and distribution to individual customisation provides an avenue for reviving dead media.

FIG 14. Melissa Wrench, *Orange Cable.* 2023. Ink on Paper.

THREAD

Thread is an important part of tinkering with telephones. I remove the housing to the intercom telephone to find single-core cables. Each cable is candy-cane coloured to correspond with the colour thread wound around its metal links. The convention is to use insulation tape or heat shrink to insulate the ends of cords, but I decide to learn from the hands that put these telephones together. In Figure 15, thread binds and insulates the cables. Sewing thread, waxy twine and automotive cable differentiate my handy work from the work before me. Therefore, I bypass the original wires, rather than **r**emoving them.

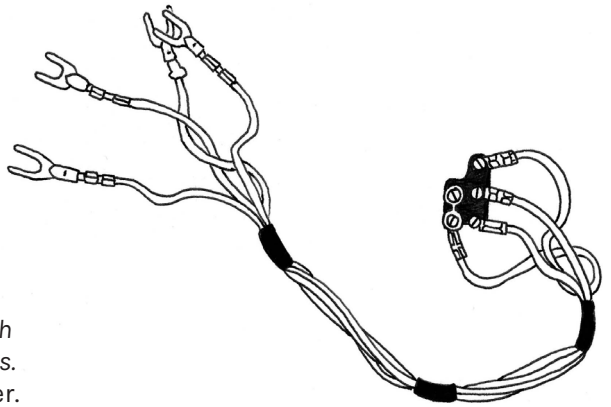


FIG 15. Melissa Wrench, *Wires with spade terminal lugs.* 2024. Ink on Paper.

STRAP OR LINK

Terminals can be disconnected by releasing the screws that hold them captive. I solder my wire to an existing cord restraint then use the screw to hold the connection in place. The terminal links allow for easy repairs and replacements of any part of the telephone. Moreover, the circuit boards are made for DIY and educational purposes allowing for easy adaption. For example, an Arduino Uno has plugs for jumper wires. Therefore, wires do not need to be soldered directly into the board.

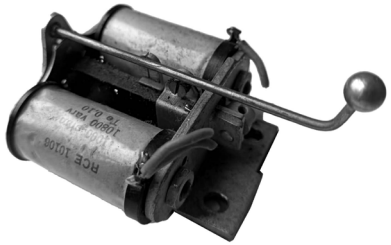


FIG 16. Melissa Wrench, *Ringer Assembly*. 2023. Found Object.

THE RINGERS

I hardware-hacked the ringing mechanism with assistance. The ringer in any landline or desk telephone from the early 1900s to the early 2000s could be made to ring using this circuitry. The current is modified from Direct Current (DC) to Alternating Current (AC). To visualize the process, imagine a unidirectional, horizontal line change to a sine wave. The osculation across the conductors mimics the ringing generator and switching system in central telecommunication offices. And, the telephone essentially rings itself. The diagram in Figure 17 details the connections.

The electronics are housed in a translucent acrylic box outside the exhibition room. Digital garage door relays replace the relays previously connected the ringing generator to the subscriber line and calling party. A 12-volt DC runs the relays and an AC is sent to the ringing mechanisms in the telephones. Transformers were stripped from household appliances to reduce the current from 240 v to 12 v. The system is housed in a translucent box. It recalls the phreaking or vermilion boxes devised to emulate a telephone call. A call is made by nobody.

Other electronics have a way of being consumed by the sculptures. The chime in a grandfather clock in the corner of my family's living room ends up in a sculpture. In my installation, the timepieces are integrated with telephonic technology

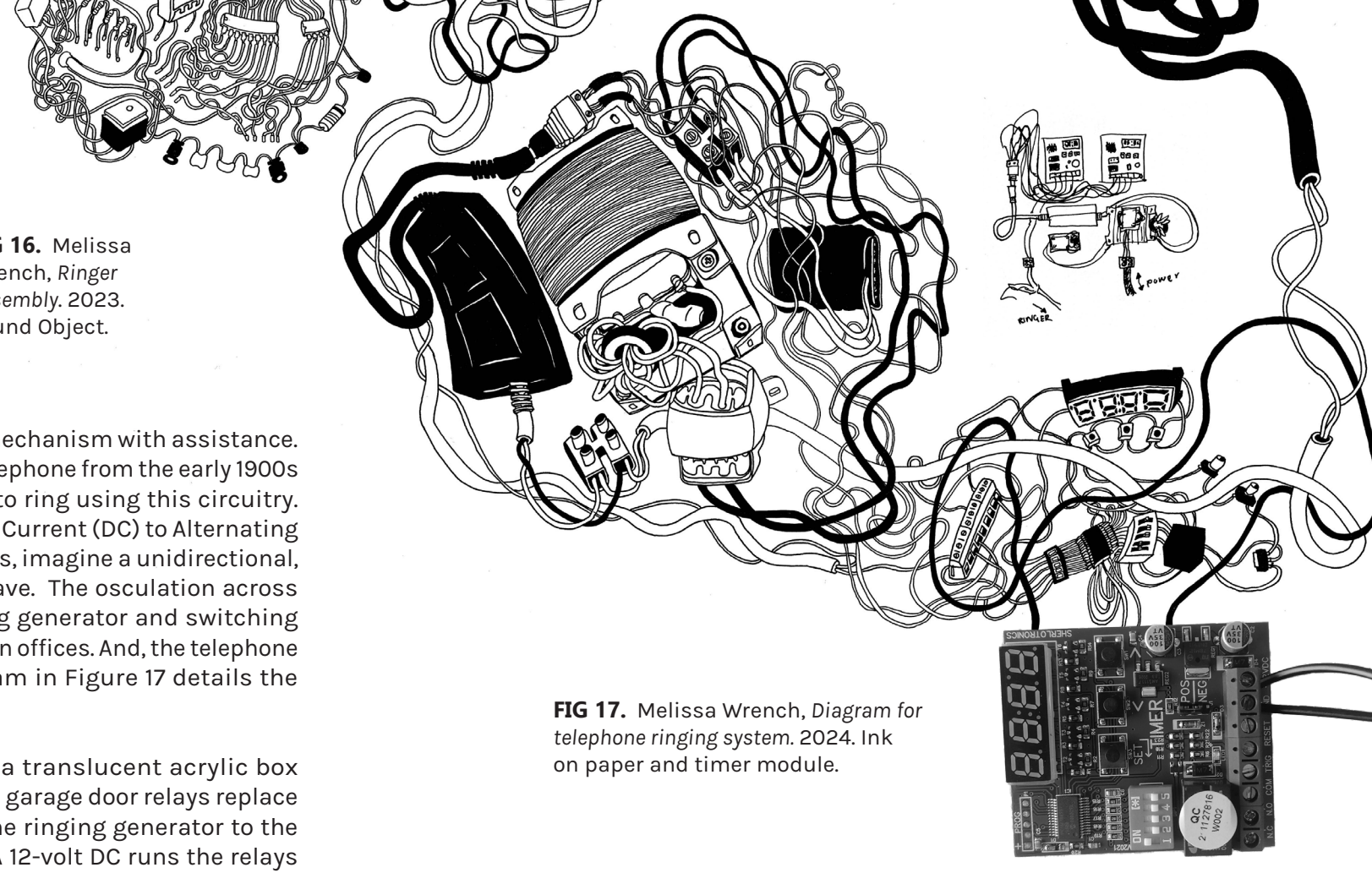
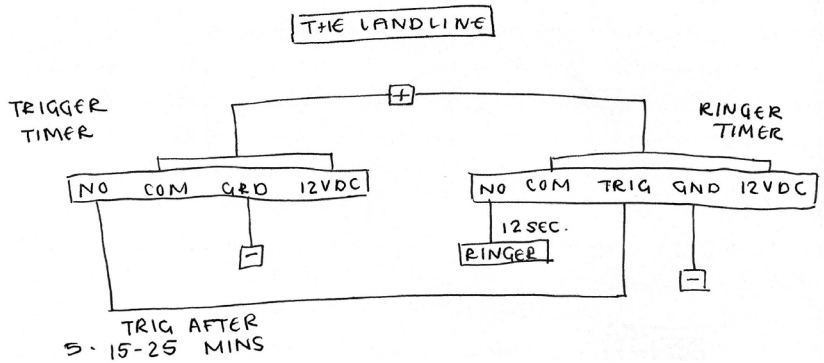


FIG 17. Melissa Wrench, *Diagram for telephone ringing system*. 2024. Ink on paper and timer module.



to correspond with Bernard Stiegler's *Technics and Time, 1* (1998). The human counterpart has been conditioned to observe and adhere to certain technical objects. My intervention within these 'ordering objects' reclaims time from the machine's original intended purpose. When a chime is struck or a bell rings, the viewer halts and waits for an instruction or a reason for the interruption. When the ringers ring with no rhyme or reason, in general, there is a failure to release the human from technical time. The deficiency makes the ordering function of these time objects recognisable.

FIG 18. Melissa Wrench, *ATE Protea Telephone Receiver.* 2023.

FIG 19. *40mm 3W 40hm speaker.* (botshop).

HANDSET

The original speakers (in Figure 18) in telephone handsets are functional but the sound quality could be improved for an exhibition setting. A 40mm 3-watt 40hm speaker (in Figure 19) is an equivalent component to exchange the existing receiver's speaker. To install a new speaker, I twist the transmitter cap anti-clockwise until it releases from the handset. Then, I solder the existing wires directly onto the speaker's negative and positive terminals. I twist the transmitter back onto the handset. To further update the telephone, I could add an aux cable to the end of these wires and plug in an MP3 decoder and player

module with a built-in audio amplifier. For my exhibition, I sever the handset's connection to another telephone which means I do not need to illude to another caller.

FURNITURE

In the past, telephones were housed in wooden boxes. In Figure 21, there is an example of an antique telephone with a base and casing made from oak wood. This antique was designed to blend into the current style of domestic or official interior space. My work mimics this tradition. Figure 20 shows electronics integrated into furniture. I combine a wooden ashtray and case with industrial metal parts, electric components and plastic. My practice reflects a time when telephones were fastened securely to the wall or weighed down tabletops. Today's smartphones enter and exit the exhibition space in the viewer's hands, pockets and bags.

FIG 20. Melissa Wrench, The Chattering Machine. 2024. Bakelite handset, counter, wood and electronic components. Variable dimensions.

FIG 21. *Antique Rotary Telephone with Clock. (antiquevintagehub).*

Tinkering as an art method allows practical objects to transform into art objects. In my artistic practice, a utilitarian object's use value highlights an approach to staging my installation. The objects are not completely detached from their function but are transformed to gain an artistic value. Andreas Fickers and Annie van den Oever (2019:46) argue that experimental media archaeology "seeks a physical, sensual engagement with these historical artefacts to stimulate our imagination of the past: to reflect critically on the hidden or non-verbalized, sensorial, corporal, and tacit knowledge that informs our engagement with media technologies." The Franken machine is not made with only an aesthetic consideration in mind or as a precise historical reconstruction.

FIG 22. Melissa Wrench, *Legs*. 2024.
Telephone table legs. Variable Dimensions.
Installation View.

SECTION THREE

DEAD RINGERS IN THE LIVING ROOM

The exhibition space resembles a disjointed and disrupted living room. My artworks comprise partially uncovered mechanisms intermingled with table tops and chair backs arranged around a fireplace. The familiar and the strange coexist. It is initially inviting. The warm glow of the lights and the natural wood tones provide a comfort that is intermittently interrupted. While the outer casing of the telephones is recognisable, the internal parts are not. While some machines seem dormant, others do not. The subversion in my installation strengthens the connections between familiar objects while interplaying between the mundane and the strange. Fragmented telephones are dispersed throughout my installation. The reappearance of obsolete machines, after being relegated to obscurity, disrupts a singular temporal experience. The viewer is asked to think about the dust-covered things that lie in wait, obstinately biding

their time, in dark backrooms, attics and under the floorboards. Those machines have been left to fall into a state of disrepair while shiny, new things take their place in the living world. No longer obliged to their corresponding function, the obsolete machines are destined to persist as a mechanical oddity. But, voices were caught in their mechanisms and breath was held in their coils. What if, as a thought experiment, in a secluded room on the third floor of a building just over a hundred years old, mechanical objects shudder back to life? The signs of life that are the first to appear are signals beginning to be sent, which activates an isolated realm of time. This state is unlike before, now the machines do their own bidding. Mechanical sounds emanate from the revived machines. There is a desire to communicate but their voices are unintelligible.

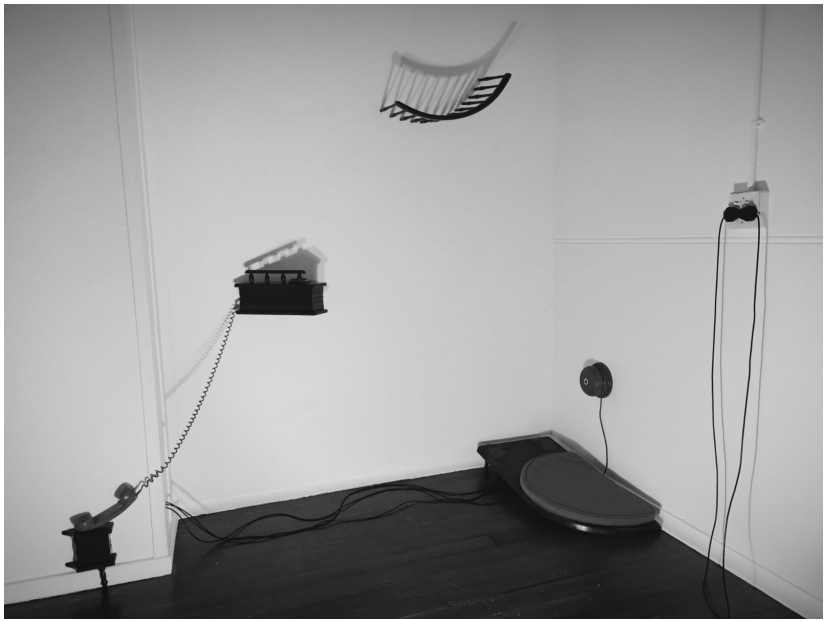


FIG 23. Melissa Wrench, *Dead Ringers*. 2024. Fragmented telephone table, mustard-yellow pillow, Fireland bell, ATE Protea telephone handset and dial. Variable Dimensions. Installation View.

The uncanny[12] is dependent on a homely appearance, which is later thrown into sharp relief (Vidler, 2013:405). The installation has a distinct domestic appearance, further emphasised by the traces of everyday life that pre-exist my exhibition. Human activity is etched into the hardwood floors. Stains bleed through the white wall paint. The fireplace tiles are chipped from continual use. My interventions in the exhibition room speak to activity that is already established. Electrical and water conduits within the walls extend into the interior space. Some connections have been bypassed over the years. A pre-existing electrical cable comes out from the wall. To imitate this occurrence, the cables for my artworks extend straight through the wall to external power sources and control panels.

And yet, despite the lived-in quality of the room, the composition and arrangement of the pieces do not provide comfort. In some regards, the unsettling atmosphere is due to the juxtaposition of recognizable readymade objects on display alongside exposed electronic parts. And, in other respects, this is owing to dismembered household objects that jut out of the walls or lay inverted on the floor. In addition, a lamp rears its head out from under the floorboards as if the room was restored, but misremembered. There is a sense of happening upon a failed reconstruction.

Above the entryway, two components from a 300-type telephone from the 1940s are installed side-by-side. The two-toned base plate and directory tray are next to a chassis fitted with an AC bell set. I inserted an LCD screen into the base plate to replace the instructions for a subscriber, because they are obsolete to the telephone's new function. An abstract animation plays on repeat. Red circles are drawn at a decreasing size, it function as a loading screen, an in-between state or digital purgatory. Much like this piece, the rest of the installation takes on an undead quality.

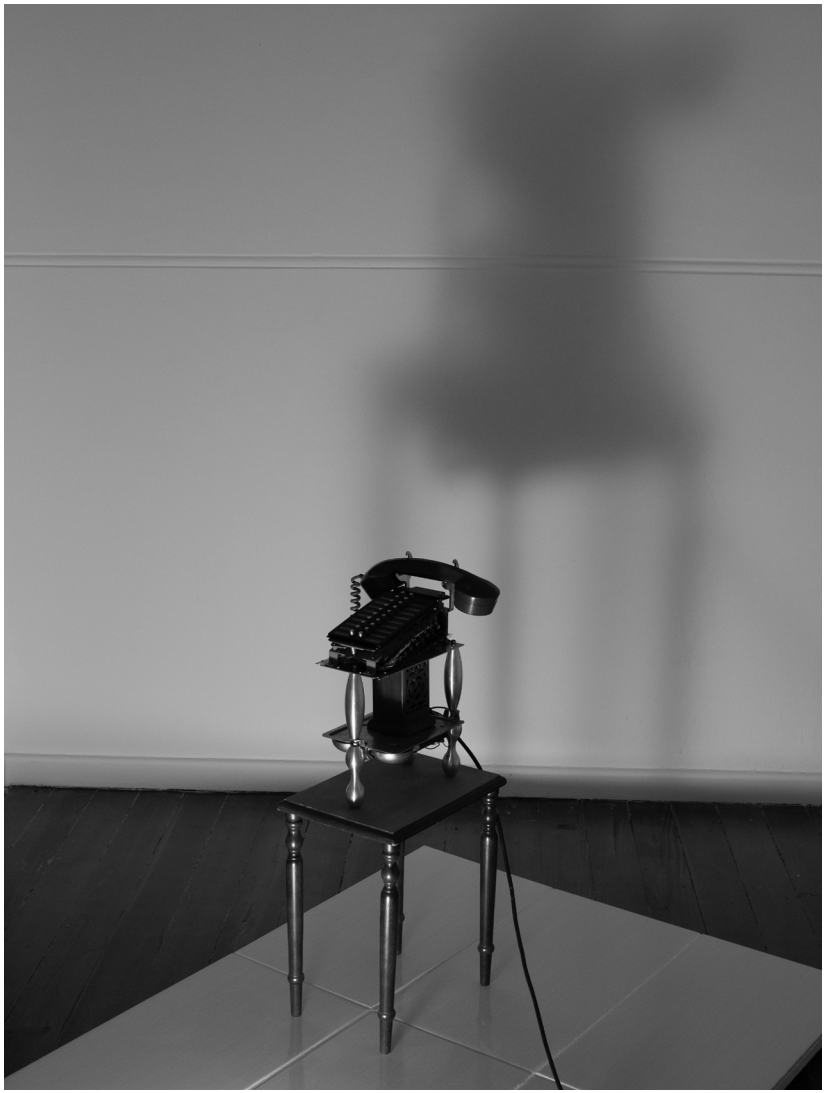


FIG 24. Melissa Wrench, *Multi-vocal Machine*. 2024. Intercom Telephone, maroon handset, bellset, table, circuit board, sound and software. Variable Dimensions.

THE MULTI-VOCAL MACHINE:

On an elevated tiled surface stands a three-tier structure: a table, the ringer, and a telephone illuminated by a lightbulb in a mustard-yellow glass lampshade. In Figure 25, an oil lamp's shade was repurposed to defuse a single lightbulb. A maroon Centenary Neo-phone (1958) handset rests on an intercom telephone's forked metallic cradle. The GEC Press Button Intercommunication telephone system (pre-1955) pre-dates the Centenary Neo-phone. Although the plastic and styles are different, the backboard of the intercom telephone is also maroon. In addition, the table and a wooden box are dyed a red mahogany colour to compliment the telephone's hardware. Furthermore, I made aluminium legs to mimic the wooden table legs. Prior to its obsolescence, the intercom telephone extended to 20 lines and 20 different interiors within an office block or apartment building. Now, the telephone is only a decorative part of the furniture.

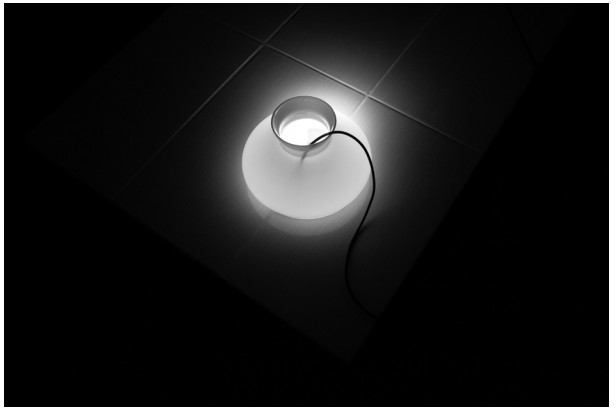


FIG 25. Melissa Wrench, *Multi-vocal Machine*. 2024. A mustard-yellow glass lampshade. Variable Dimensions. Installation View.

FIG 26. Melissa Wrench, *The Chattering Machine.* 2024. Bakelite handset, counter, wooden case, wooden ashtray, motor, smart phone, sound, 5v converter and cable. Variable Dimensions.

THE CHATTERING MACHINE:

The Chattering Machine comprises a decorative wooden chest and ashtray stand which supports a time counter and a telephone handset. The wooden casing harks back to late eighteenth-century wood-cased telephones. A Bakelite handset lies on the makeshift table top in an ongoing call position. After picking up the handset, the viewer expects to listen to a one-way conversation while simultaneously recalling past embodied experiences with telephone hardware. According to Brian Massumi (2002:57), "The body is an accumulation of relative perspectives and the passages between them [ ] retaining and combining past movements." The stance that the viewer assumes fosters intimacy. The Bakelite comes into contact with the shell of the ear. The transmitter captures breath from the viewers' lips. Insisting on a passive reaction, the viewer knows that their voice will not be heard by someone on the other side, which speaks to "a processual and relational approach to embodiment" (Stern, 2013:54).

However, the human automated response to handling the handset is not reciprocated with hearing a human voice. In other words, the telephone is dead. Instead, a mechanical voice is present. The viewer hears a rhythmic heartbeat sound emanating from the tabletop. The wooden cavity amplifies the *hum* of a motor. This motor activates a timing mechanism which *whirrs* as it turns in reverse. The machines no longer serve a human-centric purpose in my installation. Therefore, the chattering of the machines unsettles the viewer.

DIAL:

In my installation, time is conducted by instruments with gears and bells. Every three minutes a muffled *burr, burr, burr* emanates from the corner of the room. Above the doorway, a bell mechanism was taken from a 1900s Bakelite telephone. Above the mantelpiece, the chime from a grandfather clock chimes. And something small goes *ding*. The ringing portion of the installation comprises an alarm bell, a Venus Telkom landline (1991) and a bell set from a 300 Series Ericsson telephone without the Bakelite moulding. A telephone table is disarticulated and fragmented between all the ringing devices. Usually, a telephone stops ringing once the subscriber picks up the handset or the ringing party puts the handset down in the cradle. In this case, the ringing continues until its completion, because the original telecommunication system is circumvented.

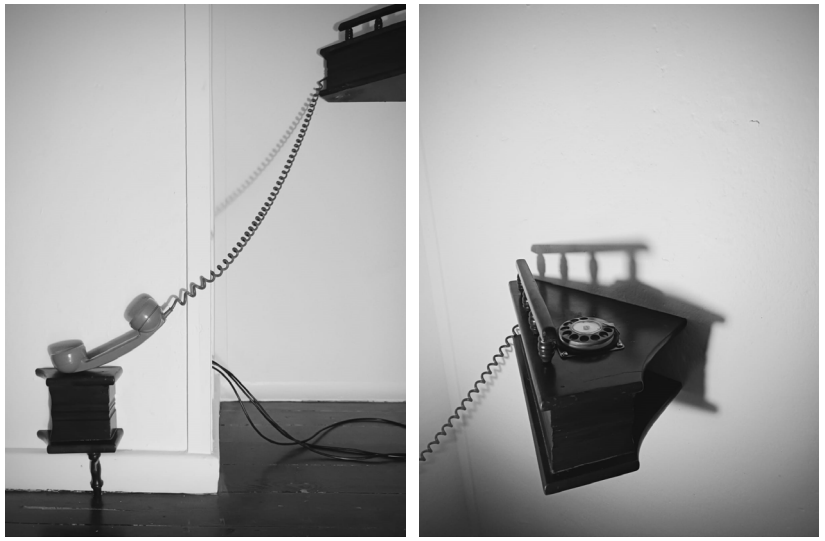


FIG 27. Melissa Wrench, *Dial. 2*024. Telephone table top, servo motor, ardeino Uno board, landline circuitry, ATE Protea telephone handset and dial. Variable Dimensions. Installation View.

ExCHaNge?

The telephone's orientation is flipped vertically. A viewer needs to stand between the table legs to interact with the telephone. When a button is pressed, the internal mechanisms crunch and words appear on a small screen. The labels beside the buttons are digitally reproduced into a glitching and flickering text.

FIG 28. Melissa Wrench, *ExCHaNge?*. 2024. Telephone table legs, Nokia LCD screen, Arduino Uno board, landline circuitry, ATE Protea telephone handset and dial. Variable Dimensions. Installation View.

FIG 29. Melissa Wrench, *Fireplace.* 2024.
Installation view. Variable Dimensions.

DIGITAL ANIMATION:

The digital animation on a display screen above the entryway into the room. An LCD display is plugged into the Arduino Uno board. The electronics are framed by a pull-out tray from a bakelite auto extension telephone. A bell ringer from the same telephone is exhibited beside the digital display screen. The screen displays a series of red squares which decrease in size until the animation fills the screen. Then, the animation repeats. The animations are created using the test code for Arduino IDE-compatible displays. I changed the code to adjust the speed and colour of the animation. The artwork takes into account the present-day cellphone screens.

OTHER INTERVENTIONS:

Inspired by René Magritte’s painting *La Durée poignardée* (1938), a sculpture featuring an enlarger, air ducts and table legs extends the fireplace's flue into the exhibition room. The artwork juxtaposes the domestic built-in fireplace with industrial objects. This section of the installation includes a photographic enlarger jutting out of a fireplace, connected to ducts and mounted on table legs. It gives the impression of transporting light down the chimney, through the ducts and into the enlarger’s projection assembly to spotlight a piece across the room. Above the fireplace, I have installed parts from a dismantled grandfather clock. A chiming clock mechanism sits on the mantle piece. A 5-volt DC motor and a striking arm are clamped to the light switch outside the room. When the switch is turned on, the motor's attachment strikes the chime rods. The motor has burnt out multiple times prior to its installation because the tinkering process is imperfect. During the exhibition, a contingency is based on whether the motor will malfunction.

FIG 30. Melissa Wrench, *Back*. 2024.
Telephone table back. Variable Dimensions.
Installation View.

CONCLUSION

This explication outlines an artistic practice based on playful experimentation. In the studio, I combined obsolete machines and maker technology to create hybridised electric sculptures. Reviving obsolete media machines is a practice in *reductio ad absurdum*. Despite developing hardware hacking and DIY methods to ward off the inevitable consequences of obsolescence, my media machines only occupy a half-life. Similar to Frankenstein's creature, the machines continue to persist in seclusion and obscurity. Further research could delve into the media archaeological significance of interventing in outmoded technology. An extensive investigation into the material culture may be productive in future endeavours. In the meantime, my installation functions as a speculative space where an alternative conclusion is enacted. Telephones are recalled, bells ring, and the clock chimes before they all return to silence once more.

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ENDNOTES

1. I adopt the term 'media machine' in this text to refer to electric media players or displays. Alternately, they are referred to as simply 'machines' for ease of explanation. This includes devices made for film projection and magnetic tape readers. Telephones, televisions and radios are included in this category despite the real-time display of sound, video and/or image.
2. Mary Shelley does not give Frankenstein's monster a name. Victor Frankenstein refers to his creation as, "daemon," "vile insect" (Shelley, 1818:104), and "abhorred devil" (Shelley, 1818:107). Frankenstein's creation refers to himself as the "Adam of your labours" (Shelley, 1818:119).
3. In *Rabelais and His World* (1965), Mikhail Bakhtin defines the 'grotesque' in response to Francois Rabelais' texts. Bakhtin (1965:315) argues that the grotesque body is sharp contrast to the classical pursuit of an ideal body and spirit. The inverse process to teh latter is presented in Rabelais' carnival settings defines the grotesque. According Katerina Clark and Michael Holquis' (1984:300) analysis of Bakhtin's concept, the 'carnivalesque' is a microcosm. For a specified space and time, like in a carnival setting, the bodily indulgences of a collective sanction the upheaval of fixed and absolute social norms (Clark & Holquis, 1984:301). During the carnival, the crowd's bodies and spirits are degraded through drunkenness, excessive eating and exaggerated interactions. Yet, the festivities are a transformative and regenerative process in society. Bakhtin analysis reveals that the grotesque body is natural and necessary for social renewal.
4. For further information on the systemic structures which establish obsolescence please see, Amankwah-Amoah's *Integrated vs. Add-on* (2017).

5. First, media machines are made to disintegrate because the infrastructure makes it impossible to replace and repair worn parts (Kanai, 2017:126). Second, their exteriors are designed to complement the current interior styles of the era, allowing the machines to become unfashionable as trends change. Finally, rapid advancement is either due to humanist ideas which pursue progress toward utopian visions, or capitalistic gain.
6. In *The Meaning of Things: Domestic Symbols and the Self* (1981), Mihaly Csikszentmihalyi and Eugene Rochberg-Halton introduce a framework to explain the subject and object relations within a domestic setting. Furthermore, the text studies how household objects are shaped by the owner's identity and lifestyle.
7. Artist-led groups such as Experiments in Art and Technology were known for tinkering with electronic material to create installations and performances. An engineer-artist relationship was foundational to the art collective.
8. Bruno Latour introduced the term in *We Have Never Been Modern* (1993), which presents an argument for ordering time into a multitude of stages (Latour 1993: 76).
9. Ron Rosenbaum coins the term Phreaking, phone and freak, in *Secrets of the Little Blue Box* (1971) which details the practices and predilections of American telephone hackers from the 1950s onwards.
10. Open source content refers to free information or material available for public access and usage. For artists, this often refers to audio and visual material made freely available on online sites for remixing, collaging and distorting.
11. The Blue Box, an electrical box, was a hacking device that infiltrated the telephone switching systems. In 1961, Phreakers studied and shared schematics called "box

plans" (Coleman, 2012:103).

12. The uncanny refers to an unsettling sensation experienced in the face of something inexplicable. Sigmund Freud (1919:249) writes, "An uncanny experience occurs. Either when infantile complexes which have been repressed are once more revived by some impression, or when primitive beliefs which have been surmounted seem once more to be confirmed." According to Freud (1919:249), the uncanny speaks to the confirmation or complexification of preexisting beliefs.