

The background of the entire cover is a blue-tinted underwater photograph. At the top, there's a layer of water with ripples and bubbles. Below this, the water is filled with numerous small, out-of-focus bubbles that create a bokeh effect. In the lower half of the image, a dark-colored smartphone is visible, partially submerged. Water droplets are clinging to its surface, and some bubbles are rising from it. The overall composition suggests a theme of technology meeting water.

LICENSE TO SPILL

WHERE DRY DEVICES
MEET LIQUID LIVES

RACHEL PLOTNICK

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Where Dry Devices Meet Liquid Lives

RACHEL PLOTNICK

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INTRODUCTION

Radio listener G. Allison Phelps (1924) learned the hard way that media content and bathtubs didn't mix. Over lunch at a busy restaurant one day, he confronted a popular radio personality, Hatch Graham, about the wet situation. The *Los Angeles Times* recounted the conversation as follows:

G. Allison: The other evening I was preparing to take my regular bath—nevermind how regular—when my wife informed me that you were booked to sing from KHJ. The water in the tank was hot and I couldn't afford to let it get cold, yet I was anxious to hear you, so I attached two long wires to the telephone connections on my receiving set, ran them down a hallway to the bathroom, and hitched the phones on to the end of them. I tuned in to KHJ, took off my clothes, put on the head-set, got into the bathtub and turned on the water. . . . But your voice was so fascinating as it floated to my ears on the shoulders of an ether wave, that I forgot that I had turned on the water in the tub. The washrag, riding on the back of a large-sized bar of Ivory soap, got stuck in the overflow spout, and just as you were singing the last liquid lines of "And I Learned About Women From Her" the door into the bathroom burst open, my wife rushed in and pulled the phones from my ears—rather roughly.

Hatch Graham: And what did you learn from her?

G. Allison: Plenty, believe me. The water in the tub had overflowed, flooded the bathroom and soaked the ceiling of the dining-room below. A shower of wet plaster had fallen on my wife and ruined her best evening gown—not to mention her disposition.

Hatch Graham: And what do you want me to do about it?

G. Allison: Not a thing. But hereafter I wish you'd sing on noon programs, when I'm not to be taking a bath.¹

Phelps's saga demonstrated a mismatch between media, liquid, and bathing—the content didn't quite fit into his preexisting hygiene routine—to the point that the bathtub overflowed. The mishap led to an irritated wife, who blamed her husband's inattention, and a humorous plea to singer Hatch Graham to shift his programming schedule so it could accommodate the bather's wetness. Liquid breakdowns like Phelps's overflowing bath highlight that media use was—and has always been—messy. Media devices and their content do not exist in a vacuum separate from bodies, wet environments, or practices. Indeed, people encounter wetness in everything they do, from swimming and showering to drinking and hiking, often enrolling all manner of technologies. Yet moments of friction commonly occur between this liquidity and media practices.

Leakages and ingresses, as unexpected messes, “often involve a mutually defining collision between a person and an object,”² and it is these collisions to which *License to Spill* attends: matters of spillage, seeping, smudging, spraying, splashing, and overflow that happen in everyday life's liquidity. Sometimes such wetness merits little attention, prompting only a hand wipe to remove an excess droplet. In other cases, a dramatic flood soaks the ceiling or breaks the media device itself—coffee corroding the laptop keyboard or sweat glitching the smartwatch. Spillers often interpret these latter situations as crises, when fragile and expensive technologies succumb to breakage. Take the case of writer Mike Fahey (2019), who describes a direct collision between laptop and drink as he recovers from multiple surgeries:

My wife, Emily, was pulling the table away so I could transfer from the bed to my wheelchair. The table rolling over carpet (we have lumpy carpet, I guess?) caused a can of Energizing Mango Lime Kickstart to fall, spilling its contents into the Alienware M17's keyboard and the speaker grill that runs below the alien-shaped power button. The moment liquid flows into the keyboard is the worst. The rhythmic sloshing of can contents into the costly electronic components. Watching it seep into the guts of the machine, where the most valuable, difficult-to-replace bits are tucked away. I panicked. My wife panicked. “Get

a towel!" I shouted, hastily pulling the plug from the unit and holding down the power button to turn it off. It took about 30 seconds for my wife to find a towel, but it seemed like an eternity.³

Fahey's narrative expresses a double vulnerability as he can't stop the spill from occurring, and the laptop lacks requisite protection to survive it—its "guts" filling with liquid. His only recourse becomes a hasty towel sopping, an attempted home repair of "difficult-to-replace bits" with his wife that may or may not succeed, and a commitment to future carefulness and stringent hygiene practices. Like Phelps's radio encounter, the once-mundane drink transforms into something else entirely when it meets an electronic device; it becomes a *hazard* that provokes shouting, panic, and hasty repair efforts. Fahey is left feeling uncertain about how to navigate what he calls his "complicated" circumstances. Should he get a cup holder for his bed table or create some kind of cardboard splashguard? Should he purchase a less expensive device and hope that no future spills will occur? Should he stop drinking near the machine altogether?

Both Fahey and Phelps detail technological failures prompted by mingling music listening with bathing and drinking with computing, respectively: they have tried to integrate the radio and laptop into everyday life's practices, spaces, and habits and found them frustratingly incompatible. As Elizabeth Shove, Mika Pantzar, and Matt Watson (2012) explain, people's practices "restrict, enable and condition each other"⁴; sometimes our activities work together in unison and other times they conflict. However, consumers don't always know on a day-to-day or even moment-to-moment basis how well these practices will gel in the "throwntogetherness"⁵ of daily living, as they multitask and improvise in (sometimes literally) fluid circumstances. People live not only with media content but also with devices themselves, whose fragilities and material limitations manifest and unfold dynamically through interactions.⁶ How to live with a technology and fit it into one's bodily routines and rituals has always also involved managing the vulnerabilities that Fahey and Phelps describe.

Liquids and media devices intertwine as uneasy elemental bedfellows not only because wetness can corrode, erode, soak, mildew, electrocute,

and sully but also because people have long questioned whether media practices *should* entangle with other activities. Liquids can provide physical pleasures that enhance technological experiences—like sipping the perfect cup of coffee while checking one’s email or sinking into a bubble bath with a good book. Yet these alliances are also often interpreted negatively when it seems that media intrude upon and insinuate themselves. In the 1910s and 1920s, for example, some people rejected telephone installation in bathrooms, considering those spaces one of the few safe from irritating ringing and bothersome salespeople calling.⁷ During the 1980s, many worried that soda-gulping computer programmers were developing an unhealthy habit that mixed caffeine with unrelenting (and unhygienic) productivity. And in the current moment, complaints often circulate about smartphones situated at the dinner table or even taken into the shower. The more that people stitch together eating, drinking, bathing, handwashing, exercising, and toileting with talking, texting, picture-snapping, scrolling, typing, and streaming, the more concerns arise about the deleterious effects of lives metaphorically and materially (over)saturated with media.⁸

Thus, liquids can at once make media use seem excessive or naturalized and “at home,” or somewhere in between, depending on social, cultural, and historical contexts. But they also point to the ways that we live with and negotiate fragility—technologies “bite back”⁹ and assert themselves within our activities when they don’t perform as expected or necessitate repair. The spilled drink and overflowing tub (or their possibility) provide occasion to think about how liquidity can unsettle comfortable arrangements between people and technologies. Frank Trentmann (2020) has noted that the “increasingly complex rhythms of daily life [have] become more dependent on enabling technologies, making smooth coordination even more difficult.”¹⁰ While for some, a broken device might offer liberation from constant media use and pressures, it is also often the case that those who can afford to disconnect already benefit from the most privilege; they can quickly replace a waterlogged piece of hardware with a functioning one. For most everyone else, liquid ingresses signals expense, worry, or frustration. In a climate where media connectivity has become so necessary, the burden falls squarely upon individuals to either maintain and preserve their media

technologies through careful, liquid-abstinent practices or engage in “risky” behavior that may lead to the device’s undoing.

In the pages to come, *License to Spill* investigates how media practices and routines intermix with wetness in complex entanglements. Technologies embed in so many aspects of everyday life, as people cope with media’s “abundance”¹¹ and its “saturation”¹² as “‘we swim in an ocean of media.’”¹³ Yet despite these quite wet metaphors, much of media scholars’ work about media and everyday practices is exceptionally *dry*, with scant consideration for how liquids intersect with use, users’ bodies, maintenance, and repair.¹⁴ The book thus thinks through fragility politics by considering how people treat (and are encouraged to treat) their devices with liquidities in mind, or not: what consequences emerge when someone must always take a “prohibitionist” mentality, taking pains to keep her device dry? Who gets blamed when wetness causes various breakdowns and interruptions? Conversely, how are certain liquid behaviors normalized or even treated heroically? And how do ideas about wetness create material, bodily, and cultural thresholds around what it means to live a media-saturated life?

To understand this question of wetness acceptability, I examine how liquid–media prohibitions and permissions get legislated through design, use, repair, advice literature, manuals, advertising, and other discourses—a constellation that I refer to as *media hygiene*.¹⁵ Hygiene, writes T. L. Cowan (2019), “has always been about the administering of bodies through the punishing of ‘bad’ habits, the introduction, the surveillance–promotion–disciplining of new ‘good’ habits, and the innovation and advertising of products to necessitate, sustain and enforce these new good habits.”¹⁶ Although the term commonly references safety and cleanliness practices and products meant to maintain human health, here I am interested in how hygiene involves the work of maintaining not only oneself but also one’s technologies—particularly as spills, dunks, smudges, and seepages happen in the little processes of going about one’s day.¹⁷ Although people expect things to hold together and treat breakdowns as catastrophes and unexpected events, the world is always breaking apart and characterized by tenuous fragility.¹⁸ The goal, then, becomes to understand how people negotiate their hygiene in the blurry and everyday boundaries that form between wet and dry.

As I will demonstrate, getting media technologies wet (and risking or causing breakage) has long triggered rejoinders against people as careless and bad users, as though all use should occur in sterile, highly choreographed, and completely dry situations; in this formulation, vulnerable devices get abused by wet bodies and activities that misuse them. They take this tact because they frame breakdowns as interruptions to service, functionality, productivity, and smooth consumption. Technologies can only carry out their duties dependably, they argue, when users perform the role of careful custodians who sublimate their bodily needs and tamp down/clean up their wetness to accommodate the device. By contrast, advertisements, popular films/TV shows, and gadget enthusiasts have promoted protected (liquid-resistant or “proofed”) technologies by inviting users to “defy” the elements, transforming formerly taboo liquidity and riskiness into desirable encounters. They prod the user to enact abusive behaviors that simultaneously test a technology’s survival and the user’s mettle. This licensing process minimizes breakage worries and encourages *some* liquid–media practices as necessary.

Such orientations toward liquids take an antagonistic posture, where wetness represents an “enemy”¹⁹ that one must either dutifully avoid or successfully overcome (similar to how marketing for hygiene products and public health campaigns have targeted germs that one should fear or vanquish).²⁰ More recently, however, producers of resistant devices have pivoted away from stigma, panic, or abuse to normalize wetness practices. They portray media usage as a necessity and “life” as necessarily wet; therefore, the two must become compatible. These three different hygiene frames, “bad,” “abusive,” and “normal,” point toward wetness politics in everyday life.

BAD USERS AND GOOD HYGIENE

While liquids give life, wetness can pose all sorts of dangers to humans and nonhumans alike. The “leaky” human secretes, sweats, smudges, lactates, urinates, menstruates, ejaculates, and breathes. As scholar Astrida Neimanis (2016) puts it, “From watery womb to watery world: we are bodies of water.”²¹ Though Western civilization is highly individualistic, all bodies are fluidly interconnected with one another, from the shared air that

communicates germs to the breastfeeding that sustains a child.²² But the porousness of people's bodies can also become a danger, through disease or drowning.²³ Indeed, a body encounters risk when something "open[s] it up, . . . play[s] on its leakiness, or render[s] it more leaky in order to enter and damage it in some way—that is, [to] endanger its integrity."²⁴ It is not surprising, then, that bodily leakiness often carries a negative connotation of uncontrollable and overflowing boundaries, particularly for women (in terms of lactating and menstruating) and disabled bodies whose "spillages" of saliva, urine, or sweat get labeled as abnormal and undesirable.²⁵

These critiques of certain bodies and how they leak extend to the ways that people manage their technologies in liquid living. A person's body becomes unhygienic and "unruly" when "there is a misfit between bodily expression and the imposed disciplines of a particular cultural and social environment."²⁶ When "careless" behavior occurs, like a phone dropped in the toilet or a vinyl record handled with sticky fingers, then spillers get chastised for making their porous devices vulnerable. People might explain mishaps in different ways, blaming thoughtlessness or recklessness. The consumer may also get censured for what is perceived as their core nature—their personality traits ("lazy" or "stupid") or seemingly innate clumsiness. These "bad-person theories" reject situational or social factors as explainers for poor hygiene (like: she worked a ten-hour shift and came home to child-care responsibilities). Instead, the threat comes "from within" and references "who a person *is* rather than what they *do* or what is *done to them*."²⁷ For instance, popular assumptions and stereotypes dictate that women and children break and sully things more than men.

Interestingly, though, these explanations may also be mobilized to forgive the spiller. For instance, we might call a toddler "naturally clumsy," which is different from someone "who chose to deviate from careful, dutiful behavior."²⁸ It is believed that some people can't help their leakiness, even if it's undesirable, while others can and therefore should. However, disability studies scholarship has explained that "almost everyone and everything has some degree of impairment (though not in the same way)"²⁹ and likewise that "the very idea of a body which has *never been* clumsy or *is never* clumsy is an impossibility, an 'imaginary' body."³⁰ Yet when clumsiness and

impairment are wholly considered traits of some people and not others, then it is easy to favor simplistic assessments.

From a user's perspective, a dunked, soaked, or splashed media technology might trigger panic or worry, as someone puzzles through how their practices, environments, and cautiousness mismatched with the device's fragility. However, sometimes people don't perceive their doings as risky at all, instead considering them as habitual parts of everyday life (you always drink your coffee while you check your email). Nevertheless, if wetness leads to damage, then repairers, insurance companies, manufacturers, and others begin a "retrospective testing"³¹ process, in which they try to hold users responsible for their hazardous lifestyles that competed with the device's safety. Here, what counts as an "accident"³² and what (who) "caused" it depends greatly on social, political, economic, and cultural factors. Even the question of whether such situations are preventable hinges on how the concept of accident is defined in the first place.³³

In many cases, the user and not the product takes the blame. Repairers have historically constructed the broken device as a "blameless" victim whose innocence goes unquestioned. In this process of "shift[ing] the responsibility for failures onto consumer-debtors,"³⁴ they don't recognize how these products, embedded within social structures, can actually *cause* impairments and induce leakage.³⁵ Casting liquid breakdowns as the result of someone's lifestyle, body, or identity position obscures a technology's politics, design, history, and production. Some technologies are in fact designed to deliberately leak (like a colander), while others involve unexpected "incontinent," "catastrophic," or "merely embarrassing failures of containment,"³⁶ like a leaky pipe or menstrual pad. Another category involves technologies designed with staunch dryness in mind (such as books, excluding those made for children in the bathtub³⁷) or those that break even when they promise protection. But in addition to devices themselves, the conditions of modern, capitalist life bear down upon liquid lives: grueling emphases on productivity and work output, burdensome child- or eldercare expectations, frenzied multitasking, economic hardships, and illness seem to *ensure* that fumbles will happen, spills will occur, smudges will mar, and breakages will incur heavy

costs. These systems, rigged in favor of corporate bottom lines, demand an always-on and vigilant user who pays dearly for dunks and disconnection.

The bad user, however, can supposedly reform by shaping up and avoiding liquid risks. Device manuals, insurance policies, Internet user forums, guidebooks, and advertisements propose proper hygiene, tender loving care (TLC), and cautious behavior as antidotes to breakdown; in these instances, “good” use means successfully incorporating a device’s fragility into one’s routines. Liquid carefulness thus often means suppressing one’s thirst or cleaning up one’s sweat by civilizing the body and putting device safety first.³⁸

To act hygienically means not only to monitor oneself but also to “sense object changes and adapt practice doings around them” by anticipating a technology’s potential fragilities and recognizing that the device depends on people for its continued existence.³⁹ This “calibration”⁴⁰ and maintenance can happen more or less intuitively on consumers’ parts, but it is very much active work; *taking care of* something (or someone) is a “judgment, the skill involved in choosing one course of action rather than another.”⁴¹ Such judgments may not come easily or without costs: caring and carefulness require labor, resources, and time, and these impositions do not fall upon everyone equally.⁴² In fact, women have typically undertaken the bulk of caring and hygiene-oriented practices, especially in domestic contexts. They become the moppers, plumbers, and wipers of wet media, held accountable for not only devices themselves but also the bodies that make those messes, like children’s, alongside their other cleaning and caretaking responsibilities.⁴³

PUNISHMENT AND PROTECTION

Instead of warning users to behave carefully or slapping them on the wrist when they fail to do so, manufacturers have developed and sold more “resistant” technologies to take the fragile one’s place. At different moments, a whole host of solutions have coalesced around liquid mitigation, including extended or specialized warranties (that function retroactively), and aftermarket cases, covers, housings, and films (that operate proactively as

barriers). Through this fortification, they transform technological objects from vulnerable “victims” into heroic “survivors” and remake bad consumers into punishing abusers that can justify their mistreatment as necessary behavior. Producers and marketers frame liquid-resistant products as impenetrable “condoms,” “skins,” “safety vests,” “suits,” “armor,” and “shields,” mimicking the protective language often used to talk about human health.

To understand these technological container fantasies requires making sense of longstanding efforts to suppress and defend the problematic *human* leaky body previously discussed. Fantasies of corporeal safety in the Western world rely on notions of closed-up, carefully sealed borders and successfully managed risk that keeps the “other” out.⁴⁴ For if all bodies leak, to some extent, then their security is often enforced at one’s skin, where “the health of the body requires a border”⁴⁵ and beyond that border is “the alien, the other, the unknown and contaminating.”⁴⁶ Protective clothing like military armor, personal protective equipment (PPE), and sports helmets do the work of enforcing physical autonomy and preventing what is often perceived as harmful entry. These are not neutral technologies, though.⁴⁷ As debates over sexual safety have demonstrated, matters of penetration, pregnancy prevention, and infection necessarily involve cultural questions of consent, gender roles, and bodily agency.⁴⁸ These dynamics became extremely apparent in the context of illness during the COVID-19 pandemic, with mask mandates generating rage about who could spit and sneeze with or without a facial cover. As people’s porous bodies got deliberated publicly and politically, ideas conflicted about liquid risks and how to contain them.⁴⁹

Nonhuman shields, covers, and containers like masks or condoms give occasion to think about containment more broadly. For instance, Zoë Sofia (2000) makes a case for containers as “active” technologies that hold, supply, store, protect, and enclose. All kinds of things function as containers, from pitchers, vases, and dams, to shoes, cinemas, shopping malls, and submarines. Sofia argues that these technologies often get reduced to the background in technological studies, neglected instead for masculinized tools that make (like a hammer or saw) rather than feminized utensils that contain (like a cup, cupboard, womb, or breast).⁵⁰

By contrast, the impervious container is often framed as hypermasculine and oriented toward violence. For example, the common image of a sheathed US soldier's body is a "heavily armored agent of violence: rugged boots, torso bulked out by body armor and a harness laden with ammo and equipment, and a face hidden by black wraparound ballistic sunglasses and recessed behind an armor collar and the rim of a Kevlar helmet."⁵¹ These "material, bodily environments"⁵² are not invulnerable, but they hold the idealistic promise of preventing wartime hazards. As Aaron Belkin (2012) puts it, "Soldiers abhor the possibility that anything might penetrate their bodies, and conceptualize warrior masculinity in terms of having a hard, sealed-up, leak-proof, impenetrable body."⁵³ This anxiety over imperviousness also plays out in sports and adventuring, as well as in popular superhero and action movie/comic culture, where helmets, vests, padding, and other equipment meet harsh, physical tests that will earn a particular kind of manhood.⁵⁴ However, glorifying the sealed-up, protected body does not mean that leakiness is always treated negatively. In fact, some wetness becomes proof of battles waged and won. Soldiers and athletes alike may "give their sweat and sometimes blood,"⁵⁵ as bodily secretions and injuries spill forth to demonstrate one's commitment and prowess. Both protection and leakage can become desirable in certain contexts, while generating disgust, weakness, and contamination in others.

These meanings that attach to human beings' physical containment play out concretely in technologies' designs and their cultural construction. For instance, throughout most of the twentieth century, imperviously designed media technologies existed mostly for "rugged" devices as a specialized feature for industrial, emergency, and military workers or for extreme outdoor adventurers; messy domesticity and liquid spillage rarely surfaced as a motivation to create leakproof media devices. Instead, a dive-friendly Rolex wristwatch or water-resistant Kodak camera case was marketed to macho masculine soldiers, sailors, athletes, explorers, boy scouts, and the like to "defy" the elements. If men had to prove themselves on the battlefield and at home, then the waterproof device functioned as an adjunct that mimicked its wearer's hardiness and performed its own survival by overcoming

environmental and physical risks.⁵⁶ Through their mutual toughness, they together embodied safe impenetrability.

This protection need not take the form of conspicuous armor, however. As a representative popular culture example, consider the famous British literary and film character James Bond and his agile use of waterproof technologies for all manner of missions, from an underwater battle in *Thunderball* (1965) to a submerged action scene in *Skyfall* (2012). Bond's iconic watches, often supplied by luxury watchmakers Rolex or Omega, have inspired liquid fantasies where timepieces play the resistant and ever-dependable partner. His "license to kill" represents the spy's privilege as the white, male, able-bodied agent who receives government sanctioning to enact "justice" and take lives when he sees fit. By extension, the aquatic-friendly watch authorizes Bond with yet another license: unaffected by elemental stressors, it grants him permission to move imperviously through the world. This licensing allows him to promiscuously take on liquid risks and offers a different orientation toward the machine—not one of hazard avoidance but rather one of harsh treatment that is justifiably necessary for national security. He can accomplish all this while cloaked in a tuxedo and drinking a martini, as the luxury watch becomes a stylistic marker of class and culture that functions like an unflinching and yet unassuming weapon in the spy's arsenal.

These links between durability, wetness, and violence are not only the stuff of fiction. They play out in a culture that valorizes men/other active users and device proving themselves together. For instance, when manufacturers design intentionally for "rough" behavior, they not only imagine a specific kind of user but also conduct various stress tests that anticipate "real-life" liquid conditions to determine the technology's containment. These trials function as "rites of passage,"⁵⁷ in which the device itself becomes the "good" soldier, athlete, or adventurer that has endured liquid hardship and demonstrated its survivability. In so doing, it earns its authenticity by meeting specific standards, such as labels like "water-resistant" or "waterproof," or ratings like ingress protection (IP ratings) or MIL-SPEC certification (military benchmarks). These badges, like all classification systems, are "hotly contested,"⁵⁸ caught up in the controversial projects of defining nature, society, and technology all at once: what kinds of liquids the product is tested

against (coffee, ocean, water, champagne), what wet scenarios the testers imagine, and who will engage in wet practices all come to the fore to define what “rough,” “tough,” or “impervious” means.

Likewise, “torture tests” conducted by journalists and other third parties—not unlike the violent practice undertaken during wartime⁵⁹—aim to reveal the “true” hardness of an object. These tests often function to regulate the consumer marketplace by evaluating manufacturers’ claims and recommending or warning against a potential purchase.⁶⁰ More recently, consumers—especially early adopters—have taken up the mantle of testing devices themselves, in forums such as YouTube and TikTok. In each of these cases, liquids are continually defined as media technologies’ problematic foes.

In their desperation to prove that impervious media technologies can suffer abuse, these attempts reductively understand everyday life’s vulnerabilities. Protection is never decided definitively in design, as people put devices into practice under specific contexts and conditions.⁶¹ Manufacturers’ laboratory tests may not simulate “everyday life” conditions even when they propose to do so, as the very concept of everyday life is far from universal. And in fact, the everyday-lifeness they construct is often narrowly male, white, middle to upper class, and able-bodied (“active”). Likewise, the terms “proof” and “resistant” have caused significant confusion. But even if a technology is successfully built to endure, problems may result. A device that is truly sealed up may limit its repairability, necessitate an expensive replacement, and further encourage upgrade culture. Such designs may also resist recycling practices and won’t biodegrade, becoming waste, or they may involve harmful chemicals and coatings that affect human health and climate.⁶²

Normal Users, Acclimation, and Resilience

In the present moment, a vast market has erupted for technologies such as gaskets, seals, glues, nanocoatings, cases, and bags that aim to protect all manner of media as “endurance” becomes desirable. The philosophy behind resistant or proofed devices is that they don’t stop wetness from occurring; rather, they offer “fail-safing,” whereby inventions like seatbelts or airbags don’t prevent automobile crashes, but they lessen the harm done when

“reconfigured . . . as ‘injury reduction.’”⁶³ Through this mitigation strategy, designers anticipate that a simple spill won’t cripple a keyboard, nor will a rainy phone conversation cause imminent damage. Such protections thus go part-and-parcel with domesticating⁶⁴ media technologies because greater protection can “tame” them to fit wet moments and activities: children can take books into the bathtub, a parent can photographically capture a splashing moment at the beach, and an athlete can sweat while a fitness tracker counts her steps.

In addition to imagining an expanded range of uses for resistant devices, companies have reframed protection from a niche feature for select users to “anyone” who needs a “life-proof” device. Likewise, the *justifications* for using a resistant technology have changed, especially through an emphasis on everyday liquid mess. Blurring boundaries between work and life and more expansive work-from-home policies, as spurred by the COVID-19 pandemic, have further pressurized this need for imperviousness, in a demand for “resilient” devices that eliminate carefulness. Indeed, alongside the debonair James Bond type now exists his parodied Mr. Bean–like character—the British chronic bumbler who inevitably causes spillage. If once the symbolic wetness catastrophe scenario involved the deep and dangerous ocean, it is presently the overturned coffee cup that threatens to disrupt digital life. Now, the (hypothetically) hermetic container can protect the spiller and the swimmer alike, making 24/7 digitality with its “streams” and “flows” possible.⁶⁵

Water resistance and proofing technologies are sold as a kind of technosolutionism;⁶⁶ the adage “accidents happen” covers all manner of sins. Here, promoters imagine how the ideal liquid-resistant device doesn’t fight against but instead acclimates to people’s wet habits, bodies, and environments so that it fits in effortlessly and naturally.⁶⁷ I use this notion of *acclimating* media to reference fantasies that a technology can unproblematically adapt to different elemental and embodied conditions like humidity, soda stickiness, sweat, or ocean spray—and how that adaptation becomes positive and normalized for practices and habits so that wetness is “ordinary.”

This appeal to the acclimated device and to the “oops” as a matter of course, while it may beneficially reduce the need to perform cautiously with liquids, carries several consequences. Its emphasis on resilience and smooth

coordination implies that wetness and media practices *should* always go together: why leave the computer for a break when you can eat and drink alongside it? Why stop sending text messages or emails when you can do so from the shower? When liquids and media can unceasingly interact, then these boundaries may become indistinguishable. The “always-on” device and “always-on” user are never impeded by material constraints, the threat of breakdown, or hygienic worries.

Another problem with resilience discourses, which convert liquid disruptions and “hard” usage into mere wipe-able blips, is that they “individualize what are social problems.”⁶⁸ Creating a liquid-resistant laptop—like Dell did when it promised “Resilient Laptops Meet Resilient Students”⁶⁹ to deal with delivering school content at home during the pandemic—may prevent certain damage from occurring, but it fails to address the enormous pressures and difficulties that mount when asking children to work remotely, especially those who do not have access to education-ready spaces, supportive and ever-available parents, or stable Internet connectivity.⁷⁰ These technologies’ designs assume that liquid mess is simply something to sop and overcome in the pursuit of productivity, rather than a symptom of larger inequities that persist in homes and schools alike. Resilience demands a return to a time before—a “bouncing back” to prior conditions—but those conditions may not have been desirable in the first place. If it seemed that “accidental destruction” accelerated during the pandemic, then those mishaps drew attention to unequal responsibilities around caretaking and labor that intensified rather than manifested anew.⁷¹ Repairing broken things is often itself conceived of as resilience; in Latin, the term “repair” means “to restore, to put back in order,” an action that attempts to return an object to its “normal situation.”⁷² Yet it is important to consider what happens in that process, when spills, secretions, and dunks represent “business-as-usual.”⁷³

Although protected devices are increasingly normalizing wetness, popular culture texts have recently argued for liquid *damage* as cathartic and freeing; they suggest that disconnecting from one’s device is more important than safeguarding it. To give but one example, in the 2021 animated film *The Mitchells vs. the Machines*, a family must battle against a rogue smartphone—which has become too powerful for its creator to control—in a bid to save

humanity from the machine. The final climactic action scene revolves around the Mitchells, who save the day in the most unexpected fashion. With a desperate attempt to thwart the sentient device, the daughter chucks the evil phone as hard as she can; it bounces off an umbrella, sails by her open-mouthed dog, and lands unceremoniously in a simple glass of water. The phone, realizing its fate, screams, “not a glass of water!” and begins to glitch and fail until it explodes in the glass most dramatically. This dunk not only breaks the phone but also shuts down an entire race of dystopian robots operating at the phone’s whims. Although the phone seemed all-powerful mere moments ago, a mundane beverage emerges as an unexpected hero because the device cannot survive within it. At the same time, the phone’s destruction offers both characters and audience relief: humans win out over too-saturated and too-powerful technology. Portrayals of this kind aim to disrupt the profound mediatization of everyday life with liquid breakage.⁷⁴ They encourage us to think about how broken things can allow for new forms of being and doing that reject what came before.

SEEKING OUT SPILLAGE, IN SEARCH OF CONTAINMENT

The following pages analyze how people *do* media, recognizing that media are “embedded in the interlocking fabric of social and cultural life.”⁷⁵ As a result, “doing” media means necessarily encountering wet practices that may compete with or complement other activities.⁷⁶ I am particularly interested in how acts of self-care (drinking, showering, toileting, exercising) and bodily wetness (finger smudging, sweating, salivating) intersect with wearing a wristwatch and checking the time, carrying a smartphone in one’s hand or pocket, using a laptop, or listening to music. When these practices intersect, they create a media-specific hygiene. The case studies herein focus especially on widely used consumer media devices in the United States, and they span across historical moments ranging from the early twentieth century to the present.

While each chapter’s case is distinct, it also overlaps with each of the others; the book moves mostly in chronological order to offer linkages between devices and contexts. However, rather than offering any kind of

singular object history, I aim for breadth by teasing out significant themes or “topoi”⁷⁷ (topics) that get repeatedly activated and animated over time. I focus on rethinking and expanding familiar media technology histories to imagine them through a wetness framework. My emphasis is also on devices that interact closely with bodies, either those directly worn⁷⁸ or routinely touched and held to explore the intimate and embodied aspects of media usage. Although what counts as “media” is murky at best, the cases explore how wetness impacts content/data (pictures, video, sound, documents) beyond hardware alone. Thus, while all electric technologies might break if they get wet (like a hair dryer or an iron), the book attends to those that pose a double threat through wetness’ disruptions to phone calls, image preservation, sound quality, connectivity, and so on. Through these investigations, I suggest that our current contemplations about liquids and media are not so far afield from people’s consternation even a hundred years ago; liquid contact still signifies uncertainty about both its appropriateness and its damaging effects.

Chapter 1 begins with early analog telephones and their cords between the 1910s and 1930s, but rather than chart a typical history of telephony, it considers how telephone companies dealt with wetness as an impediment to uninterrupted phone service. “Trouble men,” the repairers who fielded customer complaints and were charged with restoring functionality, negotiated people’s wet practices and users’ frustrations. They chided customers—particularly women—for their children’s or own careless behavior and aimed to make them careful, dry, and compliant through user manuals, public service announcements, and service calls. The second half of the chapter studies the uneasy ergonomic relationship between telephones and wet practices like bathing, teasing out how phones threatened with the danger of electrocution and transgressed social norms about when and where one should answer a call. Concerns about how phones belonged in everyday life necessarily related to their technical fragilities. Eventually, a freight of products, including water-resistant cords, were developed to mitigate the need for telephonic hygiene, which signified a growing dependency on telephones as habitual media.

In a strikingly similar comparison, chapter 2 details how jewelers during this time period dealt with their own clientele around wristwatch-wearing,

a practice also initially deemed “feminine.” Gendered ideas about worn media led manufacturers and repairers to argue that the devices’ fragilities necessitated a cautious and abstinent user who sacrificed constant timekeeping for carefulness, while users grew accustomed to incorporating watches into their wet habits. This attitude contrasted significantly with the ethos that fueled designs for water-resistant and proofed wristwatches meant to facilitate men’s outdoor, rugged interactions related to sport, military/Navy activities, and industrial work. Beginning in the 1910s, luxury watch manufacturers and advertisers suggested how ideal users were imagined as hardy just like their protected technologies. This narrow interpretation of waterproofing equated hermetic containment with virtuosic, able-bodied physical performances, redefining misuse positively as rugged punishment and the elements as hostile. The chapter further discusses changes after World War II, when a new slate of producers began targeting women as a desirable market demographic, thereby reconfiguring resistance as protection for the housewife’s wet parenting and housekeeping tasks. However, it also notes the subsequent challenges that the watch industry faced regarding classification of “resistance” and “proofing,” as government agencies took many advertisers to task for their hyperbolic promises.

Many of these issues similarly percolated around photography, particularly around how to use cameras in rainy and humid climates or while boating, fishing, or going on vacation. Chapter 3 investigates how devoted hobbyists and professional photographers developed a rugged mindset around outdoor photography in the first half of the twentieth century as they argued that neither cameras, nor their operators, should fear wetness. “Hunting” and adventuring with a camera became a common practice that demanded fortitude in line with attitudes toward resistant timekeeping. These practices, at their extreme, culminated in underwater photography that aimed to take the intrepid diver to exotic “frontiers” with the aid of impervious devices. Yet even on a more mundane level, photographers had to develop a slate of care techniques—ranging from retroactive repair to proactive protection—to negotiate camera dunks, splashes, and sprays and construct wetness solutions that came part and parcel with navigating outdoor media.

Where the embattled wristwatch wearer was encouraged to “defy the elements” with his device and the outdoor photographer chided for a reticent attitude toward liquids, chapter 4 unpacks how 1950s–1970s magazines, booklets, and music journalists warned handlers against degrading vinyl records with their unhygienic greasy finger smudges. This oiliness posed a liquid hazard not unlike a baby’s saliva on a telephone cord, and it generated copious tips for abstinence and caretaking. Importantly, such advice literature differed when directed at the housewife or the male collector, with a large accessories market developing for the latter fastidious group to clean scientifically rather than domestically. The chapter pairs these deliberations with developments that happened around music in the 1980s, when a rampant “self-care” culture focused on fitness and health gave rise to protected devices, like the Sony Sports Walkman and bathroom shower radios, which imagined a wet lifestyle that incorporated liquids unproblematically into existing hygiene and everyday life routines. The latter part of the chapter explains how advertisements featured youthful and able-bodied listeners whose consumption couldn’t afford interruptions from rain or sweat, thereby connoting the “splash” as playful and harmless.

Continuing in the 1980s, chapter 5 turns toward microcomputers, keyboard typing, and disk/data practices to think through how early office and home computer users managed drinking around their devices. Examining manuals, advice literature, magazine columns, and how-to books, the chapter studies a large discourse that emerged to make computerists careful like the telephonists and watch wearers that preceded them. These texts particularly warned about children while also denigrating the “office bumbler” prone to causing drink spills. Workplace policies tried to tamp down beverage consumption by arguing that drinking should occur separately from vulnerable machines to stave off repairs. However, magazine covers contradictorily often portrayed PCs in carefree and harmonious acclimation with cups of coffee or milk and glasses of wine, thereby imagining not only what kinds of liquids were acceptable but also *who* could engage with them.

If the average computerist threatened with her propensity to spill, then male computer programmers posed a complicated case with their reputation as slovenly machine users who couldn’t afford to leave the computer’s

side. Chapter 6 notes how the programmer's strewn soda cans identified a computational commitment in which uninterrupted coding trumped rest and unhealthy food and drink consumption could become a "manly demonstration"⁷⁹ of extreme computing. While this behavior straddled the line between admirable fortitude and poor hygiene, computer accessories and portable computer manufacturers of the 1990s and early 2000s tried to imagine a more decidedly positive liquid connotation. Keyboard covers and special membrane keyboards were designed to negotiate the computer's liquid boundaries. These developments led to the creation of protected notebook computers (laptops) made for the "road warrior" who took his work to the road and the skies. Such devices fit in with a culture that resembled rugged timekeeping, but they concentrated on drink spills as the most threatening leakiness. Journalists began "torture testing" laptops to measure their containment, treating liquid consumption as a hazard and men as the justified "abusers" who put devices through their paces.

Chapter 7 shifts terrain to cell phone and smartphone practices between the early 2000s and the present, when the handheld device entangled with so many other everyday activities like showering, toileting, swimming, laundry, eating and drinking, and exercise. Where watch-wearing raised questions about the mobility and fragility of wrists and vinyl record use put greasy fingertips under the microscope, mobile phones drew attention to "incontinent" hands and pockets that fumbled, slipped, and otherwise failed to hold onto devices. Water-resistant handsets received little initial uptake by mainstream consumers due to their high cost, bulkiness, and relative lack of features. Over time, however, new protective mechanisms—like nanocoating, cases, and protective seals and glues, as well as warranty plans—became increasingly available and more widely desirable. Manufacturers and advertisers shifted their approach to make containment designs not "tough" and conspicuous but rather invisible and imperceptible. They likewise promoted an "always-on" mobility in which liquid practices and phone practices intermixed liberally and without caution. This normalized wetness has contrasted significantly in recent years with users' ambivalence about constant mobile usage and companies' failure to produce handsets that live up to the hype of their sturdiness.

Indeed, as the conclusion will discuss, capitalist markets and social structures have leveraged both fragility and protection mechanisms to different ends. Manufacturers have consistently deployed easy-to-break technologies that lead to frequent breakdowns, thereby profiting from upgrade policies, repairs, and extended warranty plans. Likewise, hyperbolic promises of liquid-friendliness far outweigh their day-to-day practicality. Consumers are often forced to interpret unclear classifications, verify proofing authenticity, or argue with customer service representatives over liquid policies. Numerous lawsuits have even resulted, taking companies such as Samsung and Apple to task for their ambiguous claims or aggressive wetness policing that invalidate warranties and leave devices unrepairable. Leakiness is the norm and not the exception, and companies profit from ingress while promoting containment.

However, my goal is not to advocate for a one-size-fits-all approach that designers and manufacturers can solve sheerly with better wetness protection. Media are “vessels and environments, containers of possibility,”⁸⁰ but they are leaky⁸¹ containers at best. People and things share deep interrelationships that blur the boundaries between human and nonhuman, flesh and machine, environment and body, and so on.⁸² The spillages and overflows that happen between people, practices, and media technologies demonstrate this porousness. At the same time, they expose how wetness itself becomes negotiated and contested, when liquid use can mean misuse, desirable abuse, or a “normal” situation depending on historical, social, and cultural contexts. To fully tease out how to live more equitable lives with and within media, we must begin to think deliberately about the kinds of wet worlds that we—and our devices—can inhabit.

1 LEAKY TELEPHONES

Mothers never liked to blame their babies for failed telephone service. After all, what harm could a bit of saliva do? Yet reports of liquid-gone-wrong with telephones reached the popular pages of women's magazines and big city newspapers as evidence of basic troubles that could befall consistent service—especially the kind of trouble that teething babies caused. The *Boston Daily Globe* (1908) recounted, for instance, how a mother only learned her lesson about baby's cord chewing when the baby received a shock—or “got stung”—and the service went out.¹ These stories affirmed that youthful oral fixations rarely caused harm to the chewer, but they noted that they were “injurious” to the telephone cord (see figure 1.1).²

As Americans encountered telephones in the decades before World War II, those devices did not radically alter American ways of life, but still they played a significant and “evolving social role in daily life.”³ That daily life was filled with wet conditions, not only teething babies but also “toy poodles, the ever-present spittoon, overshoes . . . and even people talking while in the bathtub.”⁴ Painters washed ceilings, which dripped; telephones sat near windows during storms; phone cords came in contact with moist radiators; and so on.⁵ In workplaces, too, mundane leakage led to breakdown, as in one instance when stenographers caused an outage by leaving their handkerchiefs (washed at lunchtime) to dry on a telephone cord hanging between two desks.⁶ Bringing telephony into one's home or office thus meant not only thinking about conversations alone; people had to consider whether their other life practices and environments were complementary to or competitive



Figure 1.1

Telephone company employees warned about the outages they discovered—with babies' wet mouths being described as a common source of outage. Source: B. J. Griswold, "An Educational Campaign: Paper Read at the Indiana Telephone Convention on the Practical Newspaper Campaign Conducted at Fort Wayne," *Telephone Engineer & Management* 24, no. 5 (1920): 16.

with phone service. For instance, one telephone repair worker noted that phone users could hardly avoid wetness in hotels, where ice water pitchers and telephones commonly occupied the same bedside table space.⁷ A telephone chief operator who handled service complaints, Mrs. Eva Hawes, even recounted that “a frequent combination in interior decoration is the canary bird and desk telephone occupying the same table. The canary bird includes the telephone in his morning bath,” thus leading to out-of-order phone calls.⁸

Within the telephone industry, consensus built around liquids as a *hazard*, or, as a 1913 article on telephone service stated ominously, “Water is one of the worst enemies.”⁹ At this historical moment, cords were typically made from silk tinsel and could easily corrode from wetness, while any protective moisture treatment would make them too brittle.¹⁰ But it wasn’t an elemental force acting alone or fragile materials that bothered workers; rather, the blame fell to the abusing consumer—to the “energetic housewife” that damaged wiring by scrubbing her telephone with water or cleaning fluid and men in offices that dangerously propped their wet umbrella against the wire.¹¹ Spillage played a role, too, in the form of a “carelessly handled glass of water . . . or an overflowing inkwell.”¹² Wetness lurked everywhere in people’s spaces and habits; phone companies argued that one could hardly expect proper service under such circumstances—especially if users didn’t learn to accommodate the phone’s need for dryness.¹³ In telephony’s infancy, though, users did not always make the connection between liquidity and breakdown and might not even notice the wetness, at least in a phone company’s estimation. As one writer put it in an article on telephone maintenance (1910), “It must be remembered that while the subscriber is intent upon getting the trouble cleared, he is usually ignorant of the workings of the telephone and cannot be depended upon to complain intelligently.”¹⁴ This differing appraisal of liquids caused problems when telephone consumers expected service that would not falter or fail and directed outrage at their provider when outages of various kinds did occur.

Telephone workers perceived one kind of telephone misuse as a mistreatment of employees, and consumers even sometimes admitted to swearing at the telephone receiver and haranguing operators.¹⁵ The book *ABC of the*

Telephone (1904), which offered hints to people about proper telephone behavior, warned readers against such complaining in a list of “don’ts”: Customers shouldn’t “expect the best treatment in the world at the hands of exchange operators if [they] have given them occasion to put [their] telephone on the list of ‘chronic kickers.’”¹⁶ This notion of blacklisting irascible consumers, labeled “kickers,” came from phone operators’ direct dealings with them and their complaints. Telephone company employees faced intense scrutiny and pressure to tend to telephone infrastructures. “Trouble” took two forms, then, in dealing with customers’ frustration over outages and in dealing with wetness damage itself.

When the phone fell “‘out of order’ or ‘out of business,’”¹⁷ breakdowns required determinations about the outage’s source. An evaluation could happen over the phone via a neighbor’s telephone or with on-the-scene home and workplace visits. “Trouble men” and “trouble departments” hunted down damage, which meant sussing out babies, sponges, damp locations, spills, and open windows.¹⁸ But if customers wanted to lay blame at workers’ feet in these moments, then repairers did quite the opposite in labeling telephonists as abusers of the telephone cord. For instance, one author attributed telephone trouble—at least 50 percent of it—to cases when “someone has been careless or neglectful.”¹⁹ Repairers argued that they could *diagnose* these breakages with their particular know-how that far exceeded the consumer’s grasp. Trouble men explicitly employed medical metaphors to describe their work, as “he is a physician, and he makes the ills that the telephone is heir to his life study.”²⁰ The “good” troubleshooter committed himself wholeheartedly to difficult cases and to getting at the root of the problem. By contrast, a “hasty conclusion by a less experienced man may start the trouble-clearer on a false errand.”²¹

Stories about this investigative work abounded. They typically emphasized the user’s ignorance and established the “trouble man” as the voice of reason, as in one case of an ill-placed wet umbrella:

Thoughtless people can do many things to put a telephone out of commission and some of them are as simple as the one here illustrated—a wet umbrella leaned up against the wiring in such a way that it grounds the current, and of course makes the phone useless. In this particular case—the photograph comes

from Baltimore—the umbrella remained where it ought not to have been while the owner of the phone fretted and fumed because he could not get central, and then went to a neighbor's and called up the telephone company. When the “trouble man” arrived he saw at once what was the matter and picked up the umbrella. “Now call central,” he suggested, and the irate patron got an immediate response.²²

The story did not sympathize with the frustrated customer's emotion but rather sided with the trouble men who could easily uncover a telephone's ailments as one of sloppy, wet, and “thoughtless” behavior.²³ With this positioning, the user behaved irrationally in the face of what seemed to the repairer an obvious cause of outage. He could ferret out a *true* cause and thereby solve the disagreement. It did not seem to occur to the telephone worker that the umbrella user simply didn't attend to the umbrella's positioning or apprehend its wetness as problematic. In its everyday familiarity, the rainy-day apparatus faded invisibly into the background of object relations as a service interruption came to the fore. Phone companies thus tried to make wetness not only an individual but a collective problem, for instance, by taking out newspaper announcements that commented on how many households lost power in a particular storm due to improper umbrella habits.²⁴

Even if consumers *knew* the cord had gotten wet, this acknowledgment didn't mean they necessarily blamed wetness as the cause. Thus, the repairer resolved that he could use this uncertainty as an opportunity to properly socialize a user about wetness and inappropriate telephone treatment. Deskmen often played this role by counseling phone customers over the line about their difficulties.²⁵ C. W. Taylor of the New York Telephone Company (1917), for instance, shared the tale of a phone user who blamed the operator for a “frying” noise on the line, which turned out to have another cause once Taylor carried out tests back at the telephone exchange:

The test showed that there was a short-circuit caused by water somewhere, and the deskman told the subscriber that the operator did not cause the trouble, but if she would look over the green cord she would see a wet spot that caused all the trouble. The subscriber said: “Yes, there is a wet spot on the cord. I gave the cord to the baby to play with while I was talking on the telephone and she put it in her mouth.” . . . With plentiful apologies for what she had said about

the operator, the subscriber asked if she could not fix the trouble. She was told to warm an iron, not hot enough to scorch, and rut it over the spot on the cord. About five minutes later the steady light disappeared and in five minutes more the line was clear. Evidently her efforts had been successful. The deskman called the subscriber and thanked her for her assistance, and she announced that she would never again let the baby chew the green cord.²⁶

The account demonstrated, from the deskman's perspective, how repair could happen remotely without even seeing the baby in action—both in terms of restoring phone service and in acculturating the user about wet hazards: the subscriber didn't know the source of outage (and blamed the operator), she learned that the baby should not play with the cord, and with the deskman's help, she used household items to restore service. This instance aimed to prove how the repairer could *reform* the unknowing user with the right advice, who would change her future actions. The "good" customer stemmed the tide of her (baby's) leakiness by recognizing the oral habit as a telephonic threat and putting an end to it.

These conversations didn't always go pleasantly, though: an article in *Popular Science Monthly* (1918) explained about an explosive conversation between an infuriated woman and a phone company employee, as the two bickered over a baby's cord habits. According to the piece, "Irate ladies who complained of the service and possessed babes were as nothing to [the employee]," given the regularity of such incidents.²⁷ These negotiations demonstrated a mismatch in wetness perceptions, which led to mothers' frustration when they incurred blame.²⁸ The permissive mother and teething child became an emblematic duo that represented misuse, so much so that a photograph of them appeared in *Bell Telephone News* (1917) as evidence of common trouble that a telephone (and its repairer) might encounter (see figure 1.2). If the "good" consumer talked, then the "bad" or uncontrollable consumer ate the phone (cord) itself. However, no one blamed the baby for her leakiness; in fact, child-rearing guides called teething a "normal process, and connected with no disease."²⁹ Based on this logic, telephone workers unfailingly held mothers responsible as "bad" users given their entrenched gender roles as caretakers; the telephone became an "oral fixation" with attendant anxieties about mouths and telephony.³⁰ These admonishments failed



CUTTING TEETH IN—CUTTING TRANSMISSION OUT
 Subscribers Often Wonder What Causes Trouble on Their Lines. This Is Perhaps Not a Common Source of Trouble, but It Is a Real One

Figure 1.2

A seemingly posed photograph of mother with baby chewing on a telephone cord served as evidence to telephone company employees of the “trouble” that phone service might encounter. Source: “The Telephone Society of New York,” *The Telephone Review* 8 (May 1917): 142.

to take into account that teething could be “distressing” to babies and could produce anxiety in mothers with limited parenting experience.³¹

Nevertheless, when consumers minimized wetness as a problem, like they often did with teething babies, or when other wetness did not present obviously, repairing work happened with specific tools meant to identify the source of outage. Not unlike a doctor relying upon an X-ray to visualize and interpret a patient’s body, the trouble man relied on a system such as the Telefault to evaluate breakages. This device allowed the repairer to attach an exploring coil to a telephone receiver; he would then generate an intermittent current that, when sent out over the malfunctioning wire, could allow him to hear the source of the fault.³² This did not always prove an easy process, but linemen recommended apparatuses like the Telefault through testimonials and articles as desirable mechanisms. Manufacturers also advertised these machines as wetness seekers: “You can’t find your ‘wet spots’ unless

you own a Matthews Telefault,” and “Looking for trouble? You’ll find it” with the cable testing set made by Western Electric.³³ If repairers felt they couldn’t trust the subscriber to correctly report the outage’s cause, then the machine and trouble man together functioned as co-testers of wetness, making everyday life’s liquidity diagnosable and interpretable.

Armed with such a tool, repairers, and publications about them, glorified their expertise.³⁴ A wire chief garnered this attention as the “original ‘find-out artist’” who could determine a telephone’s underlying troubles even in tricky cases.³⁵ *The Saturday Evening Post* (1908) reported this account, from the telephone exchange’s perspective, of Biddy McGee—a young woman heading to market who lost control of her umbrella on a rainy and windy day.³⁶ The simple umbrella, which had flown into the air and hooked between two telephone wires, left Biddy (reportedly) rageful and swearing while a crowd of onlookers laughed; the umbrella’s position subsequently caused an outage that disrupted incoming calls to a doctor, a lawyer, and a manufacturer. Upon hearing outage reports at their office, none of the operators at the telephone exchange could locate the source of the malfunction, until the wire chief stepped in and ran a remote test, which located the problem at Elm Street between poles 789 and 790. Portrayed as a Sherlock Holmes-type figure, the chief transformed Biddy’s slippage into a breakdown explanation and simultaneously solved his customers’ outages by virtue of his detective work. Though witnesses saw the errant umbrella take flight, the wire chief provided a new interpretation to connect wetness with outage.

This heroic detective narrative played out similarly in two scenes, like a play, in *The Mountain States Monitor* publication for Colorado-area telephone industry news. In the scenes, the noble wire chief uncovered the source of wet cord trouble as a spilled drink during someone’s lunch; first, he detected the source, and then he confronted the guilty parties:

Scene I

Terminal Room. Manager and Wire Chief discovered eating their frugal noon-day meal.

Manager (glancing at trouble card just received)—I see Wade’s Mill is “permanent.”

Wire Chief—What's the trouble?

Manager—Don't know yet. I'll test while you finish, so we can grab it right after lunch. (Goes to test board). H'm—looks like a wet short. What the dickens would make it wet, do you suppose? (Thinks.) By George, I'll bet these fellows were eating their lunch on the desk and tipped over a cup of coffee on the desk stand cord.

Wire Chief (coming over)—Sure looks like a wet cord, and I saw them making coffee for lunch the last time I was there.

...

Scene II

Interior of Mill. John and Henry, partners, are sacking grain, trucking it to scales in one corner. Partners are good friends of Wire Chief.

Wire Chief (appearing in doorway, shouts)—Who spilled that coffee?

Henry (amazed)—I tipped over a cup of coffee, but how in thunder did you know it?

Wire Chief—I have ways and means of discovering these little things. You spilled it on the telephone cord, didn't you?

Henry—A little of it got on the cord, but how did you know it, and how could you tell it was coffee?

Wire Chief (pompously)—Tests, my dear boy, tests. I not only knew it was coffee, but determined the KIND of coffee.

...

John (registering astonishment)—Do you mean to say that you actually discovered that by test?

Wire Chief—Certainly.

Henry (admiringly)—Well, I've seen a lot of trouble shooters, but you're the wizard of them all.³⁷

In this representation of the wire chief's work, the spill served to prop up the fixer's abilities at determining why an outage occurred—lauded even by the person who caused the mess. This perspective painted telephone companies and their repairers not only as technically savvy restorers of phone service but also as all-knowing ones; the customer couldn't evade responsibility because the trouble man would determine the source of carelessness, one way

or another. The unruly body would make itself known, as the unassuming lunchtime spill transmuted into the “enemy” so often described.

It is impossible to ignore issues of power, gender, and hierarchy at play in these accounts. Telephone company employees leveraged themselves as experts who could confront all manner of wetness by translating its causes to—in their estimation—uneducated (and even dimwitted) customers, who were often female and failed to apprehend wetness’s harmfulness. Given that women were often the earliest and most engaged phone users, adopting the device as a key mechanism for social relations, they became an easy target for these critiques.³⁸ Repairers’ described interactions with mothers, in particular, demonstrated how they interpreted women’s parenting as neglectful (of the phone cord’s fragility), silly (not understanding how phone service worked), and leaky (in their permissiveness of phone–liquid interactions). By casting hygiene policing as a woman’s problem and wetness as a feminine vulnerability, telephone companies then further treated the technology as a female device. If women were the primary talkers and keepers of house and children, then wetness fell within the bounds of their care, too.

But along with gender, phone repairers were constructing everyday life as a problem for uninterrupted service; untamed mouths, clumsy hands, windswept umbrellas, and turned-over cups stood at odds with connectivity. Through these efforts, they, like electrical experts before them in the nineteenth century, aimed to “invent themselves as an *elite*” who could perform “technological literacy” by naming their expertise through telephony literature.³⁹ These discussions about telephone trouble also functioned as a source of commiseration and comradery between like workers; they traded “woes” and “war stories”⁴⁰ when difficult customer experiences arose, and they shared laughs when unconventional service calls came to pass.⁴¹

REFORMING THE UNRULY CONSUMER

Though the phone industry and repairers themselves often employed a heroic framing, troubleshooting took its toll on overextended phone workers, and companies suffered a financial burden from repairs. One estimate by the American Telegraph and Telephone Company found that each time

an American telephone company “clear[ed] wet cord trouble,” it cost a dollar.⁴² Spurred by these conditions, companies tried to make their subscribers properly concerned and careful by entreating consumers to minimize outages. One strategy involved describing the telephone and its related equipment as precarious. Indeed, as one article on telephone troubles surmised, “In appearance your electrical messenger of joy and sorrow would have you believe that it is an instrument of considerable strength. Such is not the case. This electrical carrier of conversation, to which we give thought only when it is out of working order, will crumple up under the tiniest trouble, that is, tiny to us.”⁴³ This appeal to weakness—its propensity to “crumple up”—made a victim out of the device. Everyday life became a series of (previously unrecognizable) tiny troubles that amounted to failure.

Phone companies used this logic to take up educational campaigns aimed at making the subscriber a proactively “dry” and compliant user. In a series of public service announcements put out in the early twentieth century, they did their best to explain that a variety of wet practices could surely lead to a breakdown, like being unable to call a doctor in an emergency.⁴⁴ In this regard, telephones became literal lifelines, and liquids represented the hazard that could prevent a critical connection. Information campaigns put out by the Chicago Telephone Company, for example, warned consumers (1917): “Do Not Let the Telephone Cord Get Wet.” It listed a series of wetness problems and explained that a soaked tinsel cord couldn’t be fixed and must be replaced.⁴⁵ Similarly, print headlines like “Are You to Blame For Your Telephone Troubles?” framed technical and infrastructural problems as a matter of personal responsibility and user hygiene.⁴⁶ Telephone companies put extensive resources into such efforts, often hiring cartoonists and working with local newspapers to do outreach work.⁴⁷

Telephone workers tried to accomplish this mission by quantifying the costliness of moisture incidents that impaired good service. According to an investigation conducted by an Easton, Pennsylvania, central office employee, a baby chewing on a cord could lead to one hour and forty-five minutes of lost service, while a spilled pitcher of water would cause a whopping eight-hour outage (see figure 1.3).⁴⁸ Other quantifications related to spilled whisky or mustard, wet hands, and mops. In a (rather cheeky) summary of this work,

Cause—	Time lost in telephone service.	
	Hrs.	Min.
Baby chewing on triple cord....	1	45
Wet mop lying on cord.....	6	..
Cleaning with wet cloth.....	7	40
Spilled pitcher of water.....	8	..
Wet cloth lying on cord.....	4	30
Wet sponge	25
Spilled whisky on cord.....	2	15
Wet umbrella	6	15
Paperhangers using water on wall	77	..
Wet bouquet	10	18
Skylight leaked	2	..
Spilled wet mustard.....	11	36
Wet hands	3	45

Figure 1.3

An investigator quantified how much time a telephone user would lose due to a breakdown caused by various liquid accidents. Source: "Telephone Statistics Regarding Trouble From Moisture," *Telephony* 73, no. 13 (July–December 1917): 32.

a reporter reminded readers that the investigator did not recommend "doing away with babies, sponges and wet bouquets" but rather offered his statistics "as an educational hint to keep the telephone cord away from dampness."⁴⁹

Such discourses tried to teach subscribers about not only how to avoid wetness but also how to actively construct their spaces and practices with the telephone and its wet hazards in mind. Ergonomic advice emphasized both environmental conditions and embodied use; for instance, one announcement instructed users to routinely keep their telephones in front of them on the desk, away from sources of clumsiness and spills—"where it is in no danger of being knocked about" (see figure 1.4).⁵⁰ Although some people installed phones in isolated areas, occupying their own table or wall mount, part of phones' domestication involved integrating them into these multi-purpose zones—like the desk that simultaneously housed a phone and a glass of water. This instruction also spoke to what kind of handling a telephone could endure, for its "efficiency is impaired by rough treatment" and the good user should avoid acting "roughly" or with "force." These delineations operated on the body itself; erratic, flailing, or aggressive movements



Telephone Front!

KEEP your telephone in front of you on the desk where it is easily accessible when you want to make a call and where it is in no danger of being knocked about.

Your telephone is a delicately adjusted instrument and deserves to be handled with care. Do not set it down roughly on the desk, drop it on the floor, or replace the receiver with force. Its efficiency is impaired by rough treatment.

Keep the desk stand cords free from wet umbrellas, sponges and damp locations and away from open windows. The telephone is very sensitive to moisture. After an hour's rain last summer, in one city, we had 96 cases of trouble from wet cords on account of the failure of our subscribers to protect their telephones properly.

Cooperation Quickens Telephone Service



**The Chesapeake and Potomac
Telephone Company**

Figure 1.4

One aspect of telephone company campaigns emphasized the importance of desk ergonomics and arrangements to avoid liquid accidents. Source: The Chesapeake and Potomac Telephone Company, "Telephone Front!" *Washington Post*, February 28, 1917, 12.

jeopardized the telephone and could lead to wet collisions, and thus one should keep a safe distance between body and device.

A blossoming telephone accessory market also emerged in response to these negotiations, which likewise focused not on wetting phone cords as an acceptable practice but rather on moving phones *away* from sources of moisture and remediating arms, elbows, and hands prone to knocking them over. The telephone bracket acted as one such device, which could clamp onto a desk and, like a “third arm” or “human arm,” would “hold [the phone] out of your way when not in use; brings it where you want it at a touch” (see figure 1.5).⁵¹ Produced by Oliver Manufacturing Company and the Holtzer-Cabot Electrical Company, the Equipoise Telephone Arm, or the flexiphone, was put into use by government offices, on ships, and at desks with increasing frequency in the twentieth century as a sort of worker’s appendage. In their advertisements, the latter company promised that the Equipoise could prevent liquid messes—like overturned inkstands—and could stop cords from getting tangled or impeding one’s work.⁵² Other companies, too, introduced products like the “Universal” Sperry Telephone Arm along such lines, as did inventors who designed alternative versions of traditional desk telephones that an individual could operate hands-free.⁵³ Companies marketed them for daily living at home and at work. However, they succeeded mostly as business tools in the desk context because they promised greater uninterrupted productivity and efficiency when clearing out breakage risks. To do so, they aimed to optimize bodies’ comportment and accommodate media technologies’ constraints by framing the “best” arm as a nonhuman one that could take up the charge of appropriate phone-holding so the worker could work more. This proxy⁵⁴ stood in for the busy and potentially impaired appendage to counteract idle or clumsy hands.

THE HAZARDS OF A RINGING PHONE

Another ergonomic consideration involved human fragility because mixing liquids and electricity could pose a significant hazard not just to the phone’s connectivity but also to a human body.⁵⁵ Although telephone workers waved away concerns over babies getting “stung,” discourses about electric

Equipoise Telephone Arm

A third arm for the busy man.
Brings the telephone right where
you want it when you want it.

Moves up and down and swings around,
and lifts over books, papers and inkwells—

works like the human arm

Keeps the cords out of the way, cares
for the receiver when "holding the wire,"
and is as useful in homes as in business
offices.

You'll get an *Equipoise* sooner or later. If you
break your telephone or upset ink over your desk,
you'll be sorry you didn't get it right away.

Made in one standard size with interchange-
able extensions giving a range of from 16
to 41 inches. Telephone revolves at outer
end of arm—accessible from every side.

Graceful and ornamental, and beauti-
fully finished in gun metal or nickel.

At all electrical- and office-supply
houses or shipped direct from fac-
tory. "*Equipoise*" and "*Oliver*"
on every *Equipoise Arm*.
Strongest references.

Write for free illustrated
booklet.

**OLIVER MFG.
CO.**

1016 Drexel Bldg.
Philadelphia



Figure 1.5

Telephone attachments like the "Equipoise" functioned like a human appendage to coordinate ergonomic working arrangements in wet and cluttered situations. Source: Oliver Manufacturing Company, "Equipoise Telephone Arm," *McClure's Magazine* 26 (1905): 121.

dangers—from exposed wires and unclear electrical codes to death penalty executions by electricity—sensitized both users and prospective users about the very tangible risks of electric shock.⁵⁶ Among these various risks, intersections between water, electricity, and human bodies prompted discussion about ways to avoid liquids for one's personal safety. Doctors described the porousness of human bodies as a potentially “fatal” problem: they elaborated on harmful conditions when “the skin is wet, as when a person is in a bathtub, or if there are open cuts or abrasions on the skin which touches the electric wiring, or even if the victim is perspiring freely.”⁵⁷ Cuts, sweat, and wet skin made the body highly vulnerable to electricity's ill effects by virtue of “moistened electrodes.”⁵⁸ Wet hands, too, threatened when “taking up a telephone.”⁵⁹ A *California Safety News* (1924) publication described the leakiness of bodies intermingling with water and electricity:

Water is a very good conductor of electricity, and when spilled on floors or splashed on walls, it usually spreads over these surfaces until in contact with water pipes or gas pipes. You can readily see what an excellent path this makes for electricity to follow from the live wires to the earth. The human body is a conductor of electricity, and if any portion of it happens to get in the circuit with this stray current leaking from the wires to the ground, it becomes a part of the circuit, much to the discomfort of the conductor.⁶⁰

As described in this passage, all elements intermingled with one another. Water spilled and splashed on the floor, spreading. Electric current leaked from wires to ground. A human body touched and conducted electricity. The interactions between them created a kind of perfect storm for injury or death. Interestingly, though, the relationship between electricity and liquid went deeper. As scholar Ghislain Thibault notes, “From theories of magnetism about gaseous *effluvia* to the image of ‘fluid mechanics’ used to explain the transmission of electricity between bodies, fluidity and electricity have gone hand in hand.”⁶¹ Electricity, strange, fluid, and leaky, became all the more untamable as it intersected with water and bodies.

Of the many voices that warned against mixing water and electricity, the insurance industry spoke perhaps the loudest in its efforts to make everyday hazards known and quantified. Beginning in the 1910s, insurance agents

launched public campaigns about the home as a site of danger and accident to create awareness and to monetize their industry. With headlines that called bathrooms, a particularly common site of injury, “death chambers” and “execution chambers,” texts focused on warning bathers away from simultaneously operating electric lights, bells, heaters, telephones, radios, and other appliances.⁶² In one especially dramatic piece titled “How to take a BATH and LIVE” (1936), Louis I. Dublin, PhD, a vice president and statistician for Metropolitan Life Insurance Company, warned that “when we indulge our desire for super-cleanliness carelessly, we pay for it in more ways than one.”⁶³ The article was accompanied by an illustration featuring the caption “Electricity and water do not mix. Forget it and you flirt with suicide” (see figure 1.6). Although significantly more dramatic than a telephone company’s warning that a spill or slobbering baby could interrupt telephone service, the appeal similarly worked from a place of personal responsibility: one risked suicide for behaving “carelessly,” just as the individual jeopardized the media device’s well-being with liquid promiscuity.

Alongside insurance industry warnings, newspaper and magazine reporters frequently shared accounts of lives lost—both those of children and adults—due to liquid–electricity encounters. An *Afro-American* article (1922), for example, reported on the death of a thirty-year-old woman who abandoned washing the dishes to answer a ringing phone.⁶⁴ The coroner concluded from the scene, which wasn’t witnessed directly, that burns on the woman’s hand indicated that she had failed to dry her soapy and wet hands before answering. Tragic deaths occurred with other media devices too, like radios, that people could bring more easily into bathrooms due to their portability. Journalist Joseph W. Kearney recounted the death of a twelve-year-old girl in Chicago who “carried a portable [radio] set into the bathroom so as not to miss a favorite program” and died when the set fell in the tub.⁶⁵ Such stories demonstrated embodied uses (wet hands, carrying) as well as a person’s efforts to stitch together different life practices rather than separating them. News accounts of these deaths acted as cautionary tales to warn against mixing one’s media habits with one’s hygiene/cleaning habits.⁶⁶ Thus, the bathroom became a media-free zone by virtue of these everyday disasters and tragedies. However, descriptions like that of the little



Figure 1.6

The insurance industry detailed catastrophic accidents from everyday home experiences, such as using electrical appliances while bathing. These depictions villainized the mixing of electricity and water. Source: Louis I. Dublin, "How to Take a BATH and LIVE," *New York Herald Tribune*, November 1936, SM5.

girl who didn't want to miss her favorite radio program or the woman rushing to answer a ringing phone indicate that users struggled to disentangle media from life's other happenings, well before the always-on culture of smartphone use or social media scrolling.

Where the telephone could be placed in terms of physical safety for user and device meant that it often loomed out of reach in wet situations. This placement, at the same time, inevitably related to how telephones fit into and challenged social/cultural norms, precipitating uncertain boundaries between wet and dry communication situations. For instance, people commonly complained about the telephone ringing while taking a bath, making it impossible to answer the call that originated in another room. The growing significance of telephony in everyday life made it both necessity and nuisance. As writer Mary Robinson Thomas remarked (1923), "How annoyed and inconvenienced we are when [the telephone] is out of order for even a few hours! And how human and inconsistent we are when we are equally annoyed and inconvenienced by its incessant ringing!"⁶⁷ Bathers told stories about this wet inconvenience, which often involved answering what they perceived as an unnecessary call, thereby making the trouble even more irksome. Yet these accounts commonly also became jokes, retold humorously in telephony trade publications as a kind of zany by-product of living with phones. In one case, the bathroom interruption became occasion for a witty pun, reported in *Telephony* magazine:

'Last night, after I'd caught the soap for the second time in the bath-tub, there came an insistent ring on the telephone,' says a contributor to the Chicago Tribune. 'I was alone in the house and I was expecting an important telegram. I dashed for the telephone in a cloud of silver spray. When I picked up the receiver all I got was: "Sorry, I rung you by mistake." Says I "'You didn't wring me at all; I'm still dripping.'"⁶⁸

Playing upon the words "ring" and "wring," the joke poked at the problematic mixing of phones and wetness. The phone ring summoned a wet body before it could dry and answer the call more appropriately.

In another instance (1915), a likely fictional tale—playing on the indisposed bather—offered a surprising ending:

Simon Mish (an extremely busy man) was enjoying his first bath that year. He splashed luxuriously, enjoying the unwonted sensation.

Suddenly the telephone bell rang.

Simon Mish was alone in the house.

The telephone bell continued to ring.

"Bother!" swore Simon Mish, and got out of the tub and went and answered it.

"Hello," said a strang[e] voice. "Does Selig Wiffelshank live here?"

Simon Mish slammed down the receiver and went back to his bath. (He was alone in the house.) Five minutes later the phone bell rang again. Again Simon Mish left his tub to answer.

"Hello," said a second strange voice. "Is this the Mickentootle residence?"

Simon Mish positively hurled down the receiver and went back to his tub. A minute later (he was alone in the house) it rang again.

For the third time Simon Mish deserted the tub and answered the telephone, and a third strange voice said, "Hello, may I speak to Rhudorf Wishwasher?"

That evening Simon Mish had the thing taken out of the house.

No, silly reader, not the telephone, the bathtub.⁶⁹

The main character, in an unexpected turn of events, gave up on bathing rather than doing away with the phone. Given that the story appeared in *Bell Telephone News*, it likely would have appealed to its audience of telephone enthusiasts and employees, who were keen to prove the importance of telephone connectivity in everyday life. Surely one could quit hygiene practices more readily than disconnect from that technological necessity, even if the call itself was nonsense.

A third case also turned to humor, while emphasizing frustration, when a bather (1918) misunderstood the substance of a call's message:

Time: Saturday p.m., late. W.S. Lewis in the bath-tub. Telephone rings and Lewis answers, dripping wet.

Mr. Williams: "Mr. Crawford has just broken his leg."

Lewis: "Shades of Mr. Howard T. Vaile!"

Ten minutes later: Lewis enters the Wasatch Exchange Building, scantily dressed.

Mr. Lewis: "Where is Mr. Crawford?"

Mr. Williams: “In your office. We have sent his leg to the Walker Bank Block to have it repaired. I forgot to tell you that it was his wooden leg that was broken.”

Mr. Lewis: “Oh!(!&)))?&!—” (Deleted by censor.)⁷⁰

Here, the vignette exposed Mr. Lewis as a confused receiver of the message who didn’t get enough information to understand the nature of Mr. Crawford’s injury. The summons, which occurred during his bathing practices, thereby led to his swearing when he arrived at the scene.

Early discourses about telephones described this process of mad-dashed-and-wet call answering as an unpleasant one that encouraged commiseration.⁷¹ Each emphasized a disturbance, pulling someone from a moment perceived as private into one more public at the phone’s demand; they depicted an awkward bodily experience of wetness, slipping, and dripping; and they concluded with disappointment at the call’s triviality, which did not warrant the effort in the first place. The phone’s ring evaded containment and leaked into the bathing space. Such tropes came together in an article for *Ladies Home Journal* as part of a series that followed important social circles and wealthy individuals through their daily lives. The writer, Mrs. John King Van Rensselaer (1923), reported a case when a man became uncomfortable at answering a phone wet and naked, this time with the device close at hand—especially when he discovered the caller’s identity as a much-admired member of high society:

Mrs. Belmont was among the first on the island [Newport] to have a telephone installed. Shortly thereafter she telephoned one morning to Thomas Cushing, also a possessor of one of the newfangled instruments. The Cushing telephone was in the bathroom. So was Mr. Cushing, and in the tub as well. Dire embarrassment overcame him when he went, dripping, to the instrument and recognized Mrs. Belmont’s voice.

“Oh, dear!” he exclaimed. “I’m so sorry. I’m frightfully ashamed. I don’t know how I can express—”

He dropped the receiver and did not pick it up again until he had wrapped a bathrobe about his shuddering self.⁷²

Of note, Rensselaer acknowledged the phone’s newness as a “new-fangled” device—one unfamiliar and not yet domesticated in the Cushing

household. At the same time, the device seemed further untamed in the bathroom with that room's connotation as a space of modesty, vulnerability, and privacy. Mr. Cushing's embarrassment emerged not from what Mrs. Belmont could see but rather the mere act of "exposing" himself over the call by answering wet and unclothed.

It is significant that these stories featured men made uneasy by the telephone's summons. Though made for a laugh, such tales cast men in moments of repose and in what they perceived as private and wet spaces being rudely called to a moment of more public sociality. These intrusions perhaps indicated a more general discomfort with the reachability that such communication devices afforded. Where irate mothers could hardly believe that a baby chewing on a cord would cut out service—as the cord enfolded into the scenes and bodily practices of domestic life—these anecdotes tried to reinforce some separation between the telephone and one's other (wet) doings.

This violation of social norms also occurred in part because even most wealthy people, let alone those without significant wealth, did not install telephones in their bathrooms. In fact, bathrooms served mostly "utilitarian" functions in the 1910s and 1920s and weren't envisioned as hybrid or mediatized spaces.⁷³ Thus, when such arrangements *did* occur, they garnered attention. As an article in *Telephony* (1918) acknowledged, "a bathroom would hardly be considered a choice location for a residence telephone" and could only be recommended in instances of great busyness or privilege.⁷⁴ A Baltimore doctor, for instance, installed one of his three telephones on a shelf above the tub, due to the perceived importance of his work.⁷⁵

Bathroom telephony thus conveyed one's status. In 1924, the *New York Times* reported on a colorful story to this effect, noting that Hollywood actress Barbara La Marr "has so frequently been disturbed when in her comfortable tub that she has had a white painted telephone put into her bathroom. It stands on a little table, so that Miss La Marr has only to reach out and answer the call while in the water."⁷⁶ The story identified the "nuisance" of telephone ringing while bathing, especially when the call could bring interesting or important news. For La Marr, the solution became marrying the two activities to make them compatible. A doctor or a movie star could justify this combination of practices due to their position as public figures. This privilege

materialized later in the 1939 film *The Women*, starring Joan Crawford and Rosalind Russell, when the film's main character enjoyed a telephone call during a glamorous and sudsy bath; the opulent bathtub became the ideal setting for social connectivity rather than a problematic one.⁷⁷

Yet though Hollywood made telephony and bathing seem easily compatible, the problem of how to manage phones in these situations did crop up as an everyday life concern. Indeed, by the 1930s, a survey of home economics by Cornell University found that one in four people left their bath because of a ringing phone.⁷⁸ Additionally, the researchers noted that 8 percent of participants used phones in the bathroom, though they did not inquire as to whether these were phones installed in those rooms; some people acknowledged having long cords that could reach to bathing spaces. Perhaps most interestingly, the survey reported that “the idea of telephoning from the bathroom had appeal” for those who participated.⁷⁹ However, the majority of people branded this problem as an unavoidable inconvenience without obvious remedy—both because of economics and because of the phone's ambivalent cultural position in bathrooms. As one writer put it in a discussion about the “perfect bathroom,” making a case against bathroom telephony, “We think that there ought to be one room in the house where we can be free from the solicitations of insurance and electric refrigerator salesmen.”⁸⁰ In this framing, moving a telephone to the bathroom would create distress rather than convenience by inviting irritating callers into a space designated as media-free. Ergonomics thus involved concerns about material fragility (such as breaking the device with liquids) and cultural accessibility (whether to invite the device and its symbolic meanings into certain liquid milieus).⁸¹

CORDS THAT WITHSTAND ANY CLIMATE

Telephone cord management and handset placement in the early part of the twentieth century suggested how a difficult dynamic surfaced between manufacturers, repairers, insurers, and consumers who understood wetness differently. While each of these groups valued functioning technologies (both to avoid conversation interruptions and to mitigate expensive repairs), they appraised risks and causes in accordance with their own positions.

Manufacturers, fixers, and insurers wanted rational and conforming bodies who entered wet situations with caution: knowing where to place an umbrella, surveilling and removing a teething child's mouth, or anticipating the risks posed by a bathtub or wet hands. They often didn't account for the fact that people's leaky behaviors exceeded containment in so many circumstances, as consumers juggled what they considered "ordinary" wetness and everyday media practices with device and bodily fragilities.

Although telephone companies put significant effort into reforming their subscribers, the increasing pervasiveness of telephony began to conflict with these abstinent aims. Thus, a new technological solution emerged that put the burden on cords to acclimate to their wet users' lives: moisture-proofing the wire. Manufacturers like the Stromberg-Carlson Telephone Manufacturing Company (Rochester, New York) began producing copper wire that featured an insulating enamel, two layers of silk, the company's moisture-proof compound, and a layer of cotton.⁸² Called "Duratex," the cord withstood a test in which the manufacturer submerged it in water for forty-eight hours. In advertising for its product, Stromberg-Carlson warned that many cords—even if they seemed to visibly dry out after wetting—had sustained damage on their interior. This leakiness, the company warned, involved an inapprehensible activity so "gradual that it is seldom noticed until the subscriber complains of service."⁸³ Using a workplace setup as its case in point, one ad (1919) staged a spillage scenario involving a desk phone affected by a tipped-over glass of water that wet the cord.⁸⁴ This mundane imagery played to the ordinary overflows that could happen in the course of everyday life, and it tried to sell telephone companies themselves on purchasing a solution that would aid customers. Like the teething mother and baby, this scenario-building offered a still-life portrait of liquids as at once troublesome and ordinary.

Western Electric, another manufacturer of liquid-friendly cords, focused less on the spill and more on the protection aspect. The moisture-proof and "hard-knock proof" cord could handle "rough" conditions and wore its coating like the Charles Dickens character Tony Weller (*The Pickwick Papers*) with his many layers of clothing. Here, the aim was not to stimulate the ad reader's imagination about leaky damage worming its way into the cord

over time, but rather to demonstrate the product's hardiness and effective containment. The desk telephone that could "Withstand Any Climate"⁸⁵ treated the desk's milieu as a harsh environment, one hostile to the communication technology. This "climate" involved both elemental and embodied considerations. For instance, Runzel-Lenz Electric Manufacturing Company advertised its resistant cords to telephone companies dealing with switchboard operators' problematic usage. Runzel-Lenz's cords could overcome "the perspiration of summer, the jerks and twists of girls who still have a lot to learn about cord handling, and all of the other miseries to which switchboard cords are heir."⁸⁶ No longer weary victims, the new cords became suited to their miserable treatment and authorized a more aggressive use.

Telephone companies that implemented these cords explained significant benefit in terms of cost. A report from Bell Telephone noted that in 1919, when it installed 1,800,000 of these protected cords, it began saving \$90,000 per year.⁸⁷ By 1926, that same report concluded, the company had saved \$400,000. But something else significant had shifted in this transition that involved far more than developing a moisture-proof solution. The cultural balance tilted from encouraging consumers to behave properly to insulating these media technologies from their everyday circumstances. This subtle change meant that the burden fell to the device to adapt rather than the other way around. As telephone wires began to "penetrate everywhere,"⁸⁸ they were imagined as fostering constant and unimpeded connectivity that not even saliva or a spilled drink could interrupt. The move to cord protection was not one that accompanied a great deal of fanfare, however. As part of telephone infrastructure, cords often faded to the background of conversations as long as they worked properly;⁸⁹ they hardly inspired fantasies like those inspired by the impervious wristwatch around the same time period.

2 WATERLOGGED WRISTWATCHES

Some people refused to wear wristwatches because of their perceived frailties, as “wearing a watch on the wrist . . . is one of the severest tests which can be given it.”¹ Professor H. Bock of Hamburg (1917) proposed that people avoid this kind of test altogether because they could not properly tame the ever-moving wrist: “The idiotic fashion of carrying one’s clock on the most restless part of the body, exposed to the most extreme temperature variations, on a bracelet,” he hoped, “will . . . soon disappear.”² Hamburg responded to the fact that a worn device like a wristwatch particularly succumbed to its elemental circumstances when people shifted from pocketed timepieces to strapped ones: unshielded on one’s body and carried from place to place, their mobility and ubiquity in everyday life activities made them a liability for all kinds of damage, including corrosion. Bumps of the wrist, splashes from sinks, unintentional dunks, and even perspiration routinely occurred; these wetness possibilities further expanded opportunities for damage as compared to the telephone cord, which hung about in a fixed location.

For both pocket watches and wristwatches, the question of carefulness had taken on increasing urgency given that, since the late 1800s, a general desire for keeping *precise* time had increased, as compared to the preceding decades. People began to value timetables, showing up “on time,” and hourly-wage employment as part of a shift in attitudes toward timekeeping and a greater dependency on time management.³ The act of keeping time seeped further into the practices of everyday life, and so too did everyday life—with its rain, puddles, oil, and sweat—seep into timepieces themselves. Though

stories of breakage garnered attention as unusual events, they occurred with enough frequency that an article in *Popular Mechanic* surmised, “Almost everyone has had the experience of dropping or holding a watch in water, entirely unintentionally of course.”⁴ The unruly wrist threatened with its awkward movements and constant liquid exposure. Although wristwatch-wearing became more popular than Bock hoped as the twentieth century progressed, his concerns reflected a common sentiment among watchmakers and repairers that neither watches—nor wrists—were fit for everyday life’s liquidity.

Indeed, the wrist itself represented a controversial timekeeping location. For example, while many men carried pocket watches (and even pockets themselves were considered a masculine fashion trait⁵), most people in the early twentieth century in the United States associated wristwatches with femininity and “jewelry” akin to the bracelet or, as one article noted, to wear a wristwatch was “all right for ladies.”⁶ Expectations about gender, bodies, class, occupation, and environment all played a part in structuring a person’s timekeeping practices. Thus, cultural discourses were trying to work out what it meant to *wear* a watch, who should do so, under what circumstances—and whether the need for keeping time in all situations exceeded damage risks.

Wristwatch repairers, like telephone trouble men, told many “war stories” of customers bringing waterlogged watches to their shops. And, like their telephony counterparts, they often weren’t critiquing watches themselves; rather, they warned against the “merciless treatment” such devices often incurred at their wearers’ hands.⁷ The bad-user frame featured prominently, wherein consumers were described as either unaware of—or not concerned enough about—liquid risks, but this lack of caution didn’t absolve them of responsibility. In such accounts, usually gendered, men purchased or repaired watches and women broke them. This damage-causing (and supposed ignorance) came to the fore in a story about bathing gone awry, when a repairer wrote about an encounter with a woman whose watch required fixing:

“What in the world is the matter with my watch?” she exclaimed as she placed the timepiece on the counter. Today is a cold day, and I guessed what had happened even before she told me. In taking her bath she had forgotten to remove her wrist watch and it was immersed for some little time. After dressing quickly she had immediately gone out into the open air. The water, penetrating the

case, had frozen and the movement was ruined beyond repair because it was incased in ice.⁸

The repairer reported that he diagnosed the source of trouble even without the woman giving any explanation, thereby deeming himself an expert barometer. Her basic confusion, at least according to the repairer, served as evidence that she hadn't attributed the breakdown to the bath or cold day. Another more elaborate retelling, also involving a bathtub, described a frustrated watch purchaser dealing with a woman's, perhaps his wife's, repeated breakage of a wet watch:

When I gave Mildred a wrist watch for her birthday, her gratitude was touching. She said she would always cherish it and keep it by her, and I know she meant that. That night she took a bath with it on. It cost \$10.50 to have the watch drained and started running again. But as Mildred remarked, she was hardly used to it and accidents will happen.

Two weeks passed before the wrist watch took another tub. Mildred was properly contrite about it, and explained that she had become so used to the darling little thing that she had forgotten she had it on.

This time it took longer to fix the watch and it cost more. I had a little shelf for it built next to the bathtub, but somehow it submerged again on Mildred's wrist. Repairs, \$31.75. I asked Mildred if she could not get into the habit of wondering what time it was just before she tubbed, but she said she never wondered until afterward and then her watch had stopped and she couldn't find out.

Fifty-two bucks was the damage for the wrist watch's stay in dry dock this time, and I uttered a solemn warning. Mildred was a trifle put out and demanded to know if I expected her to stop taking baths.

I have just heard a splash from the direction of the bathroom, a slight scream and a few fairly ladylike swear words. I know full well what has once more occurred. So I am on my way downtown to buy Mildred a new wrist watch. The new one must have a Swiss-navy movement.⁹

In this unfolding narrative, Mildred seemed to comprehend that the bath would break the watch, but its domestication—as she made timekeeping part of her normalized habits—conflicted with the device's acclimation. The author described how Mildred increasingly incorporated the device into her embodied routine, from being “hardly used to it” to “so used to the

darling little thing” that she bathed without remembering to take it off. The bathing body became a watch-wearing bathing body. Checking the time also became part of her bathing ritual, in which timekeeping itself played a role in managing the bath. Yet, as each subsequent damage event occurred, the reader learned about both the writer’s and Mildred’s frustration at its breakage—him growing irritated with the cost of repairs and her cursing at the repeated problem and his irritation with her. Watch-wearing and bathing became incompatible. It is interesting to note that the author ended with a resolution that he would purchase some kind of impenetrable diving watch instead of the frequently breaking, nonprotected one: if Mildred could not adapt her habits and practices to accommodate the device, then he must invest in a device that could sustain such ingrained practices.

The question of habit thus played fundamentally into watch-wearing activities, and wearers learned to define some situations as appropriate for watches and others as inappropriate in terms of breakage. Yet these adaptations, as in Mildred’s case, didn’t come without hiccups. In a book on how to retrain one’s mental patterns, author Shepherd Ivory Franz (1923) used the following example:

Not unfrequently the habit of wearing such an ornament as a wrist watch results in laughable situations. Thus the writer has seen a woman at a bathing beach unconsciously continue to wear her watch when going into the water. The habit of wearing the watch is so firmly fixed that the new situation does not inhibit it, even though dangerous to the watch. Doubtless if the woman were asked she would say she never wore her watch when taking a bath. The habit of wearing it was replaced by the habit of taking it off under the usual conditions of bathing.¹⁰

Franz identified how a person would remove her watch as a “usual” course of habit when bathing, while the newer circumstance of going to the beach did not trigger the same impulse—despite a similar liquidity. This variation suggests how wearers had to develop carefulness repertoires with devices like wristwatches, interpreting their surroundings and activities as either friendly milieus or damaging hazards.

The most high-profile instance of a woman’s liquid accident came from US First Lady Eleanor Roosevelt, who, in 1937, suffered “‘wails and moans’

when she forgot to remove a non-water-tight watch while swimming last summer.”¹¹ Roosevelt’s mishap earned coverage in the *New York Times*, among other papers, as the president gifted her a new (more protected) watch in response. Once again, the news’ framing suggested that a man had rescued a woman from her unfortunate breakage, but he had done so not through education but through a new kind of device. Over the years, Elgin Watch Company noted that “one of the pet traditions about women is that no woman ever takes care of her wrist watch,”¹² which in part explained the gendered blame. Yet the manufacturer chalked this up to a “mistaken notion” about such consumers, though one not easily undone. Gendered perceptions of carelessness made assumptions about women’s orientations to machines and portrayed them as lacking either the mental acuity or foresightedness to act preventively. They both contributed to and were informed by an understanding of the female body as, scholar Elizabeth Grosz puts it, “leaking, uncontrollable, seeping liquid” and therefore lacking “self-containment.”¹³

Although women incurred rejoinders, men were not beyond reproach. Take the tale of infantry member Sergeant Squibs, who endeavored to improve his (often criticized) memory. After reading a pamphlet that offered to train his mind to better retain facts—and following its instructions—Squibs boasted that “I got my memory fixed so’s I don’t forget. What I see I remember.”¹⁴ However, he became a source of amusement while giving his laudatory speech due to yet another memory slippage: “He was interrupted by the loud laughter of a man who pointed at one of his gesturing arms. Eyes followed the pointing hand. Squibs glanced down. ‘Hell,’ he remembered to say as the riotous crowd piled out through the door. He was looking at a wet and ruined wrist watch which he had forgotten to remove.”¹⁵ The serviceman’s inability to remember removing the watch cast his brain retraining as a failure and him as a buffoon.

Like the public service campaigns that telephone workers undertook, manufacturers, jewelers, and repairers tried to warn that liquid threats abounded everywhere, especially when it came to outdoor exploits. They used language focused on safety and peril to promote carefulness. Watchmaker Samuel Bernard noted in 1924 that users should “guard your watch against dampness when you are at the seashore” because the salty air could

cause corrosion.¹⁶ Repairers often encountered the “drowned watch” when they lived and worked in seaside towns, dealing with the “fatal” problem of saltiness.¹⁷ Yet even the more mundane issue of rain could cause trouble: P. K. Loud of Wright, Kay & Co Jewelers reprimanded wearers about wet practices that transpired on rainy days, like women sticking their wrists out of car windows to signal a turn and athletes playing intense games of wet-weather polo.¹⁸ Damage wasn’t confined to outdoor conditions, however. As Elgin Watch Company president De Forest Hulburt suggested—similarly echoing telephone companies’ warnings about overzealous babies with telephone cords—in a 1921 editorial, “Don’t give your watch to the baby to play with. Don’t take a bath, or a shower or go in swimming, without first removing your wrist watch. That may seem an unnecessary piece of advice, but some persons need it. In short, have a heart!”¹⁹ Watches couldn’t handle these kinds of situations; as another jeweler put it, “A good watch . . . isn’t keen on playing tennis, and it is apt to get sulky and keep bad time if you go swimming with it on your wrist.”²⁰

But if manufacturers and repairers sought to recalibrate consumers’ affect toward concern, then they also wanted to induce a sense of guilt rooted in mistreatment and bungled responsibility. H. Frank Meddril, in an article on watch care, surmised that a broken watch’s grim prognosis reflected bad handling and therefore user blame: “On the tombs of many of these faithful little servants might be aptly inscribed the epitaph: ‘A Victim of Human Neglect.’”²¹ Sent to the grave by their incompetent owners, this victimization language pitted the innocent timepiece in opposition to the handler. Turning also to the same language of servitude, Bernard characterized water as “harmful” to the “most temperamental of mechanical servants.”²² By imagining the device in a subservient role to its human master, these writers suggested an imbalanced power dynamic in which the watch could only perform its duties if treated a certain way. To overcome risk, jewelers entreated consumers to coddle and protect their watches by envisioning them as fine jewelry, dependent upon the wearer, rather than hardened tools.²³

But if watch-wearers couldn’t be trusted to behave with caution, another solution to watches’ fragility came in the form of owning different kinds of watches for different purposes. The *Boy Scouts Year Book* (1921), for example,

recommended that young outdoor enthusiasts bring inexpensive watches on overnight hiking trips—knowing they would likely fall victim to wrist perspiration, hot weather, and hard knocks—and leave “fine” watches at home.²⁴ Manufacturers seized on this notion of wearing cheap versus expensive watches when it came to travel, advertising watches specifically with disposability and ruggedness in mind. Watchmaker Ingersoll enthused in 1928, “The Ingersoll has become known as ‘*the* vacation watch.’ People who don’t care to run the risk of injuring their expensive watches carry Ingersolls in the summer months.”²⁵ The company referenced its watch’s chromium backing as an alternative to nickel-backed watches, a material that prevented corrosion from sweating. This approach suggested that one should, rather than stop using the device altogether or risk damage, match the proper watch with the proper activity. Consumers could *manage* wetness by adjusting their purchasing strategy to meet specific lifestyle needs.²⁶

In a good example of this kind of toggling between devices, a magazine article reported on the watch-wearing practices of Jim Lewis, a master shipwright who had launched more than 540 ships. The piece told the tale of Lewis’s predilection for keeping launch time with an inexpensive watch as opposed to an expensive one: “Now, deep in Jim’s vest pocket he carries a beautiful timepiece, its multi-jeweled works nestling in a handsome gold case, but he wouldn’t think of taking it out where it might get bashed in the rigorous atmosphere of a ship launching.”²⁷ The article continued, with its big reveal, “Instead, he holds in his big, roughened hand the hero of our story—a battered old relic that costs only a dollar.”²⁸ By making the dollar watch a “hero,” the text worked to subvert readers’ expectations about luxury and economy timepieces. Where Lewis could not trust the high-end watch to meet his maritime needs for “launchings . . . ‘right on the button,’” he could delegate timekeeping responsibilities to the low-end watch without fear of damage.²⁹

Cost, durability, and user behavior thus intersected in complex ways. By World War II, a survey found that most watches had paltry life spans, especially the “cheapest grade” ones. But these inexpensive watches, according to the US government’s report, suffered not primarily from their construction but from their users’ bad behavior:

Many of such watches are used by youngsters who frequently treat them more as toys than as timekeepers. Even the cheap grades of watches used by adults receive abuse, particularly wrist watches. They may be taken on camping trips, exposed to rain and dirt, and dropped frequently; and they are likely to be discarded when they first meet with a serious accident or when they stop running for want of cleaning and oiling.³⁰

Well before the disposability of digital upgrade culture, concerns raged over consumers' willingness to discard broken things. But it is also notable that cost and materials/manufacturing often mattered less than how particular uses counted as "abuses." These attributions hinged primarily on the user's culpability rather than the device's shortcomings or sociocultural factors that necessitated watch-wearing in the first place.

Indeed, no matter what kind of watch one chose, jewelers argued that it came down to the proper handling. Repairers framed themselves as doctors giving urgent aid, like the telephone trouble man carrying out his "diagnosis": "If such men and women would follow the advice of their jeweler as they follow the advice of their physician," concluded one repairer, they would save their watches as they save their bodies: "Life extension is possible for both."³¹ It wasn't always clear, however, who should educate wearers about behaving in this manner. Although many jewelry stores both sold and repaired watches, the same people often did not occupy both positions. Given that repair people did "not see a customer until his watch has a 'flat tire' or a 'burned out bearing,'" it made sense that salespeople should also instruct buyers upfront about how to behave properly with their new purchases—thereby preempting breakage before it occurred.³² Thus, at the moment of acquisition, some understanding of liquid carefulness should also take place.

Jewelers and repairers failed to grasp, however, how the portable and worn device moved from practice to practice and from liquidity to liquidity. They imagined a desirable consumer as one who constantly negotiated and calculated risks by putting on and taking off her watch based on moment-to-moment elemental appraisals, rather than one who habitually moved through daily life without recognizing and attending to liquid hazards. This may explain why advisories often had limited success, which meant that repair often happened in ad hoc moments and intermixed with use. Indeed,

though repair people were quick to recommend the value of their service in these scenarios, do-it-yourself columns proposed various consumer interventions such as putting a piece of cellophane between the watch and one's wrist to prevent sweating, painting the strap with colorless nail polish to protect it, or soaking the watch in kerosene, whiskey, or gin to prevent corrosion from air contact.³³ Through these advice channels, how to deal with liquids became a regular, if not always acknowledged, part of owning and wearing a watch. Such adaptations took place outside of traditional repair institutions and demonstrated consumers' ingenuity in trying to patch up, plug up, and remediate leaky bodies and leaky devices; it wasn't necessarily that people didn't grasp breakage, but instead that watches had become entrenched in everyday life so that fragility didn't immediately spring to mind.

ENGINEERING IMPERVIOUSNESS

Quite in contrast to manufacturers' and repairers' mantras that users should recognize and protect against liquid "hazards," another approach involved designing and engineering contained technologies to prevent breakage in the first place. This ethos imagined an impervious device that gave the potential user liquid permission.³⁴ It played out quite noticeably in the wristwatch market, where one could replace fragile "jewelry" with a protected time-piece that could eliminate liquid intrusion. This license, however, didn't apply equally to everyone. Only men in certain occupations, such as "cavalry officers, sportsmen and aviators," were not subject to "ridicule for wearing wristwatches."³⁵ It was quite difficult to convince men to take up worn media. One jeweler put it quite explicitly, in a campaign to encourage males' watch-wearing: "There's absolutely nothing effeminate about a Regular Red Blooded man wearing a strap watch."³⁶ Over time, in its conversion from feminine adornment, the wristwatch "emerged as a distinctly masculine object, freighted with overtones of technological knowledge, high social status, and personal courage and daring."³⁷ Such a transition required not only redefining who could wear strap watches and for what purposes but also rethinking their design and liquid tolerance to project a hypermasculine image. Wrists, too, needed to undergo such a shift: "Formerly it was thought

that the man who wore a watch on his wrist was the kind who was afraid of being slapped on the wrist—that he was an effeminate person, even a ‘sissy.’”³⁸ By contrast, the durable watch wearer could “throw the wrist forward”³⁹ without concern. Timepiece “toughness” could apply equally to the wearer’s body, his timekeeping practices, and his device’s hardness.

Thus, if jewelers argued that the average (often female) watch wearer should remove her watch when bathing, swimming, or doing the dishes, then a different solution came in the form of making timepieces water-resistant or proofed. Device protection offered possibilities to expand the watch-buying demographic, but it also resulted from normalizing timekeeping into men’s military occupations, particularly for aviation and nautical activities, during World War I. A watch that could sustain spray and even submersion offered advantages, like protective body armor, to the embattled wearer. Where previous outdoor watch-wearing might have necessitated that people put their arms above their heads while wading through water to minimize wetness,⁴⁰ an abstinent wrist did not fit in with the “harsh” wartime climate and a soldier’s wet activities. Manufacturers proposed that men were “active” users, who could—and needed to—ruggedly carry forth with their wearables.⁴¹ Watchmakers incorporated this kind of thinking in their appeals. In the words of an ad for watchmaker Ingersoll published in the *Army and Navy Register* (1918), “The Waterbury is thoroughly a ‘he’ wrist-watch, built for man-service.”⁴² The wartime watch-as-tool seemed to justifiably *necessitate* wetness protection in particular gendered occupations.

The rhetoric that surrounded impervious watches eschewed leaky vulnerability by imagining macho impenetrability. Where telephone workers and jewelers had a hard time convincing women about the dangerousness of their practices, impervious watchmakers tried to position liquids as yet another foe that the mechanism and wearer could successfully conquer in the course of battle. This posture reinforced the idea that men treated things (and people) in “hard” ways—in binary opposition to a woman’s supposed gentleness and caring—and in which roughness was encouraged as a sign of appropriate masculinity.

A commercial market for water-resistant and proofed watches began to take shape when a number of companies supplied US forces with watches

in the first half of the twentieth century.⁴³ Models such as the “Land and Water” Wrist Watch (1916) targeted men by promising to meet those “constant demands” posed by active service members.⁴⁴ Charles L. Depollier, a New York watchmaker, filed some of the first patents for a waterproof watchcase and dubbed one of his models “the watch in the trenches.”⁴⁵ In one particular patent, Depollier (1918) wrote that “with the very general use of wrist-watches by soldiers and others engaged in the open, the demand for waterproof watches has become much more insistent and the fact that the demand still exists unsatisfied is itself an indication that a reliable waterproof watch has not yet been produced.”⁴⁶ The watchmaker stated that he spent more than twelve months to determine why previous makers had failed. In his patent, he cited a variety of problems that plagued waterproofing watch cases—especially because they required manual winding. These included the fact that the waterproof features diminished after the user opened the watch a few times, that the seals themselves lost their water repellent properties over time, and that the user often forgot to tightly screw the case shut after winding.⁴⁷ His innovation involved creating a washer soaked with water-repelling solution that would act like a “lamp wick” and produce an impenetrable case.⁴⁸ The company sold the watch initially only to Army and Navy men.⁴⁹ Other Depollier products included a liquid-resistant watch strap (made of olive drab webbing) for military men, as the company promised that the wearer could “Wet the strap! Shake it! And it’s dry!”⁵⁰ Such instructions permitted the user to, literally and metaphorically, shrug off hazard and caution. The wrist practice of *shaking* as a vigorous action contrasted with a perception of that body part as a vulnerable, exposed one.

The military wearer needed this containment design, Depollier argued, due to the risky situations that both wearer and device encountered. To this effect, a frequently appearing advertisement suggested, “To the out-of-doors active man, sportsman, traveler, seafaring man, or man engaged in a pursuit where he is in an atmosphere of dust or grit or dampness, the Depollier water and dust-proof watch is the only watch qualified to withstand exposure to such conditions. It protects the movement from the salt, air, ice, dampness, alkaline dust and heavy winds carrying always minute particles of dirt and dust.”⁵¹ In this description, Depollier appealed to a particular

kind of able-bodied man and to protection that would inoculate the watch against its surroundings. The watch's durability represented its steadfastness and dependability, like uninterrupted telephony, as "Every man in the service wants the watch that will stand by him through thick and thin."⁵² In contrast to the fragile servant that could not perform its duties due to poor treatment and required liquid prohibition, the sealed-up device never stopped and never broke down because the soldier's hazardous occupation required its continuity. This framing argued that the watch should always remain on, as the wearer seamlessly enfolded timekeeping into the flow of his military practices.

Within years of Depollier's innovations, Swiss luxury watchmaker Rolex emerged as a key player in the waterproof market. Rolex's founder, Hans Wilsdorf, recognized the need for a durable wristwatch, not only to protect it from water but also to ensure the continuing functionality and integrity of the watch against all elements such as dust and dirt. In 1917, two Royal Navy submarine officers commissioned Rolex to create a first attempt at a hermetically sealed case with its Submarine Commander watch. However, the design failed because it featured two outer cases and the wearer had to open the outer shell every day to wind it. This contributed to metal gasket failure over time—thereby inviting water ingress. The product also suffered from poor marketing.⁵³

Despite these trials, Wilsdorf and his team persisted. Watchmakers Paul Perregaux and Georges Perret had received a Swiss patent in 1925 for a crown that attached to a watch case and could make a waterproof seal.⁵⁴ Wilsdorf purchased the rights to this patent, but he recognized that it had problematic aspects to its design; among these, its waterproof gasket would not have lasted long (typically made of leather, cork, or felt in the 1920s), and it caused inconveniences in the way it required winding.⁵⁵ As a result, Rolex built upon its technology and released the "Oyster" in 1926.⁵⁶ Named for the "little shell-fish with its hermetic, protective shell," the Oyster's design received patents in Switzerland, England, Germany, and the United States.⁵⁷ This time, the watch featured a single, watertight case with a screw-down back and a patented winding crown.⁵⁸ It allowed the wearer to unscrew the crown in order to set the time or wind it and then to screw the crown onto

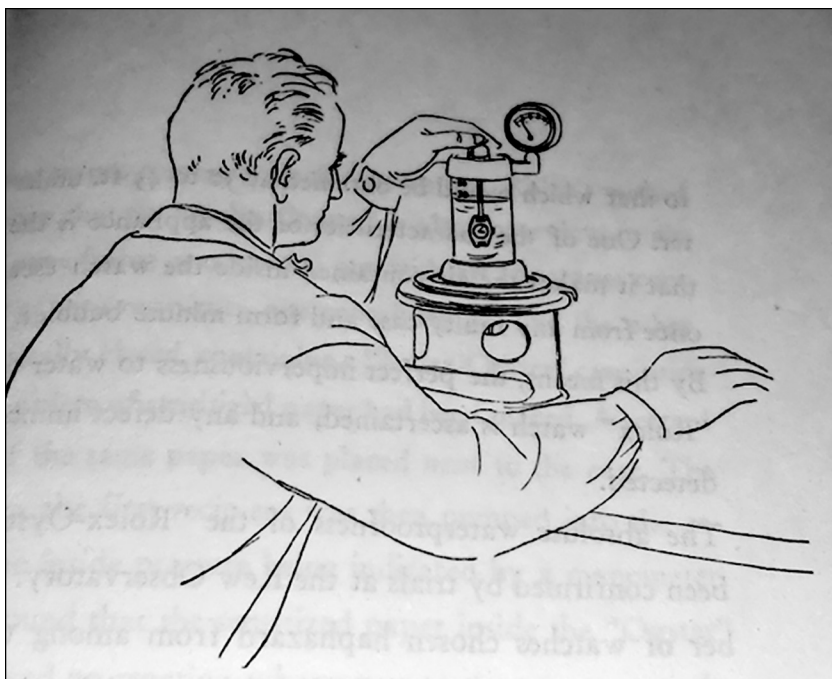


Figure 2.1

Rolex designed a testing device called the “Rapid” to determine if its Oyster watch could continue working after a submersion in water of 30–45 feet. Source: Rolex Watch Company, Ltd. (translated by R. Grandvoinet). Illustrations by Hans Tomamichael. *Rolex Jubilee Vade Mecum* 3 (1946): 18.

the case with an easy-to-use thread.⁵⁹ It is notable that the designers had to think through the wearer’s bodily practices in *making* the watch impervious; one necessarily had to engage with unscrewing, time-setting, and rescrowing to manipulate the time while ensuring containment.

Designing against liquid entry had proved a difficult business, and Rolex employees recognized that they had to test its product under strenuous conditions to claim effective protection. To this end, the company designed and patented a testing device, the “Rapid,” which submerged the Oyster under 30–45 feet of water to assess whether drops had penetrated the case and to ensure “perfect imperviousness” (see figure 2.1).⁶⁰ In many ways, the mechanism operated like the telephone “trouble” man’s Telefault to tease

out wetness where it lurked and to diagnose breakdown, yet in this instance, the Rapid conversely demonstrated its powerful *resistance* to ingress. Both devices constructed liquids as a problem, but they worked at opposite spectrums of prevention and repair.

The question of how to test this protection became paramount: how could companies demonstrate and verify their device's "authentic" imperiousness, and how could the public (as well as other authoritative governmental and industry groups) trust the claims made? Public spectacles, celebrity testimonials, splashy (quite literally!) advertising displays, and laboratory trials all worked to interpret and place boundaries around the terms "water-resistant" and "waterproof." At the same time, watches were embedded in wartime feats of human survival and "ordeals of suffering."⁶¹ The person-watch together became survivors who, through their successful liquid performance, achieved a "rite of passage."⁶² Gone was the temperamental beach bracelet, now replaced by intense physical rituals.⁶³

While battle became a fitting experiment for the durable watch, World War I's aftermath left confused attitudes about who should wear a wristwatch and under what circumstances. Strap watch demand and purchasing significantly diminished, and manufacturers began a campaign to establish wristwatches as desirable for *sport* beyond the "soldier's regalia."⁶⁴ In a Stanford University magazine reviewing fashions of the 1920s, a writer reinforced this perspective of the wristwatch "as a sport accessory only. The smart man is wearing it only in the country and when traveling."⁶⁵ As an accessory with a defined and limited use, the wristwatch transformed into a tool for the elite, outdoorsy, and itinerant wearer. Given its high cost and manufacturing in Switzerland, a Rolex would have been out of reach for many, and thus it needed to appeal to a particular class who could enjoy its privileges. While no longer explicitly associated with combat, the timepiece maintained its connotation as a device that would accentuate and accommodate rugged physical performances.

Rolex capitalized on this logic in its first public achievement with its Oyster wristwatch. Worn by twenty-six-year-old British stenographer and swimmer Mercedes Gleitze on October 7, 1927, the watch survived a grueling ten-hour swim in the frigid English Channel. In November of that year,

Rolex took out a full-page cover spread in the *Daily Mail*, a London newspaper, to proclaim its victory. The ad featured a smiling image of Gleitze with details of her swim and boasted of the watch's hermetic seal. News of the successful swim circulated to many other international outlets (see figure 2.2).⁶⁶ From this early moment, the Rolex company recognized that it could bolster its claims by relying not exclusively on its own word but by appealing to virtuosic demonstrations, testimonials, and tests. Gleitze, in her youth and able-bodiedness, represented the stereotypical peak of human physical fitness by accomplishing the difficult swim; her athletic performance meshed with a "perfect" technological specimen that also proved its endurance.

Despite Gleitze's lauded performance, Rolex worried that a watch "used by swimmers and divers" alone offered a "rather restricted use"; however, the company's executives also surmised that the public could more easily glean the dangers of water ingress than it could humidity or dust, given that invisible particles and misty, damp air hardly seemed like significant threats.⁶⁷ Rolex thus wagered that water resistance would sell the "proofing" capacity of the watch writ large and engender desire for protective technologies. Alongside sport, the company experimented with different methods to demonstrate its waterproof capabilities to the masses rather than only tell of them. For example, Rolex staged window display spectacles in England of the watch casually floating inside of a fish tank that passersby could witness (see figure 2.3). This submersion offered more dramatic proof than a mere splash, and the fish tank also dazzled in its commonness as a household object. As well-dressed onlookers gazed with interest at the tank, the watch seemed to habituate to its surroundings—fish, coral, shells, and water—and yet its unusual placement in the tank (as well as frequent admonitions against mixing timepieces and liquids) made it a surprising and foreign interloper. Wilsdorf noted that jewelers could stage displays of this kind to help them explain the product and its capacities, as both manufacturers and the public at this time believed that "the idea of a watch impermeable to water appeared quite utopian and without future."⁶⁸

This wasn't the first use of a submerged watch in a tank to attract attention—indeed, one historian notes that at the Great Exhibition of 1851, W. Pettit & Co. in London demonstrated, according to *The Illustrated*

THE ROLEX OYSTER WATCH

DEFIES THE ELEMENTS

MISS MERCEDES GLEITZE CARRIED AN "OYSTER" WATCH THROUGHOUT HER ENGLISH CHANNEL SWIM. More than ten hours of submersion under the most trying conditions failed to harm its perfect timekeeping. No moisture had penetrated and not the slightest corrosion or condensation was revealed in the subsequent examination of the watch.

THE ROLEX OYSTER

is proof against practically everything. Immersion in water cannot affect it. Dust, Sand, Grit, Grease, Damp, Cold, Heat, Perspiration,—all these enemies of good timekeeping are unable to penetrate the "OYSTER'S" elegant but immensely strong armoury. It is the ideal watch for tropical conditions.

Rolex Watches have been awarded twenty high awards for precision. Send for illustrated list.

AGENTS FOR WESTERN INDIA:

LUND & BLOCKLEY,

Watch and Chronometer Specialists.

150-154, Esplanade Road, BOMBAY.

Figure 2.2

Reports of Mercedes Gleitze's swim across the English Channel while wearing a Rolex wrist-watch emphasized the extraordinary quality of the watch and its leakproof construction against the elements. Source: Lund & Blockley, "Oyster Watch Defies the Elements," *The Times of India*, January 19, 1928, 1.



Figure 2.3

Rolex set up window displays in shops of its watches floating in fish tanks. This blending of the extraordinary with the natural and the domestic made the watch seem at home in the aquatic environment. Source: Rolex Watch Company, Ltd. (translated by R. Grandvoinet). Illustrations by Hans Tomamichael. *Rolex Jubilee Vade Mecum* 1 (1946): 18.

London News, “a watch, keeping time, though suspended in a glass globe, filled with water, and surrounded with gold and silver fish.”⁶⁹ Whether Rolex Company employees knew of this much earlier demonstration or not, the fish tank display dramatized how a watch could move beyond *battling* the elements to become aquatic and acclimated just like a fish.

Moving forward, though, the company’s predominant advertising themes continued to lean hard into constructing liquids as vanquishable enemies defeated by outdoor explorers, professional athletes, and other “sportsmen”: those wearers whose wet outings couldn’t afford failure. Numerous ads in the 1930s and 1940s took this tact.⁷⁰ The watch could move fluidly

between wartime and peacetime, even into World War II, because it had been “tested . . . by men of the Allied forces on every front” and in peacetime “by sportsmen in every climate.”⁷¹ After surviving in the English Channel or the trenches’ wet muck, the watch could certainly manage everyday life’s fishing pond, sailboat, or tennis match. Writer and outdoor enthusiast Howard A. Giddings commended wristwatches particularly for these activities, surmising, “I will add for the benefit of the doubters that the wrist appears to be the safest place to carry a timepiece.”⁷² Giddings reframed the watch and its wrist as a durable duo.

It is critical to recognize these themes as part of a larger pattern—one not unique to Rolex. Just as Rolex’s advertising picked up on themes from Depollier’s, so too did another Swiss luxury watchmaker, Omega. Prior to the invention of any waterproof watches, Omega had already established itself as a watchmaker for a military and well-to-do athlete clientele, producing watches for both Britain’s Royal Flying Corps in 1917 and the US Army in 1918. The company also gained recognition (from 1932 forward) as the official timekeeping watch for the Olympic Games. That same year, Omega created the first commercially available divers’ watch, the (aptly named) *Marine*. In order to get around the strictures of Rolex’s patent, inventor Louis Alix of Geneva inserted his watch into a second casing. With a rectangular shape and an Art Deco style, the watch utilized a spring clip to keep the two cases together.⁷³ Alix patented the *Marine* in Switzerland, France, Britain, the United States, and Germany.⁷⁴ Like Rolex, the company tested its diving watch in a variety of circumstances, such as sinking it to a depth of 73 meters in Lake Geneva for thirty minutes.⁷⁵ However, in contrast with the *Oyster* (which Rolex never tested or certified to great depths), Omega earned certification from the Swiss Laboratory for Horology for its *Marine* timepiece. Notable divers wore the watch, too, such as French Naval Officer Commander Yves Le Prieur and the American explorer Dr. William Beebe, who also helped to popularize underwater photography.⁷⁶ These wearers’ usage in difficult climatic conditions further cemented the protected watches’ status through repeated mettle tests.

FAILING TESTS AND STANDING UP TO TORTURE

Companies tried to sell the appeal of water-resistant and waterproof watches to consumers within an evolving framework of protection initiatives that increasingly called their bluff. The US Federal Trade Commission (FTC) had taken increasing interest in the watch industry following World War II, and a number of the FTC's rules and regulations cracked down on what the governing body perceived as misleading and unethical advertising when it came to liquids. Where Rolex and Omega sold high-end watches only available to a select, wealthy set, other manufacturers had caught on to the values of espousing resistance rather than warning against fragility in a lower economic bracket. The frequency with which companies threw around the terms "water-resistant" and "waterproof," however, meant that it became difficult for consumers to ascertain their claims' veracity. Thus, the FTC desired to introduce third-party rigor and standardization into the watch-testing process.

One of the most significant initiatives involved the FTC's April 24, 1947, Trade Practice Rules, which, under Rule 2(c), provided two tests that companies should use to measure "water resistancy" or "water repellancy." The first test, designed to measure pressure, dictated that manufacturers should submerge a watch or watch case underwater for at least three minutes and "at a pressure equivalent to a depth of 26 feet of water under normal atmospheric pressure of 15 pounds per square inch."⁷⁷ A watch would successfully pass the test if, after this immersion, it did not admit "or show any evidence of capacity to admit, any moisture or water."⁷⁸ A second test evaluated the watch or watch case's ability to withstand a vacuum of "'conditions of equivalent or greater severity' than that involved in the pressure test."⁷⁹ Though advertisers might compellingly describe their watches' performance, these formal tests and classification standards intervened in the discourse to place surveillant boundaries around what counted as "successful" containment.⁸⁰ However, they did not take into account daily practices, bodies, or specific scenarios; the hallmark of resistance became deep water submersion over time and therefore it privileged activities like diving over other forms of daily wetness. These definitions would undergo further scrutiny in later years.

In the meantime, another familiar watch company, the US-based Timex, aimed to make water-resistant watches more affordable and widely available as compared to Rolex's priciness and luxury connotation. Yet the company didn't pivot from imagining its watches and wearers as embattled and liquids as hazards; in fact, it reinforced these tropes even more so. Using what would become a wildly popular slogan, Timex promised that its watch "takes a licking, yet keeps on ticking!"⁸¹ The notion of taking a "licking" fit in with the idea of abuse, a trope at the heart of "torture testing"—a stress-testing practice that pushed materials to their limits; meanwhile, the "keeps on" ticking referenced uninterrupted timekeeping. Where Rolex and Omega had relied predominantly on testimonials from high-profile athletes and explorers to prove their devices' survivability, Timex contrived its own scenarios that positioned the company (and, by extension, the user) inflicting "punishment" upon the device.

The concept of "punishing" a watch had caught on earlier,⁸² but the metaphorical violent language that associated torture with consumer products of many kinds grew in usage during wartime. For example, a 1942 Simmons Beautyrest mattress ad boasted about its "Mattress 'Torture Tests,'" in which the sleeping surfaces "were crushed and pounded under Mattress Endurance Machines" to serve as proof that they could survive during wartime exigencies.⁸³ This approach licensed the corporation to do its worst to and with their devices by adopting military lingo and militaristic rituals. It is notable that this kind of abuse stood in direct contrast to everyday life abuses as *misuses*; the torture test represented a necessary evil to measure imperviousness as opposed to carelessness or neglect.

These grueling verification tests—proof of proofing—offered an appealing advertisement for water-resistant features, and Timex became known for its extravagant tests that made imperviousness a spectacle. In one print ad, the company outlined how it had strapped its Timex Marlin watch to a submerged anchor of the SS *Exochorda* ship in New York Harbor. The advertisement reported that "a half hour later when the anchor was weighed dripping with mud from the river bottom the watch was still running—and on time."⁸⁴ With the well-trodden nautical theme, the ad aimed to put the watch through its paces in a way that would impress potential customers. Yet another showcased

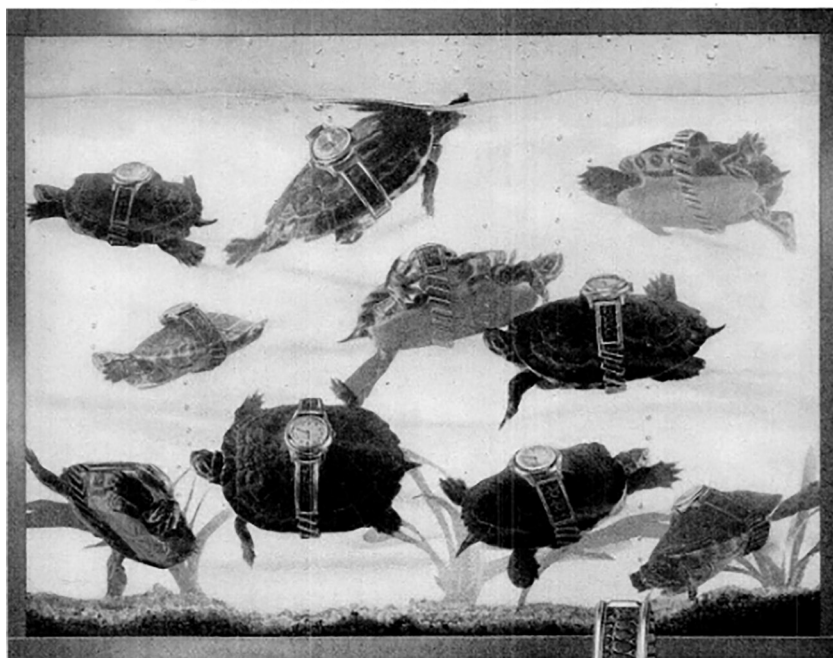
the device's supposed assimilation into nature, with imagery of wristwatches strapped to turtles' backs as they swam underwater (see figure 2.4). Harkening back to Rolex's fish tank displays, Timex aimed to make the case that its devices swam underwater as unproblematically and habitually as a turtle.

The company also transitioned from print ads to television spots in a series of high-profile commercials that featured John Cameron Swayze, news anchor and product commentator, who gave live demonstrations. Taking the torture test one step further, Swayze tried to shock and delight viewers by carrying out wet experiments for the camera.⁸⁵ While these spectacles continued to emphasize abuse, watch manufacturers of resistant timepieces began more aggressively targeting women as prospective purchasers in the 1950s and 1960s, in line with post–World War II consumerism.⁸⁶ To make this maneuver, companies like Timex pivoted to redefine household liquids as hazards that one could embrace. In a 1959 torture test TV commercial to this effect, Swayze put a ladies Timex watch—with its “lovely feminine lines”—into a 45-gallon KitchenAid dishwasher.⁸⁷ The machine possessed a clear front panel for a live viewing of “powerful jets of water” spraying the watch. Swayze encouraged viewers to “imagine the beating [the watch is] getting.”

Swiss watchmaker Mido took a similar tact, proclaiming that “a Mido is so completely immune to water, she can wash the dishes, bathe the kids—even swim with it!”⁸⁸ These appeals to cleaning and childcare practices as reasons for wearing a waterproof watch demonstrated how entrenched gender roles played as much a part in women's advertising as it did in men's. Men went to lakes and oceans for rides on boats and trips through the jungle, while women took on wet domestic chores. Such differential tableaux of everyday life were also working to normalize liquidity in these spheres by acclimating the device; instead of removing one's watch (or being blamed for forgetting to do so), the watch could remain as an ever-present fixture. The wristwatch could thus “serve” a woman to optimize her practices while reinforcing which practices counted as women's work.

Just as watch advertisers had faced an uphill battle in constructing wristwatches as masculine, they encountered a similar challenge in conceiving of impervious wristwatches' designs as feminine. Their efforts to continually frame women's watches as jewelry created friction with aesthetic impressions

TURTLES TEST TIMEX!



TIMEX WATERPROOF*

Wear a Timex in water? Of course you can. These ten Timex Waterproofs* humped around all day on ten turtles underwater. They all kept running right on time... they all lived up to their waterproof*, shock-resistant guarantee.

Accurate, durable and good looking, Timex is everything a fine watch should be... yet it costs less than one third the fine watch price.



Timex Marlin
Sweep second hand,
Radolite dial,
chrome case, stainless
steel back and
flexible expansion
band.

\$12⁹⁵
price tag

More people buy **TIMEX** than any other watch!

WATERPROOF* • DUSTPROOF* • SHOCK-RESISTANT • ONE YEAR GUARANTEE

500 Fifth Avenue, New York 26, N. Y. • 1300 Jane Street, Toronto 9, Canada

Figure 2.4

Timex tried to assimilate its timepieces in underwater conditions by showing off a "torture test" involving turtles swimming in the watches. Source: Timex Corporation, "Turtles Test Timex," *Life*, February 6, 1956, n.p.

of protection as clunky, masculine, and inelegant. The “ugly-faced”⁸⁹ rugged watch ran counter to these newer appeals to attract a stereotypically gendered feminine wearer who needed to look good as she carried out chores or went out on a date, thereby coding the female wristwatch as fashion and fashionable. A man, by contrast, needn’t concern himself with how he looked while engaged in liquid practices. Aesthetics thus further enforced gendered and binary ideas about “rough” versus “gentle” devices.

NO SUCH THING AS “WATERPROOF”

Increasingly expensive and dramatic ads of this kind demonstrated how the market had heated up around water resistance as a noteworthy feature. But if the FTC had issued a warning after World War II in its Rule 2(c) about fast-and-loose claims, then the advisory body found itself continuing to sanction many companies for failing its tests while promoting imperviousness. In a 1961 FTC decision versus the Helbros Watch Company, Inc. of New York, for example, the Commission invited an independent expert in metallurgy to test four Helbros watches by submerging them each in a beaker within a bell jar, creating a vacuum. The Commission noted that all four admitted water within less than a minute’s time.⁹⁰ In response, Jack Diamond, on behalf of the company, explained that Helbros tested 25 to 33 percent of the watch cases once the company received them from another manufacturer and again tested approximately 10 percent of the watches once assembled. The FTC, however, believed this to be an insufficient amount of testing. It also criticized the company’s use of the term “waterproof” in its advertising, as the Commission had determined that use of a such a term (as compared to “water-resistant”) required a greater testing standard of at least 35 pounds per square inch/pressure for at least five minutes—after an initial pressured immersion of 15 pounds per square inch.

A subsequent 1964 decision of the FTC versus the Delaware Watch Company and A. Schwarcz & Sons, also of New York, rendered similar findings when the Commission noted, “It is an unfair trade practice to use the term ‘water resistant’ or ‘water repellent,’ or any word, expression, depiction, or representation of like import, as descriptive of a watch or watchcase

under any false, misleading, or deceptive circumstances or conditions.”⁹¹ Legislation of these kinds held advertising up to scrutiny and acted as yet another test of what imperviousness really meant. The situation fully came to a head in 1968, when the FTC published article 245.5 in the *Federal Register*, which outlined its policy about “Misrepresentation of protective features.” In the section, the FTC banned the use of the term “waterproof” altogether from advertising.⁹²

By taking this more dramatic step, the FTC intervened in a broader dialogue about proofing not only as a technical feature but also as an advertising technique and as a cultural marker. To *proof* a watch meant to imbue it with qualities of invincibility and impenetrability; that fantasy, however, didn’t always pass muster with the technical realities—and shoddy manufacturing policies—of actual devices. The organization was responding, in part, to the many copycat and counterfeited brands on the market that used the term liberally. “Dupes” circulated widely in the marketplace, with names like “Cimeqa,” “Hormilton,” “Longune,” “Bulovia,” “Benhur,” and “Gruin”—and usually imitated higher-end watches like Rolex or Bulova.⁹³ Once the FTC prohibited the “waterproof” moniker, it actually became easier to spot the sale and circulation of fake watches because their makers continued using the term, whereas reputable manufacturers did not.⁹⁴ This strategy provided yet another kind of test for watches as authentically liquid-friendly.

3 SUBMERGED CAMERAS

Henry Symonds, who had devoted decades of his career to “marine photography” involving naval drills and sea combat for England and other countries, argued that “the marine photographer, tossing himself helplessly in a vicious sea in a twenty-foot half decker sailing-boat, amid a flotilla of thirty-two-knot torpedo-boats and destroyers at steam tactics, endures more hardship, needs greater nerve and presence of mind, and runs graver risk of his life than any other camera-man that ever exposed a plate.”¹ The writer went on to describe numerous scenarios when the boat’s and water’s unpredictable violence led to unfortunate (and dangerous) dunks of his person and camera. These peril episodes served to invite readers as witnesses to the picture-taker’s perceived courage and investment in getting an image at all costs—serving not only his country but also demonstrating the heroic feats that media device and operator could carry out together.

Wet photographic feats drew attention to the fact that cameras, like wristwatches and telephone cords, presented their own set of difficulties when it came to photographing liquid subjects in the first half of the twentieth century. Photography in wet circumstances required attention to lighting, accuracy, and moving targets, as well as concerns about preserving photographic film.² Beyond the particular rigors of military photography, wetness could involve taking cameras to humid or rainy locations, carrying them while out boating or at the beach, or submerging them underwater to capture aquatic scenes. Aside from these specific photographic difficulties, cameras also drew direct comparisons to wristwatches in terms of their similar need for care. Asked one author to “outers” (photographers who took outdoor excursions) in 1922, “I wonder how many outers know that the

camera, even if it is only a moderately good one, is as delicate as a watch and that it must be treated accordingly?”³

Yet if writers in photography magazines deliberated about fragility, they also thought of the camera as an “essential part of the [outdoor] equipment”⁴—the camera *should* go to wet places and needed to adapt accordingly. Indeed, most photographers agreed that bringing “a camera on an outing is one of its chief joys.”⁵ Photographer Ray Atkeson wrote in an article about taking one’s camera to the seashore, “There is no certain method of eliminating the menaces of nature near the sea except by going somewhere else,” and this attitude exemplified photographers’ common mindset about persisting in wet, elemental situations despite the perceived risk.⁶

In the camp of device hardiness, poet William Ludlum (1924) encouraged photographers to take their cameras out in cold weather in an excerpt of his poem, “When Winter Comes”:

When winter comes—why store away
The camera you used yesterday?
It has no fear of temperatures—
But through all seasons it endures;
Though wet or dry, or cold or hot,
Your camera should be on the spot.
To capture each succeeding grace
On Nature’s ever changing face.

When winter comes—though days be chill
And snow-clad every vale and hill—
What of it? Coats are made to wear
And you should have no thought or care
Of winds that blow or frost that bites.
Buck up! Get out and view the sights
That winter only can provide,
And—tote a camera at your side.

...

When winter comes—dress warm and go

Prepared for pictures in the snow.
Forswear the radiator's cheer—
This is the best time of the year
For cameras and for humans, too;
Snow puts the joy of life in you
Until the red blood in you—hums!
And cameras thrive—when winter comes.⁷

Ludlum advised how both people and cameras must respond to winter: the camera had “no fear” and the human should “buck up!” as it is “the best time of the year/for cameras and for humans, too.”⁸ The author encouraged a durability mindset—the ready and willing camera required a user who could demonstrate the same ruggedness. He articulated not only how cameras and people could acclimate to cold but also that they should—human and machine together in liquid living.

Photographers, both amateur and professional, often discussed the utility of picture-taking in wet situations. Outdoor photography for the sportsman, boater, naturalist, and hunter constituted its own genre with copious advice-giving, and magazine editors were known to favor publishing scenic location pictures.⁹ Photography magazines and journals also hosted contests that encouraged rainy-day scenes.¹⁰ These pictures could become cliché over time through their sameness, however, and columnists advised participants to “avoid the hackneyed rainy-day themes” by taking evermore unusual and difficult-to-access shots.¹¹ This kind of outdoor photographic practice’s attraction stemmed in part from its *difficulty* meant only for the “courageous individual who ventures forth under such conditions.”¹²

As photographer B. B. Snowden (1920) put it in a bid for making wet-day pictures,

Rain and storm inevitably suggest man’s conflict with natural forces, and his triumph over them. As the wet beats down, the dull complexities of modern life fade into the background, and civilized man reverts to his primitive battle with the elements. On one side is arrayed the storm; on the other are the comforts and security of shelter and warmth and indoor life. Much of all this can be put into pictures. Indeed, I can hardly think of any class of subjects in which what we see so closely corresponds with what we feel.¹³

This pitting of man against nature in battle resonated similarly with the kind of antagonism described by timepiece manufacturers. Armed with a camera against nature's punishing forces, the photographer could evoke the struggle of dealing with the elements through the rainy-day picture. And indeed, the term "armed" may have fit aptly; where "the old-timer packed a gun" to enjoy the outdoors, now "the modern tourist carries a picture-box."¹⁴ The camera functioned as a new kind of weapon, finger ready at the trigger to apprehend a wet-weather scene.¹⁵ Sometimes, too, the camera worked alongside actual weapons. Paul J. Rainey (1910), for instance, wrote about his violent hunting encounters with polar bears: he "bagg[ed] arctic monsters with rope, gun, and a camera," using the device to capture the scene while armed hunters literally captured the animal in wet, snowy climes.¹⁶ A technology embroiled in this situation thus enacted its own violence, made to defy nature and to colonize it at the same time.

Wilderness photographers were "fascinated by a primitive world of violence and savagery," scholar Finis Dunaway (2000) writes, and the camera promised to function like a "more civilized weapon" that could see and store the photographer's views.¹⁷ Dunaway elaborates that this kind of reformed hunting connected to ideas about manhood in the late nineteenth and early twentieth centuries: "Restraint and violent intensity, photography and killing went hand in hand. Violence and aesthetics were linked by the need to preserve wilderness, to remember an imagined past, to protect a masculine space from the encroachments of an effeminizing civilization."¹⁸ The "hunter-artist" could use the camera to maintain a kind of primordial connection to nature that inevitably entangled with questions of gender and physical performance.

DEVELOPING UNDERWATER AND WET PHOTOGRAPHY

Similar danger and adventure themes characterized efforts to take cameras *under* the water as opposed to only photographing from above. For instance, noted underwater photographer John Fenton's account of battling a shark merited a large spread in *Popular Science* (1950). A graphic illustration detailed the diver in a dangerous wrangle with the sea creature as another

submerged photographer caught the tangle on camera as a bystander in the image, rather than aiding the endangered picture-taker.¹⁹ While many were motivated to descend into deep water to procure and “hunt” an unbelievable and never-before-seen shot, there might be other motivations, too, that hinged on hunting for things. People like yachtsmen with an “adventurous spirit” were encouraged to take their cameras below to search for sunken treasure and cash in on the “vast wealth lying on the bottom of the waterways of the world.”²⁰ Underwater photography’s difficulty in part inspired its allure: not just anyone could master diving underwater to great depth, let alone learn how to operate a camera under those conditions. Additionally, unlike the mundanity and domestic vulnerability of a bathtub or baby’s saliva, oceans were perceived as strange and exotic, even hostile sites of wetness that resisted knowability.

Photographers had begun experimenting with equipment to gather underwater ocean images as early as the 1850s, but these first attempts revealed significant challenges. Photographer William Thompson (1856) built a wooden and iron box to house his camera, mounted it to a tripod, and submerged it approximately 5½ meters deep with a rope.²¹ Saltwater caused the box to fail as it could not survive the water pressure, but even then Thompson had ascertained that the successful picture-taker would need to “‘suit’” the camera to make it water-friendly.²² Underwater photography developed further by the end of the nineteenth century and into the early twentieth century, though the scientific community debated proper methods and what value such aquatic vision offered.²³ Of the many achievements that happened in this time period, the work of French photographer Louis Boutan stood out, given Boutan’s efforts to show most basically between 1893 and 1900 that one could take a photograph legibly underwater.²⁴ In a photographic magazine, Boutan explained his method for exposing a camera to water, with an emphasis on the proper case/housing:

To photograph below the water one had to go below the water, and to take one’s camera with one. What was wanted was a watertight case, in which an ordinary camera could be worked from the outside without the risk of the water getting in. I adopted the camera known as a “detective camera.” This was placed in an outer case made of sheets of copper. The lid of this case, which was clamped

down with strong screws, rested on a pad of thick india-rubber. When the camera was put into the case the lens rested against a window of plate-glass of the same size let into the copper side. By means of button handles outside the case the shutter could be opened and closed, and the plates renewed automatically.²⁵

The photographer's invention involved a camera housing that one could operate via button from outside the housing, thereby removing the need to directly access the camera itself. The leak-free container made this kind of photography possible. Boutan, though wary about forecasting into the future, prophesized that people would later undertake underwater photography as a sport, though this shift did not come to pass for most consumers until decades later.²⁶

Much of what a layperson would have experienced about underwater exploration came from print texts, cinema of attractions, or popular press accounts. Two of the most popular early films were *The Terrors of the Deep* (also known as *At the Bottom of the Ocean*) (1914) and *20,000 Leagues Under the Sea* (1916), the latter of which adapted Jules Verne's 1800s famous book.²⁷ *20,000 Leagues*, an expensive and technically complex film produced by the Universal Company and shot in the Bahamas, featured the work of George and Ernest Williamson. The brothers used an iron submarine chamber with a waterproof tube through which camera operators could pass a camera up and down a ladder; that device had evolved from an invention created by the Williamsons' father, Captain C. Williamson. He had built it in tandem with George and Ernest, and it was first used in the film *The Terrors of the Deep* by Thanhouser senior cameraman Carl Louis Gregory (see figure 3.1).²⁸ Known as the Williamson Submarine Tube or the Photosphere, its use persisted well beyond those initial films.²⁹ The Williamsons' work broadly represented an increasingly public desire to solve "the riddle of the deep" and "conquer the unknown"³⁰ by apprehending a little-examined region of the earth.³¹ Underwater photographers made such a proposition seductive by portraying their experience as like "Columbus finding a New World."³²

Glossy and alluring Caribbean images from *The Terrors* and *20,000 Leagues* fit into a broader pattern of colonialist tourism marketing, colonizing not only the ocean but land and its inhabitants, too. Through photography

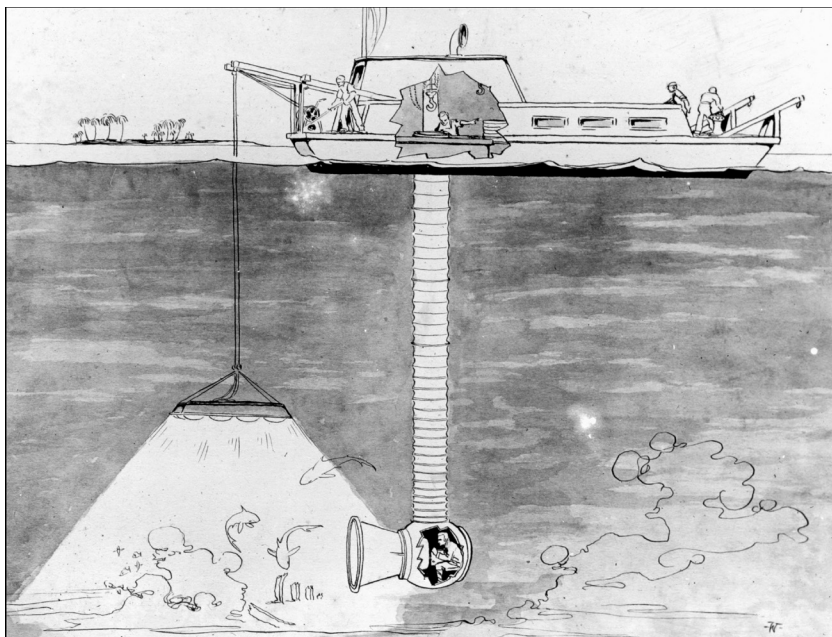


Figure 3.1

The underwater camera work for *The Terrors of the Deep* (1914) involved consideration for how operators could pass a camera to the ocean floor without getting it wet. Source: Williamson sketch showing Photosphere in operation, 1914, Chapman University, Frank Mt. Pleasant Library of Special Collections & Archives, https://digitalcommons.chapman.edu/jonathan_silent_film/1226/.

and cinema, the United Kingdom and the United States advertised that location as a tropical paradise.³³ This underwater imagery's novelty, the public's familiarity with Verne's written work, and a highly romanticized landscape came together to produce a potently popular film. The Universal Company boasted that crowds across major US cities waited in lines around blocks to see the film, with some cinemas opening hours early "to accommodate the surging multitudes."³⁴ Even the movie premiere attracted a packed house and rapt attention. According to Jas. S. McQuade (1916), Ernest Williamson attended the premier at Studebaker Theater in Chicago and, after initial anxiety about the film's reception, relaxed when he saw "the sea of faces turned towards the screen, every one of them revealing interest so profound that speech was forgotten."³⁵ Following his further aquatic cinematic

achievements, with films like *The Girl of the Sea*, *The Submarine Eye*, and *Wet Gold*, Williamson was lauded as an “inventive genius” who was “absolutely devoid of fear” despite the dangers of deep water filming.³⁶

Other texts like William Beebe’s book, *Beneath Tropic Seas* (1928), introduced the public to a four-month submarine expedition in Haiti, and the author “advise[d] his reader to buy, borrow or steal a diving-helmet and visit for himself the realms of gorgeous life and color that are to be found beneath the surface of the sea.”³⁷ Making the underwater adventure attractive, Beebe portrayed the ocean as at once exotic and accessible. The writer himself, on behalf of the New York Zoological Society, demonstrated this possibility by taking an automatic motion-picture camera underwater to obtain images for public consumption.³⁸ Moviegoers would subsequently experience an increasingly ambitious and wide array of aquatic images (such as those from Jacques Cousteau films) in the 1940s and 1950s; at that point, diving with a still or movie camera became an increasingly common sport and profession, in part because of safer equipment for deep water submersion.³⁹ Diver A. Felix du Pont took note of these opportunities for newcomers to the field (1940)—once again imagining the ocean as a place for the settler and the innovator—as he surmised, “There is plenty of room for pioneers.”⁴⁰ Likewise, Cousteau deemed the underwater world “man’s last great frontier on earth.”⁴¹

Techniques developed by Cousteau and others aimed to make this “frontier” visible—a quite technically complex operation. Most photographers who wanted to carry out underwater photography had to either construct heavy and clumsy DIY housings (various watertight boxes to which a camera could be inserted) or purchase quite expensive commercial options, many of which were developed first in Hollywood (see figure 3.2).⁴² Photographers used processes of trial and error to determine watertightness, such as initially submerging their camera housings in the bathtub to check for leakage.⁴³ In this sense, domestic environs functioned as testing grounds for the wet situations that the photographer would encounter outdoors.

Circumstances changed in 1959, when Jacques Cousteau, with the Belgian inventor Jean de Wouters, developed the first “amphibious” 35-mm camera, the Calypso.⁴⁴ Manufactured in France in 1960 and named after Cousteau’s research ship, the device used synthetic rubber O-rings to keep water out and

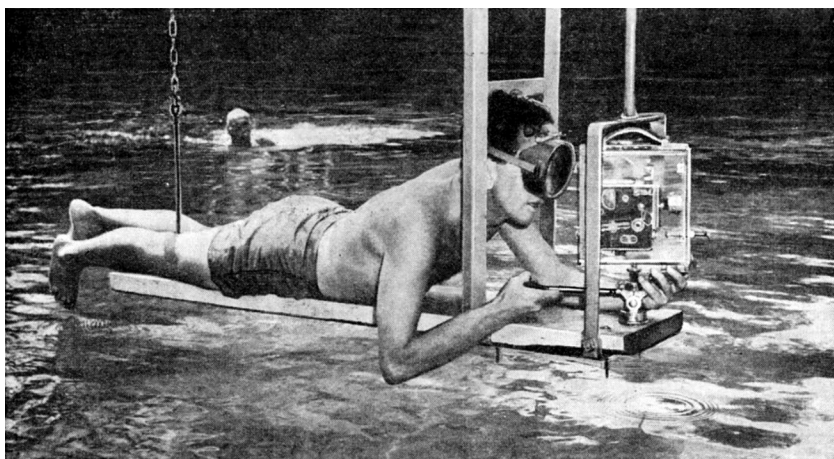


Figure 3.2

Typical camera housings, like this one used to shoot underwater movies, involved fully encased housings made from plastic or other materials. Source: "Shooting Underwater Movies," *Popular Mechanics*, May 1946, 96.

could sustain water pressure down to 160 feet.⁴⁵ Nikon would later purchase the camera and rename it as the Nikonos, developing a long-lasting series of underwater cameras under that brand. Designed for the "all-weather sportsman," the Calypso's advertising promised its appeal as acclimated media, that it "works equally well in the sea, in rain, snow, sunlight, in mines and caves, tropic regions or on spray swept decks."⁴⁶ Promotional images featured men in various water-oriented activities, from photographing a bathing suit-clad woman at the beach to catching a fish and boating. A large background image for one ad emphasized the diver's camera pointed at a topless mermaid—capturing the exoticized female form through the man's gaze (see figure 3.3). These messages authorized mediated experiences with water, particularly by male photographers, as both possible and desirable.

As the public gained increasing familiarity with water-related images and films, a host of amateurs also became photographers and cinematographers themselves, flocking to use cameras with increasing numbers. Tapping into this lucrative market, camera manufacturers went out of their way to encourage wet activities (not as risky or technically complex as underwater

REVOLUTIONARY NEW CAMERA!

the "CALYPSO" 35 mm
UNDERWATER CAMERA

THE "CALYPSO" WATERPROOF CAMERA
A MUST FOR... "AQUA-LUNG" DIVERS AND ALL-WEATHER SPORTSMEN
 This rugged, compact 24 oz. 35 mm camera, guaranteed waterproof to 180 ft., has a SOM BERTHOIOT FLOR 35 mm f. 3.5 LENS and shutter speeds 1/30 to 1/1000. Rapid single stroke lever advances film, cocks shutter, sets exposure counter, trips shutter release. Watertight flash connection. Rust and corrosion proof inside and out.
 No. 2407 "CALYPSO" UNDERWATER CAMERA 180.00

U.S. Divers Co.
 1423 W. Wainwright Ave.
 Santa Ana, California

U.S. Divers Co.
 114 Manhattan St.
 Stamford, Connecticut

"Aqua-Lung" of Canada
 600 Burlington St. East
 Hamilton, Ontario, Canada

Figure 3.3

The Calypso underwater camera, developed in collaboration with Jacques Cousteau in 1959, offered the first 35-mm submersible hand camera that did not require bulky housings. Source: La Spirotechnique, "Revolutionary New Camera," in James Tocchio, "Diving Deep with Nikonos—A Brief History of Nikon's Underwater Cameras," *Casualphotophile.com*, April 17, 2018.

diving), for any amateur picture-taker, particularly around vacation travel for the middle class, which had grown in popularity across the United States and United Kingdom following World War I.⁴⁷ To do so, they provided educational hints about where to take a camera without fearing dampness.

For instance, in its magazine for the Ciné-Kodak movie camera (1929), the Eastman Kodak Company encouraged travelers on wintertime cruises to take a camera as a perfect addition to the journey: “To be able to capture, *in action*, every outstanding moment of your trip—to bring back a living picture of the beauty spots you see and enjoy—to keep with you forever the friends you meet on your journey—to make the thrills and joys and happy moments of your cruise live forever, is more than privilege.”⁴⁸ The magazine gave tips about how to handle moisture while sailing in tropical climes, but it aimed first and foremost to help photographers envision themselves out on the water. In two later issues (1931), the company likewise advised that “your Cine-Kodak has no seasonal complexes” and could easily acclimatize, whether to snowy winter sports or to the adventures of “salt or fresh water sailors, ‘kicker’ helmsmen or blue water enthusiasts.”⁴⁹ It also offered camera dealers recommendations about how to advertise cameras to boaters with window displays, making marine cinematography desirable while on vacation (see figure 3.4). Likewise, testimonials from marine photographers helped to associate cameras with nautical themes and boating excursions.⁵⁰

Augmenting the camera’s abilities, film manufacturers would also enter the market by producing products like Ansco’s All-Weather Film. Sporting the logo of an umbrella, the company promised that the picture-taker could simply “forget” the weather and get ideal pictures even on a rainy day with its Plenachrome film that could handle variations in exposure while providing greater contrast.⁵¹ This appeal to rain-or-shine photography similarly promoted the idea that picture-taking wasn’t limited to specific milieus or circumstances or dictated by wetness.

Camera use was encouraged in more domestic wet settings, too, such as through advice to parents to record a baby’s “eager reaching for a floating toy in the bath water”⁵² or children “romping in the snow.”⁵³ These suggestions, however, considered camera work *near* water and other liquids as opposed to in it. When the apparatus had to endure wetness itself during outdoor

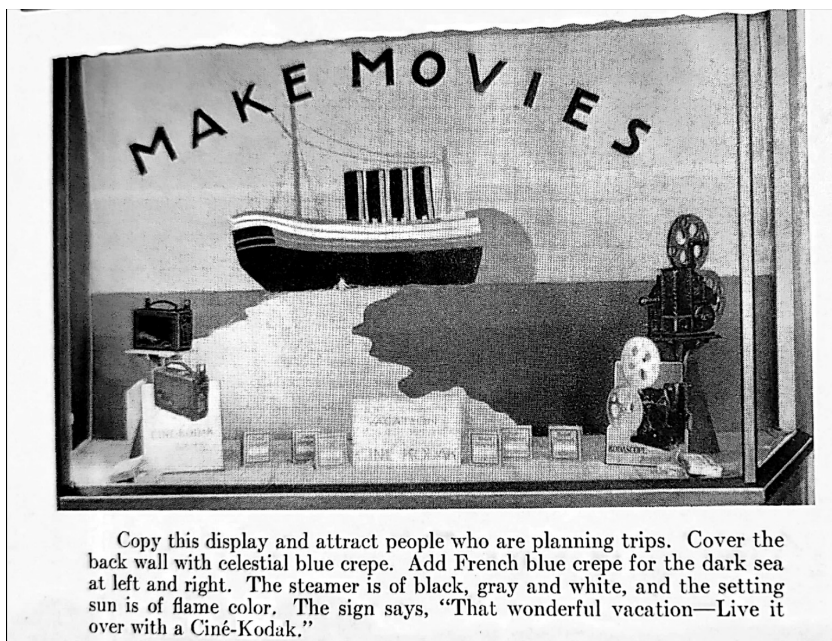


Figure 3.4

Eastman Kodak advised camera dealers to create window displays that made movie cameras desirable for vacations aboard—or proximate to—ships and nautical scenes. Source: Eastman Kodak Company, "Make Movies," *The Kodak Salesman*, June 1928, n.p., in Wayne P. Ellis Collection of Kodakiana, Box 70, Folder: Photography Manuals/Amateur/Specific, David M. Rubenstein Rare Book & Manuscript Library, Duke University.

photography, then it demanded a more strenuous approach. For instance, the Eastman Kodak Company described how it conducted tests at its Rochester, New York facility to ensure that a Ciné-Kodak could survive difficult, wet conditions during one's travel by simulating a trip "from Artic to Equator."⁵⁴ One trial subjected the camera to 90 percent humidity—"a condition of moisture exceeding that of Panama City, Canal Zone, one of the most humid spots on earth"—for one-and-a-half hours.⁵⁵ Another exposed it to frigidity and ice in an insulated cabinet. Writing about these experiments, journalist Walter E. Burton (1937) invoked the abusive language that inflected discussions about wristwatches and that would later describe stress tests for many other media technologies. The cameras and their accessories, he noted, "undergo a scientific 'third degree' that reveals whether they can 'take it' in actual service."⁵⁶

Still, although Eastman Kodak boasted about cameras, like its Graflex model, providing the best results under “unfavorable conditions”⁵⁷ from the “rugged, snow-capped Sierras” to a “peaceful summer landscape,”⁵⁸ such cameras were not specifically outfitted with water-resistant features and were certainly not meant to be taken underwater. Traveler testimonials of taking cameras on difficult expeditions thus further helped to demonstrate how cameras could tolerate unfamiliar climates and their moisture or precipitation as worthy partners. Writer Burton Allbee enthused that “from the equator to the poles the Kodak . . . has told its tale and has told it well,” recounting the exploits of Edwin S. Brooks as the McMillan Arctic Expedition’s official photographer.⁵⁹ Allbee detailed how Brooks (and his camera) together faced dramatic snow, ice, and below-zero temperatures. These adventure stories, like underwater ones, found their ways into books, radio, and film to introduce the public to other “thermal zones”⁶⁰ and stimulated their imagination in the process about environmental extremes.

An emphasis on risk-taking often came part and parcel with gendered ideas about who should do the adventuring. For example, underwater photographer Hans Hass, in his book *Under the Red Sea*, described a conversation with his female secretary, Lotte, about his good fortune at getting to travel and explore in the ocean. “I envy you!” she exclaimed. “I’d go with you like a shot if I could! I sometimes get quite angry because I’m not a man!” In advocating for herself to take a future expedition, she argued, “A woman can be as tough as a man, if not more so.”⁶¹ The pair would later marry and Lotte Hass would stay true to her word, becoming an influential diver/photographer in her own right and earning the title of the “first lady of diving.”⁶² Yet Lotte’s remarks referenced the uphill battle that many women faced as divers, underwater photographers, and expeditioners in a male-dominated profession to prove their “toughness” with device in hand.⁶³

COPING WITH CAMERA DUNKS AND SPRAYS

Though manufacturers like Eastman Kodak and boastful professionals might have tried to unproblematically enfold cameras into wet environs and a culture of picture-taking activities, it is clear from myriad discourses about photography that mechanical troubles abounded. One of the most common

involved accidental falls into the water, which generated stories about such unfortunate mishaps. In *Field and Stream*, A. E. Swoyer (1912) told the unpleasant story of his camera's dunking while trout fishing:

I was wading a swift and rather deep stream with the camera in the side pocket of my shooting coat, ready for instant action when the man ahead should connect with that big one, when I stepped on a sloping rock. To you who have been there I need say no more; I took the water like the launching of a battleship or like the dip of the boats in the "Shoot the Chutes" at Coney Island. When I emerged, the camera was soaked and the entire roll of films, containing some rather unusual views intended for purposes of illustration, was spoiled.⁶⁴

Swoyer's message "to you who have been there" created a kind of camaraderie around this sort of accident, a mishap that could damage not only the device but also one's curated photographic views. The risk of destroying photographic content amplified such liquid threats. Outdoor photographers surmised that "a water-soaked camera is a bad thing, either for good temper or good pictures."⁶⁵ Yet these accidents occurred with some regularity, for "numberless times cameras are dropped or otherwise abused unintentionally when their owners are skylarking at a picnic, house-party or in camp."⁶⁶ The camera—held, carried, and swung about—drew attention to wet hazards and to the cumbersome bodies that did not perform the desired choreography.

In some rarer cases, cameras could surprisingly continue working after a submersion, thereby garnering positive attention. Kodak shared about an event of this kind after flooding in Kansas (1923):

While a young man of Topeka was watching through field grasses the flood of the Kaw River, he saw a girl drop her camera into the swollen waters. Nearly a mile below he rescued the little black box, which rode high on the crest of the flood and came gaily down with the current. The roll it contained was developed by the *Topeka Daily Capitol's* staff photographer, one of the pictures was published and the owner was invited to claim her camera.⁶⁷

The manufacturer used this tale to its advantage to warn away wetness worriers, in a heartwarming account that reunited a youthful picture-taker with her device *and* merited publication in the local newspaper.

Not all cameras fared equally well, though, and inconsistency characterized the effects of liquid exposure. Remarked one photographer (1920), “It is amazing, sometimes, how much rough usage a camera will stand without in any way having its serviceability impaired. Then, again, a very little thing may put the best camera out of order.”⁶⁸ One couldn’t know definitively how much “roughness” the device could take with certainty. The size, type, material construction, and cost of camera certainly mattered in these circumstances, which included the box camera, folding camera, and miniature camera and models that ranged from the inexpensive to the high-end (alongside Graflex, models like Speed Graphic and Rolleiflex often earned high marks for their durability). Although discussions in photography journals stressed that technique and skill mattered more than mechanism, materials and cost became a greater consideration when it came to the elements.⁶⁹

A photographer, like a carpenter, should be “proud of and careful with his paraphernalia of glass, metal and wood”⁷⁰ and recognize that neglect could lead to “serious consequences.”⁷¹ However, this entreaty to carefulness could come into conflict with the daring ethos that attached to photography—which meant learning to deal with liquids in their various manifestations. Photographers often distinguished between different kinds of wetness in terms of its damaging effects. Volume of liquid played a significant part—drenching rain could cause more problems than a little splash. Saltwater constituted “the worst enemy of the camera” when compared to fresh water, and even gusty wind or damp, humid air ranked as a concern.⁷² Dampness seemed especially insidious and unpredictable because, rather than a catastrophic accident, it seeped into and corroded the porous camera body over time, its slow insidiousness not giving immediate cues of harm.⁷³ Salty air could likewise peel leather from the camera’s frame, “leaving a metallic contraption looking as beautiful as a clipped collie.”⁷⁴ Cameras made from wood could also warp.⁷⁵ These concerns related to both the camera’s interior and its working parts and structure. Travel guides encouraged the tourist photographer to “accept the weather as he finds it” and prepare for situations like a sudden rain onset.⁷⁶ However, one writer (1920) noted that 60 percent of hand camera owners left their devices at home if the morning weather

indicated rain (though it is not clear how this percentage was determined).⁷⁷ Amateurs were chided for this cautious behavior. As a hardy photographer put it, “Frankly, the use of the hand camera ought never to be restricted by *mere* weather conditions” (emphasis added).⁷⁸

This attitude meant that within the avid hobbyist and professional photography community, photographers’ and repairers’ advice circulated extensively about how to retroactively clean and repair cameras’ liquid damage after it occurred. In the case of a drop, when a camera dunked underwater, all instructions concentrated on drying it out as quickly as possible, stressing timeliness and on-the-spot ingenuity as a critical element. Writer R. M. Fanstone promised in the *British Journal of Photography* (1934) that “wet will not hurt a good camera, provided that proper care is taken afterwards.”⁷⁹ He described how his field camera fell into a stream and that he dried it with cloths and could use it again after driving to another location. Others recommended kerosene or gasoline to drive out water from a shutter to prevent rusting, though some thought this controversial method did more harm than good.⁸⁰ The soaked camera required that the photographer begin to tinker and take apart the device, using even one’s own shirt to dry it if necessary.⁸¹

Underwater photographer Hans Hass, for instance, recalled a vivid scene of trying to rescue his camera when it failed at containment:

I was actually standing on my head to photograph a fat, nibbling parrot-fish through a tangled mass of rods, when the camera suddenly jammed. I gave it a shake, but that made no difference. . . . Water had penetrated the cover! There was quite a lot of it, too. I made a dash, as fast as I could, thrashing my fins, for the world above. I climbed into the boat and took off the cover. A good half-litre of salt water streamed out of it! Part of the camera had been surrounded by water and the film had certainly been affected. I ripped it off and cleaned up the interior as well as I could with my handkerchief. Then I exposed the camera, open, to the full heat of the sun and rattled the shutter continuously for five minutes.⁸²

Hass described the device’s leakiness, its penetration, and his scrambled efforts to get both mechanism and film dry. Ultimately, he reported success, but it was one of many trials on his expedition when the camera’s

permeability caused frustration and threatened to derail his photographic achievements. Stories like this one elaborated on a fragile media danger that could imperil the photographer, alongside marine life threats or oxygen deprivation, which necessitated quick thinking.

Repair people warned against such antics when it came to less experienced laypersons, reporting that “most of the harm done is by well-meaning owners after they fish their cameras out.”⁸³ As with jewelers and telephone “trouble men,” camera repairers tried to position themselves as knowing experts in the face of liquid ingress. Nevertheless, photographers typically undertook camera care themselves—not only when it came to catastrophic dunks but also in rainy seasons and humid climes—because such tinkering and cleaning fit in with the upstart and hobbyist mentality of early photography. Speaking of how to attend to the device’s fragilities while traveling in Java, an island in Indonesia, one British photographer advised,

The aim is to keep [the camera] in a dry state. For this purpose it should be put away, not closed, but with every part opened up, in some roomy cupboard where as much fresh air as possible can get to it. It should be frequently dusted with a flat soft brush, which should be carried in the case and frequently used. It is specially necessary to observe caution in carrying the camera about in the sun after a heavy downpour of rain, when the atmosphere is left in a condition of extreme damp.⁸⁴

This hygienic approach sensitized the user to the camera’s needs, advocating for caretaking and protection in the uncertain boundaries between wet and dry and the “trying conditions of climate.”⁸⁵

Along similar lines, the issue of camera lens wetness also circulated extensively. Water mist in the air coated the lens’ glassy surface, leaving white spots behind, and perspiration likewise caused unsightly smudges.⁸⁶ In the words of Harriet Arnold, advising amateurs on how to get the best beach pictures of their babies, “Remember that a camera lens is like eye glasses [*sic*]. When your glasses are dirty you can’t see a thing. If the lens has fingerprints and sea mist all over it, your camera can’t see a thing either. Winds off the water are constantly coating everything with a fine mist, and you must keep the camera lens out of the breeze whenever possible, constantly watching

to see that it does not become coated.”⁸⁷ Experts oft remarked about the importance of cleanliness, noting that “grime doesn’t pay” for those who wanted to produce good-quality photographs.⁸⁸ The most common pieces of advice given for caring for a lens, which should be “kept scrupulously clean,” involved (1) breathing onto the lens to moisten it and (2) always using a soft cloth.⁸⁹ The photographer should reserve use of a handkerchief for an “emergency” only so as not to scratch the glass.⁹⁰ Instead, Japanese tissue paper, a lintless cloth, or a specially manufactured lens cloth/paper offered the best and gentlest cleaning.⁹¹ A “really scientific job” of cleaning should involve getting inside the creases of the bellows, if the camera used that mechanism, and wiping any areas exposed to spray, such as when aboard a ship.⁹² Spots or traces of rain on the lens were criticized as symptoms of poor photography,⁹³ and novices were called out by professionals for their lack of proper cleaning technique.⁹⁴

SUITING UP THE PICTURE-TAKER, SEALING UP THE CAMERA

If liquids could spell “death” for the device, then it became imperative not only to react to wet circumstances and their potential damage after the fact but also proactively prepare cameras for the moisture they might encounter. Photographers discussed how they dressed themselves appropriately for a wet occasion—in boots, raincoat, hat, and with an umbrella—and that the camera likewise needed physical protection.⁹⁵ Sometimes, one could simply keep the camera (if small enough) inside a raincoat pocket, waiting until the right photographic moment and then taking a photograph with one hand while holding an umbrella with the other.⁹⁶ This strategy meant developing the right bodily practice, knowing how to negotiate camera, umbrella, coat, and photographic technique. The more fortunate professional could rely on a photographic assistant or “obliging friend” to hold the umbrella during picture-taking.⁹⁷ Without an extra body, the umbrella-holding could make picture taking quite “clumsy” in a “one-handed job.”⁹⁸ The craftier photographer could use an umbrella stick with metal tip affixed in the ground, with a clamp to hold onto the umbrella’s handle, for hands-free operation.⁹⁹ An additional protection came from a rubber-made focusing cloth that covered

all of the camera body but its lens—a sort of camera jacket.¹⁰⁰ Horseback riders even commended wearing a saddle-slicker that could cover the rider, saddle, and camera at once during movement.¹⁰¹

These methods didn't offer satisfactory protection in some instances, though. One might start more comprehensively by sealing up the camera's body. For example, to prevent dampness without an add-on covering, a photographer could run a wax candle, oil, or Vaseline around all of the camera's joints and cracks of the camera.¹⁰² Constructing a camera case became another common protective approach, particularly when in transit or during non-picture-taking moments. Much of the time, this meant that photographers built the case themselves from a waterproof material or coating.¹⁰³ Cases could take numerous forms. A. E. Swoyer, after his unfortunate experience trout fishing, came home and crafted a case from an old pair of rubber boots, using tire cement at the seams to seal it up.¹⁰⁴ In another article, he mentioned coating boots in celluloid dissolved in amyl acetate, also known as banana oil.¹⁰⁵ These casing solutions worked admirably, for he noted, "Since then I have been caught in heavy showers, dropped the camera into shallow water, and left it without other protection during a rainy week in camp—so far without the loss of a negative."¹⁰⁶ The case afforded a newly carefree attitude toward photography, one that allowed for accidents and anticipated wetness.

Photographers primarily favored leather as a waterproof material of choice, though that material cost the most.¹⁰⁷ If cost prohibited leather, another option included a plywood case covered with waterproof canvas and cemented with dextrin paste.¹⁰⁸ A tobacco pouch, typically lined with rubber, could also make a serviceable and inexpensive case, particularly for a miniature camera.¹⁰⁹ A tin can could also work, if sealed with waterproof tape, though "'sweating' and mildew" could result from leaving the camera in the can for too long.¹¹⁰ Alternatively, some, like Agnes B. Warburg, liked to use a canvas bag because it could be "slung over the shoulder" usefully, especially when aboard a ship.¹¹¹ Other bags were attached to a man's belt for easy reach.¹¹² A waterproof bag could be fashioned from focusing cloth—sewn by "your own sister or some other fellow's sister"¹¹³—or later made from waterproof plastic (see figure 3.5). Unlike the resistant products circulating in the watch industry, photographers demonstrated ingenuity when it came to case construction because commercial options did not exist or were prohibitively expensive.



A waterproof bag tailored to fit the camera and flash gun will afford protection from dust and driving rain

Figure 3.5

A waterproof bag, often handmade, could cover a camera in case of a sudden rainstorm. Source: Richard W. Emery, "Close-ups on Camera Care," *Popular Mechanics*, April 1949, 215–219.


Indeed, “most outdoors photographers have had to solve [the problem of wetness] for themselves,”¹¹⁴ they observed, and yet “the naturalist’s camera must be weatherproof, or it will give endless trouble.”¹¹⁵

Still, camera makers like Eastman Kodak eventually begin selling their own cases aimed at general durability. In their advertising material (1927), the company promised that the camera could go “everywhere” and “when you have one of these containers you need never leave your camera behind for fear of injuring it,” emphasizing protection as a tool for mobility and “hard usage” (see figure 3.6). Similarly, a case produced by German camera maker Rollei featured an all-metal body that could float with “complete protection.”¹¹⁶ These cases offered various degrees of resistance to a submersion, but they only worked when sealed up and not when using the camera directly. Eastman Kodak also began to produce specialty products like an Official Boy Scout Kodak by the 1930s, which featured a “durable waterproof cover to resist the strenuous use that Scouts will give it.”¹¹⁷ The imagined user in this scenario—the young, outdoor-adventuring boy who would handle the camera quite physically—required protection for (and from) its male operator.

Photographic film might require its own protection, too. The picture-taker could repurpose or build another kind of water-resistant case, like a baking powder can or copper box that could hold thirteen or more rolls of film.¹¹⁸ Companies like Eastman Kodak also promoted their own film’s imperviousness by stressing that their Ciné-Kodak movie film rolls were sealed and “tropic-packed” against moisture.¹¹⁹ Yet they reminded that this protection only lasted before opening, as “once packaged film is unsealed, it’s no longer safe-guarded against excessive humidity.”¹²⁰ The film carton could shift in an instant from contained to vulnerable when the photographer broke the seal, which meant that speed of picture-taking and developing became critical. Advice guides stressed proper film handling under the “combined attack of heat, moisture, and mold,”¹²¹ which threatened the stability and preservation of physical media. These worries especially applied to Army and Navy personnel when they traveled overseas, which in fact led to a surplus of such hermetic products after the war.

Technologies for water resistance would continue to develop in the second half of the twentieth century, particularly alongside new apparatuses for diving. Underwater photography would become a bonafide sport and

*Protect your
camera—make
it easier to
carry—with a*



Kodak Carrying Case

With a Kodak Carrying Case you can take your camera *everywhere*—conveniently. The handy straps are one of the reasons. Another is the fact that the cases are staunchly built. When you have one of these containers you need never leave your camera behind for fear of injuring it—a Kodak Carrying Case provides positive protection. And even with hard usage it will keep its good looks for years.

Kodak Carrying Cases \$.75 up

Figure 3.6

Manufacturers advertised camera cases in order to encourage all-the-time and everywhere picture-taking without worry. Source: Eastman Kodak Company, “Kodak Carrying Case,” *Camera: A Practical Magazine for Photographers* 35 (1927): n.p.

hobby by the 1970s and 1980s and would later lead to the development of inexpensive, disposable cameras with plastic housing for submersion. Before that time, underwater picture-taking belonged largely in the domain of professional photographers and cinematographers, marine scientists, and a limited swath of devoted amateurs. More commonly, laypersons would find themselves in wet situations when trying to take pictures in the rain, while boating, or at the beach, as they tried to determine when and where it was safe to expose a camera’s mechanisms to liquids. What is notable is the mindset that surrounded these liquidities: to get the camera wet meant to possess an intrepid, unflinching, and sometimes antagonistic attitude toward the “elements”—to overcome nature for the purpose of capturing and hunting down evermore exotic and one-of-a-kind images while colonizing the land, water, and animals that inhabited those climes. This rationale that underpinned outdoor photography eschewed worries about breakage and focused on how to protect the camera and its accessories rather than furthering too much consternation on if the camera should participate in liquid activities in the first place.

4 SMUDGED AND SPLASHED SOUNDS

In a magazine editorial, housewife Rita Anton complained bitterly when it came to keeping vinyl records clean, especially as the mother of five tried to protect the disks from her children's dirty, wet fingers: "The fact remains," she wrote in 1960, "that there are now these records to care for. Our marriage has also produced 50 (count 'em) 50 little fingers; the smaller sets sticky with peanut butter and jelly, and the larger ones with chewing gum, glue, axle grease, ink and waving lotion. Familiarity, they say, breeds contempt, and I can think of no other word to describe the attitude of my brood to these costly, scratchable, grease-abhorring, diamond-demanding records."¹ Anton explained that "I now spend . . . hours on end wiping these sensitive surfaces the week's accumulation of gummy finger marks that mar the pristine clarity of their tone." She went on to compare her own, seemingly futile, efforts at cleaning records to her brother-in-law's fanatical ones, noting that he treated his disks with "solemnity" and a "great deal of fuss" as he attended to them with equipment like chamois cloths and mink brushes. Enjoying the thought of his mortification, Anton marveled that one day she'd like to take a picture of his face reacting to every "peanut butter gorge and fjord which impedes the path of music." For her part, she felt that she'd put the "whole darned bunch" of records in the dishwasher to try to get them clean, a last-ditch effort at managing media's liquid mess.

Where Anton quickly connected the dots between her children's sticky handling and record degradation—unlike "irate" mothers who didn't want to blame their teething babies for telephone outages or wristwatch wearers

who neglected to notice they had dunked their wrists in the tub—she similarly found herself defending against liquidity. Her remarks expressed difficulties around containing her children's leaky practices, as their hands posed a hazard to physical media and sonic fidelity. Records often "lived" in domestic, indoor spaces, exposed to various elements of daily living and yet highly vulnerable to their effects. The question of how to acclimate them to such conditions, whether to throw them in the dishwasher or pamper them with "solemnity" and "fuss," represented two possible preservation approaches. Both Anton and her brother-in-law demonstrated a *desire* for clean records; indeed, Anton fondly remembered a time before children when she could enjoy a less messy listening experience. They disagreed, however, when it came to repairing wetness and with what tools: how far should one go in the pursuit of "good" sound? For Anton, the problem fundamentally involved her gendered responsibility as housewife and mother; she called record-cleaning activities "extra chores wished on us by the Great American Male," and she regretted that she spent a "large patch of wasted time devoted to the care and maintenance of hi-fi records."² By contrast, the fastidious hobbyist like her brother-in-law hunted down daily life's messiness as a worthwhile and necessary practice, remediating smudges as part of his music activities.

Like the frustrated housewife, other record listeners, music journalists, inventors, advertisers, and corporations all grappled with vinyl record preservation between the 1950s and 1970s in the United States and Great Britain. At this historical moment, vinyl LPs had emerged as a distinctly different music format as compared to their shellac predecessors and quickly became the dominant technology for prerecorded music.³ While vinyl disks' materials offered more durability in one sense, as one could drop them without shattering, their fragility came from ingress. Although they didn't encounter perspiration, rainy days, or ocean swims like wristwatches or cameras—or incur corrosion from flooded mechanisms or shorted electrical circuits—their grooved surfaces unceasingly attracted finger oils and dust. These elements transformed into "contamination" within music-listening discourses,⁴ putting the onus on the handler to preserve the disk's life span and "arrest decay."⁵ Degradation became another wet interruption to smooth and ideal

consumption, threatening to damage not only the physical disk but also the sonic content that it contained.

Although people have often considered music “to be quintessentially intangible,” a string of vibrations or notes codified in a musical score or one’s mind that one could not “be grasped literally,” in fact musical experiences have always involved a tactile component.⁶ When it came to vinyl records, consuming music meant to handle, touch, and feel disks and their associated sleeves, stylus, players, and accessories.⁷ Debates loomed about how wetness functioned as both a problem and a potential remediator for disks’ well-being, because records produced cracking and popping noises when impacted by dust or scratches and could degrade over time. Even when removing children’s unwashed fingers, the record-collecting community widely acknowledged that when *anyone* handled records, the user’s finger oils left residue on disks.⁸ These greasy oils acted like glue to make dust stick that much more in the grooves. Thus, the simple act of touching came to represent risky behavior. Handling brought together three circumstances: a biological characteristic of fingers (oiliness), a structural feature of disks (grooves), and an environmental factor (dust), which amplified when considering certain bodies—like children’s—who entangled other life practices with music listening. Journalists, product manufacturers, and listeners themselves subsequently referred to finger smudges as blemishes that affected music content.

Indeed, the “problem” of finger oil appeared as a repeated theme in discussions about how to care for and handle vinyl records—particularly in magazines for housewives and about various aspects of domestic housekeeping. Author George Marek in *Good Housekeeping* magazine (1954), for example, warned that “even the print of a greasy thumb may leave a trace of imperfection.”⁹ Likewise, a piece in *Better Homes and Gardens* of the same year reminded that “within two minutes after you wash your hands, your fingertips are greasy. If you touch the playing surface of a record, this grease is transferred to it and will permit dust to adhere.”¹⁰ Others stressed that “salt and other body chemicals will damage the plastic vinyl” and that skin could cause “invisible damage.”¹¹ Fingerprints became the scapegoat for disk damage, as an assistant manager of radio station WNIB in Chicago, concluded:

“Fingerprints are even worse than scratches because they contain microbes that eat into the vinyl surface and can’t easily be wiped off.”¹² This wasn’t a matter of mere cleaning, then, but rather an insidious one that resisted repair and that threatened like a harmful germ—even more lethal than the camera lens’ spots.

While discourses about record care noted that finger oils constituted an inevitable bodily condition (one couldn’t simply remove her fingertips like she could stop propping an umbrella near a telephone cord or wearing her watch for a dip), they still routinely blamed users for what they conceived of as poor hygiene or bad behavior: “Much damage is done by careless handling,” wrote Carl Dreher (1957) for *Popular Science*.¹³ Some writers spoke up for records’ lack of agency, like wristwatches as fragile “victims,” noting that records couldn’t defend themselves against such carelessness. An article titled “‘Care’ and ‘Feeding’ of Records” (1958), which anthropomorphized records in its title, cautioned that, “as [records] are inanimate and silent, unless spinning, they are often neglected, mistreated and ignored.”¹⁴ Their victimization came *before* playing, when human body met disk and sullied it with a touch.

Similarly, and quite pointedly, journalist Ivan Berger (1976) instructed readers: “Don’t blame your records if they’re full of noise, warps and scratches—blame yourself. Long record life is up to you.”¹⁵ By placing responsibility squarely upon record listeners’ shoulders, and by portraying records as helpless and in need of protection, these writers framed smudges as a personal failure. They contributed to a record-collecting culture that emphasized not only devoting labor and capital to one’s hobby but also committing oneself to caring as a critical part of music consumption. Records have long evoked human qualities such as “fallibility, warmth and mortality,”¹⁶ and more ardent collectors/hobbyists took responsibility for sustaining their “lives.”

Although one could minimize touching records, some handling necessarily occurred, which precipitated lots of advice about *how* to touch one’s disks. The most common advice suggested that handlers proceed with carefulness, relegating their fingertips to the media’s margins and avoiding its surface.¹⁷ Dreher advised that the record user should “grasp [the record]

by the rim with both hands, instead of across the grooves—just as you keep smudgy fingerprints off a fine photograph.”¹⁸ As many readers would have familiarity with photos’ glossy surfaces and their propensity to attract smudges, this advice would likely have resonated clearly. Other tips, such as those that came from the Recording Industry Association of America (RIAA), also extended to removing a disk from its jacket, which directed the consumer to tip the disk out and use the label in its center as a safe haven for touching.¹⁹ Commenting on this difficult choreography, Bruce R. Maier, president of disk-cleaning accessories company Discwasher, noted later in an interview (1972) that “most of us go through elaborate gyrations to keep from touching the playing surfaces,” but that even an “electrified fence about your record collection” couldn’t keep it entirely safe from smudgy harms.²⁰ Maier’s comments—biased toward selling cleaning and preservation products to record collectors—indicated a difficult, unruly physicality involved in using records, with no such thing as perfect protection or hard-and-fast containment. Likewise, writing for *Popular Science* (1977), record collector Harry Maynard surmised that no matter how much he tried, his disks accrued fingerprints, and “some audio critics I know even wear gloves when handling records.”²¹

This preoccupation with hazardous handling meant that the images featured in advertisements, care articles, and manuals positioned hands gripping, holding, and manipulating disks. In these depictions, hands served both as the primary contact sites with records and as the most problematic aspect of such interactions. Maynard’s gloved hand came to represent the cleanliness ideal by recalling a “white glove test” or a butler’s hand. At the extreme, record handlers were imagined in full medical scrubs, as though prepared for surgery (see figure 4.1).²² Such imagery medicalized the care metaphor and dramatized the lengths one could go to achieve “perfect” sound. This logic also fit in with record mortality analogies, as a medical intervention could keep the fragile record alive. One writer imagined how a collector could age alongside his disks into senior citizenry, as described in a 1976 article that promised that “A Pampered Record Can Live to Be 100.”²³ The article featured an image of a gray-haired and bearded man clasping tight to his equally aged record, as they navigated the life course. Discourse



Figure 4.1

Imagining the ideal record caretaker as a surgeon in gloves and a mask, collectors often medicalized record caretaking. Source: "Hi-fi Maintenance Handbook," *Sound Wave Magazine*, 1976, archive.org.

of this kind humanized the record's life span to suggest that human and disk could evade death together. This caretaking relationship and emphasis on the "pristine artifact"²⁴ differed quite strikingly from Anton's exasperation at preservation efforts, which coded care as a "chore."

If these preservation requirements seemed too odious, another radical possible solution involved not touching disks *at all*. General Electric (GE) took this approach with the advent of its Record Saver machine. The company effused, "It lets you remove the record from its jacket, play it, and

replace it without touching delicate playing surfaces. Only General Electric has it.”²⁵ GE also exclaimed in its advertisement that “your fingers never smudge the sound!” This argument imagined a touchless consumption in which hands no longer sullied the sound and dirty disruptions were eliminated. Given that discourses about record handling associated smudgy disks with carelessness, this kind of “good” collector need not cultivate proper habits and could rely on an intermediary, like the Equipoise telephone arm managing the telephone, to keep wet fingertips safely afar from disks.²⁶

GIVING DISKS A DUNK

Yet if GE’s product offered a sanitized and machine-handled experience, it didn’t correspond with most people’s day-to-day vinyl practices. Instead, consumers managed their touches and the particles their fingers transferred by cleaning their disks. Initially, as Anton’s story suggested, tips for cleaning focused on washing, usually in one’s sink. Women’s magazines like *Seventeen*, *Good Housekeeping*, and *Better Homes and Gardens*, especially, recommended common household products like mild detergents or soaps and a dip in warm water. They featured sections on record washing and often depicted female hands handling disks like common dishes in the sink (see figure 4.2). Advised Sue Steinberg (1976) for *Seventeen* magazine, “Your LP’s will sound better longer if you treat them with tender loving care.”²⁷ An earlier column from the same periodical likewise argued that records were “priceless treasures to be used, not abused.”²⁸ These reminders hearkened back to jewelers’ arguments for a quid pro quo in which the wristwatch could only “serve” the wearer if treated well, both affectively (with love) and practically (with specific cleaning practices). Additionally, by feminizing this caring, washing became a woman’s obligation and asked a woman to direct her attention to the record’s needs among other housekeeping responsibilities.²⁹

At the same time, however, columnists did not generally advocate for special practices or tools to protect these “treasures.” To get records wet in the sink meant to fold them into everyday life chores. Records were special enough to merit washing and yet banal enough to get dipped in the sink in a safe and familiar wetness, not a dangerous one. Although women’s magazines

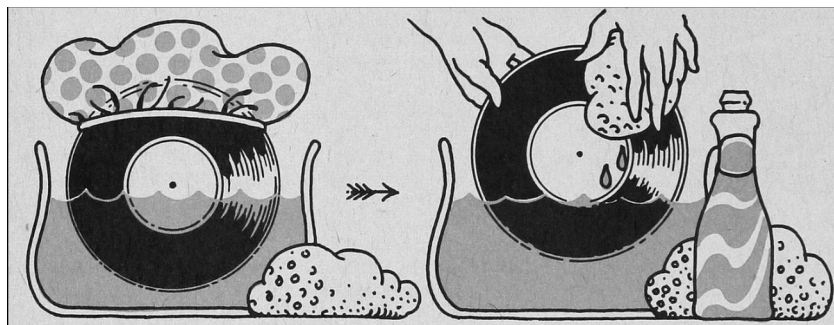


Figure 4.2

Washing practices in women's magazines made the act of cleaning a vinyl record simple and domestic like washing a common dish. Source: Sue Steinberg, "Sound Advice," *Seventeen* 35, no. 5 (1976): 44.

emphasized washing, publications targeted at men did so too—albeit without the guilt trips and obligation to care. A piece on record care in *Soldiers* (1973), an Army magazine, asked, "Would you believe the best way to clean discs is by giving them a good bath?"³⁰ A picture of a man's arms submerged in suds at the sink with his record accompanied the article. Entreaties to wash disks thus complicated the boundaries between wet and dry, as wetness could lead to damage or helpful cleanliness.

Washing records could still involve a careful and time-consuming practice for the record consumer. Writer Bob Rosenthal (1976), for instance, took up a temporary job as a house cleaner and recounted his experiences in a book, *Cleaning Up New York*, which included a detailed description of washing his client's records:

Evelyn has more records than I can wash at one time so I devise a system. First fill the sink with warm water and add some mild liquid dishwashing soap. This soap is plastic-like and seems to be gentle on vinyl records. So many records are taken off the pile and placed in order into the bath. They are carefully kept in order so that they can be reunited with their jackets, which also are kept in order. The batch of records is rinsed and placed single file into the dish rack. A dish rack stacked with gleaming records is a sight not appreciated until attempted. I think it is really one of my finest moments as a cleaner!³¹

In his tale, Rosenthal described the record-cleaning act as somewhat novel and exciting, rather than mundanely domestic—he reported like a tourist in a woman’s kitchen. As he created a cleaning system, he explained a distinct methodology. Both Rosenthal’s text and the *Popular Science* piece transformed the act of washing into a deliberate, performative, and meticulous caretaking system. This kind of washing differed from ad hoc advice to “throw” disks into the dishwasher or to simply rinse them.

Washing thus acquired distinct meanings dependent upon context and the washer’s subject position—a trip to the sink could represent an unpleasant chore or a triumph of care. In their contemporary study of record collecting, Dominik Bartmanski and Ian Woodward (2015) suggest that activities like cleaning for collectors are “not interpreted so simply as ‘work’, but as practices of care, craft and tendering that link to embodied, emotional connections to listening practices.”³² Anton’s and Rosenthal’s experiences from the past, however, indicate that users constructed different perceptions of cleaning as “chore” or “care,” and such meanings were neither stable nor universal.

By the late 1960s, the question of how (and whether) to wash records intensified, as record enthusiasts conducted more research about disk degradation and cleaning methods’ effects. Cecil E. Watts, a musician, recording engineer, and scientist, published a couple of volumes on record care that aimed to delineate proper techniques. In a booklet sold for 50 cents, Watts stressed that one should reserve the practice for “circumstances where a thorough washing is the only remedy available,” and he noted that such circumstances resulted from overuse of chemical-soaked cloths or sprays that had attached to the disk’s surface.³³ In addition to creating a line of record care products, Watts’s perspective signaled a shift in record care away from domestic washing practices (what he called the “old methods”) and toward “scientific” ways of analyzing disks’ dirt. From a technical perspective, evidence indicated that soap and detergents left a problematic residue on disks that, like finger oils, would entrap dust. Record enthusiasts subsequently redefined these cleaning agents as destructive ones and “ideal” sound as one hampered by such repair. Wetness was thus highly indeterminate and often changing in its character—from “good to bad,” and from oils to soap, liquids could take on different meanings.

A cultural shift had begun to occur regarding record care, sound, collecting as a practice, and one's identity as a collector. By 1977, music journalist Harry Maynard wrote that record care was a "highly technological matter" involving "mechanical, electrical, and chemical aspects."³⁴ This redefinition coincided with collecting as a masculinized enterprise consisting of "scientific and ordered practices."³⁵ Male record collectors fanatically discussed ways to clean, tools to clean, how often to clean, and so on, treating a record as a kind of machine, not dissimilar from cameras, cars, or radios.³⁶ These record "grooming rituals" fit in with a long line of men taking care of various machines,³⁷ but they also incorporated ideas about housekeeping and cleanliness from feminized spheres of domestic life—especially post–World War II attitudes aimed at making the home "high tech" for the modern consumer.³⁸ Where a simple wipe, wash, or dunk may have previously sufficed, the market reconfigured users as hygienic hobbyists and devoted caretakers that primped, pampered, and cleaned their disks—victimized by everyday life's liquidity—as part of the standard consumption process. Cleaning and care also fit in with other music-tinkering activities in this time period, such as replacing a tube amp or a record player needle; users were invited to tend to their machines' overall well-being and to behave responsibly so that they might fend off breakdowns preventively.

SPLASH-PROOF, SPORTS-PROOF

If record-handling involved cultivating the right hands, accessories, and practices to mitigate harmful liquid effects, then the 1980s ushered in new ideas about managing music. Cassette tapes, which were developed in the 1960s—but didn't begin to outsell vinyl records until the 1980s³⁹—afforded portability (through miniaturization), longer playing time, and plastic housing that encased their magnetic reels. As "container technologies,"⁴⁰ cassettes bound up fragile tape so that people didn't directly handle the sound, unlike the oft-touched vinyl surface that made direct contact with a player's needle.⁴¹ It wasn't that tapes weren't vulnerable to damage,⁴² but they were often culturally coded as another kind of sound carrier that didn't privilege high fidelity. Subsequently, tape practices flourished quite apart from vinyl

collecting, as people could record, distribute, and erase music, as with the iconic mixtape, in a medium that promoted “fungibility and plurality”⁴³ and even democratic engagement with sound.⁴⁴

Cassettes as material media also bound up with how they played, in yet another boxed case: the portable music player. In 1979, Sony released its first version of the Walkman, which assembled existing cassette and headphone technologies into an attractive configuration. Sony succeeded in part, according to Paul Du Gay et al. (1997), due its decision to “lifestyle” the Walkman by “tailoring or customizing a product to the lifestyle of a particular niche or target market segment.”⁴⁵ By the 1990s, Sony had developed more than 700 Walkman versions.⁴⁶ Among these, the bright yellow (“banana-colored”) plastic Sports Walkman WM-F5, released in 1983, offered a popular option for music enthusiasts that engaged in sports, outdoor activities, or exercise. The water-resistant model both responded and contributed to a feverish self-improvement culture, which began with jogging in the 1970s. Fitness gurus integrated music into their exercise videotapes, and “zippy music” and dancing were touted to make routines fun, especially for women.⁴⁷ During the 1980s, a “dramatic growth of a fitness and health industry . . . embraced and promoted the relationship between exercise and character, responsibility and prevention in quite specific ways.”⁴⁸ This movement emphasized smart choices and self-betterment to achieve an ideal, able-bodied physique, which also meant advocating for a rampant consumerism tied to owning the right health and fitness products that could aid one’s bodily transformation.

Although the Sports Walkman would achieve great popularity, a similar concept had preceded it—the Astraltune “stereopack”—developed in 1975 by Roy and Andy Bowers. The Astraltune inserted a portable tape deck into a padded sleeve that one could carry by chest harness, but it weighed a fairly hefty 3.5 pounds. Its inventors targeted skiers, and later other athletes, as the imagined beneficiaries of such a technology that one could wear rather than holding it to time physical activities (like skiing) to a song’s rhythm (“the rhythm method”).⁴⁹ Astraltune’s advertising supported this frame, with testimonials from people like World Cup champion skier Bob Howard, who effused that “a lot of companies claim their product can be used for sports. I’ve used them all but only the Astraltune holds up to the abuse I put it

through. Rain, snow, extreme temperature . . . I haven't found any conditions that affect the Astraltune."⁵⁰ Howard used familiar rhetoric to frame the pack as admirably hardened to the "elements" and his athletic performance; it could withstand "abuse" that the extreme male athlete could dole out, akin to the tough wristwatch wearer or hardy photographer.

When Sony released its music player, the company didn't make any overt gendered assumptions about potential users, but it did famously court a young and international demographic with a specific athletic mobility in mind (such as roller skating, walking, and running) that tied to its *Walkman* moniker.⁵¹ The Sports Walkman took this imagined athleticism one step further from its original model as its design connected fitness with wetness, like the Astraltune, promoting an impervious mobility. Designated "rugged," the WM-F5 utilized thickened ABS plastic, rubber seals, and O-rings to plug up its openings; Semedine liquid gasket (a sealant); and rubber buttons to control play, stop, and other functions, while weighing under a pound.⁵² In another move to prevent corrosion, Sony relocated the battery compartment from the tape deck's exterior to interior. It also changed its headphone construction from foam earpads to an in-ear style that could similarly tolerate liquidity, a feature that was not available with most other Walkman models. An early focus group yielded positive responses about the "sporty" device, but participants still gravitated toward the familiar black models when offered a choice.⁵³ Water resistance didn't immediately hold sway; the company had to garner favor by effectively selling aesthetics, protection, and fitness culture in a compelling package, and potential consumers needed to determine its merits.

To make its case, one early advertisement for the Sports Walkman constructed a familiar animal metaphor, in the form of a duck, to describe the device's liquid affinity (see figure 4.3).⁵⁴ Using the tagline, "They're built on the same principle, but one sounds a lot better," Sony's imagery aimed to give its player aquatic prowess. The ad continued, "It's no surprise that the new Sports Walkman should deliver remarkable stereo sound. But it's quite another matter that it should keep delivering this exceptional sound even when it's dripping wet. As with its companion above, water rolls right off its back—and front."⁵⁵ The company described an unflinching imperviousness as well as an

**They're built on the same principle,
but one sounds a lot better.**



Introducing the Sony Sports Walkman. The first water-resistant portable stereo.

It's no surprise that the new Sports Walkman should deliver remarkable stereo sound. But it's quite another matter that it should keep delivering this exceptional sound even when it's dripping wet.

As with its companion above, water rolls right off its back—and front. Every button, dial and jack has its own watertight seal, fully protecting the Sports Walkman's cassette player and FM tuner. Even in demanding situations, ranging from beach excursions to skiing to driving rainstorms.

The Sports Walkman also sports other advantages. Such as ultra-mini MDR earphones that fit comfortably in each ear. And a disc drive system that protects the cassette player from wow and flutter, even when it's jostled.

But perhaps the most outstanding feature the Sports Walkman has to offer is the fact that you no longer have to choose between your love of music and your love of water.

SONY
THE ONE AND ONLY

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Figure 4.3

Sony compared its Sports Walkman portable music player to a duck, surmising that the device could fully acclimate to its wet surroundings naturally, rather than antagonistically. Source: Sony Corporation, "They're Built on the Same Principle, but One Sounds a Lot Better," *Black Enterprise* 14, no. 6 (January 1984): 57.

uninterrupted media experience (“keep delivering this exceptional sound”). Protection corresponded with portability and unproblematic acclimation to the elements, as the ad suggested that users could enjoy their Walkman both at the beach and in an intense rainstorm: “You no longer have to choose between your love of music and your love of water.”⁵⁶ Rather than necessitating a hierarchy of practices, in which the device’s fragility trumped one’s consumptive desires, the sealed-up cassette container could allow wetness and music listening to coexist. This marketing corresponded with later strategies used to sell wristwatches that sought to normalize wetness as ordinary rather than hazardous.

Sony further demonstrated this acclimation by featuring the Sports player in another ad surrounded by streaky marks that looked like rain, with the caption, “Walking in the rain with the one I love.”⁵⁷ The ad referred doubly to the actual practice of walking in inclement weather (with the Walkman becoming the user’s “love”) and to the 1972 Love Unlimited song, “Walking in the Rain with the One I Love.” Music and wet weather became inextricably linked as rain benignly splashed the Walkman, but the ad also signified an embodied practice—walking the walk⁵⁸—while listening. Like its duck comparison, the company focused on vaguely construing the “elements” without any particular person involved—no user pictured at all—but these wetness examples aligned with particular authorized liquidities that connoted “sport” (swimming, outdoor sauntering).

Sony recognized that with a protective design, the Walkman could fit into beach, pool, and watersports practices, as well as strolls in the rain, thereby increasing the range of practices and situations in which one might encounter liquidity. However, the company also continued in a tradition that emphasized ruggedness and extreme adventuring as part of the technology’s ethos. Thus, a 1988 advertisement titled “Camping, sunbathing, or on safari, Sony plays on,” enthused that “only one Walkman™ is built so rugged, audiophiles have been known to take it sailing Cape Horn, bushwacking the Amazon, and climbing Mount Fuji.”⁵⁹ The ad concluded that when impressive sound “comes in the rugged armor of a Sports Walkman, you can take it to where the action is.”⁶⁰ Sony used difficult conditions, exotic locations around the world, and the “armor” metaphor to reference a virtuosic physical performance that merged human and device.



Figure 4.4

Water-resistant music players fit within a broader spectrum of protected media in the 1980s, when bright yellow plastic became the normalized aesthetic and material to symbolize sport and imperviousness. Source: (a) Canon, "Canon Aqua Snappy AS-6: Take It Anywhere," *Backpacker*, May 1987, 93. (b) Minolta, "Introducing the Pocket Camera That Can Take It When Others Can't," *Backpacker*, August–September 1980, n.p.

These ideas could be similarly found in advertising for water-resistant cameras that developed into a flourishing parallel market in the 1980s. With products like Minolta Weathermatic, Canon Aqua Snappy, and Fuji HD-M, many of which sported the same bright yellow plastic material and aesthetic as the Sony Sports Walkman, manufacturers promoted the always-ready camera at home in the elements and yet protected from them (see figure 4.4). It is no coincidence that so many media technologies of this ilk found a willing audience during this time period, as the cultural moment of individual fitness and athleticism merged with ideals of portability, affordability, and youthful consumption. Featured in outdoor magazines like *Backpacker*, advertisers for cameras and music players alike identified a clear imagined demographic in terms of age, ability, and race. These renderings intermixed with particular climes and cultures. Journalist David Frith affirmed (1986), for instance, that weather and outdoors culture in

Australia were viewed as “catalysts” for why the country “embrace[d] the Walkman era so fervently.”⁶¹

But where protected cameras’ designs had evolved from earlier decades to support greater submersion, it wasn’t always clear if a portable music player could support such activities with its various cracks and housing of physical media. Advertising typically collapsed many liquidities into one, where submersion, splashing, and rain showers were undifferentiated in terms of their effects. However, actual practices demonstrated how this simplification obscured the player’s material realities. In a review article about rugged sound machines, writer Robert Love (1985) recognized the resistant device’s benefits, noting that “even a splash can be deadly” for high-tech media technologies;⁶² however, he mentioned that, referring to the Walkman, “This little receiver will survive a dunk in the pool or pond, but like all equipment that comes with the tagline ‘water-resistant,’ it’s not designed for underwater use.”⁶³ By distinguishing splashes from submersion and resistance from proofing, Love joined many voices that tried to sort out what devices could and couldn’t endure in different contexts. Indeed, even Sony itself released a press release to clarify that the Walkman’s water-resistant design afforded “splash, sprinkle- and snow-proof” use in places “where water can be a problem.”⁶⁴ The *splash* and *sprinkle* differed from the ocean’s fathoms or a soaking flood to prioritize limited protection different from the deep dives imagined for wristwatches or dunks for cameras. A trend toward “splash-proof” and “splash-resistant” sound gear constructed the splash as playful, outdoorsy, and minimally liquid.⁶⁵

Many other similar products to Sony’s hit the market, including the company’s own CFS-950 Sports Box, a boombox clad in identical bright yellow plastic. Pioneer’s pricey PK-R7AW, another portable, “looks tough enough for a Marine,” commented one reviewer, and sported a fiberglass and aluminum body.⁶⁶ The Jandy SoundWave likewise paired sound and wetness, but it stood apart from other models because it could float.⁶⁷ Other options included a specially crafted plastic bag, The Aqua Stereo (Technovation, Inc.), which could house music players that lacked protective features. One could wear the bag with a harness, attached to chest, back, or waist, thereby freeing the hands and mobilizing other body parts as music

carriers.⁶⁸ Water-resistant containers correlated with different body postures, different practices, and different liquid types. If portable players involved transporting music and circulating it through “ever more varied activities and situations,”⁶⁹ then this also meant defining which bodies were appropriate vessels for such content and the technologies that housed them.

SINGING IN THE SHOWER, TUNES IN THE TUB

In the context of the American exercise craze that proselytized healthy living and fitness fanaticism, self-betterment projects extended from the outdoors to domestic interiors, too, where a “building boom” prioritized houses designed with larger and larger bathrooms (some large enough to do cartwheels in⁷⁰), bathtubs, and showers. Interior designers promoted renovating one’s bathroom to feature the latest high-tech gadgets and encouraged people to reconceive of these spaces as “luxury spas.”⁷¹ These architectural changes imagined that media practices and hygiene practices could seamlessly coexist. Over time, bathroom cultures had become increasingly “throwntogether”⁷² spaces, with activities including “smoking, eating, drinking, reading, watching television, listening to the radio, telephoning, playing, masturbating, and so forth” treated as increasingly acceptable and normalized.⁷³ These practices coincided with a shift toward interpreting baths as “a means of escape from family pressures or activities,” rather than merely perfunctory cleansing spaces.⁷⁴ Thus, as Alexander Kira noted in a bathroom study (1960), “The distinction between what is a primary and what is a secondary activity [in a bathroom] is sometimes blurred by motivations.”⁷⁵ He offered the case of a “mother with several small children who takes her favorite magazine with her to read while taking a bath” and noted that it was difficult to sort out whether the bath or the magazine reading held greater importance for that mother. What activities were “allowed” in bathrooms depended on many factors, such as the historical moment, a household’s socioeconomic status, roles played in a household (and number of people in the house), gender norms, architectural features (how many bathrooms and square feet?), and attitudes toward dirt, germs, and filth.⁷⁶

To a large extent, media technology use in bathrooms had long represented a luxury or privilege not afforded to many lower- or middle-class

folks.⁷⁷ But this wasn't a sheer affordability matter; as with telephones in the early 1900s, people commonly rejected such devices even when they were available because they treated bathing as a sacred practice *separate* from everyday life's hustle and bustle. These social interpretations intersected with (and perhaps even furthered) technical limitations. While radios were designed for portability in the 1940s and 1950s, manufacturers identified liquids as their one limitation. A 1947 Zenith ad, for instance, proclaimed that "Zenith Portables won't play under water . . . but they will play everywhere else!"⁷⁸ If the aquatic radio seemed an impossibility when compared to all the places a radio *could* go, then so too did the bathroom device; it was highly "unusual" to put radios to use there given the potential for electrocution and the limited space available in most bathrooms away from water elements.

Thus, by the 1970s, products made for bathroom consumption were uncommon novelties, like the Sears, Roebuck and Company radio that could affix to walls or fit on shelves.⁷⁹ A similar model made by Windsor, aimed at the "executive," attached to the bathroom wall via adhesive strips, framing the toilet paper roll.⁸⁰ Many of these devices ran on batteries, mitigating the need for cords—like the telephone's previously risky one—that previously posed a danger with wetness. Radio manufacturers found a new willing audience among bathers in the mid-1980s, however, amid the cultural turn toward health and fitness. They proposed that bathroom showers could serve as a new media consumption site and that the radio apparatus itself, like the Sports Walkman, could get wet as opposed to merely operating at a safe, splashable distance from water. Targeted particularly at people in their teens to thirties, shower radios were relatively inexpensive (typically between \$20 and \$35) and featured plastic housings and water-resistant coating for wall-mounted use. Some of the most well-known brands included Wet Tunes by Salton, Soaprano by Biforia USA Inc., and Splash Dance by Pollenex. The latter company, Pollenex, reached the most potential consumers with a national advertising campaign that appeared during TV shows such as *Late Night with David Letterman*, *Saturday Night Live*, *American Bandstand*, and *Dance Fever*. By 1985, *Adweek* forecasted that corporations would sell 1.5 million shower radios that year (\$30 million in sales), with a projected 1986 increase to 2 million units (\$40 million in sales).⁸¹

These devices grew quickly in popularity due to their low price, plastic construction, and the ways that they reinforced and promoted entertainment enmeshed with hygienic and fitness cultures. Newspapers, magazines, and department stores featured them as ideal Christmas gifts, and corporations often included them as sweepstakes prizes. They constituted a type of gimmick, which spawned many iterations in the mid-to-late 80s, including Tub-Tunes, Nep-Tunes (meant for the pool), and Hit Tunes. Nevertheless, Lester Gribetz, an executive vice president and general manager of housewares for department store Bloomingdale's, observed their fleeting trendiness; sales fell in half from one year to the next, once "hot" and then not.⁸² Thus, consumers didn't take such products seriously as a necessity—unlike the battle-ready wristwatch or the impervious camera—but rather they considered them an accessory aimed at a particular demographic who wanted to make the bathing experience more fun.

Still, shower radios generated interest because they promoted an ideal of the "good" body as a clean one, suturing together washing with media content. Their advertisements and packaging featured young, white people who looked to be in their twenties having a good time while cleansing themselves, encouraging an active body that didn't swim or hike but liked to "dance" while bathing. Another recurring theme featured singing or whistling in the shower (see figure 4.5)—a practice common long before these devices' advent. Consumers' familiarity with singing in the shower helped to argue that an already existing everyday life routine could easily merge with a water-resistant media technology to allow for carefree consumption. Although shower radios were not pitched primarily as practical technologies, manufacturers did frame shower-listening as a strategy for keeping up with consumption without missing out on sports updates or news content, somewhat akin to uninterrupted timekeeping or disruption-free phone calls.⁸³ Similarly, Salton promised with its Wet Tunes that "you won't have to miss a beat" by not hearing "today's number one hit" on the radio due to bathroom activities, a concern described by bathers more than forty years earlier.⁸⁴

Notably, this marketing did not employ any militaristic language to describe the music player's wet encounters. In fact, Splash Dance's packaging and TV commercials and Wet Tunes' print ads hardly dealt with liquidity

**The best thing to happen
to showers since soap.**



**Wet
Tunes**
The Shower Radio

Start your day with an AM or FM shower! **Wet Tunes** is the new water-resistant radio specially designed to use in the shower. It easily adheres to your shower wall with extra durable, two sided velcro.

Order **Wet Tunes** today! Only \$34.95 plus \$3.00 postage and handling (9-volt battery not included). To order call **toll free** 1-800-531-5314 ext. 6000F (Mastercard, Visa and American Express accepted).

Or Write To: Wet Tunes, 1725 Summer St., Stamford, CT. 06905

Figure 4.5

Shower radio advertisements featured fit, young, white people having a good time singing along to music while they scrubbed. Source: "Wet Tunes," *Redbook* 163, no. 6 (October 1984): R-7.

at all. Aside from a mere mention of "water resistant," the promotions did nothing to stress toughness, ruggedness, or elemental antagonism. Rather, the device plainly affixed to the wall as it received a splash from the showerer's wet head, an unquestioned media partner. This acclimation differed from the submerged wristwatch (in fish tank, pool, or ocean) because it didn't construct the media technology or its environs as exotic or dangerous. Conceiving of a splash or spray as trifling and ordinary, the radio's plastic housing simply carried on. At the same time, the bather in a familiar (and

feminized) domestic context did not perform any great tests of her person like the diver, hiker, or swimmer; mundane washing meant business as usual. This perspective fit in with manufacturers' goals to make music listening routine rather than extraordinary.

If shower radios functioned as inexpensive gimmicks of the moment, then at the other end of the spectrum, bathroom product manufacturers envisioned high-end luxury bathtubs that could incorporate music—as well as many other media and information technologies—into the bathing experience. These all-in-one designs remained far out of reach for the average buyer (and were significantly different from the cheap plastic rope or wall-mounted radios sold at Filene's or Marshall Field's department stores), but they represented an imagined future of fully technologized and mediatized bathrooms. American Standard's \$25,000 tub, the Sensorium, promised such an experience, with a keyboard of twenty-two different controls that allowed one to speak via a telephone or intercom, control a home's locks, play music, and watch TV.⁸⁵ Another product, WaterJet Corporation's "The Bath Womb," offered a similar menu of options. Whether such features promised ultimate relaxation, or disruption, proved disputable. Described one reviewer of the tub:

Lean your head against the water pillow, which gives a gentle massage; turn on the stereo system to play soft music over the water-resistant speakers on either side of your head; and start a gentle whirlpool from the nine water jets in the tub. . . . If you could store food rations in the tub, you might stay weeks. What could possibly shatter such bliss? Again, electronics provide the answer. You glance at the built-in digital clock and realize that you are late for an appointment. But before you can get out of the tub, your boss calls on the waterproof phone to say you will not be paid for three weeks of last year's vacation time that you didn't use.

This conflicted account of a hypothetical bath in "The Bath Womb" suggested how media technologies accrued indeterminate meaning. On the one hand, soft music provided the necessary context for relaxation in a protected, womb-like space; on the other, the pressures of the clock and phone intruded on the bather's "bliss," transforming wellness time into work time.

One's media ideologies⁸⁶—which dictated how people thought about what different media types were *for* and how they were interpreted—influenced these perceptions. While many agreed in the popular press that “there’s more to [bathrooms] than just keeping clean,” not all could reconcile the introduction of media technologies (especially electric and electronic ones) in these realms when they metaphorically “leaked” other daily life pressures into a seemingly sequestered space.⁸⁷ This perspective echoed one from the early 1900s that painted telephones and their ringing as unwelcome intruders on the sanctity of bathing.

Bathing itself could connote many things, including health (cleansing germs), self-care, or sensuality and sexuality, and indeed bathrooms possessed a long and storied history in relation to pornography, sex toys, and illicit scribbles on the walls of public stalls.⁸⁸ Thus, what media was “allowed” in bathrooms and how that permission intersected with social norms, gender, and taboo practices suggested the multiplicity of meanings that wetness could provoke. An iconic scene from the 1990 film *Pretty Woman* exemplified this complexity, when a bathing woman became the object of a man’s desire. Featuring Julia Roberts as a likable sex worker taking up with a successful executive (Richard Gere), one scene featured Roberts bathing in Gere’s tub full of bubbles while singing enthusiastically to Prince’s song “Kiss” on that famously plastic yellow Sony Sports Walkman with headphones. During her rendition, Roberts closed her eyes, unaware of Gere’s prolonged gaze and attraction. As she sang along, lost in the music, it became clear that Gere grew fonder of her enjoying the device while she luxuriated in the bath. When she opened her eyes to Gere standing over her, Roberts evinced a mixture of embarrassment and enthusiasm, remarking, “Gotta love Prince.”

The music acted as occasion for getting lost in the moment—a kind of double immersion in liquid and media content. Like the shower radio advertising campaign, it also offered a very different conception of water-resistant media from that of the wartime wristwatch, evoking feminized relaxation and vulnerable (naked) enjoyment instead of armored protection. Where repairers had warned against women bathing while wearing their watches—and impugned them for carelessness when they forgot to remove

them—the film depicted the Walkman unproblematically in terms of its wetness: though it sat on the edge of the tub, the headphone's cords dipped unflinchingly in soapy suds. This normalized wetness corresponded with a quite sanitized sexuality that was neither overtly risqué nor threatening, with Roberts's body covered up with bubbles and her character positively transformed through the course of the film.

Pretty Woman positioned the character not as a failed caretaker neglecting her device's needs, but rather as someone who prioritized her own self-care with the right acoustic accompaniment. The soapy suds that made record washing an unpleasant chore for people like Rita Anton or that necessitated a wristwatch replacement were remade into a pleasurable and hygienic human body experience. But if this scene idealized this wetness, then it also depicted the sex worker caught between two classed and gendered worlds: the Walkman and the bathtub weren't hers, after all. Singing in the tub with the portable music player functioned to habituate Roberts into the hedonistic, swanky lifestyle that a business tycoon could offer a sex worker when she adopted *his* liquid practices. The acclimated device made her at home in someone else's wet world and liquid routine.

Vinyl records and water-resistant music players like the Sony Sports Walkman or Pollenex Splash Dance could take on multiple meanings depending upon who used them and how they fit (or didn't) into one's liquid experiences. Finger smudges and shower splashes weren't universally understood, but they similarly sparked appeals to consumers that they should embrace cleanliness ideals through media hygiene. Clean fingers meant achieving what hobbyists deemed "high fidelity" and desirable longevity for the record listener, while washing bodies could (potentially) keep up with the latest music and news while promoting their own health and well-being. These efforts aimed to transmute unruly bodies into ordered ones that performed wetness in accordance with a device's hygienic needs. However, a significant change had occurred during this time period in terms of framing media devices and media content as compatible with liquids in a wider range of circumstances and domestic practices, making them increasingly mundane—though certainly not for everyone alike.

5 DOUSED PCS

Like a 1971 Rolex advertisement that imagined a woman's impervious wrist-watch slipped into her drinking glass,¹ or a Sony Sports Walkman ad that submerged its player in the snow,² the 1984 film *Electric Dreams* pondered what would happen in a liquid scenario if champagne intermixed with a computer.³ Where most 1980s discourses generally warned against this kind of liquid-machine collision, the film's narrative posed quite the opposite frame when a spilled beverage didn't destroy the computer but rather brought it to life. As architect Miles Harding's hands slipped and bubbly alcohol met keyboard—and then motherboard—the computer became shockingly sentient with its own thoughts, feelings, and dreams. The plot responded to a historical moment when extremely large mainframe computers—previously cloistered in hospital-like and “sacrosanct” computing rooms⁴—had given way to microcomputers that began to proliferate in offices and homes.

The film's premise revolved around not only understanding this changing human-machine relationship but also negotiating one's hygiene and social practices in the computer's environment. Hyperclean early computing spaces often functioned like hospitals, with strict rules about eating, drinking, smoking, and other habits.⁵ A new anxiety thus emerged about how much wetness computers could withstand and to what extent these devices would enfold into, or disrupt, existing liquid practices. Indeed, when people talked about a “changing workplace” in the 1980s due to computerization, they noted that work practices included what happened *around* and *within* a computer's habitat, rather than only what one did directly with it.⁶ Drinking

near the computer did not signify a simplistically “good” or “bad” practice. Rather, it demonstrated the embodied practices and technology entanglements that transpired in everyday life.

Writers Dan Gookin and Andy Rathbone assured lay readers, in the book *PC for Dummies*, that they didn’t need to tiptoe around their microcomputers: “a desktop computer doesn’t undergo much abuse,” they surmised. “It just sits there and hopes you don’t spill anything too gross on it.”⁷ Indeed, corded and tethered to desks or other tables, computers resembled telephones in their stationary situatedness. They weren’t worn, as were wristwatches, or held, like cameras or music players, but liquid behaviors still might occur in their vicinity. In particular, like *Electric Dreams*’ champagne–machine cocktail, drinks represented the most likely source of wetness around computers in the 1980s and 1990s, especially as desk lunches (rather than lunch breaks) and white-collar layoffs (which often led to one person doing two people’s work) became common.⁸ However, beverages occupied an uncertain position in computing activities and in workplaces more broadly.

Coffee drinking, for instance, had long kept workers alert to maximize their productivity, but it also possessed a history as a “sociological rhythm”⁹ and “social drug” that featured significantly in workplace culture.¹⁰ The “coffee break,” in fact, developed squarely out of capitalist desires to increase laborers’ output, given that caffeination could enable workers to get through their shifts less sluggishly.¹¹ Yet if employers thought beverage breaks aided efficiency, they didn’t want to *pay* for them, leading to legal tangles over whether employers must compensate employees for such respites.¹² How to manage beverage consumption in the workplace thus intermixed market imperatives with body optimization, but it also related to specific organizational cultures as well as types of work being conducted. People used drinks like coffee as a leveler between work and nonwork practices; the drink could connote pleasure and comfort even in unpleasant situations.¹³ Coffee drinking also fit into individuals’ and groups’ daily routines, whether in the office or at home, where it often represented safe, patterned, and habitual life.¹⁴

DELIBERATING ON DRINK DISASTERS

However, like Gookin and Rathbone noted in their nod to spills, although food and drink symbolized the glue that could bring together social practices, people, and workplace devices like computers, then they also “continually threaten[ed] to become dirt”¹⁵—to become “gross.” Scholar Deborah Lupton (1996) has suggested that food (and I would add drink) are “a source of great ambivalence,” connected to nourishment but also bringing symbolic and literal portents of “contamination and bodily impurity.”¹⁶ This ambivalence meant that it remained unclear whether drinking (and spilling) near a computer signified an “abuse a personal computer could suffer,”¹⁷ one that a computerist inflicted like the cord-chewing baby, wristwatch-dunking housewife, or smudging record collector—or if it constituted a machine’s necessary acclimation to everyday life. As with other media technologies, who got to incorporate wetness—and when and where—connected to power relations and social dynamics as much as it did to material fragility.

When it came to beverages, at issue wasn’t merely whether it was appropriate or not to drink near the device, but also determinations about a spillage’s likelihood: how and when might liquids unintentionally make their way into the machine? Drinks situated precariously near computers prompted worries over errant and erratic bodies that, with a single gesture, might overturn a beverage container. Of the computing system’s many parts, computer keyboards were the most leaky and vulnerable to intrusion, given their cracks between the keys and the ways that liquids could “slip too easily”¹⁸ inside the device, leading them to become a “receptacle” for drinks and crumbs.¹⁹ Typists had already faced this wetness problem with electric typewriters,²⁰ but the built-in computer keyboard attached directly to the rest of a machine’s hardware could further permit liquids to permeate the computer’s insides, which were “delicate.”²¹ The keyboard thus acted as a penetration point—not apprehensible to most users—and yet looming unprotected.

Beyond this hazard, computers provoked additional concerns regarding software and data loss that compounded service interruption. Indeed, an external keyboard posed the least worries—a “fairly painless fix” in the words of Icon Computer’s Phil Kohler—because one could replace a keyboard

without tackling the rest of the device's components.²² By contrast, data's fragility without the appropriate backup threatened lost productivity and pricey repair or a destroyed work product. "How much does it cost to replace a damaged diskette?" asked writer Keith Aleshire in a tome on PC care. "Although a new diskette costs less than \$1, your hundreds of hours of work cannot be so easily replaced. That 50-cent cup of coffee or other beverage may cost you or your company thousands of dollars."²³ Quantifying damage in terms of cost, Aleshire trivialized the monetary value of a cup of coffee or disk against the imposition of damaged data, the stuff that couldn't be retrieved even if one could replace the hardware. This emphasis on disruption, loss, and wasted effort made liquid exposure an unnecessary threat.

To this end, the Apple Corporation, in its manuals, advised that one should "handle [disks] with care" and avoid liquids like spilled milk, which would cause disks to "drown."²⁴ The primary term used to describe floppy disks, "sensitive,"²⁵ painted them as vulnerable victims. As UniDisk put it in a 1982 owner's manual, "With reasonable care a disk will give you an average life of about 150 hours—which is a lot when you consider the few seconds it takes to load a file from a disk. But with just a little bit of carelessness, a disk may give you no service at all."²⁶ This quid pro quo proposition meant the disk's hardy life span and reliability, like the vinyl record before it, depended entirely on the user's liquid carefulness and *reasonableness*—behaving in a manner that befit data containers.

Computing discourses consequently framed liquid practices as impending dangers to both disks and keyboards rather than as coexisting elements. Warned writer Ellery Henn (1984), "There are literally hundreds of potential hazards lurking in wait to transform an expensive and vital piece of software into a dripping thirty-eight cent mylar doughnut. Cigarette smoke, dust, and coffee baths tend to be the more insidious offenders, though even the most careful user will likely lose some data through either neglect or overuse."²⁷ This notion of the hazard "lurking in wait" portrayed liquidity as a potent threat and users (through deficient or excessive use) as the careless or clumsy catalysts who would cause spills and drops. Outlined in these terms, when someone allowed a drink to enter the computer's space, it could generate disgust. According to Joseph Reymann in a computing guidebook (1984),

“A common contaminant around personal computers at the office and at home is food and drink. I shudder when I see a ring from a cup of coffee on the top surface of a computer cabinet.”²⁸ Calling food and drink a *contaminant* and describing a visceral reaction to its residue—a shudder—Reymann classified coffee not only as a hazard, but as a dirty, revolting one that revealed unhygienic behavior.

In homes, the damage risk didn’t merely come from a beverage but also from children as users who seemed to constitute the most pernicious and unpredictable demographic—like teething babies attracted to phone cords or sticky-fingered music handlers. Tales of children behaving messily with computers proliferated, especially in computing magazines and books, where repairers and users alike shared “horror stories.” One anecdote detailed how a three-year-old child smeared a floppy disk with sticky jam fingers before their parent ever got to use it—and “there aren’t many manufacturers who will warranty a program against children with peanut butter and jelly.”²⁹ Another also offered a snapshot of child-induced wreckage: “One of the strangest [stories] I’ve ever heard involves a man who decided that his two-month-old baby sitting on the keyboard in front of the computer would make a cute photo. The child had an ‘accident.’ Obviously so did the keyboard. The acidic fluid caused bad connections on the soldered components and even damaged the circuit board.”³⁰ The urine-soaked keyboard elicited a powerful memory for one repairer, who, many years later, shared that “the smell of urine while soldering is something [I] will never forget,” after the person repaired a friend’s Commodore 128 computer wetted by a two-year-old.³¹ Narratives like these explained that the computer stood no match against the indiscriminating child’s leakiness. The incontinent youth led to the container’s incontinence, too.

Domestic life thus created a dangerous computing climate. Journalist Michael Himowitz (1990), for instance, remarked that “I still think anyone who sticks a computer in his kitchen is crazy. Just imagine one kid spilling chocolate milk onto the keyboard while the other stuffs his peanut butter sandwich into the disc drive slot. A computer may be a great tool, but a Veg-O-Matic it ain’t.”³² If the film *Electric Dreams* imagined that an imbibing computer could achieve consciousness, then Himowitz’s comment expressed

a quite different interpretation of machine consumption. Two frames thus came into conflict: the domestic setting as a “home” for the computer (a tamed or domesticated device)³³ and the computer’s vulnerability to a home’s “mess” (its inability to acclimate). Scholar Marsha F. Cassidy (2001) has observed that “all domestic technologies necessarily add to domestic labor, too, since they must be purchased, maintained, repaired, learned, and managed, and the home computer is no exception.”³⁴ These burdens became evident as computing publications tried to place the role of liquids in facilitating a computerized life while catering to the computer’s needs.

If spills, pets, and slippery-handed children all represented “disasters,” then machines didn’t fail in these formulations, but their users did. As Gene B. Williams put it regarding Macintosh repair (1986), “If a television or radio refuses to work, it is usually the fault of the equipment. With a computer the fault is more often with the person running it.”³⁵ By laying blame at the hands of the human and not the device, Williams ignored situational or infrastructural factors and instead relied on a “bad person” explanation.³⁶

This attribution was predicated on the fact that people couldn’t manage their unwieldy bodies while drinking. Indeed, computer users, discussing their liquid mishaps, described their spills resulting from unpredictable choreographies. One story by Terry Hart, titled “OOOPS!”, which circulated in a user group newsletter, spoke to this effect. Hart detailed how a significant other had delivered a drink to the typist upon request, only to find that “you zig when they zag and the nice cool drink splashes all over your keyboard.”³⁷ This liquid unruliness disrupted the seemingly harmonious alignment of routine practices with machines, but computer users were more likely to interpret these overflows as matters of chance or bad luck rather than misuse.³⁸

Computing publications portrayed domestic life’s liquidity as fundamentally uncontainable, regardless of cause. A story published in *PC Novice*, for instance, told of “true data disaster stories” and used the case of the flooded PC as perfect evidence of the home as a site of potential hazard (see figure 5.1).³⁹ DeWayne Baxter, a former IBM engineer, shared with the magazine how his PC suffered its flooded fate due to its positioning in the basement directly beneath the kitchen sink: “When his cold water line came loose from the faucet one night, he had a big mess. ‘I came out (to

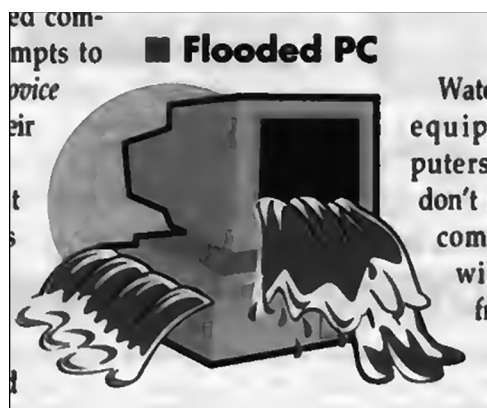


Figure 5.1

Domestic space represented a perpetual threat through its leakiness, which could affect the vulnerable computer and “flood” its unprotected case. Source: Kyle Schurman, “True Data Disaster Stories,” *PC Novice* 6, no. 6 (June 1995): 32, archive.org.

the kitchen), and there was about an inch and a half of water on the floor,’ Baxter says. ‘It went down through the ducts and took my false ceiling (in the basement) down. It went into the computer and into my Epson LQ-570 printer.’”⁴⁰ The scene described by Baxter depicted the home as a site of leakage, while the illustration of the flooded PC imagined its incontinence, flowing out in more than one direction. In this regard, the PC did not fit naturally one floor below the kitchen sink (a far cry from the wristwatch wading in Rolex’s fish tank display or the Walkman imagined as a duck); rather, Baxter represented it as a vulnerable inhabitant in a home setting.

Though people described domestic space as hazardingly wet, some of the same liquid concerns surfaced in office spaces too, where broken hardware increased organizational pressures and expenses. As journalist Michael Ball wrote (1988), “From coffee spilled on the keyboard to blown hard drives and chips, PC hardware support is a fact of life in corporate America.”⁴¹ Cautionary tales—like one about a simple spilled coffee costing the *Los Angeles Times* \$38,000 in damage—circulated as warnings for computer room managers.⁴² Maintenance and repair problems became routine ones for IT workers tasked with managing their coworkers’ liquid practices that conflicted with computers’ perceived fragility. Microcomputers and their peripherals

seemed more at risk when compared to their nonelectric predecessors. As Roy Blount Jr. commented with incredulity (1985), “If it had been my Royal standard manual typewriter, bought used 19 years ago, nobody would have noticed. You’d have to spill a pot of chili into my typewriter to make it operate worse than it does already. Can you imagine what it probably costs to spill a *spoonful* of chili into a word processor? . . . If an electronicsian [*sic*] tells me it costs, say, \$1,140 to fix a word processor that has had Kool-Aid spilled into it, how am I going to argue? . . . What am I going to say? ‘That doesn’t sound right to me.’”⁴³

Blount Jr. voiced vulnerability around repairs—not only would his machine easily succumb to a small spill, but the user also lacked agency when confronted by repairer expertise that exceeded his own. He described nostalgia for an earlier mechanical device, the typewriter, as a hardier alternative to the fussy computer and one that did not require deep repair know-how and could be fixed at lesser expense. Barbara Naness likewise expressed how she had cultivated a materially dependable relationship with her typewriter: “I’ve driven it beyond exhaustion into the wee hours, then neglected it for days on end. I’ve cried on it, spilled on it and yes, even pulled the plug on it. But never has this pillar of strength and stability let me down.”⁴⁴ Naness detailed a writing device so thoroughly entangled in her wet practices and leaky body (tears, spills, and all) that she could “drive” and “neglect” it without breakdown or interruption. By contrast, she worried that a shift to a word processor would hardly afford this imperviousness to which she had become accustomed. Of note, such complaints targeted the device’s fragility as a problem. Users didn’t want to recalibrate their behaviors to avoid breakage.

These responses also stemmed from the fact that when spills happened, repairs loomed as costly, undesirable, and sometimes unsuccessful rather than as matters of course. Advice columnists and book authors routinely referenced a spiller’s reaction time as crucial for preventing permanent device damage. The user should “turn off [the computer] immediately,”⁴⁵ “don’t wait,”⁴⁶ and carry out an “emergency cleaning job”⁴⁷ to minimize problems. Many warned that even if the spiller didn’t see harmful results or breakdown immediately, the liquid’s insidiousness would come to pass eventually, either through corrupted data or expensive repairs over the long

term.⁴⁸ Some recommended going directly to a professional repairer, while others advocated for cultivating enough knowledge about the computer that the individual could dry it out herself. In the latter case, advocates for computer maintenance and repair encouraged users that they could avoid getting “fleeced” by a repairperson if they understood how the “mystery box” worked.⁴⁹ Common techniques included unplugging the device, giving it time to dry before turning it on, flushing it with distilled water, or using a hairdryer to eliminate liquid.⁵⁰ Most often, though, texts suggested that people should replace components such as keyboards, deemed unsalvageable once wet, if they weren’t integrated into the computer unit.

When it came to recouping data, the process grew even more difficult. Joseph Reymann (1984) described the following procedure one should take in such a situation:

Don’t just run the disk in your drive and try to read it. You could cause more damage than you have already. Carefully hold open the black sleeve holding the media disk, and let tap water run slowly inside across the wet disk surface. The water will rinse off whatever might leave a residue. Don’t rinse any more of the disk than was originally wet. Then let the disk dry, propping open the sleeve with something nonmagnetic and clean. The liner inside the sleeve will probably take the longest to dry.⁵¹

The proper cleaning practice meant knowing what the disk could and couldn’t tolerate, but this process occurred retroactively rather than as maintenance meant to stave off decay or degradation. These sorts of tips appeared frequently in publications because people, still learning about computers, often didn’t know what to do. Yet consumers were encouraged to develop such know-how so as to increase their control over the situation, much like avid photographers developed their own discourse around protection and repair.

If it seemed futile to try to repair a wet disk, then users sometimes shared stories relating their successes at sopping up liquid. Tim Anderson of Logan, Utah, wrote to *Softalk* magazine (1983) to share how he had stashed a disk in the kitchen cupboard, only to find it wet and in need of repair later:

At the end of the party, when I went to get the program, to my dismay I found that ice cream had been spilled all over it. When I took it home and tried to

boot it up, I found that the disk was all gummed in and couldn't turn in the drive. I thought that all was lost but decided to try opening the plastic case (after all, the program was shot anyway). I took out the plastic disk and rinsed it off with water and carefully blotted it with some toilet tissue. Then I took out the soft, now sticky, lining, cleaned the plastic disk case, and dried it off. I carefully put the disk back into the case and taped it shut. By that time the disk had fingerprints and stains on it. To my amazement the program booted up beautifully and has been working well ever since.⁵²

Anderson described a home repair that he expected to fail, but didn't, as he employed common household items like water and toilet paper to remediate the ice cream spill. If advice-givers characterized spills as lethal and necessary to avoid at all costs, then tales like this one suggest how users creatively adapted to disruptions and breakdowns and repaired them on their own terms.

Disk manufacturers seized on this disk repair market, too. Polaroid, for example, sold a service to consumers using a graphic that leaned into messiness: "Give us your stained, your dog-eared, your filthy dirty, your mistreated" disks, the ad campaign entreated.⁵³ Polaroid visualized the many possible liquidities one's disk might encounter, from "Aunt Molly's jam" and "Regular coffee, two lumps" to "sudsy soap bubbles," "chocolate fingerprints," and "dry martini, one olive" (see figure 5.2).⁵⁴ The ad laid bare domestic wetness but continued to treat it as a symptom of carelessness and contamination ("stained," "filthy," "mistreated"), offering its services as salvation against the potentially "fatal" accident that might occur with one's data. These messes were ordinary and recognizable, like the peanut butter smudges so maligned by housewife Rita Anton cleaning her records, and not exotic. As scholar Matthew Kirschenbaum (2019) has written, the "ragged and gummy, often dust-coated"⁵⁵ disk remained firmly entrenched in everyday, tactile muck rather than the imagined virtuality of data as 1s and 0s. Polaroid's message at once treated wet practices and bodies as problematic for disks and yet normalized them as cleanable.

By the mid-1980s, microcomputer repair shops were "booming," bringing in \$951 million a year, according to a survey by the International Data Corporation (IDC).⁵⁶ These services varied widely, from large corporations

Give us your stained, your dog-eared,
your filthy dirty, your mistreated:

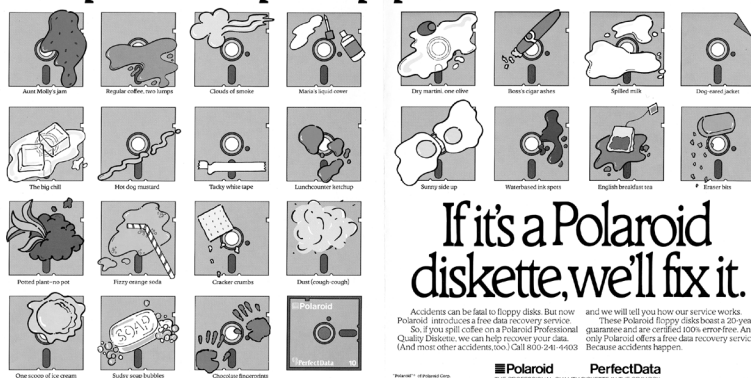


Figure 5.2

Polaroid peddled the mantra “accidents happen” by offering data recovery services for dirty and messy floppy disks. Source: Polaroid Corporation, “If It’s a Polaroid Diskette, We’ll Fix It,” Polaroid Corporation records, Series XII: marketing and advertising records, Box XII.10, Folder 2, Baker Library, Harvard Business School.

creating service centers around the country, to retail stores, to small mom-and-pop repair shops. In office contexts, such businesses sought the “holy grail” of proactive maintenance contracts, rather than profiting from individual repairs, where they could secure upfront funds to maintain an entire organization’s devices. Home machines, by contrast, rarely merited repair. Noted the president of repair company Computer Doctor, Earl Humphreys (1984), “We get a significant number of calls wanting service for \$300 computers. We even recommend to them to throw it away, but they still want it repaired. We’re watching the home market like a hawk.”⁵⁷ Thus, repair services existed within a complex ecosystem that depended on the type of device, its cost, reparability, and the broader computer market. Oftentimes, a spill meant “game over” for the device, either because no one could repair it, or it didn’t seem worth repairing when one could replace it at similar cost. Analysts worried that computers were becoming “disposable commodities” that were made so by hefty repair fees.⁵⁸

STOPPING THE SPILL BEFORE IT HAPPENS

Since one couldn't always repair hardware or software—and significant costs came with such repairs even when they succeeded—computing discourses routinely directed people about how they should treat their device, as writers aimed to calibrate caution and carefulness levels among early users. A 1983 Apple IIc manual included a section titled “Handle with Care” and laid out the terms of fragility awareness:

The Apple IIc isn't made of porcelain—so handle it with care, but not kid gloves. You can't break it by pressing the wrong key. You also can't break it by typing too vigorously. But the one thing the Apple IIc can't stand is immersion in coffee, soda, or Jacuzzi. If you have one rule in the computer room, make it this one: “No drinking on the job.”⁵⁹

This advice coded keyboards as durable when it came to typing but fragile when it came to drinking, and thus the user needed to manage her handling according. Author Gene B. Williams, in his book on maintaining Apple computers, concurred: “Make it a policy never to allow anything spillable within a 20-foot radius of the computer. If you or another operator wants a cup of coffee, it's time for a break *away* from the computer.”⁶⁰ Like the imperatives made to remove one's wristwatch when bathing, swimming, or driving in the rain, missives like this one proposed a staunch dryness.

Repetition about keeping food and drink away from devices circulated routinely in the 1980s, from computing manuals to popular magazines and layperson guidebooks, such as *Surviving PC Disasters, Mishaps, and Blunders*.⁶¹ Where behavior dictums came primarily from manufacturers and professional repairers in the past, now a flourishing literature included these groups but also journalists, hobbyists, and laypersons. These texts strove to create an educated computerist attuned to potential risks and willing to do whatever possible to avoid them. When working from home, microcomputer users should “keep the computer room as free of dust and smoke as possible and refrain from eating or drinking anything in the immediate vicinity of the equipment.”⁶² Likewise, they should “protect disks from heat, cold, fingerprints, television sets, video monitors, desk lamps, stereos . . . and liquids.”⁶³ To mitigate unruly users, especially young ones, articles and

books often included sections on how to “kid-proof” one’s machine, which was vulnerable to “prying hands and inquisitive minds.”⁶⁴ One should prepare in advance for “close encounters between your micro and your tot” and establish ground rules from the time a child first approached the computer.⁶⁵

Key terms such as *don’t*, *prevent*, *ban*, and *keep away/out* stressed best user practices that emerged across computing discourses. Often framed in the negative, language also described liquids in terms of their harmful capacity to *kill*, create *emergency*, *spell disaster*, and *ruin* computers and their accessories. Such warnings asked computer users to imagine costly and undesirable damage: avoiding repair became the primary goal. To achieve this mission, these texts advocated that a snack or drink could wait for another time and place; in so doing, they argued against an urgent nourishment need (instead, it was “most easily avoided”⁶⁶) and that one could schedule her bodily requirements around the device and not in conflict with it. This hygiene presupposed a particular kind of body that had access to plenty of breaks, never got extremely hungry or thirsty, never grappled with an illness or disease, and prioritized computing first and foremost.

For example, in a Mac User Group in Corvallis, Oregon, editor Philip C. Russell reprinted some no-no’s “heard from Mac owners” in the group’s newsletter. Among the various faux pas, these included: “Bring that Coke over here and sit it next to my keyboard. I need something to drink with these crackers.”⁶⁷ Circulated as a humorous anecdote, the statement also functioned as a clear what-not-to-do admonition against sloppy or ignorant users. In that same publication a few months earlier, Russell shared that computer users could give old floppy disks a new purpose as drink coasters. He explained that one person who repurposed a disk in this way “never fails to shock Macintosh users who see her set her full coffee cup on a disk!”⁶⁸ The taboo nature of a drink placed on a disk generated an emotional reaction in those who witnessed it.

In workplace contexts, drink policies similarly and proactively warned against liquid exposure, but these rejoinders more strenuously emphasized the threat of “downtime” or productivity losses; a spill led to inefficiency and ran counter to capitalist imperatives. While some encouraged educational campaigns to promote “clean” office practices, others instituted outright bans or stringent limits on food and drink near desks/workstations and computers.⁶⁹

Policies commonly focused on architectural or spatial solutions as a method to keep drinks and computers apart; employers should offer “a distinct and separate area” for drinks.⁷⁰ In this manner, managers, guidebooks, and columnists alike constructed computer work as careful, dry, and inhuman work.

Drinking stringencies applied in workplaces outside of corporate America, too. A couple of high-profile US government labor cases serve to illustrate how liquid policies, after the introduction of computers into office environments, challenged longstanding work activities and created further adversarial relationships between employees and employers. Such instances certainly did not pop up exclusively in government contexts, but their unfolding in these spaces makes them ripe for interrogation. Liquid policies usually involved lower-status employees, like data entry workers. In 1984, for instance, the Internal Revenue Service (IRS) implemented a new automated collection service (ACS), which combined telephones and computers, to allow employees to investigate unpaid taxes.⁷¹ These employees spent nearly eight hours a day on the telephone, and each possessed a keyboard, a computer terminal with a 13-inch screen, and a telephone system. Upon introduction of the ACS, the Treasury implemented the following policy:

Eating and drinking will be confined to the break areas. Drinks will be allowed in the work areas only upon receipt of acceptable medical documentation which establishes a health requirement. Among other things, acceptable medical documentation must come from an M.D. and must reflect a clear understanding of our two hour break pattern. Further the employee will be required to submit a statement to the effect that they have been advised that any drink could potentially damage the equipment and the system and even cause an accident which could harm them physically. This statement would further acknowledge that the employee could be held personally liable for damage to the equipment and the system and that the employee's negligence contributed to his own harm.⁷²

The exceptionally limiting policy required that employees demonstrate a *medical need* for drinking near their computers and telephones, certified by a doctor, and instructed that they would take on liability for any damage incurred to the equipment or themselves. The workers' union responded with a number of claims, arguing that drinks could address a dry throat

created by constant phone calls, that drinks would “increase productivity and the employee’s concentration” by limiting breaks, and that the likelihood of damage to keyboards was minimal given its positioning away from the terminal and its membrane (no gaps between the keys) design.⁷³ Framed in these ways, employees had to qualify their drink behaviors as productivity catalysts and, contradictorily, argue *against* hard-fought permission for paid drink breaks. The union claimed that the company’s service contract made no specific mention of food and drink as a risk, only later classifying it in those terms. Ultimately, though, the factfinder agreed with the government’s policy to keep drinks away from devices due to their hazardousness, though it struck down the medical documentation requirement.

In a second conflict involving the IRS and the National Treasury Employees Union, the IRS approached the Federal Relations Authority to resolve a disagreement about whether employees could bring drinks into computer and tape rooms. Laying out its case, the IRS described imagined accidents that could befall its sensitive tax data:

First, the Agency describes a situation where an employee, carrying a large coffee urn of water to the designated eating and drinking area of a computer room, trips and spills the liquid, causing a short in the electrical wiring underneath the floor that results in a breakdown of the entire computer system. In the second example, the Agency describes an employee who drinks from a “spillproof” container and chokes, spilling liquid from his or her mouth onto the tape reels by his or her work station and destroying the data on those tapes.⁷⁴

The organization used these scenarios—seemingly far-fetched ones that describe uncontrolled and uncontrollable leaky bodies (tripping and choking)—to rationalize limiting eating and drinking breaks outside of technological spaces. These bodies required reformation into computing bodies, just as mouths were socialized to correctly perform telephony and wrists were harnessed to carry out timekeeping. In this specific instance, again, the mediating board undertook this body-work by siding with the government. It concluded that the ability to drink in these rooms offered “minimal benefit” to employees that did not “outweigh the negative effect on the Agency’s right to protect its computer equipment from damage.”⁷⁵

Each of these situations and others like them invited consideration into how the introduction of computing equipment upended rules and social norms regarding bodily nourishment in the workplace. Multiple issues entangled—how to codify the potential risk of equipment damage, how likely employees were to cause spills in the first place, how bodies could assert themselves and their needs in the course of a work day (a dry throat or the need for a break), what constituted an “able” body (and whether a body-in-need constituted a medically documentable ill body), definitions of workplace productivity, and issues of power and control over who set such policies and governed working habits. Taming information workers’ leaky bodies meant containing liquidity; a dry body could better service keyboards and data entry without disrupting workflow or endangering archives and databases. Moreover, they commonly targeted data entry and telephone workers, positions typically held by women and coded as “women’s work”⁷⁶—which meant that not all bodies were equally the objects of these policies.

Drinking policies thus prioritized uninterrupted labor and avoided malfunctions at all costs, for particular workers. This same logic played out around “backing up” one’s data preventively as opposed to conducting repair after damage. Third-party companies tried to sell disk backup solutions as preventive measures for inevitable liquid breakdowns. Take the case of Irwin Tape Backup Systems, which appealed to information technology (IT) managers/repairers by feeling their pain at being “surrounded by a bunch of losers”—employees who threatened a company’s data stability and longevity. In an ad for its services, the manufacturer depicted what prototypical “losers” looked like and how they might cause damage in a typical office (see figure 5.3).⁷⁷ One case included a male manager complaining about his female secretary, who “spilled a cup of coffee on my desk and it ran over my disk.”⁷⁸ The ad imagined the woman’s leaky practices as causing the man’s undoing, but he too represented the hapless user unprepared for the ordinary office disaster. Irwin tried to sell backup as a measure against the sloppy and dimwitted employees that an IT person might encounter. Other publications not-so-affectionately deemed this person the “office bumbler.”⁷⁹ Similar to the US government’s liquid policing, it is clear that workplace hierarchies and differential notions of expertise dictated these formulations. Irwin Tape Backup Systems appealed to repairers’ woes at having to deal with careless and uneducated computer



Figure 5.3

Companies like Irwin painted average office users as bumbling, messy, and unreliable, as in the case of the man (bottom left), whose disk data was destroyed by a secretary who spilled coffee on his desk. Source: Irwin Magnetic Systems, "You Are Surrounded by a Bunch of Losers," *InfoWorld*, March 12, 1990, 25.

users whose ineptitude or clumsiness posed a danger. It wasn't just the liquid, then, that posed a hazard but also the person wielding that liquid.

THE SAFE AND DESIRABLE DRINK(ER)

While caffeinated drinks linked to increasing workers' outputs and to particular computing lifestyles, coffee and other drinks in domestic spaces shared overlapping but also alternative meanings. When microcomputers transitioned from universities and office computer rooms to homes, negotiations continued about how to domesticate them; as a result, drinks pictured near computers served as reassurance that computers would not "disrupt family life or the home itself,"⁸⁰ thereby making them "seem somehow 'normal.'"⁸¹ Some publications framed computers as fun, and others tried to demonstrate their business utility and versatility, meant to appeal to everyone in the home.⁸² As texts discussed where computers could go, they also evaluated what one could do in their proximity, stitching together rituals of eating and drinking with a new machine culture. If the insides of computing publications featured numerous articles on avoiding liquidity, then their covers

offered an opposite frame of computers habituated in everyday life's liquidity with carefree ease.

On the cover of a 1980 issue of *Byte* magazine, for instance, a young, bespectacled man stared intently at his device, with a cup of coffee sitting right beside it.⁸³ In another scene for *Color Computer* magazine (1984), a cup of coffee wafted its moisture over the keyboard in cozy company with a toaster and two crisp pieces of toast (see figure 5.4).⁸⁴ Absent of any specific person drinking, these pictures served as placeholders for the imagined computerist; anyone (hypothetically) could fill the seat and pick up the cup. Yet if these portrayals did not require a certain kind of person, they did identify a certain purpose. In a study of “domesticating” computers, scholar Elaine Lally (2002) proposes that computing advertisements drew on coffee and tea imagery because they suggested that “what is going on here is an insistence on the part of householders that computer use is seen as ‘serious’, work-like behaviour.”⁸⁵ The hot, caffeinated beverage—in its literal and metaphoric portability—could move from office to home with ease, thereby positing that computers could also make this transition with a like purpose. One could do “serious” office work outside an office’s confines. These drinking images were serene, cozy, and clean and not cluttered, messy, or contaminated. This was *safe* computing, free from threat. But the beverages served a secondary purpose, too, of specifying what kind of practices could align with computing.

Other texts used drinks to argue that computers could shed their stuffy work associations and transform into pleasant entertainment. The cover of a 1984 issue of *Family Computing* featured such an exotic and yet reassuring scene: a mother and son sat at the beach—white sand, palm trees, a breeze—with a personal computer at their feet and a fruity drink perched atop the monitor. Though the publication didn’t literally propose that users should bring their clunky hardware to this locale, the photograph, chosen for the headlining article “Computing Fun in the Sun,” aimed to demonstrate the computer’s family-friendliness and its comfortable fit into any environment (see figure 5.5).⁸⁶ This movement corresponded with the squeaky clean, white, and fit mother and son. Another image displayed a middle-aged white man—wearing an unbuttoned shirt and sitting poolside—who smiled as he



Figure 5.4

In some scenes, the device sat cozily in a domestic environment with a hot beverage and morning breakfast, with moisture wafting directly into the computer's keyboard. Source: "At Home with the Color Computer," *Color Computer*, October 1984, archive.org.

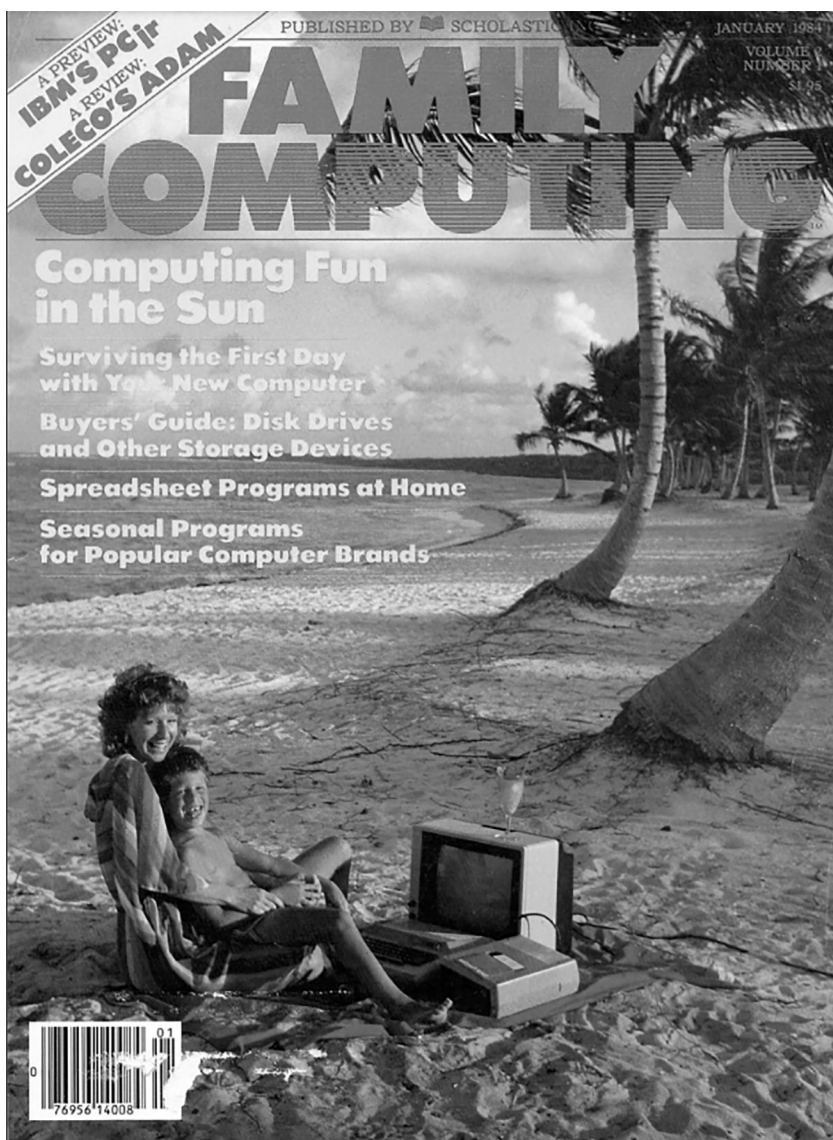


Figure 5.5

Computing magazines often showcased images of drinks sharing space with computers, as in this instance of a family on vacation with their computer. Source: "Computing Fun in the Sun," *Family Computing* 5 (January 1984): archive.org.

sat with his EXECUTIVE 64 and an orange juice with straw for a Commodore advertisement.⁸⁷ The ad copy enthused that a man like this would have “the power to keep up. In the office. At home. Or in your home away from home,” promoting a vision of unproblematic mobility and fluid practices that blended work and vacation together; the computer user could “keep up,” just like the radio shower listener could keep listening and the watch wearer could keep track of the time.

One could partake of other beverages, too, in ways that positioned computers as domestically safe, relaxing, and comfortable. For example, an ad for the Equinox 100 showcased a woman holding a glass of red wine in one hand, with her other arm’s elbow perched upon the computer desk.⁸⁸ These depictions happened outside of advertising, too. Apple, in its Apple IIc computer manual (1984), posed a well-to-do couple setting up their new device by a cozy fire and two glasses of wine (see figure 5.6).⁸⁹ Importantly, if some beverage cups stood alone at the computer, inviting a host of characters to drink them at the computer’s site, these images delineated a specific kind of drinker. The people and scenes depicted in these 1980s texts were ones of racial, gender, and class privilege characterized by whiteness and middle-to upper-class milieus: families on vacation, the male executive, and the imbibing housewife. They granted liquid permission to a very particular subset of people to enfold liquids and computers into everyday life, and the liquids themselves played a role in this framing: only a person of certain means would drink wine, while milk represented a “wholesome” American domesticity associated with the nuclear family.⁹⁰ These discourses’ computing scenarios provided an uncomplicated and sanitized view of eating and drinking near personal computers; the fruity drink atop the monitor never indicated precarity, nor did unpredictable hands threaten to topple a coffee cup or soda can. Instead, drinks suggested a harmonious alignment between everyday life practices and machines.

The chasm between hygiene rhetoric, which painted computers and their accessories as fragile, and this latter carefree computing demonstrated how liquids were contested. But if personal computers were new, then the prohibitions and permissions that related to wetness were strikingly familiar, evincing themes of leakiness that long predated computation and were

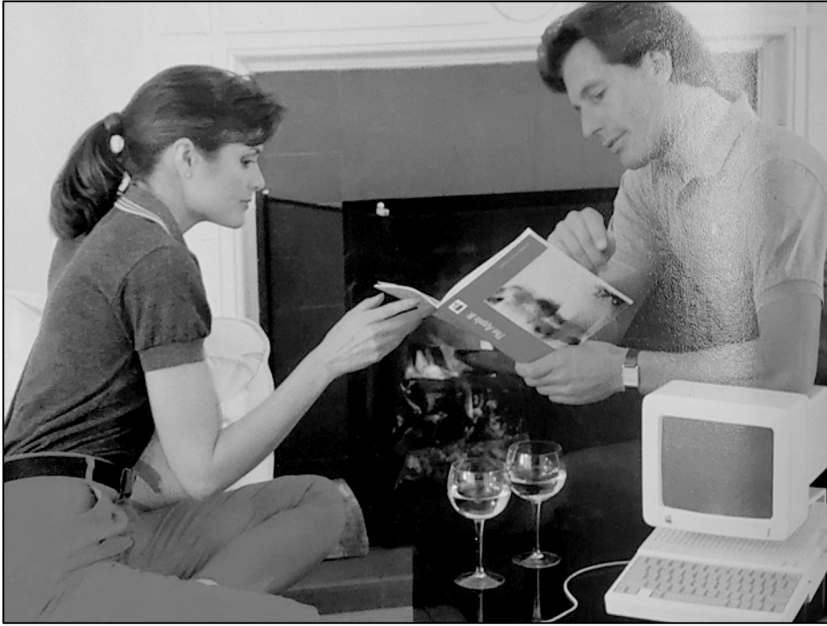


Figure 5.6

Companies like Apple displayed idyllic scenes in their manuals that promoted a privileged and uncomplicated view of domestic computing and beverages. Source: Apple Company Inc., *Setting Up Your Apple IIc*, 1984, Joseph Meyers Collection of Apple Computer Manuals, ca. 1979–1984. M1885 Carton 1, Stanford University Library Archives.

similar to those restrictions made in libraries. Drinking practices came with their own baggage and cultural associations, while spillage, or the risk thereof, signified problematic excesses and overflows. Although beverages were not *of* the body like a baby's saliva, a record handler's finger oils, or a wristwatch wearer's perspiration, they were *for* the body and spilled *by* the body, made precarious by a simple bobble or errant hand. Stringent policies and voluminous advice texts became a way to reign in users' bodies—especially women information workers and unpredictable, messy children—in line with productivity expectations and breakdown avoidance, as they tried to determine what machines (and the people who used them) could bear.

6 IMPERVIOUS COMPUTERS

In *PC Magazine* (1988), John C. Dvorak offered a computer programmers' quiz that readers could take if interested in pursuing that career. One question asked whether the would-be coder preferred "(A) Wine, (B), Jack Daniels, (C) Beer, (D) Jolt Cola."¹ When scoring the answers, Jolt Cola received the maximum 10 points and beer earned 5 points, while Jack Daniels or wine didn't merit points. Unlike the typically described unruly computerist in the 1980s who threatened with her liquidity, from the clumsy keyboard operator to the leaky child, the "authentic" geek demonstrated his computing bonafides through a variety of strategies—and liking the appropriate computer-friendly beverage could also signal his "in" status. As the quiz demonstrated, Jolt Cola, first released in 1985 as an energy drink, earned special favor as a stimulant, especially among young people and computerists.²

Jolt Cola would later feature in the film *Hackers* (1995) as an iconic computer drink, thereby solidifying its status as a cult beverage for tech enthusiasts. These liquid associations helped to reinforce stereotypes within a hardcore programmer culture. Soda drinking fit in with the dedicated programmer's reputation for his "inattention to his physical health and appearance," which prioritized working with the computer over looks or fitness. Typical images featured the disheveled "computer nerd" surrounded by pizza boxes and crunched-up soda cans.³ A hacker, too, was defined as "someone bathed in the glow of a video-display screen" and "going without sleep or a shower, subsisting on Jolt cola and Twinkies."⁴

These common clichés applied to coders in institutional settings (usually male students in university computer labs and, later, their basements) and ultra-devoted hobbyists who were known to be hopped up on caffeine as they neglected their hygiene and never left their machine's side—always “on.”⁵ In these instances, liquid practices represented “geek triumphalism”⁶ that spilled messily from body to computer. As authors R. T. Doswell and Geoffrey Leslie Simons put it (1986), “Computer experts are notoriously untidy.”⁷ If in traditional home and office contexts a drink spill could lead to downtime and lost productivity, then the programmer's strewn soda cans near machines and on the floor identified the opposite orientation: a brutalist computational commitment in which uninterrupted coding trumped rest, respite, or hygiene. A similar image would replicate in a Nintendo gaming ad many years later, linking messy eating and drinking habits with what appeared to be youthful male play as it depicted boys' feet in sneakers surrounded by strewn about soda cans and candy wrappers.⁸ The empty soda can lying in the machine's proximity, whether for videogames or microcomputing, implicitly authorized drinking as acceptable behavior; male programmers and hobbyists *needed* to drink near the machine, these images suggested, and their consumption meant dedication to one's craft and a simultaneous lack of concern regarding mess.

This wet boundary-pushing tied together soda drinking, computation, and masculinity, in which the eccentric male genius or devoted hobbyist shunned cleanliness and ignored—or even embraced—liquid hazards to prove his technological mettle. Computer programming wasn't inherently masculine or undertaken by men, though; in fact, women mostly carried out early coding activities—so much so that women were considered the first “computers.”⁹ As described in the previous chapter, women's work had historically related to data entry, secretarial labor, and typewriting and involved keyboards.¹⁰ Thus, over time, male programmers had to establish themselves as technological “wizards” in contrast to low-status female typists and coders.¹¹ But even beyond the specialized programmer, a broader “masculine status anxiety” was also occurring around white-collar work and its questionable manliness.¹² Men had to *make* a new masculinity around computing that would afford social status, of which the proper computer beverage

played a small but crucial role. Like the survivalist or warrior, programmers could, according to computing historian Nathan Ensmenger (2015), “engage in manly demonstration” by subsisting on caffeinated beverages and junk food for days on end, pushing their bodies as far as they could go.¹³ These tests, which differed from those out on the battlefield or deep in the ocean, likewise adopted liquid bodily performances to demonstrate the human’s fortitude in a sort of “extreme” computing. Rather than the fastidious vinyl record cleaner, who tended passionately to his record collection’s smudges, this unhygienic performance asserted carefree drinking and lax hygiene as a hallmark of technological enthusiasm.

Not a mere fad or fleeting depiction, the imbibing computerist trope continued to appear in both popular culture and everyday discourses about programming activities. By 1990, Dan Gookin, in *Compute!* magazine, offered a kind of anthropological investigation of computer enthusiasts’ beverage culture and how it had shifted over time: “Unlike most other hobbyists, computer people don’t get into beer. Long gone are the days of the macho Fortran programmer, sitting by his terminal in his Bermuda shorts and black socks with a cold one by the keyboard. (They’d sit around, code, belch, scratch their potbellies, and say, ‘What a hobby!’)”¹⁴ In contrast to what he described as hegemonic macho masculine behavior, Gookin outlined the changed drink habits of contemporary programmers: “Usually they resort to something stimulating, usually Diet Coke. Just for the caffeine of it. . . . It’s Diet Coke or one of the most potent drinks legally available to a 14-year-old: Jolt Cola. Jolt is a computer person’s dream come true; it’s serious stuff. It has all the caffeine and twice the sugar of wimpier cola drinks.”¹⁵ Gookin explained about the pharmacologic benefit of caffeine—being able to code late into the night—as the primary driver of drinking by the computer, as well as a shift from “macho” programmers drinking beer to the “computer people” desperate to get a fix from hypercaffeinated soda to keep them awake. These drinks correlated with a cultural understanding of programmers’ new masculine, “geek” identity and computer programming defined as craft.¹⁶ At the same time, drinking-while-computing signified a shift from the coffee break of yore. Where stimulating drinks equated with productivity in both contexts, the person who drank *with* the machine went

the extra mile. This behavior didn't mean that machines were necessarily protected from liquid elements, though; a liquid "promiscuity," in which the machine *might* get wet, meant challenging oneself by leaning into everyday life's hazards.

But if technologists glorified this lifestyle, then computing magazines and books also denigrated it as the cause for programmers' poor health. Within the public health community, for example, Jolt Cola earned a reputation as "reprehensible."¹⁷ These admonishments ran counter to the invincibility tests described above; if programmers envisioned their drink habits as solidifying their hardy geek masculinity, then health advocates used beverage behaviors as evidence of bodily fragility and unhealthiness, in which drink choice created a mixed admiration and repulsion over the "nerd" figure. Soda preferences, observers warned, led to a prevalence of "plump programmers."¹⁸ People sometimes interpreted coffee as a healthier alternative to soda, and it too featured prominently in computing discourses.¹⁹ Steven Topik notes that coffee became "so integrated into the new computer telecom age that one of the leading computer programs is called 'Java' because programmers required gallons of coffee to develop their codes."²⁰ Where people considered sodas like Jolt as an excess taken in by ultra-involved computerists, coffee drinking connoted appropriately stimulated workplace behavior. In these various dimensions, a programmer's drinking near the machine straddled the line between stigma/unhealthiness and desirability.

PC PROTECTION

Given a culture that increasingly valorized virtuosic and endurance-based computing performances, the unprotected machine represented an unnecessary liability. The predominant mode of dealing with liquids near computers had previously dictated liquid abstinence and careful hygiene to ensure smoothly functioning devices; in the 1980s and 1990s, a reverse strategy involved attempts to make computers and their accessories liquid resistant or proofed. This prophylactic approach assumed that people would inevitably drink near the machine and did not try to prevent or police it; instead, it borrowed a design philosophy employed for wristwatches, cameras, cassette

players, raincoats/boots, and others that promised a device's technological imperviousness. Notably, though, in this case, a wetness risk didn't come from a battleground's dangers or a sports field's rain and sweat but rather from an overturned cup or sticky hand.

One option to ward against spillage came in the form of third-party, after-market "skins," films, plates, and covers that would fit over the leak-prone keyboard. Though not as effective as "the protection the baby's own skin offers it," a *Popular Computing* article surmised, "They are an important defense against the natural dirt that computers and their peripherals face every day."²¹ The "second skin" could act as a liquid defense (invoking military strategy), which shielded the keyboard from spillage. Real-life experience with liquids had inspired this kind of product; student Dorian Young, for example, created a PVC keyboard for company Kador of South Wales when he spilled coffee on his keyboard that ruined his device and put it out of commission for months.²² Other similar products included Hardcover (Diversified Manufacturing), the KADO cover (KADO Enterprises), Keyboard Skin (Laulex), KeySkin (CompuCover), and keyboard seals (Sylex Ergonomics; Viziflex Seals). One such ad depicted the skin-like cover in action, with a disembodied hand pouring a teapot—which missed its target mug—so that the liquid pooled undramatically on the protected keys (see figure 6.1). The advertisement transformed a risky behavior, pouring directly over the peripheral, into a safe one.

Companies like Merritt Computer Products, Inc. took this tact of emphasizing protection, enthusing that its SafeSkin™ product, made of a thin polymer material, "protects while you type." Merritt suggested that spills would no longer necessitate repairs, while the typist would enjoy a "normal keyboard feel."²³ Other companies promised that their skins were "so thin that it won't affect the speed of a touch-typist"²⁴ and were "designed to 'form fit' . . . to provide superior tactile sensitivity,"²⁵ akin to the condom that would promote maximum sensation. In fact, journalist David Hinley (1988) even described the Sylex skin as "condom-thin" and quoted Sylex's promise that "there is no interference to the finger-feel of the keyboard."²⁶ An important design value, then, became considering the sometimes incongruent goals of liquid protection and typing productivity; the "skin" should provide an impenetrable

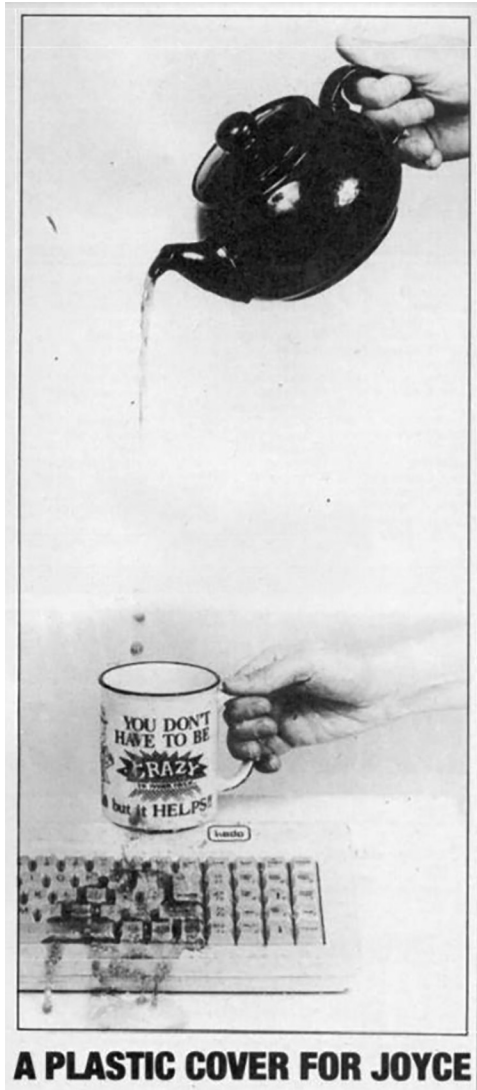


Figure 6.1

Keyboard "skins" were advertised to allow computers and liquids to come in contact even in the case of accidents. Source: "A Plastic Cover for Joyce," *AMTIX*, March 1987, n.p., archive.org.

shield while also maximizing a desirable touch—not unlike the ideal sexual experience. Conceiving of skins as condoms fit in with 1980s anxieties over AIDS—when bodily leakiness threatened disease and anxiety, especially in terms of male bodies. Biological metaphors, pertaining to computer viruses, also proliferated at this historical moment, and thus it made sense that manufacturers imagined the covered keys no longer vulnerable to a literal or metaphorical liquid penetration.²⁷ However, the condom comparison also situated protection as a man's prophylactic, thereby reinforcing long-held associations between imperviousness and masculinity. The keyboard *wore* its protection like a protective sheath.

Another possible solution involved keeping out moisture and dirt from the get-go by constructing a membrane keyboard made of sheets of plastic layers that encased conductive material.²⁸ Throughout the 1970s and into the 1980s, one would find these keyboards/pads quite commonly on microwaves, calculators, and electronic games with characteristic “space-age flat buttons”²⁹ (see figure 6.2). The keyboard design cost less to produce because it possessed fewer parts as compared to a traditional mechanical keyboard, and it attracted those who preferred a quieter typing option. Companies like Oak Switch and Chomerics wagered that inexpensive and easy to mass-produce membrane keyboards would become the wave of the future, and this input design came included with computers such as the Commodore Ultimax, Sinclair ZX81, and Atari 400 or as an upgrade for the RCA All Purpose Terminal. Other common models that one could purchase separately included the Micro Proximity Keyboard produced by Tasa Inc. and Leading Edge's keyboard by Keytech.

Reviewers agreed that this kind of keyboard's primary feature was its protectiveness, “being impervious to dust, hair, gum, etc.”³⁰ However, most of these devices gained little traction with consumers. As with protector accessories, users indicated that such keyboards “have a spongy or mushy feel”³¹ and they often tired hands while typing. For instance, in *PC Mag* (1987), Alfred Poor warned that “the price you pay for a wipe-clean keyboard is that it takes considerable pressure to execute each keystroke—about a 15-ounce force according to the specification sheet.”³² Typists desired a particular key feel and “travel” (how much the key pressed down), and they



Figure 6.2

Membrane keyboards utilized flat buttons, made from layers of plastic, that did not have a traditional keyboard's cracks to allow liquid entry. Source: Paul Grosjean, "Timex Sinclair 1000: An Affordable Way to Find Out," *Creative Computing Buyers Guide*, 1984, 10–11, archive.org.

often voiced their dislike about these interfaces and replaced the keyboards when they could.³³ Thus, most like Poor only recommended membrane keyboards at this time period to those who intended to work in hazardous environments characterized by extreme dust or wetness—or to children.³⁴

It is interesting to consider how such keyboards were imagined as liquid-proof for these two very different demographics. The “rugged” keyboard, like the TCE434–1 produced by Honeywell, could, according to the company, withstand “shock, moisture, salt spray, sulphur, sand, and dust,” as well as “coffee, cola, . . . isopropyl alcohol mixed with mineral oil, fluorocarbon cleaning solvent, detergent, and water-soluble cleaning solvent.”³⁵ A product reviewer deemed the device, which cost \$246, as one fit only for a “harsh environment” like a factory and specialized use.³⁶ By contrast, RCA promoted its key durability as “peanut-butter-and-jelly-proof for elementary school students or pizza-proof for high school students,”³⁷ while Keytek boasted that its child-friendly device “takes a lot of abuse” and “laughs at disaster.”³⁸ These

latter appeals aimed at children sutured together the protective design with an imagined messy and youthful user who could wantonly “abuse” the device like the resistant wristwatch. The flat keys were touted as approachable and more like “buttons” that could introduce a novice person to computing.³⁹ This simplicity, though, meant that older computer users didn’t always take kindly to them; writer David D. Thornburg concluded that the “Atari 400 membrane keyboard is acceptable to children, but is annoying to adults accustomed to typewriters.”⁴⁰ Industry writers suggested that the industrial worker couldn’t avoid messiness due to occupational hazards and required a hardened tool that could accompany a job’s extreme harshness and hostility; meanwhile, the child user attracted mess like a magnet due to simply inhabiting the seemingly unruly child’s body. In both scenarios, designers approached the problem as one of acclimating the device to the user and environment rather than inculcating users to change their ways. Membrane keyboards’ usability seemed to conflict with perceptions of a “normal” and fluid typing experience when it came to the more “serious” or proficient typist rather than the child user.

Floppy disks and their data also got the resistance treatment, with a similar emphasis on shielding workplace and childhood liquids as opposed to remediating them once they occurred. Eastman Kodak’s subsidiary, Verbatim, began releasing disks with 3M DuPont Teflon coatings. *PC Mag* (1988) concluded that these disks would appeal to those “PC users who routinely spill coffee,”⁴¹ while *Info World* proposed that these protective containers could “survive fingerprints, peanut butter, and even hot coffee.”⁴² As Marilyn Modesitt, manager of corporate engineering at Verbatim put it, “The only thing that sticks is data.” The company’s market research of 1,235 business users indicated that spills and fingerprints most frequently led to data loss and that the market could bear a premium option built with such repellency. Some analysts, though, argued that Verbatim overestimated the problem of “accidental mishandling.”⁴³ Debates ensued about whether the nonstick disk represented a welcome imperviousness or an unnecessary gimmick. Still, it is noteworthy that Verbatim’s language once again called on the trope of *survival*, imagining oily fingers, food, and drinks as harsh trials that the storage mechanism must overcome and demonstrating a continued ambivalence over appropriate computer hygiene.

RUGGEDIZED FOR “ROAD WARRIORS”

Disks moved from place to place, unlike the hardware that ran them, so when the computer itself became a portable technology, it further encountered wet conditions, practices, and concerns. Although manufacturers developed early iterations of portable computers as early as the 1970s, laptops—also called notebook computers, transportables, portables, or luggables—entered popular discourse in the 1980s and achieved more widespread usage in the 1990s and 2000s.⁴⁴ The first kinds of portable computers came with a good deal of heft and inconvenience, leading to a range of carrying accessories (bags, briefcases) and new bodily habits.⁴⁵ Additionally, their all-in-one design, in which the keyboard integrated with the computer’s other hardware—and couldn’t easily detach—also precipitated greater repair consequences. As *InfoWorld* writer Brett Glass recounted, where one might have previously tried taking a separate desktop keyboard in the shower to rinse it after a spill (and he wrote of someone who did just that following an unfortunate Grand Marnier incident), a laptop couldn’t take the same kind of exposure.⁴⁶ Thus, the question of device ingress and repairability amplified, particularly because of pressures to further enfold computers (and mobile labor) into other practices.

Indeed, in work contexts, companies encouraged businessmen or “road warriors” (often young, white, and male)⁴⁷ to employ laptops as tools to unteather their labor from desk or office, allowing supposed newfound freedom to carry out tasks anytime, anywhere.⁴⁸ The need for a mobile workforce arose from multiple factors such as increases in transnational business travel and staffing pressures/corporate downsizing that affected white-collar workers, especially men. The “warrior” title mattered because it applied militaristic language to describe the mobile worker as embattled, constantly tested to improvise office work (using not only laptops but also early cellular phones and fax machines) from cars and planes.⁴⁹ The term might have come from the 1981 Mel Gibson film *Mad Max 2: The Road Warrior*, which depicted the macho male surviving in a brutal postapocalyptic environment. Recalling early wristwatch wearers who engaged in physical tests of their person on the battlefield and outdoor adventurers taking to the bush or mountains with their cameras or music players, the road warrior moniker applied similar

toughness to the itinerant man in a business suit who wasn't testing his muscles but rather his work endurance in a new kind of activeness—always “on.” Sometimes people also referred to laptops themselves as “road warriors,” thereby conflating device and user.⁵⁰

Much as laptops were positioned as the ideal tool to aid privileged executives, writers, and other supposed road warriors in achieving status and mobility, scholar Renyi Hong (2023) points out that early portable computers did not accommodate such travel or work easily, given that “travellers had to deal with issues like variation in international voltages, customs prohibitions on expensive computers, and threats of x-ray scans erasing data on diskettes.”⁵¹ Hong calls this a kind of “environmental hostility.”⁵² Although the author does not consider liquid contexts, the study importantly notes that portability relied on acclimation (or what Hong refers to as “adaptation”), noting that “something can be more or less portable depending on how easily it can adapt to the environment at hand.”⁵³ Within mobile work environments, a bundle of acclimations necessarily had to occur to make laptop computing possible, on the part of both workers and the devices they carried. Despite a perception of hardy workers and equally hardy machines, laptops required carefulness or “TLC on the road,” because they could sustain damage from spills, drops, and more.⁵⁴

In fact, the road warrior's device often provoked fragility worries from its leak-prone design. Care and carefulness related to understanding proper “laptop etiquette,” which didn't just mean appropriate file storage or email practices but also consideration for how laptops dealt with liquids. Greg Keizer (1988) explained ten inappropriate instances for laptop computing, three of which referenced liquids-as-hazards. According to Keizer, one shouldn't place the device:

At the dinner table. It's hard enough to get the entire family together these days, much less with someone clicking away behind a pile of mash potatoes and meatloaf. Eating and computers don't mix very well anyway. Crumbs, gravy, soup, and wine aren't appreciated by most keyboards and circuits.

...

On the airplane next to someone who's never seen a laptop. . . . And never using a laptop next to an in-flight drunk (you don't want a spilled drink—or worse—in your keyboard, do you?).

...

In the tub. Electricity loves water. Really. Makes it go fast and hot. The only time you should take a bath with your laptop is when you pay for it.⁵⁵

Keizer's advice mimicked the "rules" given throughout the 1980s regarding drink placement and food crumbs near microcomputers, articulating a need for abstinence, but the laptop's flexibility introduced a host of new liquid negotiations, from bathtubs to airplanes. The writer suggested that the device could interrupt family time, as at the dinner table, but also sustain damage from its placement there: a double liquid danger. However, portable computers lived increasingly messy lives, as they were "slapped onto the counter at coffee shops," "set on top of greasy counters, rained on, and dropped to the floor late at night in hotel rooms."⁵⁶ Mobile work pressurized wet practices by demanding their entanglement with machines. This liquidity in myriad habitats and habits led to a framing of omnipresent technological risk, when "disaster can strike at almost anytime."⁵⁷

To deal with these issues, manufacturers began targeting "rugged" travel workers with devices that could handle the difficulties and inconveniences of portable computing. As in the past, this license didn't apply to everyone equally. Along with images of roads and suitcases, 1990s computing involved "romantic imagery of the frontier,"⁵⁸ and male executives and industrial workers functioned as archetypal pioneers on the frontlines of this adventuring, much like underwater photographers in an earlier era. The durable and resistant portable market remained quite small and niche for a long time, however, due to the devices' cost, heaviness, and limited features. In 1997, ruggedized notebook sales accounted for only 2.3 percent of the total US laptop market.⁵⁹ Even into the 2000s, approximately 225,000 rugged notebooks shipped in 2004 out of a total 48.9 million worldwide notebooks that year.⁶⁰ Nevertheless, a robust discourse about such products existed throughout the 1990s, as producers began experimenting with resistant and proofed designs. Some notable specialized manufacturers included Amrel Technology, Husky Computers, Itronix, and Fieldworks, alongside other well-known companies like Toshiba, Panasonic, and Dell.⁶¹

Those laptops truly ruggedized often conformed to military specifications (MIL-SPEC) that dictated a high rigor of containment "both internally and

externally against environmental and physical abuse.”⁶² Container designs targeted protection for the device’s fragile innards and strove to mitigate leakiness, especially from the still-fraught keyboard. They traded plastic materials for metal, like magnesium, and rubber.⁶³ As such notebooks weighed anywhere between 5 and 25 pounds, early users described these computers as “big,” “bulky,” “thick,” “heavy,” “tough,” “beefy,” and full of “brawn,”⁶⁴ putting the “‘hard’ in hardware.”⁶⁵ This language reinforced macho stereotypes, coding the machines as appropriate for male use and imperviousness as a masculine trait. Many such devices were also quite expensive (from \$3,000 to more than \$10,000) and often purchased by employers for their employees rather than available to the individual worker or home consumer.

Importantly, two kinds of frames emerged about ruggedized computers and their users. The first involved the imagined blue-collar industrial worker who might labor in trucking, construction, or oil rigging.⁶⁶ The second supposed beneficiaries of rugged devices were white-collar mobile workers—the road warriors—who might encounter travel hazards such as a spilled cup of coffee, an airplane/hotel mishap, or another road mess. For the latter group, manufacturers initially played up “testosterone” adventures and transportation/mobility in their advertising—from a Toughbook toted to the desert to the Gateway 2000 solo that functioned like an “all-terrain vehicle.”⁶⁷ Like advertising for guns, cars, or resistant wristwatches, the images identified a “rugged individualism” characterized by maleness, whiteness, and the “solo performance” in which “tasks should be accomplished alone, dangers met alone, and victory earned alone”⁶⁸ with a high-functioning device that wouldn’t let down its user. Most of the time, however, it wasn’t the testosterone-fueled adventurer but the trucker and insurance worker who benefited from a ruggedly constructed computer.⁶⁹ Still, the nod to macho masculinity played up the human–technology toughness required for constant computing.

However, just like wine and soda suggested different kinds of microcomputing identities, so too did different kinds of wetness correspond with particular rugged work identities: a coffee spill symbolized the white-collar office worker in ways quite opposed to oil, rain, dirt, and lakes in the case of the physical laborer or adventurer. These differing masculinities and their attendant messes could problematically conflict with one another, as historically,

“a man whose white-collar identity is not counterbalanced by physical (bodily exertion) risks appearing effeminate and enervated.”⁷⁰ As discussed earlier, this “crisis of masculinity” had plagued young, male information workers who couldn’t prove themselves through courage or physical prowess.⁷¹ Thus, reframing mobile computing and its liquid spillovers as a hypermasculine activity—even when limited to the confines of a hotel, airport, or automobile—served as a possible solution.

But who was the “ideal” mobile computerist—an off-roading adventurer or someone else? Popular culture imagery had provided one answer by portraying portable computers concealed in high-tech briefcases meant for undercover male agents, from James Bond to Ethan Hunt in *Mission: Impossible*. The briefcase, a “well established and well understood signifier of executive status,” became “entwined with a ‘macho mystique’ of concealed technology,” notes design historian Paul Atkinson.⁷² Films and TV shows imagined their suave lead characters “constantly on the move, living out of a suitcase as compared with the everyday drudgery of repetitive life at work and at home,” using various secret technological containers to aid their exploits.⁷³ Still, if the debonair tuxedo-ed spy represented a mobile worker with cultural caché, rugged laptop descriptions most often evoked a different frame that tied together macho militarization with spillage and other environmental “hazards.” To this end, writer Matt Richtel (1999) described the Panasonic Toughbook as follows:

If engineers mated a laptop computer with a Sherman tank, they might wind up with something that looks and performs a bit like Panasonic’s aptly named ToughBook. A water-resistant laptop encased in a magnesium alloy, the ToughBook CF-27 is advertised by Panasonic as the Hercules of portable computers. In a promotional video, Panasonic even douses the laptop with coffee, drops it on pavement, and drives a truck over it—and it keeps on working.⁷⁴

In Richtel’s retelling, the Toughbook became the ultimate protective technology akin to a tank or a Roman mythological hero. *Ralph* magazine similarly framed the device in these terms in a section on “boys’ toys,” in which the publication asked its reader: “Taking a business trip to a war zone? Pack a Panasonic Toughbook: a magnesium-coated slab of data-crunching power that’s water,

dust, shock, and probably terrorist resistant. It's a hefty bastard to lug around, but just the job when you're on deadline and copping a hail of mortar shells."⁷⁵ Transforming the out-of-office workplace into a warzone, the article conceived of a device resistant to the more usual environmental forces as well as terrorists and mortar shells. These two passages imagined the laptop not as a weapon or sleek spy tool but rather as a metal suit of armor, surviving tests from dumped coffee to crushing tires to artillery, as the device's encasement served as a ward against leaky failure and interruption ("it keeps on working" and "just the job when you're on deadline"). In its catalogs and ads, Panasonic specifically tried to appeal to companies' desires to avoid downtime as a reason to purchase a Toughbook, given that damage led to lost productivity.⁷⁶ Notably, these appeals to militaristic toughness stemmed from the fact that most ruggedized devices were originally built for branches of the US military and for defense purposes before companies like Panasonic began targeting the consumer market. This legacy thus seeped into subsequent ideas about impervious devices.

Along with hardened devices came familiar assumptions about their treatment, which implied that men behaved roughly—and they were encouraged to do so. Journalist Alan Radding wrote in *Computerworld* (1992), for instance, that companies had begun investing in "sturdy PCs built to take a beating" when their employees shifted to laptops because workers couldn't provide careful "pampering" to the out-of-office device.⁷⁷ It is remarkable how often tech journalists, alongside manufacturers, invoked this language of abuse as a sort of human–technology trial when describing rugged portables.

If machines like Rocky were constructed as abuse survivors, then these representations also positioned the user in the role of authorized abuser rather than misuser. One of the key problematics of the 1990s and early 2000s involved testing rugged laptops' mettle—putting them through liquid trials—to evaluate whether they could achieve their promised imperviousness. These verification tests took place in manufacturing spaces, but they also gained traction when journalists began carrying out their own testing for mainstream computing magazines as "outsiders" evaluating the marketplace. Carrying on the legacy of product "torture tests" begun decades before and into World War II, writers recounted both formal and informal attempts at putting laptops through their paces.

PC/Computing magazine, owned by Ziff-Davis, produced the most robust corpus of tests over many years, with writer Marty Jerome taking the helm on many stories. A survey of these stories between 1993 and 1999 suggests how wetness and leakiness were defined as enemies of the computing device, thwarting the road warrior's mobility and productivity. The magazine's 1993 testing account began by interrogating the purpose of such tests: "Why torture notebooks? Because the simple fact is that unless you (and all the people around you) are perfect, some mishap will befall your notebook sooner or later. The dangers are ubiquitous."⁷⁸ Rather than promoting abstinence from liquids, the publication offered protection as a solution for portable computers' vulnerabilities and humans' inevitable fallibility—no one could (or should have to) behave perfectly.

Not unlike a justification for torture during wartime in the name of security, the writers at *PC/Computing* argued that evaluating laptops' tolerance for liquids could help the consumer to decide about which computer offered the most—or least—protection. Scholar Alexandre Mallard (2007) has written that comparative tests of this sort published in consumerist magazines "aim to both reveal the hidden properties of consumer goods and to denounce injustices in the market," acting as a kind of watchdog to determine the authenticity or invalidity of a manufacturer's claims.⁷⁹ This process meshes with descriptions of *human* torture in counterterrorism efforts, in which "torture . . . is often shown to be an effective method for gathering actionable intelligence"⁸⁰ and is a necessary "evil to prevent evil."⁸¹ Indeed, *PC/Computing* magazine took up this mantle as abuser in the name of truth. These performances were testing not only the technologies, though, but also the publication's imagined users who were negotiating the fragilities and precarities of mobile white-collar work.⁸²

PC/Computing's 1993 article elaborated on the method of its liquid test—pouring 10 mL of a coffee and water solution into the middle of the laptop's keyboard, wiping up excess liquid from the keycaps, waiting thirty seconds, and then drying out the device with a combination of heat blowers, hair dryers, and towels. Subsequently, the journalists would wait ten minutes and try to reboot the device without opening the case itself. They concluded that a leaky design spelled disaster for the spilling user by warning that "the

more access there is for fluids, the more likely your notebook will go kaput if you're careless with the Maxwell House."⁸³ The testers confined their work to the device's exterior, delineating a clear boundary between inside and outside; though they tried to dry up their spill at the surface, the case either protected effectively or did not. It is noteworthy that the coffee spill served as the de rigueur "real-world" test of "torture" for a laptop's imperviousness and continued to do so in subsequent tests.⁸⁴ Such a shift fit with the ways that manufacturers had begun to target the "ordinary business traveler" in addition to the specialized military, disaster, or industrial worker.⁸⁵

Although the magazine addressed consumers through its stories, manufacturers clearly coveted these test results and boasted about them in follow-on advertising when they deemed it beneficial.⁸⁶ Dell, for example, proclaimed in a 1995 ad of its Latitude XP that "All Notebooks Go Through Hell. Get One That Survived It."⁸⁷ The company pronounced its victory as a five-star award winner in the *PC/Computing* tests, calling the device "indestructible" and ready to "withstand the rigors of the daily grind." It included a two-page color image of a coffee cup spilling onto the laptop as evidence of its success (see figure 6.3).⁸⁸ Of note, Dell saw an advantage in playing up spill-survivability as one of the notebook's features. Whether or not the company had built the device with spills in mind, it used *PC/Computing's* test to verify the notebook's overall hardiness against life's "rigors." The manufacturer's reference to "hell" came from the title article for the 1995 issue of *PC/Computing*, which warned that "Hell hath no fury like our Annual Notebook Torture Test."⁸⁹

In descriptions of the aforementioned torture, there existed simultaneous notes of guilt and pleasure at putting the technologies through their paces. Jerome gestured toward this in the 1997 issue dubbed "extreme computing," where he wrote that "it would bring tears to your eyes if it weren't so entertaining to watch. Admittedly, there's a little bit of the notebook ghoul in all of us. How carefully we truck our portables across the country, protecting them from every bump, hint of moisture, and change in weather. You can't help but wonder what would happen if you let your guard down—even for a moment."⁹⁰ A similar theme repeated in 1999, when Jerome wrote that "if you tortured your worst enemy the way *PC Computing* Labs works over notebooks, you'd

someone will fall unconscious. No one who participates in such an event can fail to take the point: everyone is vulnerable, and anyone could tire and collapse. Inculcating this sense of vulnerability and uncertainty is the trainer's task."⁹³ Portable computers encountered a similar hazing—what Gardiner calls “the production of exemplary victims”—choreographed to evaluate and make visible their leaky vulnerabilities. But the victimized machine could transform into a hero, with tropes of strength, courage, and resilience, if it survived the process.⁹⁴

THE “COFFICE” AND WORK-LIFE SPILLOVERS

The repeated spill testing in *PC Magazine* proposed that spills *were* going to happen—thereby normalizing the drinking practice and assuming inevitable clumsiness, even if the choice to drink in proximity to electronic machines did trigger some guilt. Indeed, food, drink, and computers were mingling more frequently as work and media consumption moved beyond offices and living rooms.⁹⁵ By the late 1990s, Internet cafés or “cybercafés” had become popular around the world; by 1996, more than 400 had sprung into existence—some large, global chains and others independently owned.⁹⁶ One could check her email and browse the Internet on a desktop provided by the café while enjoying a bagel or latte. These spaces interlinked computing with local and global networks, cafés’ technical infrastructures and staff, décor, and food and drink to become at once technologized and mundane where customers “consumed” both machines and food.⁹⁷ While these were certainly not the first moments when media technologies and literary practices—such as newspapers, magazines, and books—intertwined with beverages or cafés,⁹⁸ they newly introduced sensitive electronic hardware and their attendant data to such arrangements.

This precarity further intensified by the early 2000s, when coffee shops, bookstores, and the like began offering Wi-Fi services (often free) and laptop users began to frequent these locales. Workers of various kinds sought out “laptop-friendly” locations, such as Panera Bread, where one could plug in for power and connect to a network. Early adopters, who typically worked

from home, described the desire to escape domesticity's distractions and mess (washing the dishes, changing lightbulbs) with the coffee shop's "temporary office."⁹⁹ However, "'laptop-toting-web-surfers'" were met with mixed perceptions, by both businesses and other customers; they often overstayed their welcome by sucking up signals without purchasing drinks or by hogging valuable table and counter space.¹⁰⁰ This trend persisted, however, with the "office spilling into the coffee shop" as it became the "coffice"¹⁰¹; the metaphorical spillage of work into the ambiguously coded café aligned with coffee drinking as a representation of comfort, sociality, and productivity. A purchased beverage enacted "boundary work" to situate the 2000s laptop computer in its office-like environs at the coffee shop.¹⁰² Negotiating this spillage wasn't always easy, as work symbolically leaked into everyday life and vice versa. However, these arrangements were not described as "extreme" computing sites; instead, they evoked the kind of comfortable and carefree alignment proffered by 1980s computing magazines—where friendly laptops mingled with salt and pepper shakers, Sweet 'n Low sugar packets, and trendy beverages.¹⁰³

Although drinking alongside one's machine became more expected and normalized, that didn't mean people handled spills nonchalantly when they occurred. For writer Daphne Geanakopulos (1998), "The Big Spill" heralded breakdown and panic:

The moment it happened, The Big Spill, I was enjoying the third sip of an especially good cup of coffee. It was a peaceful winter morning, a good one for writing on my new laptop. I set down my favorite coffee mug, reached for a notebook—and then, abruptly a torrent of amber liquid cascaded from my overturned cup. I screeched. I cursed. A light flashed on the console; my work disappeared from the screen. The Spill had been a direct pour into the laptop's keyboard. Four ounces of fresh ground, perfectly sweetened coffee, now a witches' brew drowning my most important tool.¹⁰⁴

Geanakopulos set a scene of tranquil productivity—a "peaceful" morning, a "favorite" coffee mug, and an "especially good" and "perfectly sweetened" cup of coffee. The author went on to recount her many repair efforts, from calling her husband to talking with someone named Dave at a computer

repair shop. She noted that the repairer “told me (nicely) the manual says never to eat or drink around a laptop.” Such a response—quite similar to how repairers had *always* treated spills as a matter of personal responsibility and bad behavior (even if Dave had done so nicely)—gave little consolation to the writer who experienced “creative production [become] major malfunction in one split second.” Where the drinking practice once complemented her literary practices, it now thwarted them.

Given situations like this one, laptop makers began to envision a new (still small) market for less expensive “semi-rugged” devices aimed at a broader consumer market, which emphasized spill resistance.¹⁰⁵ John Harris, vice president of marketing for Panasonic, tried to make the case that “ruggedization is not just the domain of the blue-collar guys—everybody’s notebooks are breaking all the time,” and this shift in thinking about an everybodiness (even if “everybody” was a certain exaggeration and misnomer) was evident in the ways that advertising began to evolve in the early 2000s. Toshiba’s Tecra laptops, for instance, featured a spill-resistant keyboard that, according to the company, could slow down a spill from reaching the computer’s motherboard with the use of double-stick tape sealing and forms of insulation.¹⁰⁶ With various fine print attached to its innovation, Toshiba did not promise a lack of liquid intrusion; rather, it noted that the design could stave off a spill’s deleterious effects for up to three minutes. The manufacturer still recommended that the user visit a service center once turning off the device. The keyboard thus *bought time* for repair with an assumption of ingress.

In promoting the feature, the company also moved away from a logic of toughness and punishment toward protection and safety akin to the keyboard skin. Its advertising promoted the laptop’s “shell,” which could “better protect you from the hazards of mobile computing.”¹⁰⁷ Using the image of an armadillo, Toshiba’s new container acted as a kind of natural protector like Rolex’s clamshell “Oyster” or Sony’s duck (see figure 6.4). Other devices produced around the early 2000s, like the Toshiba Portege, Lenovo ThinkPad Z60, and Panasonic Toughbook CF-74, were built for similar purposes to improve resistance while appealing to more mainstream consumers.

Significantly, Lenovo’s drainage hole design constituted a new approach toward spillage that sought to *channel* liquidity rather than repel it. This



Figure 6.4

Later advertising replaced the concept of militant defense with one of protection and safety, using the armadillo's shell as a metaphor for natural enclosure. Source: Toshiba Corporation, "When You Have One of the Strongest and Lightest Shells in Nature, You're Sure to Attract Admirers," *PC Mag*, December 26, 2006.

concept directed wetness toward a safe exit, thereby treating the liquid not as intruder to be fought off but as an expected entrant. Through an *intentional* "incontinence,"¹⁰⁸ the design aligned with newer attitudes about liquid practices that embraced rather than shunned them by making it not impervious but plumbed. At the same time, authorizing the overflow to happen meant inviting beverages and their drinkers to simultaneously compute and consume, just as Timex had proposed that housewives could tell the time while doing the dishes or Pollenex enthused that singers could groove to music while showering. This design ethos corresponded with more regular use of laptops beyond the narrow "road warrior" concept as imagined uses and users expanded.

7 SOAKED MOBILE PHONES

A post to website clutchfans.com explained an unfortunate series of events when it came to a person wielding their mobile phone: “2 A.M. Drunk. While urinating, my phone vibrates. I keep my left hand on my business, and with my right hand I check a new text message. Sometime between ‘open’ and ‘reply,’ the Blackberry tumbles from my hand and lands in the urinal . . . before I can kill the stream.”¹ Consumer technology advice site methodshop.com went so far as to dub this form of toilet accident a “#iTurd” in honor of iPods and iPhones falling into the bowl, noting that the writers received “tons of emails” every month complaining of such an occurrence.² Journalists dubbed the toilet “the worst place to drop a cellphone,” offering eccentric horror stories such as the train rider whose arm got caught in the bowl trying to rescue his mobile phone, which necessitated rescue crews and a jaws of life tool.³ Rather than the seamless fit of hand and device together, fumbles, bobbles, and other slippages became oft-mentioned experiences of handling-gone-wrong.

In the early 2000s, users began to detail not only how they struggled to recover their cell phones from toilets but also how they undertook rehabilitation attempts after spilled drinks and dips in the pool or washing machine. These accounts involved a common thread that the consumer’s phone fell out of their pocket or that they lost hold of it while multitasking (and sometimes while inebriated)—especially in the bathroom. These mishaps occurred as portable and pocket-based phones mingled in new habitual arrangements with their users, becoming further entrenched in a person’s daily leakiness of

wearing, living, and touching, particularly when it came to hands.⁴ People found themselves negotiating juggling acts that were perhaps more profoundly chaotic than ever before; still, the wet experiences of mobile telephony resonated strikingly with those involving media technologies at other historical moments.

The #iTurd phenomenon captured awkwardness by depicting a literal slipperiness of mobile devices in liquid situations; nothing seemed worse than a spill in the *toilet* of all places. This discomfort with the toilet as a particular site of unhygienic wetness meant that humor became a common tactic for dealing with these incidents. Blogger Amy (2007) (www.amalah.com) wrote in length about the fatal mixture of pants pockets, phones, and toilet bowls:

If displacement of object x (where x = a fucking expensive phone) is forced by the downward velocity of object y (where y = your pants), object x will swan dive out and away from object y, with the trajectory being affected by the natural gravitational pull of object z (where z = the shitter) by a fairly simple factor of murphy's law < just your flipping luck + manufacturers' warranty = VOID. In layman's terms: pants down + phone falls = splish splash.⁵

The post used scientific and mathematical language to describe the act of a phone falling from a pocket to create comical effect. More than a joke, however, the equation dramatized how mobility and the seeming everywhere-ness of mobile phones became a problem at the site of the toilet. The clothing pocket became an unpredictably “incontinent”⁶ container, malfunctioning in its phone-holding job. Amy's explanation, though, attributed the problem not just to the pocket but rather to the combination of Murphy's law, “just your flipping luck,” and unforgiving warranty policies as the perfect cocktail for an accident. Phrased in these terms, the fall became an inevitability—like the hazardous drink-in-the-keyboard spill before it—that could strike anyone at any time without warning or even possible prevention; human and technology malfunctioned together, but humans still incurred the blame.⁷

While some proclaimed loudly about these unfortunate dunks, “sheepish types”⁸ might be reticent to admit their devices' unhygienic fates. Embarrassment over one's toilet accident might even provoke lying, as Amy proposed

when rescuing the phone from the toilet, “Wonder what the odds are that the Apple guys at the Genius Bar will believe you that *my heavens, I have no idea what happened*, or if the iPhone comes with a tracking chip like George’s book on Seinfeld, which in that case they will simply hand the phone back to you and say, *I’m sorry, but this phone has been in the toilet, and we cannot help you.*”⁹ Fearing that Apple repairers would uncover the disgusting source of the accident, despite the dropper’s secrecy, Amy depicted a shame-filled scenario of fumbled media.

For their part, repair people detailed struggles over these wet situations when it came to both truthfulness and hygiene. One tech support person told the story of their repairer colleague who had dealt with a problematic customer. When the repairer opened up the phone, water cascaded out of it, yet the customer denied any encounters with liquids. The repairer’s frustration stemmed not from the wetness incident itself but rather from the person’s perceived lying: as the phone leaked incessantly on the scene, it betrayed its history in contradiction to the user’s account. This adversarial dynamic resembled that between telephone company repair people and wristwatch jewelers and their respective clients, but it differed in the pivot to what seemed like *deliberate* obfuscation. It’s not so surprising that incidents like this occurred, given that consumers recognized that admitting to a liquid “accident” would immediately spell a voided warranty. This lack of leeway on damage precipitated articles that advised how the consumer could “trick Apple into replacing your water-damaged iPhone.”¹⁰ Tactics such as this one aimed to game a system stacked against users that carried penalizing costs for wetness.¹¹

In 2008, journalist Jennifer Clary reported that more than 850,000 cell phones ended up in a toilet in the United Kingdom that year.¹² It is difficult to know whether such a statistic accurately captured the situation, but other commentators also pointed to the everyday nature of such accidents. That same year, cartoonist Mark Stivers depicted the cell phone often finding its way into liquid situations such as the toilet, rain gutter, cup of soda, and wet bucket.¹³ The title of Stivers’s drawing, “Where did I drop my cell-phone *today*?” framed the liquid dunk as daily—a “normal” event (emphasis added). These slippages generated feelings of camaraderie; as *Engadget* writer

Robert Palmer put it (2009), “We’ve all had an ‘oh poopie’ moment involving liquids.”¹⁴ Consumers, especially in online forums pertaining to repair, described scenarios that led to soaked phones: talking while standing in the rain, going to the beach and dropping the phone in the water, dropping the phone into a glass of beer, and falling into a pond while carrying the phone in one’s shorts. These drops straddled the line between routine slippages and critical damage “events” that merited conversation and even cartoon immortalization.

If the analog telephone and its cord required a properly performing mouth, the wristwatch demanded an appropriate wrist, and the vinyl record necessitated a sanitary finger, then the smartphone needed a tamed hand that could maintain its grasp. While people were often the “scapegoats” for their fallible handling, phones attracted a great deal of notoriety for their propensity to break, high cost, and resistance to repair. To this end, consumers’ routine and well-publicized problems with nonprotected devices echoed throughout user forums and social media accounts, garnered attention from journalists, and sparked movements (such as the “right-to-repair”¹⁵) and lawsuits levied at manufacturers for false claims and punitive policies.

POLICING AND PERMITTING WETNESS

However, rather than design phones to get wet, many manufacturers developed systems to *catch* liquid behaviors to invalidate warranty claims. This practice took the form of using a liquid submersion indicator, water damage indicator, or liquid contact indicator (henceforth referred to as LCI) produced by companies like 3M and others.¹⁶ LCIs, usually comprising pieces of tape affixed inside of or at entrance ports to electronic devices, worked by changing color—often from white to red—when “tripped” by a liquid’s presence.¹⁷ Companies began putting the technology into music players, digital cameras, and laptops before it achieved more widespread notoriety with cell phones as a testing mechanism. As a kind of dragnet for liquids, repairers could quickly identify wetness when consumers brought their phones in, given the binary state of wetness displayed: wet or not wet. If liquid testing

in other contexts connoted the device's mettle and its survival, then in this circumstance, the LCI "tattled" about wetness exposure as a problem.

People quickly shared their indignity at being "caught" by the LCI, especially when they perceived the indicator as inaccurate. Blogger Kris McDonald (2009), for instance, voiced this concern when speaking with a repair person following a headphone jack issue: "I calmly explained that the phone has not been wet, etc. but there was nothing he could do for me."¹⁸ Complaints of this kind led to one journalist questioning whether the liquid sensor was a "filthy liar" that would identify wetness in cases when it shouldn't.¹⁹ In a reverse of repairers complaining about incompetent, careless, or lying consumers who didn't understand or hid wetness' damaging effects, consumers now complained about repairers (and LCIs) unjustly diagnosing liquid ingress. However, the LCI functioned similarly to tools like the Telefault wet spot detector for telephone cords, which allowed repairers to swiftly assign blame in breakdown situations. One couldn't easily argue with the LCI's "diagnosis" if the contact strip proffered liquid evidence.

Yet consumers reckoned that LCIs weren't providing an accurate reading. Sometimes, external sensors would trip while internal ones wouldn't, but repairers would often take the external sensor's finding at face value without further probing.²⁰ Only with extreme behavior could a person avoid liquid detection (if even possible), and still they may not know the results of the litmus test until a repairer agreed to open up the phone to reveal the device's fate. Importantly, Apple chose to position its sensors in these external locations, unlike some other smartphone manufacturers, thereby leading to a chance of greater superficial ingress. McDonald went on to complain that LCIs made phones essentially unusable in most contexts where wetness could possibly occur, like sweating on the phone at the gym, leaving it to accumulate condensation on the bathroom counter, getting caught in the rain with it in a pocket, or—most humorously—a dog licking it.²¹

The situation came to a head in 2010 when users filed two separate high-profile lawsuits against the Apple Corporation. The first, initiated by Charlene Gallon of San Francisco, represented a class-action lawsuit on behalf of Apple iPod and iPhone users.²² Meanwhile, the second, put in

motion by a thirteen-year-old Korean girl and her family, alleged that the girl's iPhone 3G had not sustained any water damage despite the sensor's reading and impugned Apple Korea for the result.²³ The girl declared that "I have neither dropped the phone in water nor exposed it to moisture. The exact cause of the breakdown can be discovered by disassembling and checking the motherboard. It's unfair to decide that it's been immersed in water based on the color of the indicators."²⁴ In the former case, a US court found Apple responsible for a \$53 million settlement in 2013, though, notably, the company never admitted to wrongdoing with its indicators. Rather, the tape's manufacturer, 3M, acknowledged that humidity could have caused inconsistent results.²⁵ People had long warned about climatic impacts before the lawsuit (in locations such as Hong Kong or Singapore), that humidity produced troublesome results.²⁶ It is significant, however, that consumers generally did not object to use of indicator tape outright; rather, they asked for a less sensitive interpretation of what counted as *accident* versus *everyday use*. Thus, in some ways, the lawsuits actually normalized use of LCI technology by only raising a dispute when the tape seemed "faulty."²⁷ Consumers didn't necessarily mind the test as long as it generated what they perceived as an objective result. The widespread use of liquid contact indicators to enforce (and negate) warranties fit into a capitalistic ethos around smartphones, which demanded that consumers take personal responsibility for their devices' survival while third parties and repairers lucratively profited.

To this end, insurance companies intervened by capitalizing on consumer angst. Burgeoning electronics warranty company SquareTrade met such a need by offering "Accidental Damage from Handling" (ADH) policies that would ripple across the industry until they became commonplace for many mobile electronic devices, including laptops and tablets.²⁸ This coverage kicked in retroactively, assuming breakage as an inevitability and not something that one could prevent. Providers like SquareTrade recognized the "accident" as an important category to consumers, and others like Best Buy with its Geek Squad repair team entered the fray, too. Jessica Hoffman, a spokesperson for SquareTrade, absolved devices by portraying them as faultless victims when promoting coverage. "It's not a malfunction," she argued. "It's not the product's fault. It's the klutz in us."²⁹ Using clumsiness as an

explainer, Hoffman's rhetoric portrayed bodies as out of control or unruly and in need of reactive protection for when the spill or dunk happened.

This approach to phone damage informed SquareTrade's ethos more broadly. In a 2012 press release, the company released research results from a sampling of SquareTrade consumers, which found that certain iPhone users' lifestyles contributed to a greater chance of accident—what they called “lifestyle damage.”³⁰ According to the company, those more “at risk” included people with tattoos, motorcycle riders, stock traders, and people who engaged in sex more than once per week. While “klutziiness” could perhaps represent a biological trait, SquareTrade argued that one's particular practices increased such behavior. A much later 2017 survey by AT&T similarly impugned people for lifestyle risks. AT&T claimed that people were more likely to break their phone if they were parents, under thirty-five years old, or unemployed or didn't go to college.³¹ Yet, like SquareTrade, the company failed to dig into *why* those groups might disproportionately experience accidents due to societal factors like increased care responsibilities, economic strain, and unequal labor conditions, while assuming that “lifestyle” entirely reflected one's personal choices rather than one's given circumstances.

In 2011, Apple introduced AppleCare+, a \$99 warranty service that allowed for two “accidental damage incidents” with payment of a \$49 service fee, which it began rolling out to other countries like South Africa and Nigeria in 2013.³² In countries like Ghana, the mobile manufacturer Samsung tested out a free ADH repair plan for purchasers of its Galaxy S5, in a bid to encourage more phone uptake; if people could more easily repair their phones, then they could also use them more.³³ Still, using the language of “incident,” these policies treated an accident as a quantifiable *event* rather than a processual part of liquid everyday life. Such policies also consolidated power for manufacturers and third-party insurers, who became arbiters of what counted as legitimate damage.

Repair markets beyond insurers and smartphone manufacturers also arose to address liquid breakdowns. Startup company DryBox, developed in 2010, offered “CPR for a wet phone” and promised an over 70 percent successful repair rate.³⁴ Installed as kiosks at locations around the country, the machines even appeared on college campuses.³⁵ Another company, TekDry,

founded by Adam Cookson and Craig Beinecke in 2014, got its start on season 8 of the television show *Shark Tank*. Cookson and Beinecke invented a similar drying machine that could draw water out of phones within thirty minutes. While its boxes had appeared at 600 sites nationwide in 2017,³⁶ at the time of this writing, it appears that few still exist, although TekDry also operates a mail-in service. The company's website proclaimed that one should "trust science, not rice, to save your wet phone,"³⁷ in a bid to discourage DIY repair and the oft-disputed practice of submerging phones in rice to dry them out. DryBox gave similar warnings to establish its expertise and technologies as superior to laypersons' judgments or interventions.

DryBox's appeals responded to a massive journalistic and consumer discourse and lexicon around how to repair leaky phones. The "what to do if . . ." genre concentrated on a wet user who had to act quickly and reactively. These "do's and don'ts of saving your water-damaged phone"³⁸ tried not to reform the bobbling user into a careful user but rather into a "good" *repairer*. For instance, "while you might have the right intentions," warned one blog, "the steps you take after your Smartphone has taken a plunge may be doing more harm than good."³⁹ Similar to the instructions given to sop up wet keyboards and floppy disks, as well as to properly wash fingerprint-stained vinyl records, a mix of repair workers, journalists, and users intervened to weigh ideal methods.

As TekDry referenced, perhaps no topic appeared as frequently as the use of rice in community forums and news articles; this repairing strategy circulated like an old wives' tale, a myth that constantly repeated despite people emphasizing its lack of benefit.⁴⁰ Viral videos even called out irate consumers for harassing repairers about confusing rice techniques and how to adjudicate blame.⁴¹ Experts chided users about "here's what not to do first" upon experiencing wetness, as they advised "stop putting your phone in rice" and "here's the *right* way to rescue a soaking wet smartphone" (emphasis added).⁴² Scholars Godfrey, Price, and Lusch (2022) explain that when technologies break, they "necessitate more conscious and proactive sensing and diagnosing," as consumers try to bring objects back into alignment with their practices.⁴³ These online dialogues suggest one way that such calibrations occurred as people tried to take repair into their own hands.

IS A (WET) PHONE NECESSARY?

Within these discussions about how to save phones from wetness, there existed another repeating refrain about whether mobile use *needed* to intersect with wetness. Indeed, the embarrassing #iTurd encapsulated an uncomfortable truth that cellular devices had quickly become a naturalized fixture at the toilet. A variety of polls conducted between 2009 and 2022 found that adults frequently used their phones in the bathroom, not only in the United States but also around the world.⁴⁴ Although bathroom media use had intensified, especially from the 1960s forward—and bathroom reading was a common practice,⁴⁵ it also represented a kind of unspoken taboo. As journalist Lindsey Gentile wrote, “Come on! You know you update your Facebook status while you are on the toilet. Just admit it. I do too.”⁴⁶ Like the guilt over soda consumption while typing, bathroom social media engagement carried a kind of triple stigma as excessive, gross, and careless.

Common critiques of bathroom-mobile use focused on physical health (hemorrhoids from prolonged sitting) and mental health (phone addiction). Journalist Wil Fulton surmised that “for many, the toilet is a retreat, a time of quiet sanctuary,” and phones offered “more incentives than ever to dangerously extend your toilet visit.”⁴⁷ He ended the piece with a call-to-action: “Right now, the only zone in our lives where we don’t commonly bring our phones is in the shower (at least until all phones are waterproofed), so why not widen that electronics-free zone, turning ‘shower thoughts’ into ‘entire-bathroom-area-thoughts?’” In the author’s estimation, the shower’s wetness acted as a form of protection against the digital onslaught, and this protection should extend to the whole of the bathroom.

Professor of psychology Nick Haslam took a slightly different tact, embracing the potential of phone-toilet use while warning against its more nefarious aspects. Haslam admitted that keeping up with “torrents” of media on the toilet could be frenetic, but “when conducted in the right, Leopold Bloomian spirit, toilet reading is a benign way of living serenely in the moment.”⁴⁸ This “right” way involved following the lead of James Joyce’s character Leopold Bloom in *Ulysses*, who casually enjoyed a magazine story before wiping himself with a scrap of it. The story became something easily

consumed and equally easily discarded. Yet Haslam also warned against phone filth spurred by “much-fingered glass surfaces” that harbored bacteria; people should wipe themselves as well as their phone to achieve full cleanliness. This double act of hygiene suggests how phones became yet one more element wiped and maintained alongside one’s body. The author proposed a bodily choreography that took into account hygiene and wetness alongside the benefits of bathroom reading.

Rebukes about mobile phone use in the bathroom more generally came about due to a widely circulating news story about waterproof phones in Japan, where women commonly liked to shower with their devices. In 2016, LG’s global communication director Ken Hong commented that “in Japan, being waterproof is far more important than being able to remove your phone’s battery.”⁴⁹ US journalists, in response, had trouble making sense of this phenomenon, explaining the “crazy reason” that Japanese phones were waterproof and deeming the Japanese practice “quirky.”⁵⁰ By othering phone–shower use as irrational, the journalists drew a sharp cultural distinction between the two countries and their liquid practices and norms. Waterproofing, therefore, became a cultural matter as much as a technical one. For US observers, where toilet concerns emphasized germiness and unhealthiness, shower–phone use seemed both strange and excessive, recalling bathroom–media debates that had begun in the early twentieth century.

Such criticisms cropped up in popular discourses as well. When Japanese voice actress Moeka Koizumi took her phone into the shower, she subsequently posted a blurred selfie from the lens’ exposure to water and inquired how to fix it; rather than aiding her, people responded quickly by turning the photograph into a meme that chided her for not understanding a shower’s deleterious impacts. The “iPhone Shower Meme” prompted artwork that played upon the woman’s mishap, with cartoon versions of Koizumi seeming to “water” the phone with a showerhead or tub faucet in a confused hygiene that applied water to the phone rather than the person.⁵¹ These gender-inflected barbs held up the behavior as a what-not-to-do example that resembled how telephone workers and jewelers talked about their leaky female customers. The public shaming testified about a consumer’s naivete in situations when others believed she *should* have known better.

Other users, however, embraced water resistance as a means to make uninterrupted use possible. For instance, a *Wall Street Journal* blog author wrote, “Spare us your claims that the shower is your last fortress of solitude, free of screens and flashing lights. . . . It’s time to be straight and admit that you want your phone everywhere, always.”⁵²

INVISIBLE AND CONSPICUOUS PROTECTION

As mobile telephony became further entrenched in everyday life, the push to “get protected” increased, not only in terms of retroactive repair or replacement with ADH coverage but also by proactively encasing the device. The add-on smartphone case, like the keyboard cover that preceded it, became one common answer to wetness exposure. Third-party manufacturers often sold these accessories within the “active” user frame, arguing that users could imagine their phones as akin to waterproof cameras for extreme sports like the GoPro camera or as durable wristwatches such as the G-Shock.⁵³ The company LifeProof (later purchased by OtterBox) depicted such users enjoying its cases, with campaigns that showcased young, white, and fit outdoorsy types surfing and kayaking with their phones.⁵⁴ In each of these instances, the case as advertised unproblematically merged athletic performances with mobile telephony. The selfie or action shot at the beach, for example, depended upon safe containment.⁵⁵

However, rather than building protection *into* the device, water-resistant cases were considered metaphorically as add-on protective clothing, with product names like the “Cell Suit,” “DrySuit,” and “Wetsuit,” evoking the kind of gear a person would put on for scuba diving, boating, or other water sports as opposed to the “condom” that would cover a computer keyboard. These varying metaphors suggested different cultural understandings about the devices’ purposes, whom they were for, and in what liquid practices they would participate. Phones could wear their protection proactively like a “safety vest,”⁵⁶ which—although practical in one sense—meant that the much-applauded thinness, sleekness, and desirable aesthetic of many handset models hid behind a bulky sheath.⁵⁷ Complaints about the container-within-a-container thus related to both the aesthetics of a water-friendly device as well as its

functionality; phones' touchscreens often responded with less precision and speakers output muffled sound when covered up.⁵⁸ These frustrations related similarly to the lack of tactile feedback afforded by computer keyboard covers.

Manufacturers began experimenting with cases without screen covers (a kind of phone bumper instead of 360-degree protection), like LifeProof's "nuud" that played on phone nakedness while offering containment.⁵⁹ Another solution involved selling a removable case, worn only in predetermined wet situations. MarBlue's CEO Edward Martin advocated for this protection toggled on-and-off in the following terms: "'You wouldn't wear scuba gear to a nightclub, so why would you always keep a waterproof case on your iPhone?'"⁶⁰ This design strategy meshed with the ways that wrist-watch manufacturers had suggested different watches for different occasions, from a "fancy" one for nighttime outings to a "sporty" one for stereotypically athletic bodies engaged in outdoor activities.

Meanwhile, phones had become increasingly delicate while they were toted around more. Scholar Meryl Alper (2017) has observed that cases enabled "individuals to *hold on* to their costly mobile devices more firmly and assuredly as they contend[ed] with the unexpected," thereby affording a "graspable" device made ready for fragile mobility and digitality.⁶¹ Thus, a select number of case makers also imagined a market for protection that could mitigate fumbling hands and their attendant cracked screens, scratches, and waterlogged hardware. These situations weren't spurred by glamorous kayaking adventures but rather home-life messiness. Writer Kate Murphy, for instance, envisioned "toilet texters" as ideal users who could benefit from "full-on potty proof" casing.⁶²

As an alternative to this accessory route, manufacturers released a first slate of water-resistant and waterproof phones in the early 2000s whose hardware purported to inure them to liquids. Early models included the Siemens ME45 (2001), Casio CanU 502s (2005), Sony Ericsson SO902iWP+ (2006), and Nokia 5500 Sport (2006). But if drink and food spills offered a routinely described threat to computing, then US reviewers couldn't figure out the exact purpose of a waterproof phone, with one writing about the CanU for *Engadget* that "we're not quite sure how you would use this on a speedboat or your board, given that you're not likely to be able to hear a



Figure 7.1

Designs for early water-resistant cellphones echoed those from the 1980s and 1990s for music players and disposable cameras, with bright yellow bodies and chunky, sporty buttons and trim. Source: Hoi Wan, “The Evolution of the First Waterproof Phones,” *Digistrat*, February 5, 2013.

whole lot, but that’s for you . . . to figure out.”⁶³ Like case manufacturers’ attitudes, lifestyle frames often associated liquids with specific outdoorsy practices and occupations—like swimming, boating, rainy picture-taking, or aquatic work⁶⁴—rather than with the more mundane activities of eating/drinking, bathing, and others bound up with domestic life. Manufacturers seemed to take up this logic when designing durable phones, such as Sonim for its XP3 Enduro handset (2008), which employed bright yellow plastic and a chunky shape that looked conspicuously protected and sporty (see figure 7.1). These choices mimicked 1980s and 1990s styling for waterproof cameras and the Sony Sports Walkman, which wed together imperviousness with fitness, athletics, and vacation culture.

In this regard, manufacturers were drawing on repeated themes of resistance, in which the “elements” posed a hazard to the device and the hardy, athletic user needed a fit and fitting accompaniment. A commercial titled “One Tough Phone” for the Casio G’zOne (2007) cell phone espoused this logic. Featuring a white man in jeans and boots, the voiceover

narration asked, “Ever drop your phone in a beer or toilet bowl?” The man proceeded to drop the G’zOne into a fishbowl. “Drop it, drown it, heat it, drag it behind your bike, whatever! This thing loves punishment.”⁶⁵ Casio envisioned a rugged imperviousness that folded spills, leakages, and drownings alike into a macho masculinity by constructing the technology as a survivor. Reviewers described the phone in similar terms, too, with Sascha Segan calling the G’zOne “a hulking Hummer of a flip,” equating the device with a battle-ready militaristic vehicle.⁶⁶ This notion of fortification played upon wristwatches’ combat roots and laptop torture testing’s emphasis on spillage-as-punishment.

Companies such as Kyocera, CAT, Nokia, and others promoted this mobile use and mobility that matched daring and adventurous lifestyles in appeals targeted at men. Their efforts coincided with sales demographics: statistics verified that a whopping 98 percent of CAT’s 260 users were male and working in manual labor jobs.⁶⁷ Many “tough” devices wore their protection as conspicuous badges imprinted upon the phone itself with bulkier frames and metallic, almost rivet-like accents similar to products like the Panasonic Toughbook. Though they had shed the banana yellow flashiness of their predecessors, they adopted the familiar aesthetic that evoked military armor or the sporting helmet. These phones, in a similar trajectory to laptops, tended to be heavier, cost more, and sacrificed cutting-edge features as compared to their nonprotected counterparts. Thus, when coupled with the pressures of upgrade culture and frequent handset obsolescence, ruggedized phones were relegated to the periphery of mobile phone sales and use and perceived as appealing only to a niche market.⁶⁸

It would take nearly a decade for manufacturers to produce water-resistant devices more consistently. When they did, the subsequent generation didn’t announce their protective capacities aesthetically; rather, they blended water-resistant features invisibly into the smooth and shiny handset. This pivot constituted a sociotechnical shift in terms of thinking about what phones could do, where they could go, and how people (and which people) should interact with them. Many of the designs employed familiar techniques of enclosing ports and relying on rubber seals/gaskets, water-resistant glues, silicone boots to protect buttons, and breathable mesh membranes

to cover speakers⁶⁹—but these were subtle rather than easily apprehensible features. Notable devices included “splashproof” models of the Samsung Galaxy and Marine, Motorola’s Moto suite, and Sony’s Xperia line.⁷⁰

Where Apple had mostly stayed out of the fray, it too had begun to take initial (quiet) steps toward water resistance. A requested patent in 2014 for “self-healing elastomer” identified a rubber seal to protect ingress from phone openings, like headphone jack holes.⁷¹ Then, a 2015 patent revealed technology that would expel water from a phone’s speakers, thus allowing water inside and then removing it with vibration triggered by sound waves.⁷² Following that, repair watchdog *iFixit* and other industry analysts drew attention to the fact that Apple had filed another patent for waterproof buttons.⁷³ Unlike many of its competitors, however, the company didn’t make any claims or advertise these features.⁷⁴ This decision spurred continued uncertainty about iPhones’ relationship to liquids while much of the industry doubled down on resistance.

Along with this shift to resistant handsets that didn’t overtly evoke a sport/rugged/militarized aesthetic, advertisers likewise made a significant maneuver by universalizing and normalizing the experience of wetness, regardless of lifestyle. In a commercial for its *Hydro Life* smartphone (2014), for example, Kyocera coined a condition called “Fragiphonphobia.” The company described phone fragility as something akin to a clinical disorder. A deep, ominous voice of a narrator explained, “Fragiphonphobia. The fear that you or someone close to you will spill, splash, soak, and ruin your phone. It’s real. No one is immune. Every age. Every race. Everybody. Needlessly worrying. Side effects of fragiphonphobia include: yelling at children to put down a phone; worrying about spills and splashes; an unnatural fear of toilets and bathtubs.”⁷⁵ Water resistance offered catharsis in commercials when phones continued to function in such anxiety-producing situations.

Promotions of this kind framed liquid spills and drops as easy to remediate with a simple wipe and wetness as an inevitability. A commercial for the OnePlus 8 Pro (2020) offered this interpretation.⁷⁶ In this case, the company depicted Robert Downey Jr. receiving a text message about a party that reminded him not to forget his suit. He construed this message to mean a *formal* suit, donning a fancy white one with tie and pocket square and

showing up at the party—only to find out that “suit” meant swimsuit for a pool party. He quickly pivoted and began engaging in an intense water-squirting fight with a group of children (old-timey western standoff music playing in the background). When they hit him with enough water, he fell dramatically into the pool; his drenched arm, with phone in hand, emerged first from the water. He promptly answered a phone call from (presumably) his wife: “Hi hon,” and then carried on sharing that he was “having a ball.” The spectacle fell somewhere between an “accident” and an “on-purpose” event; Downey Jr. tellingly never considered taking the phone out of his pocket before jumping in the pool, nor did he flinch after it got wet. His lack of care and carefulness demonstrated how easily the device accompanied his antics. He didn’t need to “punish” the phone like his predecessors; rather, he could seamlessly treat the phone however he wanted.

Downey Jr.’s shrugged-off wetness episode didn’t come from nowhere. Samsung, for instance, had previously used the liquid “test” as an advertising trope. A notable series of commercials filmed with Lil Wayne followed the rapper performing liquid feats on his phone that would normally spell destruction. In one, he poured almost an entire bottle of champagne on the phone and then dunked it in a fish tank.⁷⁷ A friend tried to do the same with his (non-Samsung) phone and failed. Lil Wayne replied, “Your phone can’t do that Max; here, I have another” and he threw him a (Samsung) phone. They both began pouring champagne on the phones as they exclaimed, “Whaaaatttt?!!?” In another, Lil Wayne walked through a convenience store pouring a bottle of champagne on his phone and then asked the (flummoxed) clerk at the counter if the store sold high-end champagne.⁷⁸ The rapper went to the back of the store to retrieve the beverage, returned with his sopping-wet phone, paid for the champagne with that phone, and then opened the new bottle and began pouring it again. The hedonistic and frivolous act of buying champagne to dump it on a phone highlighted both Wayne’s privileged celebrity status and the phone’s invincibility. Some responded negatively to this display: “Your phone’s ability to survive a spilled drink shouldn’t be worthy of Lil’ Wayne’s time, Samsung’s ad budget, or all that wasted bubbly”; rather, a phone’s waterproof features should be standard and even ordinary.⁷⁹ This wasn’t the stuff of fantasy from the 1984 film

Electric Dreams, which imagined a champagne spill bringing a computer to life; rather, the phone just flatly continued its existence unprovoked by the alcohol's presence.

These twenty-first-century tests also pushed technologies to their supposed breaking points through various kinds of clinical punishment. For instance, an ad for Samsung's Galaxy S6 Active (2015) took place in a "Life Simulation Facility" where individuals in lab coats did their worst to prove that the phone could withstand its life to come.⁸⁰ In the first of a series of endurance tests, a man dropped the phone into a bathtub and sprayed it with water. Subsequently, the phone moved down a conveyor belt where ketchup and mustard squirted onto it, an ice cream cone dumped on it, and it got dunked into a bowl of milk. Samsung remarked that the Galaxy S6 Active was "tested to withstand pretty much anything life throws your way."⁸¹ These conditions of middle-class, suburban everyday life—a child's ice cream cone or cereal bowl rather than the celebrity's champagne or the white-collar worker's coffee—transmuted from mundane food and drink to "punishing" obstacles quite different from the underwater photograph, frozen English Channel swim, or trip to the Arctic.

Throughout mobile ads for water resistance, a consistent emphasis on literal and metaphoric flow connected them. Scholars Kathleen Oswald and Jeremy Packer (2012) have argued that mobile "flow" is a process through which people, with their multiple screens and data, "move seamlessly through the world in unison" as film, TV, computers, and telephones collapse into combined material practices.⁸² In the case of water resistance, people flowed from one wet practice to the next, from accident to cleanup, from wet space to wet space. It was not media content that made this flow possible but rather the phone's protective features that provided the constitutive glue that eliminated breakdown and disruptions. Without breakdowns or worries over fragility, the phone could remain at one's (inevitably fallible) fingertips to promote what scholar Mark Deuze has called a perpetually mediated "media life," in which there is no separation between what counts as media or not.⁸³

Another protective approach with a similar logic involved nanocoating technologies, an application of an invisible film that could coat the insides and outsides of a mobile device to make it water-repellant. By 2012, a crop

of companies sold this feature as ultra-scientific and cutting edge. According to British company P2i, using a process created by Britain's Ministry of Defence, the patented technology "employs a special pulsed ionized gas (plasma), which is created within a vacuum chamber, to attach a nanometre-thick polymer layer over the entire surface of a product. When liquids come into contact with it, they form beads and simply run off."⁸⁴ P2i, as well as American company HZO, developed manufacturing processes that electronics companies could adopt across their industries before selling handsets to consumers. A company with a slightly different tact, Liquipel, offered a \$60 service where consumers could ship their phones for coating treatment as an after-market add-on.⁸⁵

At the Mobile World Congress in Barcelona and the 2012 Consumer Electronics Show (CES) in Las Vegas, among other events, nanocoating companies debuted their effects by submerging iPhones and other devices in water tanks to a crowd, pulling them back out to reveal a still-operational device. Attending the latter event, writer Wesley Fenlon claimed that the process "looked like magic," pointing to the *invisible* nature of the coating as contributing to the effect.⁸⁶ Putting a technology into liquid situations that would previously have represented anathema, the tests offered seemingly incredible proof of imperviousness. As journalist Roy Furchogtt explained, "It's a little heart-stopping to watch someone purposely dunk a cellphone or tablet in a water tank. Seeing it continue to work underwater is astonishing."⁸⁷ By appearing to defy scientific logic, the nanocoating effect became a celebrated achievement, and that's how nanotechnology companies sold it—as a "holy grail"⁸⁸ of the electronics industry.

The thinly applied film took another approach to water-resistant media. Rather than fortifying devices with enclosures, seals, gaskets, or drainage holes, it mimicked the resistant coating used on Teflon pots and pans, footwear, and clothing—without the harmful chemicals such as PTFE, PFOA, and PFOS that were toxic and wouldn't degrade.⁸⁹ Its philosophy built from the principle of a technology sealed "from the inside out,"⁹⁰ unlike the add-on case's "safety vest." Mobiles could incur wetness on the inside and still maintain their liquid protection, at once permeable and impermeable. The coating's invisible design betrayed no evidence of its existence—at "such a tiny scale that you won't

even know it's there," according to another nanotechnology coating company, Semblant (later acquired by HZO in 2018).⁹¹ One could not apprehend a device's liquid protectivity upon looking at it or even touching it. Though this invisibility seemed ideal in that it did not add bulk or rely on accessories, it created distinct drawbacks for consumers who couldn't look at the phone and determine whether it was protected, while aiding the magical effect of the test. To what extent consumers could access this technology hinged as much on social and cultural factors as on different economic market structures. For instance, in parts of India, a trend involved the creation of walk-in shops where consumers could purchase aftermarket nanocoating for their smartphones, which took about twenty minutes to complete.⁹²

The rash of new resistant technologies—whether case, coating, or handset—and aggressive advertising might lead one to assume that water-resistant features have become commonplace and reliable. However, consistent consumer complaints and further legal actions have exposed a major chasm between companies' design promises and how phones fit into everyday life's liquidity. Consumers and regulators have sued some of the earliest and most prominent entrants into the water-resistant market, such as Samsung, for exaggerating waterproof features in advertisements.⁹³ In 2019, Australia's consumer protection organization, the Australian Competition and Consumer Commission (ACCC), argued that Samsung falsely claimed that people could use the devices for swimming and surfing, when in fact their phones could not withstand saltwater; Samsung Australia paid a \$14 million penalty for this misdirection.⁹⁴ Similarly, Italy fined Apple \$12 million in 2020 for "aggressive and misleading" advertising related to wetness.⁹⁵ A broader research study conducted by Yu et al. (2019) demonstrates this widespread practice of smartphone companies disseminating grossly exaggerated messaging about waterproofing, which sells unproblematic liquid scenarios quite out of sync with phones' material realities.⁹⁶

Consumers worldwide have registered displeasure about how companies overpromise and underdeliver protection. In China, a 2021 iPhone ad depicts a man holding an iPhone in pouring rain, which drenches his body and the handset, with the caption, "Don't worry, it's an iPhone."⁹⁷ However, this rendering contrasts with Apple's warranty restrictions about flooding, making

the ad a “mockery and provocation.”⁹⁸ In the United States, frustration over false representations led to another proposed class-action lawsuit (2022) with plaintiffs from New York and South Carolina about Apple’s “false and misleading” advertising.⁹⁹ A judge struck down the lawsuit, arguing that the plaintiffs had made a plausible allegation but that they couldn’t prove they purchased their devices due to Apple’s liquid advertising specifically.

While it is tempting to pin critiques solely on advertising, a more complicated situation emerges when considering the mixed messages that surround water resistance generally. Ingress protection ratings (IP ratings), for example, also communicate about what an electronic device can withstand. In 1976, the International Electrotechnical Commission (IEC) created a document that fully outlined the IP classification system, also known as IEC standard 60529.¹⁰⁰ These guidelines, which predated cell phones, pertain to the degree of protection afforded by enclosures and consist of two digits. The first digit identifies dust and solid debris ingress (using a scale of 0–6), while the second digit rates liquid protection (0–9). For the purposes of interaction with wetness, the latter measure interests us the most. Of note, it references fresh *water* only and considers the degree of intensity and directionality of that liquid (see figure 7.2). These standards measure how devices respond to water in laboratory conditions, and smartphone manufacturers have latched onto them as marketing tools and explanatory labels to educate consumers about a device’s features. Yet a detailed look at their descriptions of water penetration measures suggests how they might fall short in everyday practices and spaces, creating more confusion than clarity. To what extent will a person recognize, in the rain, whether their phone is tilted more than 15 degrees? Will someone realistically determine whether water has “sprayed” or “splashed” their phone, which corresponds to two different designations? How “temporary” is temporary immersion and what distinguishes it from “continuous immersion” when it comes to a spill or dunk?

These uncertainties have meant that a wide swath of interpreters have produced articles on how to “read” or “make sense” of a device’s IP rating, as they try to cultivate an informed consumer. Journalist David Pierce warns that ratings “don’t reflect real conditions. Most water-resistance tests are done with clean, fresh water. You’re probably safe to spill a bottle of Fiji water on

Making electrotechnology work
for you.

Ingress protection (IP) ratings guide

IP ratings are represented by combining the first and second digits of the below columns

1st numeral - solid foreign objects

0	No protection	
1	Protected against solid foreign objects of 50 mm Ø and greater	
2	Protected against solid foreign objects of 12.5 mm Ø and greater	
3	Protected against solid foreign objects of 2.5 mm Ø and greater	
4	Protected against solid foreign objects of 1.0 mm Ø and greater	
5	Dust-protected	
6	Dust-tight	

Example:

IP 65

→ Protected against water jets

→ Dust-tight

2nd numeral - water

0	No protection		–
1	Protected against vertically falling water drops		Vertically falling drops shall have no harmful effects
2	Protected against vertically falling water drops when enclosure tilted up to 15°		Vertically falling drops shall have no harmful effects when the enclosure is tilted at any angle up to 15° on either side of the vertical
3	Protected against spraying water		Water sprayed at an angle up to 60° on either side of the vertical shall have no harmful effects
4	Protected against splashing water		Water splashed against the enclosure from any direction shall have no harmful effects
5	Protected against water jets		Water projected in jets against the enclosure from any directions shall have no harmful effects
6	Protected against powerful water jets		Water projected in powerful jets against the enclosure from any direction shall have no harmful effects
7	Protected against the effects of temporary immersion in water		Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is temporarily immersed in water under standardized conditions of pressure and time
8	Protected against the effects of continuous immersion in water		Ingress of water in quantities causing harmful effects shall not be possible when the enclosure is continuously immersed in water under conditions which shall be agreed between manufacturer and user but which are more severe than for numeral 7
9	Protected against high pressure and temperature water jets		Water projected at high pressure and high temperature against the enclosure from any direction shall not have harmful effects

Figure 7.2

The ingress protection rating (IP rating) designated by the International Electrotechnical Commission identifies to what degree an enclosure protects against water entry. Source: International Electrotechnical Commission, “IP ratings,” <https://www.iec.ch/ip-ratings>. Copyright © IEC 2024. All rights reserved.

your phone, but all bets are off if it’s beer or coffee.”¹⁰¹ Distinguishing between “real-world” and test conditions, writers have tried to classify the classifications themselves based on what they test and how they test it. While the codes give the impression of objectivity, particularly because they are codified as numbers rather than in murky language like “water resistant” or “waterproof,” they too require interpretation like any text.¹⁰² They work to create boundaries around what counts as a safe container versus that which doesn’t, as well as what practices are allowed or discouraged, while they provide a talisman for producers who can sell features that carry a great deal of fine print.

Part of learning to read IP ratings textually means understanding that not only the number matters but also the element of *time* at play—seals, gaskets, glues, and even nanocoatings degrade over time.¹⁰³ The mobile device is an ever-evolving container constantly interacting with everyday life’s (nonwater) liquids. This explanation stands in stark contrast to the IP number, which seems to label the device as possessing certain permanent features of imperviousness.

While the smartphone industry has adopted a more coherent message over the past decade about liquidity—trying to soothe anxious users and sell them protected devices that anticipate wetness—the matter is anything but settled. Consumers and companies trade blame with little agreement about how to balance everyday life’s wetness with fragile objects and how to determine which liquidities (and whose practices) merit protection in the first place. These are, strikingly, not new debates but longstanding ones that raise questions about media culture and media devices’ uneasy positioning among other objects and activities. Both whether phones can get wet and whether they should has become increasingly ambiguous rather than straightforward.

CONCLUSION

The cover art for pop singer charlieonnafriday's single "Enough" (2023) portrays the artist's smartphone submerged underwater and sinking, bubbles rising to the surface. This dunk, one can conclude from the lyrics, has resulted from a romantic relationship gone south: the singer has had "enough" and asks his significant other to "please stop calling, you've been dishonest."¹ Pushed too far, the spurned lover has resorted to liquid destruction to break the connection, both literally and figuratively. The song's official lyric YouTube video also shows the phone underwater, but in a sad twist, the lyrics persistently pop up on its screen via text messages; even water isn't enough to trigger breakage, as the device persists and so does the tortured communication.² The singer's deliberate decision to chuck the phone (though one does not see the act occur) would seem to represent carelessness—even if the handset does continue to work, a willful refusal to tend to its fragility marks the liquid act as "bad" use. However, this is also a desperate maneuver: how does someone cut off a relationship when the phone is always on, always at hand, always delivering the next message? A liquid breakdown would constitute a welcome relief.

In a different romantic scenario, an episode from season 3 of Apple+ sitcom *Ted Lasso* (2023), titled "A Night in Amsterdam," dramatizes how British football club owner Rebecca lands in the drink when a cyclist hits her and knocks her into a canal. In the course of the wet fall, she has also submerged and lost her phone but makes contact with a handsome, foreign stranger who takes her in, cooks for her, and encourages her to spend the

night. The next day, Rebecca receives questions from her colleagues about her whereabouts—and why she didn't return *so many* messages. The saturated, broken phone lubricated the evening's events, allowing the usually tightly wound woman to let down her guard and inhibitions without any accountability to the people with whom she traveled. In a third instance, featured in Hulu's TV show *Murder at the End of the World* (2023), a young hacker named Bill ends a romantic relationship with his significant other, Darby Hart, by disappearing unannounced from a motel; Darby knows the relationship is officially over when she finds that Bill's left behind his phone and laptop, which he sunk to the bottom of the motel's bathtub. **These three wetness episodes exemplify how media failures and fragilities can jumpstart fresh starts and rebirths in relationships, much as they embody endings.**

However, all of the cases illustrate the privilege inherent in dousing one's device without consequence. Neither singer nor wealthy sports owner seem to incur any negative effects from the liquid collision, and the hacker is able to simply walk away to a new life and reality; whether planned or unplanned, these digital disruptions portray media devices as tools that one can casually replace as needed or abandon. The fashionable "digital detox" is similarly a "privilege of not paying attention,"³ championed by celebrities and Silicon Valley executives who can turn off and tune out at will. However, such depictions differ significantly from how most users discuss leakages and subsequent disconnection/damage—as emotional and perilous. Writer Kara Carrero (2022) explains that when her child spilled a bottle of water on her new laptop, "My heart stopped and my entire computer's history flashed before my eyes. Panicked, I picked it up, wiped water off of it, all while sobbing in frustration. My mind was racing. . . . How would I even access all of my accounts? Would I ever manage to recover the pictures? *Was anything salvageable?*"⁴ Even at a time when streaming and cloud services hold more content than ever (for those who can afford them), the pricey-to-replace and difficult-to-repair device generates heart-stopping panic for many people whose livelihoods, social connection, and access to services depend to large degrees on functioning technologies. Breakage and breakdowns importantly happen within specific contexts, and it would be reductive and impossible to universalize their meaning or to wholly romanticize or vilify them. Still,

it would be naive to assume that most can unflinchingly dip their devices without consequence. Technological systems are routinely stacked against the most vulnerable people that use them, favoring those with financial means and social capital rather than those without.

These hygienic issues of maintenance and protection are a regular and inevitable part of media use: in the course of a day, people might make decisions about whether to wipe their hands after eating and before typing on a keyboard; determine whether to clean off a laptop screen's smudges with a napkin, shirt, or specialized cloth; choose to take a watch in the swimming pool or to leave it behind; and experience worry about whether a phone, caught in a rainstorm, hurricane, or other weather event, will begin to corrode over time. These negotiations involve both conscious deliberations and unplanned and unexpected leaks, wrapped up as they are in many conjoined practices, situations, bodily gestures, gender roles, and environments. In these instances, people form protocols and habits (or are encouraged to do so), which intersect with myriad other circumstances—like being housed or unhoused, coping with disability or illness, navigating workplace dynamics, or raising children. But if we are all enacting media hygiene in one way or another, then it is critical to understand how moralizing almost always attaches to hygiene, labeling some practices (and people) appropriate and acceptable and others “unruly”⁵ and misbehaving.⁶ The “good” user is the one who develops a “disciplined set of practices . . . to ward off bad things from happening to [their] devices”⁷ and, by extension, themselves.

This disciplining has repeated thematically throughout the preceding chapters and is evident in reactions to wetness, when the “bad” user is framed as a careless one whose habits, habitat, personality, lifestyle, and body lead to spills, seepages, dunks, and smudges. Although life is certainly “tenuous and fragile,” involving “a lot of energy, maintenance and adjustments from consumers,”⁸ the unhygienic user frame compellingly issues blame and makes messiness and breakage the user's problem. This strategy fits in with how risk has become individualized in modern society, not a result of fate or god's workings but instead a situation that each one of us can and must manage and avoid through cultivated carefulness.⁹ Such a burden has played out historically in the ways that manufacturers, repairers, and advice columnists

have touted liquid “abstinence” that separates media practices from liquid ones. Radios should stay far away from bathtubs, wristwatches removed before frolicking at the beach, drinks taken in break rooms cordoned off from desks, and teething babies kept at a safe distance from telephone cords.

These “don’ts” pile up with a rationale that a functioning device or uninterrupted service matter more than the superfluous liquid behavior.

Media hygiene gets weaponized when accusations of carelessness are issued unequally and directed at specific groups based on gender, age, occupation, and ability. Women and children have faced the most finger-pointing, particularly when it comes to technologies that are coded feminine or domestic. Their bodies, deemed “leaky,” supposedly make the most messes, and likewise women are expected to clean them up because caring itself is a gendered concept.¹⁰ Rita Anton’s expression of frustration about cleaning vinyl records (1960) and protecting them from her children’s mess identifies how media wetness can become yet another housekeeping responsibility lumped onto female caretakers. A similar dynamic occurred with telephone cords in the early 1900s, when telephone company workers targeted mothers to reform their children’s oral habits. Fast forward 100 years and take the case of Kara Carrero and her doused laptop (caused by a child, as noted previously), and she explains that she ultimately directs her children to abstain from liquids around their devices: “My girls are no longer allowed to watch movies or be on my laptop. Instead, we have a family ipad [*sic*] they use for movies and it actually sits on a tablet stand so that it’s up off laps and tables and hopefully is less likely to see the same demise.”¹¹ These repetitions offer an historical through-line of parenting expectations and daily negotiations that crystallize into device protection. Children offer an especially compelling case study because people treat them as fundamentally reckless, acting in the orbit of media devices like messy tornadoes. Thus, to understand media use means to dig further into how hygienic decision-making unfolds relationally for parents and children, but it also becomes a pressing subject between coworkers, bosses and employees, repairers and consumers, friends, and others. Hygiene and use are inextricably intertwined.

Sociologist Susan Leigh Star (2015) once asked, “Who is doing the dishes?” to provoke scholars to think about how labor (especially unpaid,

everyday labor) gets distributed and how material “stuff” animates that labor.¹² In a similar vein, we might ask: Who mops and sops media? Who cleans up spills? Who monitors and prevents spray, stickiness, slipperiness, and so on? Media caretaking, which has always involved wetness of one sort or another, may not seem like housekeeping “proper.” It is not what comes to mind when one thinks of cleaning or caring for one’s home—or about parenting, for that matter. For some, media hygiene gets validated as a hobby (involving tinkering, cleaning, repairing), when folks possess disposable income, time, and other collecting resources.¹³ It is a luxury to tend to and care for media’s needs in these ways with the latest trendy cleaning tool or case, to codify and organize and preen. For others, though, these activities connote another form of *work* and signal precarity or exhaustion.

Thus, it is perhaps unsurprising that writer Amanda Mull (2020) wrote an article during the height of the COVID-19 pandemic titled “Everyone I Know Keeps Breaking Things,” which gestured toward liquid-media hygiene not as pleasurable care but as effortful labor. Mull wrote, “If you’re also caring for children while at home, homeschooling via Zoom while you try to work and keep your house in order, that would potentially ratchet up both your stress level and the number of people available to grab imprecisely at breakable objects or bump into things that might fall over.”¹⁴ Other similar articles cropped up that identified the pandemic as an exercise in practices colliding and object messes occurring. For website *iFixit*, Kevin Purdy surmised that “People, it seems, are working on laptops more, are a bit more cavalier with their drinks, and are possibly working at the same crowded table where they put their mail or chop onions.”¹⁵ Meanwhile, *The Globe and Mail*’s Jimmy Thomson in the United Kingdom came to a similar conclusion as to why repair shops fielded more issues during the pandemic—that “homes are fraught with danger for electronics in a way that offices are not.”¹⁶ Thomson set the scene of a pandemic arrangement, where the throwntogetherness¹⁷ of domestic life constituted an ever-present threat: “In ad hoc home offices, laptops are precariously balanced on stacks of books next to a glass of wine for Zoom happy hours; cats are constantly on the prowl next to half-consumed coffees; and children—well, children are doing what they do best.”¹⁸ Each of these writers described bodies-and-things-out-of-control:

imprecise grabs, cavalier drink placements, precarious balancing acts, and untamable children.

For the “breaking things” article, Mull conducted various interviews to ascertain whether this clumsiness stemmed from “random acts” or if a “common cause” might be at play, and the text concluded with a recommendation that readers purchase “safety gear” for their phones and plastic drinking glasses—solutions for those who felt “the pandemic has turned you into a klutz.” This appeal to individual-level hygiene (buy the right protection to suffer through the inevitable mess) is a common refrain that intensified during the pandemic but certainly preceded it. While device cases and plastic drinking containers could mitigate damage, it is critical to consider the underlying forces that necessitated proper hygiene in the first place. If people were “klutzes,” then they became that way from increasingly untenable conditions like full-time childcare responsibilities (distributed unequally), work/schooling imperatives that bulldozed over health concerns and caretaking unavailability, and capitalist systems that required productive “business as usual”; all the while, people had to manage these challenges in spaces that were unready for those demands and hastily reconfigured.¹⁹ Not everyone experienced chaos and clumsiness to the same degree, though. Some people lived alone in clutter-free isolation (and suffered different ill effects), while others possessed the means to create ideal and idyllic work–life arrangements. **People hardly inhabit the same bodies or circumstances, nor do their liquid worlds operate in the same ways.**²⁰ The pandemic pressure cooker drew attention to the inequities of digital lives, raising alarms not only about those who worked from home while parenting but also those who delivered food and worked in grocery stores and hospitals and schools—people who handled muck and wetness that others could avoid. A liquid “mess” might have constituted a spilled glass of wine or a virus-containing sneeze. Just as people navigated different wetness, they also faced specific demands to clean, accessorize, repair, and protect.²¹

In addition to thinking through how these positionalities involve not only gender but also race, class, and age, we might also ask how media themselves *produce* clumsiness—and disability—by baking them into “material artifacts, technologies and organizational structures.”²² When consumers get

impugned for their wet behaviors, it is easier to absolve companies and their machines of blame. As one individual wrote on website *Quora* in 2019 about Apple, “Design the slipperiest, most fragile phone possible, knowing it will certainly be dropped at some stage. Users [*sic*] fault. If suspicion comes upon them, the guise of beauty over functionality is a perfect deflection. Rubbish. Smart people would have been paid a fortune to create this intentionally slippery phone.”²³ If phones and other like media technologies induce slippage, as this consumer concludes, then wetness (and, by extension, breakage) is nearly guaranteed. These slippery designs intersect with the structures that make media economies possible and liquid breakdowns desirable: (un)repairability, upgrade culture, warranty policies, material/resource extraction, labor hierarchies, and more.²⁴ Given how these situations disadvantage users, people often have no choice but to double down on separately purchased expensive accessories like cases and insurance policies. Protection often becomes the only defense in a punitive ecosystem.

Such concerns have become abundantly evident when it comes to newer digital technologies, particularly those related to virtual reality (VR). A burgeoning accessories market has blossomed to deal with the leakiness of bodies using head-mounted displays (HMDs), the device that straps to the user’s face. These add-on products range from cushy replacement facial interface covers and fans to one-time-use “eye condoms” doled out at VR conferences to facilitate device sharing.²⁵ Such technologies respond to the leakiness, often sweat, precipitated by VR—concerns that manufacturers themselves have left largely unaddressed. In a 2022 article by journalist Nicole Nguyen, the writer explains, “One thing they don’t tell you about working out in the metaverse: The exercise might be in virtual reality, but the sweat is real.”²⁶ Nguyen details what it is like to “peel [off] the damp Meta Quest 2,” which is “just as disgusting as it sounds.” Far from escaping one’s body into another digital realm—a fantasy that has long occupied VR enthusiasts—Nguyen’s description speaks to the ways that users’ bodies assert themselves and become even all the more present through heat, exertion, and perspiration. The pandemic drew further attention to this corporeality, when shared sweat (and thus shared germs) threatened to spill over from one person’s device to another’s.

Wetness continues to be a problem for VR in other respects, too. Lauren Goode for *Wired* magazine (2024) describes an experiment she undertakes to cry through a series of sad movies while using the Apple Vision Pro to test its cinematic and felt qualities:

Tears welled up in my goggles, pooling at the soft rim of the face cushion. These tears never made their way down my cheek. I was literally crying on the inside. When I plucked the Vision Pro off my face, I saw that the face computer's seal was soaked. The inner lenses needed a good microfiber wipedown. It was, in a word, disgusting.²⁷

Goode's experience demonstrates the challenges of an affective and embodied response in VR. While the device is touted for its immersive effects and the promise of perceptual "enclosure,"²⁸ it is ill-equipped to deal with its user's liquidities as it perhaps encloses and contains *against* and not *with* the body. A failure to account for how bodies behave and interact at the level of wearability not only limits the quality of the media experience but also necessitates a cumbersome hygiene routine.

While good design can't solve all ills, it is important to imagine what ethical design would do when it comes to wetness. After all, it is unrealistic to ask people to live abstinent lives where media devices and liquids never intersect. Humans and nonhumans engage porously with each other and what counts as a "media practice" versus "non-media practice" has become increasingly difficult to disentangle.²⁹ Likewise, media use is necessarily material and embodied, made of physical movements, doings, environments, and things.³⁰ It makes little sense to create arbitrary boundaries between wet and dry, body and machine, or nature and culture.³¹ Where designers have taken strides to create umbrellas and roofs that can withstand rain, test tubes that can hold blood, and boots that can stomp in puddles, the present moment requires media technologies that won't wither from a splash or sweat droplet. These devices should allow consumers to sense and apprehend their protection, to some degree, rather than privileging invisibility. Such inconspicuousness and "seamlessness,"³² like liquid nanocoating, may actually frustrate and thwart people more than help them; it is presently quite ambiguous which liquids and how much exposure a digital device can

withstand, and for how long, and IP ratings and other classifications do little to clarify the matter.

Nevertheless, it is difficult to craft a new logic toward wetness because of the embattled and antagonistic posture that accompanies so much discussion about it. Liquids have long constituted the “enemy” meant to be avoided at all costs, one must “defy” nature to overcome them, and only the “toughest” and most “rugged” device can withstand their “punishing” treatment. This language, described throughout the book, has resulted from military, athletic, and outdoor adventuring cultures that rely on rhetoric rooted in macho masculinity, extreme risk-taking, and able-bodiedness. The hardy device becomes the ready partner of its indefatigable and impervious (historically male) user, ready to take on “the elements” in a grueling mettle test. Finding its roots in historical military, nautical, and sporting culture, it has repeated ad nauseum even to this day in advertisements for smartphones, laptops, and smartwatches. These stereotypes litter promotions for water-resistant products, which long have enshrined particular embattled bodies as ideal wet ones, reproducing ideas of “fit,” “athletic,” and “active” users as almost entirely young, white, and thin who swim/dive, jump off of cliffs, and traverse deserts and oceans.

These depictions frame wetness as something hostile to be defeated and defended against rather than revered, while not subtly implying that ruggedness and imperviousness apply only to a select, privileged group. Such positioning is at work in a 2022 Apple advertisement for its Ultra smartwatch.³³ Images feature hikers summiting frozen mountaintops and divers descending into the ocean. These scenes, like those that precede them in the early twentieth century, connote endurance, survival, and fortitude for wearer and device, but in so doing, they promise protection only to those that already possess elite skills, a particular body type, and significant resources. Like James Bond with his license to kill, they “take on” the wet, natural world as something not-human and not-human-friendly that works against not only them but also their technologies.

This orientation repeats even more violently in thousands of YouTube videos and popular journalism under the rubric of “torture testing” and gadget destruction. In 2014, *Wired* magazine created a YouTube series titled

Battle Damage with episodes that featured epic destruction of common items like smartphones, tablets, and computers. The extended warranty company SquareTrade, too, also created its own set of videos, playing on the torture test tradition.³⁴ More recently, the “rage room” phenomenon encourages people to physically smash things as a psychological outlet for one’s aggression.³⁵ Journalist Darren Orf has dubbed this trend “the cult of gadget destruction porn,” which Orf believes combines “reactionary defiance to gross capitalism and simple ‘let’s blow shit up’ entertainment.”³⁶ The writer offers a variety of explanations for the genre, ranging from consumers’ frustrated dependence on their devices, to simple fun, to technological fetishism that hinges on both “worship and annihilation.” Indeed, it is likely that all of these elements play a part in the flourishing of this content, though such behavior long predated Internet videos.

Additionally, I suggest that torturing the device (whether to see if it survives or simply to see it destroyed) functions as a highly masculine form of battle testing—a spectacle of rugged performance that takes lessons from warfare and enacts them in militarized everyday life.³⁷ It feeds on the guilt and stigma associated with “bad” use, which assumes that liquidity is fundamentally detrimental. More recent concerns critique torture testing demonstrations as evidence of “society crumbling,”³⁸ as testers willingly waste money and destroy gadgets just for the pleasure of watching them break—a kind of hedonistic excess that goes against the very durability culture it proclaims to support.

Yet the journalistic tests continue, both because they attract attention/monetization and because they fit within an ecosystem of technology reporting that has positioned the journalist as a neutral party delivering consumers need-to-know information about products.³⁹ The more that people feel they can’t rely on the word of manufacturers and advertisers to authentically communicate about a product’s wettability, the more that torture tests fill this informational and trust gap. At the same time, these spectacles reduce the *tester’s* (and the user’s, by proxy) vulnerability by allowing him to take on a torturing posture that can prove survivorship or defeat. Like the basic training rituals to produce good soldiers, the technological mettle test produces “good” products—heroes—who have emerged from suffering.⁴⁰

While the urge to validate manufacturers' claims and ferret out exaggerations and distortions is understandable, the metaphors and approaches upon which these tests rely only further reinforce a violent disposition toward liquid practices. It is impossible to imagine media and liquids getting along if a drink sip or greasy finger always incurs shame as bad hygiene or the device must suffer "punishment" to prove it can contain imperviously. Media technologies need not play the role of suffering victim or beleaguered survivor, nor must their users act as "abusers" (whether as misusers or torturers). Surely, we can invent more responsible orientations toward our devices that express interdependency without violence and leaky boundaries without catastrophe. All kinds of bodies are interconnected (human bodies, technological device bodies, bodies of liquid, etc.). Writes Astrida Neimanis, "Discrete individualism is a rather dry, if convenient, myth,"⁴¹ and Stacy Alaimo reminds that "the human is always intermeshed with the more-than-human world . . . ultimately inseparable from 'the environment.'"⁴² The logic that pits users against their devices or devices against liquids tries to parse everything up into "us" versus "them." But rain is not so different from saliva, which is not so different from finger oils, which are not so different from soda. Neither are metallic wristwatches so opposed to fleshy human bodies. Subsequently, a strategy that makes consumers feel perpetual guilt and anxiety about ruining their technologies or triggering breakdowns is unproductive. Thus, we need a way to talk about how we depend on technologies and technologies depend on us without inducing a shame so weighty that it furthers antagonism, in which the object seems wholly out of step with one's everyday life. If we "connect to what we nurture,"⁴³ then we can also come to loathe that which seems constantly at risk and demands too much of us.

Corporations seem to have caught on to this problematic, which has given rise to so many advertisements that try to naturalize and acclimate media technologies so that they fit comfortably and enable carefree use in liquid lives. From the fish tank and the swimming pool to the kitchen sink and the bathtub, it is common to see portrayals of smartwatches, smartphones, tablets, and laptops making peace with wetness after decades of conflict. Apple CEO Tim Cook made headlines in 2015 when he acknowledged that he routinely wore his Apple Watch in the shower,⁴⁴ and water

resistance—once perceived as niche feature or a gimmick—is now considered a common and desirable asset for so many digital technologies, with water locks and rubbery shells, nanocoatings, washable keyboards, and water-resistant bags. Yet, as I have documented throughout this book, a gross amount of hyperbole has oversold these devices' wet-friendliness, and consumers have increasingly leveled lawsuits at some of the largest manufacturers to correct exaggerations.⁴⁵ Glossy images of people spilling, submerging, and sweating on their products belie a common reality of fragility and breakdown. As one consumer explains regarding sweat damage to a Fitbit wearable fitness tracker, "To blame water damage on the user is wrong and hurtful, as I've done absolutely nothing that could possibly damage it. Wearing it on my wrist at most getting a water splash or raindrops or sweat on it, (wiped off shortly after) should not break this device."⁴⁶ People have grown frustrated with incongruities between corporate promises and day-to-day liquid disruptions. It seems only appropriate that companies should stop offering a glamorous, amphibious media existence when material limitations abound.

Indeed, imperviousness necessarily has its limits. Hydrophobic coatings degrade, cases crack, and glues and seals deteriorate. "The world constantly decays," scholars Stephen Graham and Nigel Thrift explain.⁴⁷ When manufacturers offer up the unrealistic promise of a leakproof, breakproof, wearproof product, they fly in the face of inevitable failure and impossible standards. A more just situation would, alongside developing practical liquid resistance, invest in systems of repair that empower consumers to fix liquid damage when it occurs and reduce barriers to adequate warranty coverage. This shift would also mean creating healthier relationships between repairers and users—one in which a mutual desire for stewardship⁴⁸ would replace corporate bottom lines, lying, dragnet methods, and shaming. Perhaps, then, repairers might not need "war stories" and consumers could abandon evasive tactics that try to "get away with" liquid overflows. Still, we must avoid "romanticizing" repair and resilience,⁴⁹ which can promise a return to a not-desirable past or reinforce unproductive expert/layperson hierarchies. Rather than taking it for granted, it is important to assess how care work should be distributed between formal repairers and consumers and consider the

realistic “maintainability” of devices.⁵⁰ Outages, slips, and disruptions will inevitably occur, particularly in the face of climate change, economic crises, and world conflicts. These breakdowns require a new calibration between users and their things that honestly appraises wet worlds and their attendant challenges.⁵¹

While acknowledging objects’ vulnerabilities and fragilities, an informed design and marketing process would also need to account for people’s bodies in the same way. It would replace the negative stereotypes associated with the “bumbling” user and the warning that “users happen”⁵² to the device with a holistic understanding of people and their diverse impairments: it would take stock of the shaky Parkinsonian hand and the “chemo brain” of cancer treatment, recognize the needs of teething babies and incontinent seniors, and acknowledge sweating athletes in wheelchairs and on foot and those who use prosthetics alike. Such a vantage point would treat liquidity not as a liability but as a matter of course and people’s practices not as “risky” or “unruly” but as utterly human—made up of shakes, bobbles, fumbles, slips, seepages, and spills. Embracing many kinds of leaky bodies—and designing for them—could hopefully reduce the consequences that result from liquid collisions so that people don’t have to tiptoe around their devices or incur deep embarrassment when wetness occurs. A first step would necessarily involve further study of people’s embodied liquid experiences, both past and present, by investigating how they make sense out of their practices and manage liquid breakdowns and repairs in myriad ways.

In the end, neither unflinching imperviousness nor strict hygienic abstinence will address the current moment. It is inhumane to disallow sips of liquid in an eight-hour workday because it might damage one’s peripheral, but neither is it desirable to promote an existence where children have no choice but to gobble up lunch and gulp down drinks at the computer’s side so that they don’t miss an online school lesson. For instance, as the pandemic led to massive school closures and increased mixing of work–life responsibilities (for a certain sector of the population), it accelerated a new set of directives for laptop makers. In 2021, HP announced a new computing line meant specifically for the work-from-home population.⁵³ Likewise, Dell posited that “no matter the learning environment—we know kids are hard

on their technology.” And Lenovo, in a Twitter (now X) post, “apologized” to children: “Sorry, kids: a spill-resistant keyboard that can handle up to 1.39 cups (330 ml) means #NoMoreExcuses for missed assignments.”⁵⁴ While at face value these rhetorical strategies seem like long overdue recognition that mobile lifestyles cannot conform to staunch dryness, they normalize a media-saturated culture where laptop computers fit into backyards, schoolyards, and dining tables. Like these computers, “resilient” students never take a break, even when they spill, smudge, or splash.

Such recent pivots toward “oops-proof” devices, though they seek to reimagine a dominant dryness paradigm, do so by prioritizing productivity and 24/7 consumption over people’s well-being. Washable keyboards mean that “gameplay never has to stop”⁵⁵ and “work is better with play”⁵⁶ when a mother can cook runny eggs for her child while he watches his water-resistant tablet next to the sink. It is notable that, while in the past people were warned to keep wetness *away* to promote seamless media functionality and uninterrupted service, now present-day scenarios posit that embracing wetness will lead to evermore encompassing connectivity. And yet, these “ideals” continue to uphold unhelpful stereotypes, like the young, male gamer with his soda at the keyboard and the woman in the kitchen managing her child’s drink spill.

Attention to liquid–media practices and technologies can help us understand how different conceptions of “everyday life” manifest, how media should fit into these lives, and who benefits from particular arrangements. A default stance toward liquids has victimized devices and villainized certain users while authorizing others; now, a new media hygiene must move beyond this limiting permission and prohibition model that reinforces existing social inequities. In a revised model, such hygiene should not constitute an individual burden but rather should reflect a widespread social and cultural commitment to making, maintaining, and repairing things sustainably, affordably, and accessibly. It should make wetness increasingly acceptable (especially for those most vulnerable) and distribute device caretaking efforts more equitably, while simultaneously decreasing the pressures that bind media and wetness together with “always-on” imperatives. It is crucial to embrace this contradiction: people, together with their devices, are greasy, sweaty,

slippery, leaky, and germy, and their practices and interactions should support such liquidities; however, technologies' liquid resistance should not provide a rationale for constant media use and ceaseless output. So, let's build technologies that can withstand a spill; let's invest in reasonable designs that support repairability and produce tools to address breakdowns when they do occur; let's develop healthier ways of relating to environments and elements beyond a violent antagonism or naive acclimation; let's think carefully about how we want to mix liquids and media, and when; and let's take seriously the real work required to exist in a world that is fundamentally wet.

Notes

INTRODUCTION

1. "Bathtub Radio Is Disastrous," *Los Angeles Times*, July 6, 1924, A13.
2. David Trotter, *Cooking with Mud: The Idea of Mess in Nineteenth-Century Art and Fiction* (Oxford: Oxford University Press, 2000), 15.
3. Mike Fahey, "The Highs and Lows of Spilling Drinks on Your Laptop," *Kotaku*, July 12, 2019.
4. Elizabeth Shove, Mika Pantzar, and Matt Watson, *The Dynamics of Social Practices: Everyday Life and How It Changes* (London: Sage, 2012), 83.
5. Orvar Löfgren, "The Black Box of Everyday Life: Entanglements of Stuff, Affects, and Activities," *Cultural Analysis* 13 (2014): 77–98. Also see Karina Luzia, "Growing Home: Reordering the Domestic Geographies of 'Throwntogetherness,'" *Home Cultures* 8, no. 3 (2011): 297–316.
6. Lehtonen connects this process to what happens in laboratory experiments: "More generally, Latour believes that an actor, whether human or non-human, is defined by its performances, by what it does. It is in trials that actors show what they are capable of." See Turo-Kimmo Lehtonen, "The Domestication of New Technologies as a Set of Trials," *Journal of Consumer Culture* 3, no. 3 (2003): 363–365.
7. W. R. Brooks, "Ivory, Apes and Peacocks," *Outlook and Independent*, January 2, 1929, 27.
8. Todd Gitlin, *Media Unlimited: How the Torrent of Images and Sounds Overwhelms Our Lives* (New York: Henry Holt and Company, 2001).
9. Paulo Magaudda, "When Materiality 'Bites Back': Digital Music Consumption Practices in the Age of Dematerialization," *Journal of Consumer Culture*, 11, no. 1 (2011): 15–36.
10. Frank Trentmann, "Disruption Is Normal: Blackouts, Breakdowns and the Elasticity of Everyday Life," in *Time, Consumption and Everyday Life: Practice, Materiality and Culture*, ed. Elizabeth Shove, Frank Trentmann, and Richard Wilk (Abingdon: Routledge, 2020), 67–84.

11. See Pablo Boczkowski, *Abundance: On the Experience of Living in a World of Information Plenty* (Oxford: Oxford University Press, 2021).
12. Media saturation may mean different things to different scholars, such as quantity, competition, and many varying messages. See John L. Sherry, "Media Saturation and Entertainment-Education," *Communication Theory* 12, no. 2 (2002): 206–224. But more recent work uses the concept to think about the "mutual permeation" between media and nonmedia, as in Bhaskar Sakar, "Media Saturation and Southern Agencies," in *Saturation: An Elemental Politics*, ed. Melody Jue and Rafico Ruiz (Durham, NC: Duke University Press, 2021), 243–263.
13. Quoted in Mark Deuze, *Media Life* (Cambridge, UK: Polity Press, 2012), xiii.
14. An interest in the "elements" and "elemental media" has recently made liquids a consideration, such as Melody Jue, *Wild Blue Media: Thinking through Seawater* (Durham, NC: Duke University Press, 2020); Melody Jue and Rafico Ruiz, eds., *Saturation: An Elemental Politics*; and Nicole Starosielski, *The Undersea Network* (Durham, NC: Duke University Press, 2015). However, my focus is on the wet micropolitics of everyday life, although there are fruitful intersections here. I take cues from literature on a "non-media-centric" approach to media, as articulated in Zlatan Krajina, Shaun Moores, and David Morley, "Non-Media-Centric Media Studies: A Cross-Generational Conversation," *European Journal of Cultural Studies* 17, no. 6 (2014): 682–700.
15. For a further discussion of "media hygiene" and "computer hygiene," see Rachel Plotnick, "Sticky Fingers and Smudged Sound: Vinyl Records and the Mess of Media Hygiene," *Critical Studies in Media Communication* 39, no. 4 (2022): 260–275; Jussi Parikka, *Digital Contagions: A Media Archaeology of Computer Viruses* (New York: Peter Lang, 2017).
16. T. L. Cowan, "Digital Hygiene: A Metaphor of Dirty Proportions," Digital Research Ethics Collaboratory, 2019, <http://www.drecollab.org/digital-hygiene-a-metaphor-of-dirty-proportions/>.
17. It is true that "everyday life" is a fraught and slippery concept that resists a singular definition. I consider everyday life as "those most repeated actions, those most travelled journeys, those most inhabited spaces that make up, literally, the day to day." This does not mean that everyone's everyday life unfolds in quite the same way, and in fact, different experiences of "everydayness" matter greatly. See Ben Highmore, ed., *The Everyday Life Reader* (London: Routledge, 2002), 1.
18. See Steven J. Jackson, "Rethinking Repair," in *Media Technologies: Essays on Communication, Materiality, and Society*, ed. Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot (Cambridge, MA: The MIT Press, 2014), 221–307; Jérôme Denis and David Pontille, "Materiality, Maintenance and Fragility. The Care of Things," "How Matter Matters," *Third International Symposium on Process Organization Studies*, June 2011.
19. The notion of liquids and electricity not mixing is commonly repeated. For example: "Farm Safety Week: Good Time to Teach," *Rural Electrification News* 11, June 1946: 10–11.
20. See, for example, Lydia Martens and Sue Scott, "'The Unbearable Lightness of Cleaning': Representations of Domestic Practice and Products in *Good Housekeeping* Magazine (UK): 1951–2001," *Consumption Markets & Culture* 8, no. 4 (2005): 379–401; Nancy Tomes, *The*

- Gospel of Germs: Men, Women, and the Microbe in American Life* (Cambridge, MA: Harvard University Press, 1998).
21. Astrida Neimanis, *Bodies of Water: Posthuman Feminist Phenomenology* (London: Bloomsbury Academic, 2016), 1.
 22. Janine Natalya Clark, "'Leaky' Bodies, Connectivity and Embodied Transitional Justice," *International Journal of Transitional Justice* 13, no. 2 (2019): 268–289.
 23. Neimanis, *Bodies of Water*, 2016, 2. Smith notes that water can be a "hostile element that threatens human life," too. See James Smith, "Fluid," in *Inhuman Nature*, ed. Jeffrey Jerome Cohen (Brooklyn, NY: Punctum Books, 2014), 128.
 24. Mike Michael, *Technoscience and Everyday Life: The Complex Simplicities of the Mundane* (New York: Open University Press 2006), 48.
 25. Regarding negative connotation, see Elizabeth Grosz, *Volatile Bodies: Toward a Corporeal Feminism* (Bloomington: Indiana University Press, 1994); Kurt Lindemann, "Cleaning Up My (Father's) Mess: Narrative Containments of 'Leaky' Masculinities," *Qualitative Inquiry* 16, no. 1 (2010): 29–38.
 26. Hodge defines an unruly body as "coming into being when there is a misfit between bodily expression and the imposed disciplines of a particular cultural and social environment." Nick Hodge, "Unruly Bodies at Conference," *Disability & Society* 29, no. 4 (2014): 655–658.
 27. Adrian Furnham and John Taylor, *The Dark Side of Behaviour at Work* (New York: Palgrave Macmillan, 2004); Anne M. Kavanagh and Dorothy H. Broom, "Embodied Risk: My Body, Myself?" *Social Science & Medicine* 46, no. 3 (1998): 437–444.
 28. John Burnham, *Accident Prone: A History of Technology, Psychology and Misfits of the Machine Age* (Chicago: University of Chicago Press, 2010), 22; Deborah Lupton, *Risk and Sociocultural Theory: New Directions and Perspectives* (Cambridge, UK: Cambridge University Press, 1999). Quote from John Tulloch and Deborah Lupton, *Risk and Everyday Life* (London: Sage, 2003), 15. Regarding clumsiness, see Judith Mary Peters, "Developmental Coordination Disorder (DCD) as a Distinct Syndrome: A Conceptual and Empirical Investigation," Institute of Education, Thesis, University of London, 2006.
 29. Jonathan Sterne, *Diminished Faculties: A Political Phenomenology of Impairment* (Durham, NC: Duke University Press, 2022), 32.
 30. Katherine J. Morris, "The Phenomenology of Clumsiness," in *Sartre on the Body*, ed. Katherine J. Morris (New York: Palgrave Macmillan, 2010), 161–182.
 31. Trevor Pinch, "'Testing—One, Two, Three . . . Testing!': Toward a Sociology of Testing" *Science, Technology & Human Values* 18, no. 1 (Winter 1993): 25–41.
 32. For what counts as an "accident," see Steve Matthewman, "Accidentology: Towards a Sociology of Accidents and Disasters," *RIMCIS—International and Multidisciplinary Journal in Social Sciences* 1, no. 2 (2012): 193–215; Itai Vardi, "Normalizing Accidents: Cars, Carnage, and the Disappearance of Social Problems," Boston University, Dissertation, 2012.

33. François Ewald, "Insurance and Risk," in *The Foucault Effect: Studies in Governmentality*, ed. Graham Burchell, Colin Gordon, and Peter Miller (Chicago: University of Chicago Press, 1991), 197–210. Causes of accidents have been widely debated. See Sigmund Freud, *The Psychopathology of Everyday Life* (New York: The Macmillan Company, 1915); Donald Norman, "Categorization of Action Slips," *Psychological Review* 88, no. 1 (1981): 1–15; Naoya Hirose, "Inattention and Slips of Action," 京都大学大学院教育学研究科紀要47 (2001): 261–273. Concerns over safety, technology, and accident prevention have also occupied scholars, in works such as Jeremy Packer, *Mobility without Mayhem: Safety, Cars, and Citizenship* (Durham, NC: Duke University Press, 2008); Lee Vinsel, *Moving Violations: Automobiles, Experts, and Regulations in the United States* (Baltimore: Johns Hopkins University Press, 2019). My interest is less in attributing causes or labeling events "accidents" than in following how people talk about and experience these wetness events through social and cultural contexts.
34. Domenico Napolitano, Silvio Ripetta, and Vita Lasala, "Impairment, Failure, Emergency: A Review Essay on Recent Trends in Media and Disability Studies," *Media, Culture & Society* 44, no. 7 (2022): 1383–1393.
35. Elizabeth Ellcessor, *In Case of Emergency: How Technologies Mediate Crisis and Normalize Inequality* (New York: New York University Press, 2022); Neta Alexander, "Rage against the Machine: Buffering, Noise, and Perpetual Anxiety in the Age of Connected Viewing," *Cinema Journal* 56, no. 2 (Winter 2017): 1–24.
36. Zoë Sofia, "Container Technologies," *Hypatia* 15, no. 2 (Spring 2000): 181–201.
37. Waterproof books have a long history and were particularly designed for children, although companies like Melcher Media have created "DuraBooks" especially made for wetting.
38. This notion of the "civilized body" is discussed in Deborah Lupton, *Risk* (London: Routledge, 1999).
39. Ian Hodder, *Entangled: An Archaeology of the Relationships between Humans and Things* (Oxford: Wiley-Blackwell, 2012), 72. Also see D. Matthew Godfrey, Linda L. Price, and Robert F. Lusch, "Repair, Consumption, and Sustainability: Fixing Fragile Objects and Maintaining Consumer Practices," *Journal of Consumer Research* 49, no. 2 (2022): 229–251; Bruno Latour, "Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts," in *Shaping Technology/Building Society: Studies in Sociotechnical Change*, ed. Wiebe E. Bijker and John Law (Cambridge, MA: The MIT Press, 1992), 225–258; Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010).
40. For some key works on "maintenance," see Nicky Gregson, Alan Metcalfe, and Louise Crewe, "Practices of Object Maintenance and Repair: How Consumers Attend to Consumer Objects within the Home," *Journal of Consumer Culture* 9, no. 2 (2009): 248–272; Andrew L. Russell and Lee Vinsel, "After Innovation, Turn to Maintenance," *Technology and Culture* 59, no. 1 (January 2018): 1–25.
41. Berenice Fisher and Joan Tronto, "Toward a Feminist Theory of Caring," in *Circles of Care: Work and Identity in Women's Lives*, ed. Emily K. Abel and Margaret K. Nelson (Albany, NY: SUNY Press, 1990), 35–62.

42. Aryn Martin, Natasha Myers, and Ana Viseu, "The Politics of Care in Technoscience," *Social Studies of Science* 45, no. 5 (2015): 625–641; Maria Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More Than Human Worlds* (Minneapolis: University of Minnesota Press, 2017).
43. Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, 1983); Hoy, *Chasing Dirt*; Susan Strasser, *Never Done: A History of American Housework* (New York: Henry Holt and Company, 2000).
44. Brian Massumi similarly observes that the skin is a "leaky 'box.'" See *Parables for the Virtual: Movement, Affect, Sensation* (Durham, NC: Duke University Press, 2002), 203.
45. Steven L. Gardiner, "Heroic Masochism: Masculine Privilege and the Uses of Pain," *academia .edu*, 2004, 1–50.
46. Gardiner, "Heroic Masochism," 9.
47. Grosz, *Volatile Bodies*; Mél Hogan, "Data Flows and Water Woes: The Utah Data Center," *Big Data and Society* 2, no. 2 (2015): 1–12.
48. Laurie James-Hawkins, Cristen Dalessandro, and Christie Sennott, "Conflicting Contraceptive Norms for Men: Equal Responsibility versus Women's Bodily Autonomy," *Culture, Health & Sexuality* 21, no. 3 (2019): 263–277; Andrea Tone, "Making Room for Rubbers: Gender, Technology, and Birth Control before the Pill," *History and Technology* 18, no. 1 (2002): 51–76.
49. For discussion, see Cynthia Sear, "Porous Bodies: Corporeal Intimacies, Disgust and Violence in a COVID-19 World," *Anthropology in Action* 27, no. 2 (2020): 73–77.
50. Sofia, "Container Technologies," 187, which draws on Ihde's work. Don Ihde, *Technics & Praxis: A Philosophy of Technology* (Boston: D. Reidel Publishing Company, 1979).
51. Kenneth T. MacLeish, "Armor and Anesthesia: Exposure, Feeling, and the Soldier's Body," *Medical Anthropology Quarterly* 26, no. 1 (2012): 49–68.
52. MacLeish, "Armor and Anesthesia," 52.
53. Aaron Belkin, *Bring Me Men: Military Masculinity and the Benign Façade of American Empire 1898–2001* (London: Hurst & Company, 2012), 85.
54. Judith A. McGaw, "Why Feminine Technologies Matter," in *Gender & Technology: A Reader*, ed. Nina E. Lerman, Ruth Oldenziel, and Arwen P. Mohun (Baltimore: Johns Hopkins University Press, 2003), 13–36. See also Norman Mailer, *Cannibals and Christians* (New York: NY Dial Press, 1966).
55. Lindemann, "Cleaning Up My (Father's) Mess," 29–38.
56. Belkin, *Bring Me Men*.
57. Lawrence Busch and Keiko Tanaka, "Rites of Passage: Constructing Quality in a Commodity Subsector," *Science, Technology, & Human Values* 21, no. 1 (Winter 1996): 3–27.

58. Busch and Tanaka, "Rites of Passage," 9.
59. Joseph Young and Erin M. Kearns, *Tortured Logic: Why Some Americans Support the Use of Torture in Counterterrorism* (New York: Columbia University Press, 2020).
60. Alexandre Mallard, "Performance Testing: Dissection of a Consumerist Experiment," *The Sociological Review* 55, no. 2 (2007): 152–172.
61. Daniela K. Rosner and Morgan G. Ames, "Designing for Repair? Infrastructures and Materialities of Breakdown," *CSCW2014—Craft, Repair, and DIY*, February 15–19, Baltimore, MD, 327.
62. Jennifer Gabrys, *Digital Rubbish: A Natural History of Electronics* (Ann Arbor: University of Michigan Press, 2018).
63. J. R. Grout, "Mistake Proofing: Changing Designs to Reduce Error," *BMJ Quality & Safety* 15, suppl. 1 (2006): i44–i49. Technologies like airbags "prevent the influence of a mistake" (i45). Regarding "injury reduction," see Judith Green, "From Accidents to Risk: Public Health and Preventable Injury," *Health, Risk & Society* 1, no. 1 (1999): 25–26.
64. Roger Silverstone and Leslie Haddon, "Design and the Domestication of Information and Communication Technologies: Technical Change and Everyday Life," in *Communication by Design: The Politics of Information and Communication Technologies*, ed. Robin Mansell and Roger Silverstone (Oxford: Oxford University Press, 1996), 44–74.
65. Kathleen Oswald and Jeremy Packer, "Flow and Mobile Media: Broadcast Fixity to Digital Fluidity," in *Communication Matters: Materialist Approaches to Media, Mobility and Networks*, ed. Jeremy Packer and Stephen B. Crofts Wiley (New York: Routledge, 2012), 276–287. Streaming media are also elemental and infrastructural. See Justin Grandinetti and Chris Ingraham, "Infrastructures of Flow: Streaming Media as Elemental Media," *Critical Studies in Media Communication* 39, no. 2 (2022): 92–106. If uninterrupted streams and flows are heralded as connectivity in a "normal" state, then metaphors of "data deluges," "saturation," and "leaks" get labeled as media excesses/interruptions. Leakers become promiscuous sharers who have violated the borders of a corporation or a contract. Saturation can carry a negative connotation as a "torrent" of overwhelming text and images. See Daniela Agostinho and Nanna Bonde Thylstrup, "If Truth Was a Woman: Leaky Infrastructures and the Gender Politics of Truth-telling," *Ephemera: Theory & Politics in Organization* 19, no. 4 (2019): 745–775; Todd Gitlin, *Media Unlimited*; Natasha Dow Schüll, "Digital Containment and Its Discontents," *History and Anthropology* 29, no. 1 (2017): 42–48; Ghislain Thibault, "Streaming: A Media Hydrography of Televisual Flows," *View* 4, no. 7 (2015): 110–119.
66. Regarding techno-solutionism, see Evgeny Morozov, *To Save Everything: Click Here: The Folly of Technological Solutionism* (New York: Public Affairs, 2013).
67. I employ the terms "acclimate" and "acclimatize" throughout the book to describe how media are imagined fitting (or not) into various habits and habitats the same way an organism adapts to a new situation. This process is not quite the same as "domestication" or "affordance" in that I am interested specifically in elemental, environmental, climatic, and embodied adaptations that pertain to survivability.

68. David Harper and Ewen Speed, "Uncovering Recovery: The Resistible Rise of Recovery and Resilience," *Studies in Social Justice* 6, no. 1 (2012): 9–25.
69. Meghana Patwardhan, "Learn from Anywhere: Resilient Laptops Meet Resilient Students," *Dell*, January 12, 2021, <https://www.Dell.com/en-us/blog/learn-from-anywhere-resilient-laptops-meet-resilient-students>.
70. Laura Robinson, Jeremy Schulz, Aneka Khilnani, Hiroshi Ono, Sheila R. Cotten, Noah McClain, Lloyd Levine, Wenhong Chen, Gejun Huang, Antonio A. Casilli, Paola Tubaro, Matías Dodel, Anabel Quan-Haase, Maria Ruiu, Massimo Ragnedda, Deb Aikat, and Natalia Tolentino, "Digital Inequalities in Time of Pandemic: COVID-19 Exposure Risk Profiles and New Forms of Vulnerability," *First Monday* 25, no. 7 (2020), <https://firstmonday.org/ojs/index.php/fm/article/view/10845>.
71. Amanda Mull, "Everyone I Know Keeps Breaking Things," *The Atlantic*, August 28, 2020.
72. Sebastián Ureta, "Normalizing Transantiago: On the Challenges (and Limits) of Repairing Infrastructures," *Social Studies of Science* 44, no. 3 (2014): 368–392.
73. Ureta, "Normalizing Transantiago," 387.
74. For discussion of mediatization and media-as-life, see Mark Deuze, "Media Life," *Media, Culture & Society* 33, no. 1 (2011): 137–148; Knut Lundby, *Mediatization: Concept, Changes, Consequences* (New York: Peter Lang, 2009); Andreas Hepp, *Deep Mediatization* (Abingdon: Routledge, 2020).
75. Nick Couldry, "Theorising Media as Practice," *Social Semiotics*, 14, no. 2 (2004): 115–132. This approach resonates with studies of media practices, routines, and habits, such as Wendy Hui Kyong Chun, *Updating to Remain the Same: Habitual New Media* (Cambridge, MA: The MIT Press, 2016), among others.
76. Competitive and complementary practices are discussed in Shove, Pantzar, and Watson, *Dynamics of Social Practices*.
77. Erkki Huhtamo, "From Kaleidoscomanac to Cybernerd: Towards an Archeology of the Media," *Leonardo* 30, no. 3 (1997): 221–224.
78. I situate the wristwatch within a category of "wearable media." See Erkki Huhtamo, "Pockets of Plenty: An Archaeology of Mobile Media," in *The Mobile Audience: Media Art and Mobile Technologies*, ed. Martin Rieser (Leiden: Brill, 2011), 23–38. For connections between wearing media and everyday life, see James N. Gilmore, "Everywear: The Quantified Self and Wearable Fitness Technologies," *New Media & Society* 18, no. 11 (2016): 2524–2539.
79. Nathan Ensmenger, "'Beards, Sandals, and Other Signs of Rugged Individualism': Masculine Culture within the Computing Professions," *Osiris* 30 (2015): 38–65.
80. Peters, *Marvelous Clouds*, 2; Jonathan Sterne, "The mp3 as Cultural Artifact," *New Media & Society* 8, no. 5 (2006): 825–842. Regarding media containment and infrastructures, also see Brooke Erin Duffy and Jeremy Packer, "Wifesaver: Tupperware and the Unfortunate Spoils of Containment," in *Re-Understanding Media*, ed. Sarah Sharma and Rianka Singh (Durham,

- NC: Duke University Press, 2022), 98–118; Dylan Mulvin and Cait McKinney, “The Girl in the Bubble: An Essay on Containment,” *Catalyst: Feminism, Theory, Technoscience* 9, no. 1 (2023): 1–25; Lisa Parks and Nicole Starosielski, eds., *Signal Traffic: Critical Studies of Media Infrastructures* (Champaign: University of Illinois Press, 2015).
81. See Erin Manning, “What If It Didn’t All Begin and End with Containment? Toward a Leaky Sense of Self,” *Body & Society* 15, no. 3 (2009): 33–45; Stacy Alaimo, *Bodily Natures: Science, Environment, and the Material Self* (Bloomington: Indiana University Press, 2010). A “viscous porosity” can describe relationality in the world. Nancy Tuana, “Viscous Porosity: Witnessing Hurricane Katrina,” in *Material Feminisms*, ed. Stacy Alaimo and Susan J. Hekman (Bloomington: Indiana University Press, 2008), 188–213. Also see Ignace Schoot, “Opening Up Containment: Making Space in Newfoundland Salmonid Aquaculture,” Memorial University of Newfoundland, Master’s Thesis, 2019; Moss E. Norman and Fiona Moola, “Bladerunner or Boundary Runner? Oscar Pistorius, Cyborg Transgressions and Strategies of Containment,” *Sport in Society* 14, no. 9 (November 2011): 1265–1279.
 82. Hodder, *Entangled*.

CHAPTER 1: LEAKY TELEPHONES

1. “Where the Baby Got ‘Stung,’” *Boston Daily Globe*, October 8, 1908, 12.
2. “Water, the Telephone Enemy,” *Gateway* 19, no. 1 (1912): n.p.
3. Claude S. Fischer, *America Calling: A Social History of the Telephone to 1940* (Berkeley: University of California Press, 1992), 5, 23.
4. E. J. Whittle, “A Practical Talk about Troubles,” *Telephony* 80, no. 11 (1920): 19–20.
5. “Some Don’ts for Good Telephone Service,” *Telephone Review* 7 (1916): 273.
6. “Telephone Trouble Men,” *Popular Science*, August 1934, 35, 120.
7. Eva Hawes, “Instructive Points Relating to Telephone Service,” *The Pacific Telephone Magazine* 15, no. 8 (1921): 29–30.
8. Hawes, “Instructive Points,” 29–30.
9. “Water, the Telephone Enemy,” 42.
10. “Telephone Cord Development Big Factor in Good Service,” *The Mouthpiece*, February 1923, 15.
11. “Telephone Cord Development,” 15; Chicago Telephone Company, “Wet Umbrellas,” *Chicago Commerce* 16, no. 12 (June 12, 1920): 52.
12. Chicago Telephone Company, “Wet Umbrellas,” 52.
13. In a history of telephony, Fischer notes that telephone companies did a great deal of work to educate the public about what telephones could do and why they should pay for service. This education encompassed “publicity, advertising, and soliciting.” To these, I would add “hygiene”—teaching consumers about appropriate and inappropriate ways

- to relate to phones through one's body, habits, and cleanliness practices. See Fischer, *America Calling*, 64.
14. R. M. Bennet, "The Maintenance of a Telephone Plant," *Purdue Engineering Review* 7 (1911): 94–99.
 15. F.D.D., "The Confessions of a Kicker," *New England Magazine* 47, no. 6 (1912): 295–298.
 16. James Edward Homans, *ABC of the Telephone: A Practical and Useful Treatise for Students and Workers in Telephony, Giving a Review of the Development of the Industry to the Present Date* (New York: Theo. Audel & Co, 1904), 329.
 17. Jay, "Discoveries by Our Observers and Experimenters," *Good Housekeeping* 45, no. 2 (1907): 222.
 18. "The Trouble Man," *Leslie's Illustrated Weekly Newspaper* 123, no. 3183 (1916): 268.
 19. E. D. Reynolds, "Shooting Telephone Trouble," *Telephony*, October 1906, 252–253.
 20. Reynolds, "Shooting Telephone Trouble," 252.
 21. "A Point in Service Maintenance," *The Telephone News* 8, no. 5 (March 1, 1912): 2.
 22. "The Trouble Man," 268.
 23. "The Trouble Man," 268.
 24. Chicago Telephone Company, "Wet Umbrellas," *Chicago Commerce* 15, no. 12 June 21, 1919): 42.
 25. R. A. Parisian, "The Deskman," *The Telephone Review* 2, nos. 10–11 (October–November 1911): 253. Also "Some Ideas on Water," *The Telephone News* 9, no. 19 (1913): 3.
 26. "The Baby and the Telephone," *The Literary Digest*, December 22, 1917, 17.
 27. "Don't Let Your Baby Suck the Telephone Cord!" *Popular Science Monthly* 92 (1918): 670.
 28. "Don't Let Your Baby," 670.
 29. Setrak G. Eghian, *The Mother's Nursery Guide for the Care of the Baby in Health and in Sickness* (New York: G. P. Putnam's Sons, 1907), 17.
 30. A Freudian or psychoanalytical study might further consider orality as it was negotiated between mother and child, or theorize about the mouth in psychosexual development. See Joseph Sandler and Christopher Dare, "The Psychoanalytic Concept of Orality," *Journal of Psychoanalytic Research* 14, no. 3 (1970): 211–222.
 31. Harvey W. Wiley, "Drugging the Baby," in *The Child Welfare Manual: A Handbook of Child Nature and Nurture for Parents and Teachers, Volume I*, ed. The Editorial Board of the University Society (New York: The University Society, 1915), 193–194.
 32. Fred T. Iddings, "What Is a Telefault?" *The Transmitter* 10, no. 9 (September 1922): 10.
 33. Matthews Company, "You Can't Find Your 'Wet Spots' Unless You Own a Matthews Tele-fault," *Telephony*, April 19, 1913, 13; Western Electric Company, "Looking for Trouble?" *Bell Telephone News* 5, no. 12 (1916): 31.

34. A similar process occurred with electricians who tried to demonstrate their necessity to early electricity users. Carolyn Marvin, *When Old Technologies Were New: Thinking about Electric Communication in the Late Nineteenth Century* (New York: Oxford University Press, 1988).
35. Harris Dickson, "'Hello' Girls," *The Saturday Evening Post*, September 26, 1908, 14–16.
36. Dickson, "'Hello' Girls," 14–16.
37. H. S. Percival, "Colorado Springs District," *The Mountain States Monitor*, January 1917, 26.
38. Gender plays a large role in histories of telephony, both in terms of users and switchboard operators. See, for instance, Claude S. Fischer, "Gender and the Residential Telephone, 1890–1940," *Sociological Forum* 3 (1988): 211–233; Valerie Frissen, "Gender Is Calling: Some Reflections on Past, Present and Future Uses of the Telephone," in *The Gender-Technology Relation*, ed. Keith Grint and Rosalind Gill (London: Taylor & Francis, 2018), 79–94; and Michèle Martin, *"Hello, Central?": Gender, Technology, and Culture in the Formation of Telephone Systems* (Montreal: McGill-Queen's University Press, 1991).
39. Marvin, *When Old Technologies Were New*, 15.
40. For a discussion of repairer "war stories," see Lucy Suchman, *Plans and Situated Actions: The Problem of Human-Machine Communication* (Cambridge: Cambridge University Press, 1987).
41. "Woes of the Trouble Man," *The American Telephone Journal*, May 17, 1902, 323–324.
42. William Fondiller, "The Economic Aspects of Apparatus," Proceedings of the Bell System Educational Conference for Faculty Representatives of Colleges of Liberal Arts and Collegiate Schools of Business, New York, June 21, 1926, 28–31.
43. K. H. Hamilton, "Chase Troubles Away from Your Telephone," *Illustrated World* 31, no. 2 (1919): 271.
44. "Where the Baby Got 'Stung,'" 12; "Don't Let Your Baby," 670.
45. Chicago Telephone Company, "Do Not Let the Telephone Cord Get Wet," *Chicago Commerce* 13, no. 1 (May 4, 1917): 29.
46. Myrtle Smith, "Are You to Blame for Your Telephone Trouble?" *System: The Magazine of Business*, October 1920, 643–644, 728–729; Theodore Stempfel Jr., "Is the Public or the Telephone Girl to Blame?" *Indianapolis Star*, December 5, 1909, SM8.
47. Griswold, "An Educational Campaign," 14–20.
48. "Telephone Statistics Regarding Trouble from Moisture," *Telephony* 73, no. 13 (July–December 1917): 32.
49. "Telephone Statistics," 32.
50. Chesapeake and Potomac Telephone Company, "Telephone Front!" *Washington Post*, February 28, 1917, 12.

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CONCLUSION

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