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Durabilities in the age of disruption

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ABSTRACT

This essay engages with the theme of infrastructural disruption from the perspective of a French deep-sea cable-repair ship (flying under a flag of convenience) docked in Cape Town's harbor. This vessel sails both the Atlantic and Indian coasts of Africa to fix malfunctions and ruptures in the undersea infrastructure through which Internet traffic flows between nations and continents. It is this invisible network of thin, pale cables that hardwires the so-called "Age of Disruption" (Stiegler, 2019). Yet the ship and the infrastructure it repairs also bring us closer to the question of durability – that which is lasting, persistent and constantly maintained. Using a collection of images, photos and ethnographic vignettes, the cable-repair ship allows us to explore durabilities along two axes. First, there are the imperial afterlives of colonial geographies that live in underwater networks of connectivity. Second, there is the hidden and everyday work of maintenance that "navigates" against infrastructural disruptions and, simultaneously, makes (digital) disruptions and innovations possible. Through these different durabilities, the cable repair ship shores up competing notions of disruption, at once something that can be avoided through the work of material repair, and something that should be embraced towards alternatives to dated legacy systems.

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Introduction: Cape Town, a city of disruption

Disruption, according to the late philosopher of technics Bernard Stiegler, captures the current technological moment. In his bleak diagnosis, the constant destabilizing of social and economic life has become the engine of a senseless, careless and destructive capitalism (2019). Yet disruption, and the underlying quest for change, also navigates more ambiguous terrains. In South Africa, for example, the language of change has primed the promise of post-apartheid institutions. Even critics of the Rainbow Nation project have argued that the speed of transformation has not been disruptive enough to mend the scars of racial violence. At the same time, since the transition to democracy

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in the early 1990s, South Africa has been at the forefront of digital disruptions and technological innovation for the entire continent.

Cape Town is emblematic of this multivariate discourse on disruption. Not only does the city have the nickname of "Europe in Africa" (a jab at its enduring patterns of white wealth and spatial segregation, which have resisted efforts to disrupt and reform); it is also Africa's self-proclaimed technological and innovation capital (Odendaal, 2023). The "Silicon Cape" has produced headline-making (and indeed world-changing) technologies. For example, in the late 1990s, Cape Town-based Thawte was the second largest digital certificate provider in the world, prior to one of the heftiest tech acquisitions of its time. In the following decade, Thawte's founder went on to create the Ubuntu Linux operating system, beloved by free-software enthusiasts across the globe, while Naspers, a legacy media company headquartered in Cape Town, waged a lucrative bet on what would later become Tencent's WeChat empire. Also in the early 2000s, Amazon opened a development center in the city, birthing the software architecture of cloud computing (Pollio & Cirolia, 2022). Today, some of Africa's best-known digital companies – the likes of Luno (a crypto wallet), Jumo (a pan-African banking tech company) and Yoco (an all-in-one payment platform) – have a home in the so-called Silicon Cape (Pollio, 2020). From health care innovations to ed-tech start-ups, Cape Town has been awash with aspirant disruptors, some more successful than others.

In any talk of disruption, something must be the object of this destabilizing force. Disruptions are thus inextricably linked to infrastructural *durabilities*. In this visual essay, we explore precisely some of these durabilities, starting from a strange, mobile, floating urban geography that is as inconspicuous as fundamental to the making of a city of disruption: a fiber-optic cable-repair ship docked in Cape Town's waterfront. The ship allows us to explore two dimensions of infrastructural durability. On the one hand, the vessel is an entry point into the permanence of colonial infrastructure geographies. This meaning of durability is what Ann Laura Stoler calls "duress" (2016): the hardened, tenacious qualities of colonial histories to exert pressure on the present. At the same time, however, the cable-repair ship is also a window onto a different world of durability: that of the everyday work of maintenance, caretaking, and repair of infrastructure (Mattern, 2018; Stokes & De Coss-Corzo, 2023). This labor, we will show, works to manufacture permanence and resilience, especially when breakdown, fragility, and decay are the norm (Jackson, 2014). Returning to the question of disruption, the ship is simultaneously enrolled in two projects of disruption: at once fighting against internet failure and, at the same time, priming the system for disruptive innovations (which require this very infrastructure to function seamlessly). To this effect, disruptions are not just radical innovations, but also the malfunctions, failures and interruptions that the ship *navigates* to fix.

Almost paradoxically, it is this work of fixing that ultimately creates the possibility of the redundancy and resilience that buttress digital disruptions. In tracing this relationship between disruption and durability, as seen from a cable-repair ship and the people who work aboard it, we aim to dismantle the false binary between infrastructural legacies and the innovations intent on reconfiguring them. To make this argument, we take this infrastructure as "both an object and mode of inquiry" to reveal its "imperial afterlives" (Cowen, 2020) but also the queer ways in which, from the intimate space of the ship, infrastructural matters are cared for. We are aware that our field trip to the

cable-repair ship and data centers may register under the rubric of the necessarily anecdotal infrastructural voyeurism that often primes how researchers endeavor to find the hidden abodes of the Internet (Mattern, 2016).[1] However, we do not intend to reveal how obscure networks *really work*. Rather, the patchwork of stories and images offered in this piece showcases the laborious legacies, mutualities and multiplicities that indeed also form our broken world.

Imperial durabilities

Cape Town's Victoria and Alfred Waterfront (known as the V&A), is an urban icon – at once a working harbor, a large mall, and one of the most recognized images of the city. While many flashy yachts are docked along the pedestrianized pathway between the water and the shopping center, one of the less noticeable vessels stands behind a guarded gate, flying the Mauritian flag alongside a large orange square on its hull. She is the *Léon Thévenin*, named after the French engineer Charles Léon Thénevin and owned by Orange Marine (a subsidiary of the namesake Orange Telecommunications, headquartered in Paris). She serves one function: to repair the deep-sea cables along the African coasts of the Atlantic and Indian Oceans (Figure 1).

As we climb aboard, on a winter afternoon, the ship gently rocks in the calm waters of the V&A, and against the breathtaking scenery of what pirate Francis Drake legendarily described as the "fairest cape … in the whole circumference of the Earth" (Bickford-Smith, 2010) (Figure 2). Inside, a layered maze of rooms, there is a strange mix of machines and contraptions – some ultra-modern and "high tech" and others decidedly manual, as if recycled from an old industrial site. Coiled inside her metal belly rest thousands of meters of carefully looped cables. On top of the bridge, an official poster from the Orange company says hello, Cześć, 你好,مرحبا, … in seventeen different languages, all greetings centered toward a large French "BONJOUR."

A few photos and memorabilia along the passageways (Figure 3) remind us of the long metamorphoses that turned the global telegraphic network into the coaxial telephone cables of the mid-twentieth century, and later into the contemporary fiber-optic lines of the Internet – the *submarine cable infrastructure* or SCI. Yet SCI is not just an evolution of telegraph submarine cables: it is an "undersea network" that follows the same imperial geographies (Auerbach Jahajeeah, 2025; Starosielski, 2015). Coated by other

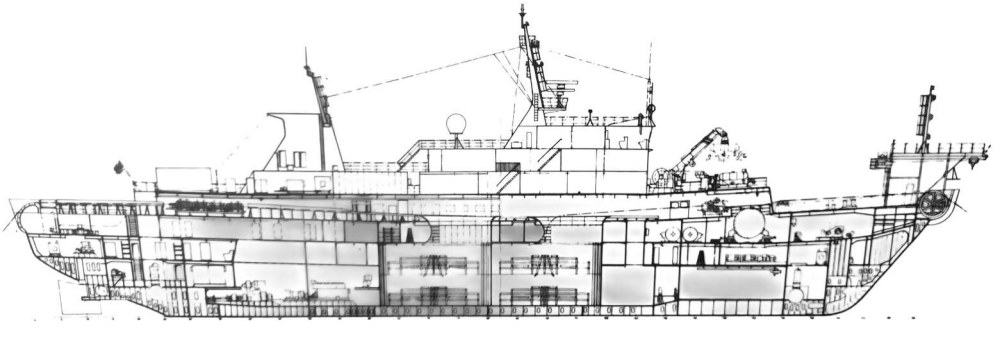

Figure 1. Drawing of the ship, Source, authors' images, altered (2025).

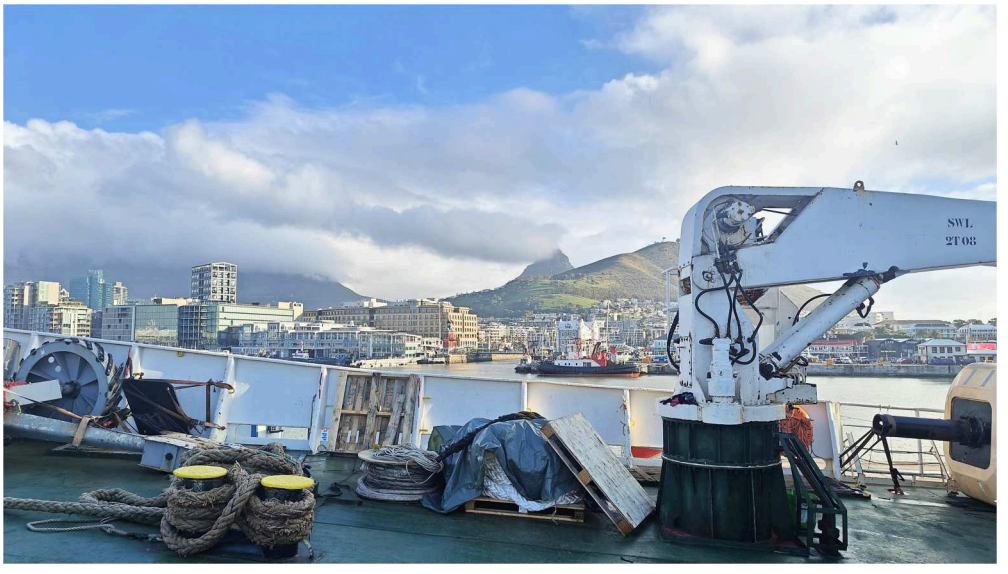

Figure 2. View of Table Mountain from the ship: Source, authors' images (2025).

colonial spoils – the milky resins of Malaysian Gutta Percha and the stubborn latex extracted from rubber tree plantations – telegraphic submarine cables were progressively deployed in the second half of the nineteenth century to connect coastal outposts to the metropolitan capitals of competing imperial powers. This infrastructure, writes Achille Mbembe (2020), was indeed one of the "key technologies" of imperialism and colonial conquest. Just like railroads (Cowen, 2020), telegraphic networks served the complex

Figure 3. Telephone coaxial cables repaired in the past: Source, authors' images (2025).

political project of imposing "discipline at a distance," enrolled in various geopolitical anxieties and urgencies (Dias, 2010, p. 171).

Cape Town was no exception to this story of infrastructural progression. A 1901 map of the Eastern Telegraph Company, the largest telegraph operator in the world, illustrates the different cables that reached the south-westernmost peninsula of the African continent, at the time under British control (Figure 4). One of these cables, linking to Great Britain via St. Helena, had just been laid on the urgency of the second Boer War (1899), in order to better coordinate military operations at a distance (Parsons, 2012). More than a century later, it was a different type of urgency that shrouded the 2009 landing of SEACOM, the first high-capacity Internet cable to hard-wire the African shores. The cable went live just in time for the 2010 FIFA World Cup, which would take place in South Africa the following year and needed to be broadcast across the globe. Anecdotally, as Clapperton Mavhunga narrates (2017), one of the justifications used by then-President Mbeki for hosting the World Cup in South Africa (rather than Egypt) was the impetus of extending submarine cable infrastructure to the tip of the continent, thereby connecting the whole of Africa to the Internet backbone. Today, a decade and a half on, the cables that the *Léon Thénevin* fixes circulate the continent many times over. Some countries are served by upward of ten cables, branching off in different directions to meet up with networks in Europe, Asia and

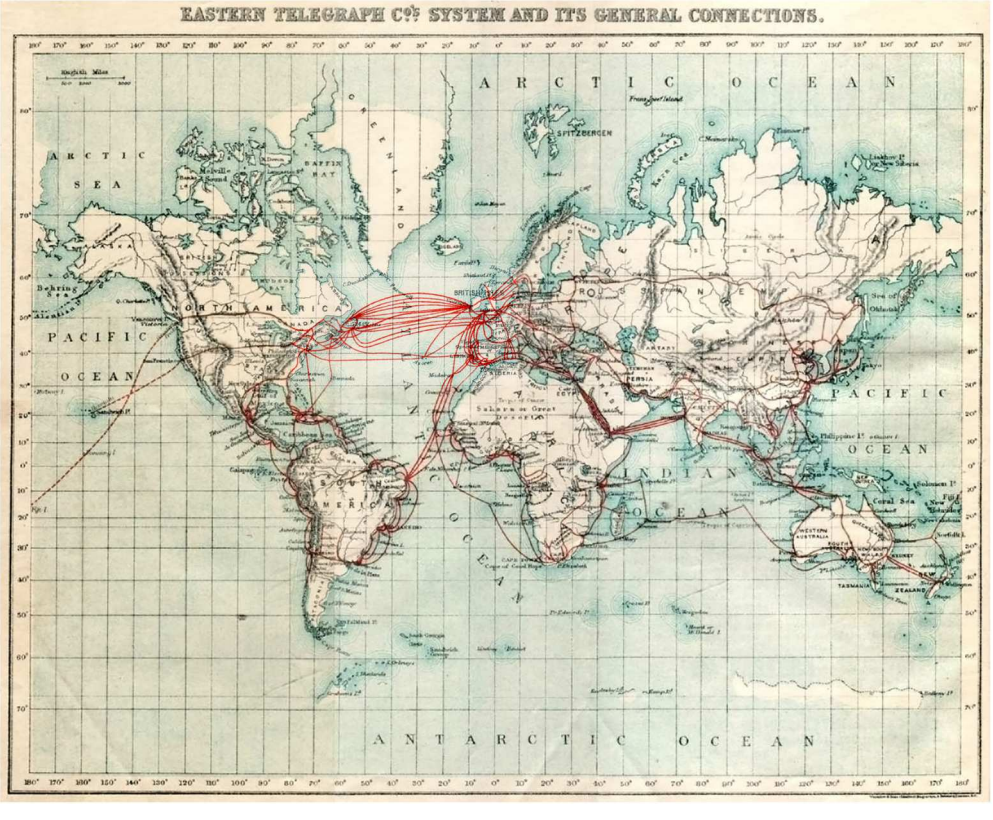

Figure 4. Telegraph cables map from 1901: The Eastern Telegraph Co. (1901). Chart of submarine telegraph cable routes. In: A.B.C. Telegraphic Code, 5th ed. Creative Common Open Source.

Latin America. In Cape Town, which is served by seven cables, lower latency and fewer disruptions have consolidated its position as the Silicon Cape of Africa, and made possible an economy of offshored digital services (Pollio, 2020). A question remains, though: was Mbeki's sensible observation just the result of a fortunate geographical accident?

Probably not.

By the time the first transatlantic cable was laid in 1857, Cape Town was well-established as an anchor in the extensive project of British imperialism. Cecil Rhodes, one of its most influential figures and first minister of the Cape Colony (1890-1896), notably valued the importance of communication networks for the sake of expanding and consolidating British dominions. He even built a temporary monopoly over telegraphic communication between the Cape Colony and Tanganyika, giving materiality to a special form of "subimperalism" across Southern and Eastern Africa (Parsons, 2012). So famed was Rhodes's telegraphic empire that his most iconic representation must be the one in which the English magnate holds copper cables in his hands like reins, harnessing the African continent (Figure 5).

Yet Cape Town's strategic centrality in imperial circulations was older than Rhodes and goes beyond telecommunications. Adam Smith, father of English liberalism, had already noticed it in the eighteenth century. Unlike other colonies, which would decline if run by a monopolistic company, the Dutch Cape Colony, Smith writes in *The Wealth of Nations*, enjoyed surplus markets based on its tactical location on the trade routes connecting East India and Europe. Dutch vessels had an obligatory replenishment stop in Cape Town, on their long journey back. For Smith, it was the geographical mix of centrality and peripherality that gave Cape Town its economic privilege. It was peripheral enough from Europe and Batavia to become central on the route between the colonial and the metropolitan worlds. Telegraphic lines then retraced these shipping lanes, landing at their strategically placed outposts (Starosielski, 2015), only to be followed by their fiber optic successors, which eventually transmitted the 2010 football matches to the rest of the world.

From aboard the ship in Cape Town's harbor, we are also reminded of imperial durabilities beyond British and Dutch expansion. The ubiquitous francophone signs (Figure 6) indicate that the *Léon Thénevin* is managed by a French company and staffed by French naval expertise. After all, France too was one of the major colonial powers on the African continent, and played a pivotal role in developing mobile technologies of "circulation and regulation" to expand military control and economic interdependencies (Dias, 2010, p. 174). In the case of cable repair, the *Léon Thénevin* takes us back to the French engineering dominance in telegraphic systems, fueled by the state military-industrial complex that served France's colonial ambitions (Carré, 1993).

But unlike the British telegraphic networks extension in Southern Africa, which was driven by hybrid private holdings (Parsons, 2012), the French state maintained a monopoly over the deployment of early telecommunications systems. The national directorate of telecommunication in France only became a state company in the late 1980s, under the banner of France Telecom, and started a process of privatization from the 1990s. It was turned into a private company in 2004, and later on, France Telecom merged with Orange. Therefore, the latter benefits from a century-old legacy of colonial public works. The highly specialised cable boats composing the Orange fleet are part of

Figure 5. Rhodes caricature 1892: Source, Sambourne, Edward Linley, "The Rhodes Colossus – Striding from Cape Town to Cairo," caricature, Punch, 1892, in Creative Commons.

this unique history of state-sanctioned expertise, and the company's internationalization strategy allows Orange to latch onto other geographies beyond former French colonies (Marino, 2007).

Figure 6. French sign of an electrocuted worker: Source, authors' images (2025).

Tracing the durabilities of (hydro)colonialism (Auerbach Jahajeeah, 2025), as we have done so far, demonstrates how Cape Town's advantageous geography is the result of old economies, and how France garnered its dominion over telecommunications networks in Africa. These legacies make Cape Town – still at the oceanic crossroads of naval routes and communication networks – the most strategic docking station for *Léon Thévenin*'s adventurous economy of intercontinental repair. As we will explore next, a different story of durability also emerges, one that weaves the afterlives and duress of colonialism together with the tireless labor of maintaining and caring for these vast yet fragile systems.

Repair and redundancy

On one of the walls of the *Léon Thénevin,* staged like a cabinet of curiosities, a display of broken cables shows the disruptions that the ship has fixed over the years (Figure 7). Some cables are bent, others fully twisted, cut off roughly, or give the impression of having exploded into a reedy bouquet of metal fibers. This horror fest of odd interruptions is a visual reminder, not only of the fragility of these small cables, but of the diversity of ways disruption can be caused. From military submarine sabotage, earthquakes and subsea landslides, to intentional theft and fishing boat trawlers, to the rough pounding on rocks closer to shore, the gamut of network failures is wide and visible. The SCI is continuously disrupted, both by human intervention and by nature. Looking at the display, the captain chuckles: "climate change is actually good for our business" (Figure 8).

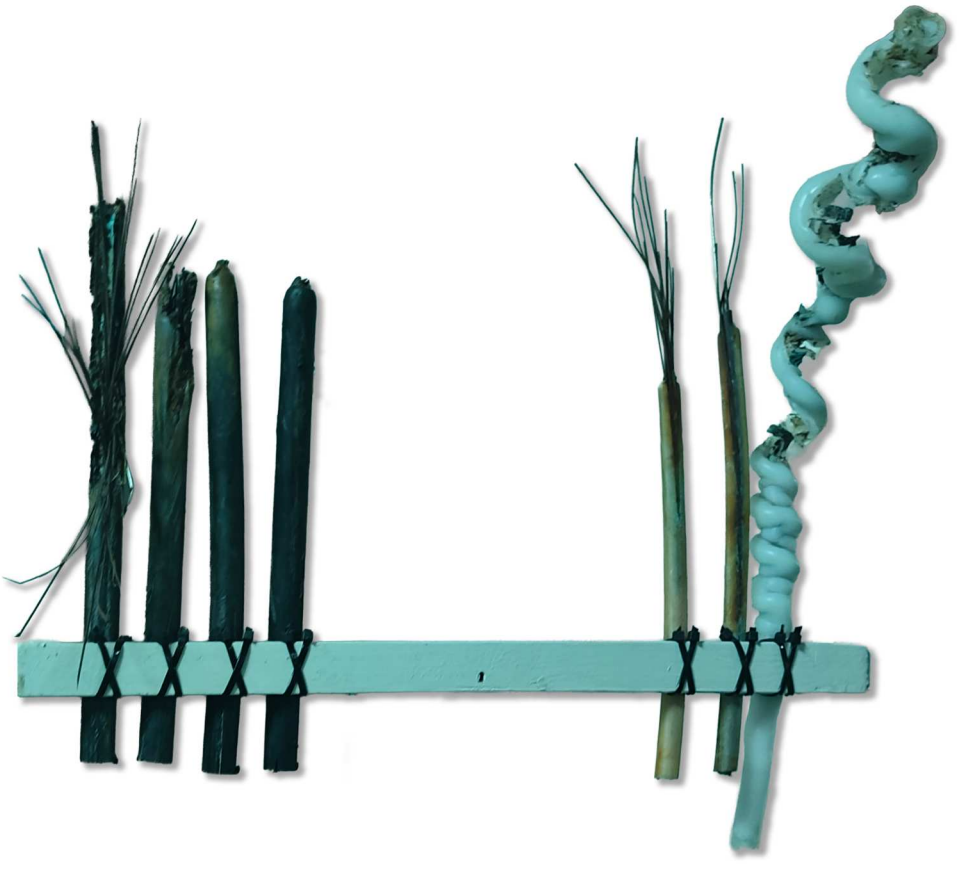

Figure 7. Display of types of broken cables: authors' images, altered (2025).

The *Léon Thénevin* has service agreements with most major cable consortia, contracts which commit the crew to rapid deployment in the event of disruption. Moving their way out of Cape Town's sheltered bay, they set off in the direction of the breakage, often for weeks on end. Repairing an undersea cable is not an easy feat. Cable maps are suggestive, but the exact locations in the depths of the ocean are not known. Neither is the accurate location of the fault, despite the sophisticated reflectometers that identify the distance traveled by light in the cable. Hence, once the ship closes on the area identified as the region of the breakdown, multiple operations begin. Sonars scan the topography of the seafloor. If possible, a Remotely Operated Vehicle (ROV), equipped with cameras, lights, and robot arms, inspects the cable. Finally, the cut. A heavy, claw-like device – the flat-fish grapnel – is dragged along the seabed perpendicular to the cable's supposed path. The grapnel snags the cable and holds one of its ends.

Once this first end is carefully retrieved and the second end hooked to a floating buoy, splicing operations begin. Highly skilled cable technicians cut off the damage, and work to meticulously attach the cable to a new section. Each individual glass fiber, thinner than a human hair, needs to be aligned and fused together between the original cable and the added length. Each connection must be tested for signal. Other technicians then take over, to recreate the multiple layers of waterproofing and outer casing, without a solution

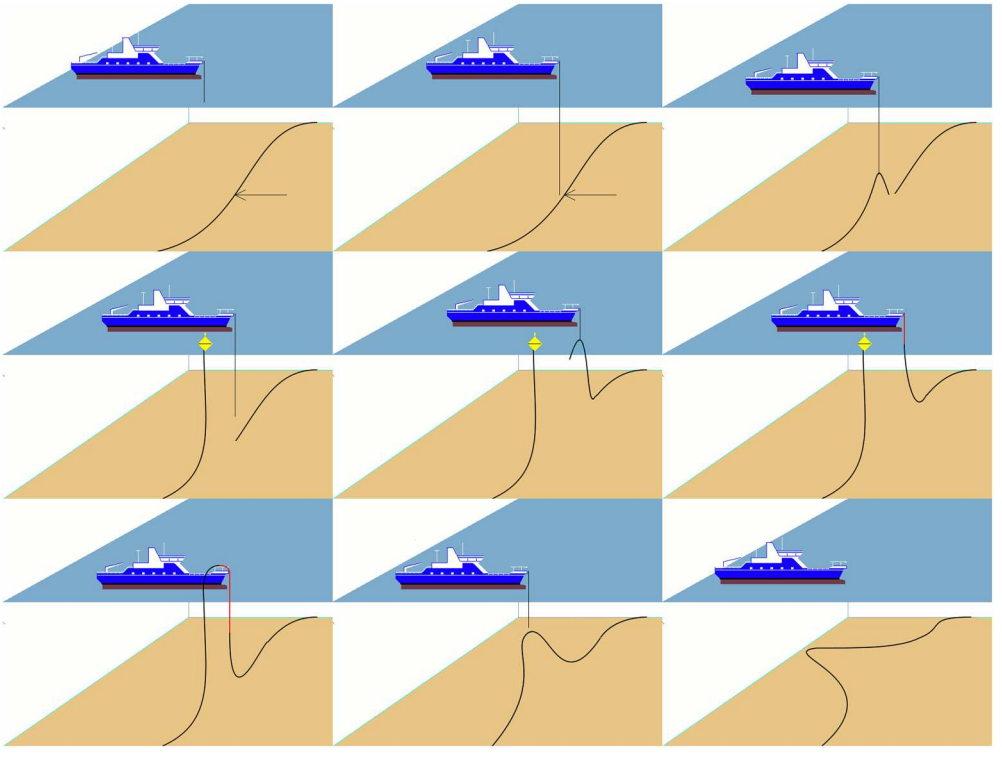

Figure 8. Sequence of cable repair operations: Source, Barbetorte (2008), licensed under CC BY-SA 3.0. Available from Wikimedia Commons. Edited by the authors (2025).

of continuity between the old and the new (Figure 9). After the first splice, the second end of the damaged cable is winched aboard with the same protocol, and a second splice rejoins the two tails. Eventually, the added cable is laid again on the bottom of the ocean, in the shape of a "U."

The literal depths of these operations explain the miles and miles of cables and ropes that rest at the center of the ship (Figure 10). After having released and used this length, recoiling too is a delicate affair; for these cables to be woven and perfectly unraveled when necessary, a skilled workforce manually arranges layers of concentric rings, to optimize space, avoid knots and allow fast deployments. Yet, as we have seen above, cable coilers are hardly the sole experts aboard. From the ROV operators to the cooks in the galley, the *Léon Thénevin* moves a selected squad of masterly laborers. In the splicing room, an old boombox is perched in a corner, providing soothing music and evoking the shared conviviality of work. "It cannot be too loud," the captain explains, "We work 24 hours and some people need to rest at different times." Toiling around the clock, different crews follow a rigid roster of activities. Of course, life at sea is less romantic than bodily demanding and tedious (Khalili, 2024).

As we continue our walk through the narrow passageways on the multiple decks of the ship, all these activities of caretaking appear everywhere. From tending to the old engines – after all, *Léon Thénevin* is much older than the cables it repairs – to fixing, oiling, servicing the very same machines that are meant to fix our broken Internet, a floating world of

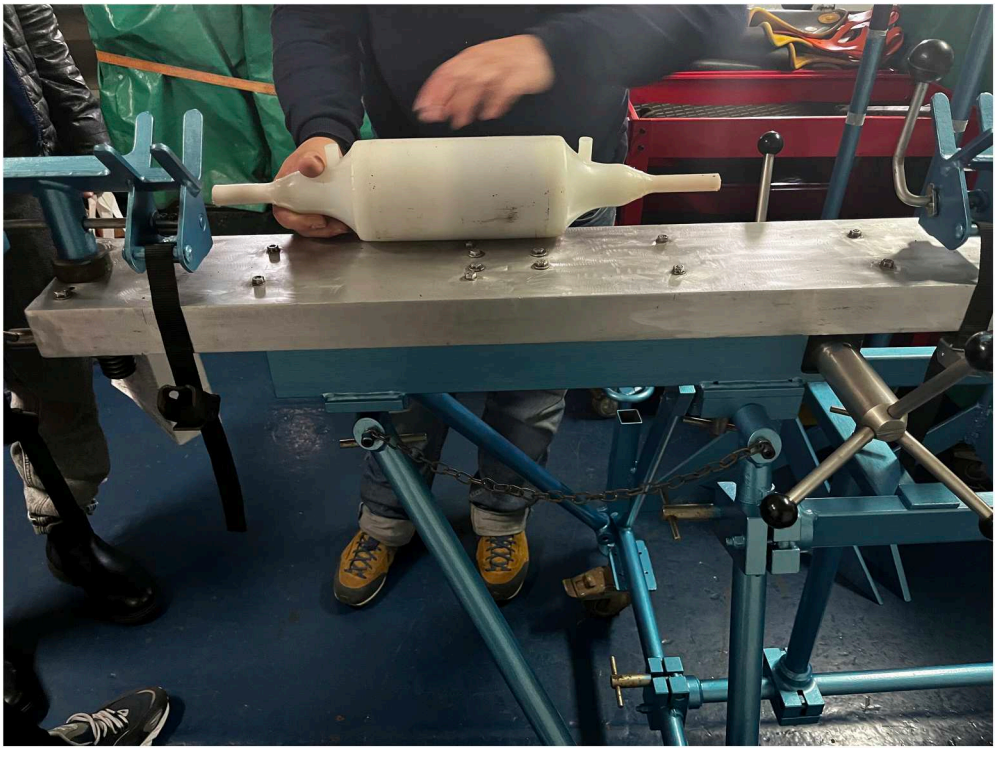

Figure 9. Image of splicing machines: Source, authors' images (2025).

Figure 10. Image of the coils: Source, authors' images (2025).

Figure 11. Image of the robotic arm being fixed: Source, authors images (2025).

maintenance and care beckons (Figure 11). Many other things are cared for. For dining aboard, tables are carefully laid with checkered table cloths. Art hangs on the walls. Sometimes, when a cable emerges, it carries deep-sea creatures attached to its casing. Some may still be unknown to marine biologists. For this reason, the captain takes pictures of the bizarre critters, and sends them to marine life researchers in France. Like a taxonomist of another era, he tells us of his dream of discovering a new sea species. On his

desktop, in a wood-paneled office full of stacked papers, worn-out armchairs and older computers, he shows us high-resolution pictures of his oddest catches (Figure 12).

Meanwhile, in Cape Town, these laborious repair adventures remain largely invisible to the public. Only a few years ago, when the Internet slowed to a trudge, Cape Town's news anchors would speak about cable damage that might take weeks to fix, warning citizens to manage their expectations about connectivity in the interim. While few knew what this work entailed, it was clear that it took time, energy and money to fix. But today, network redundancy and rerouting (owing to the many cables available and to

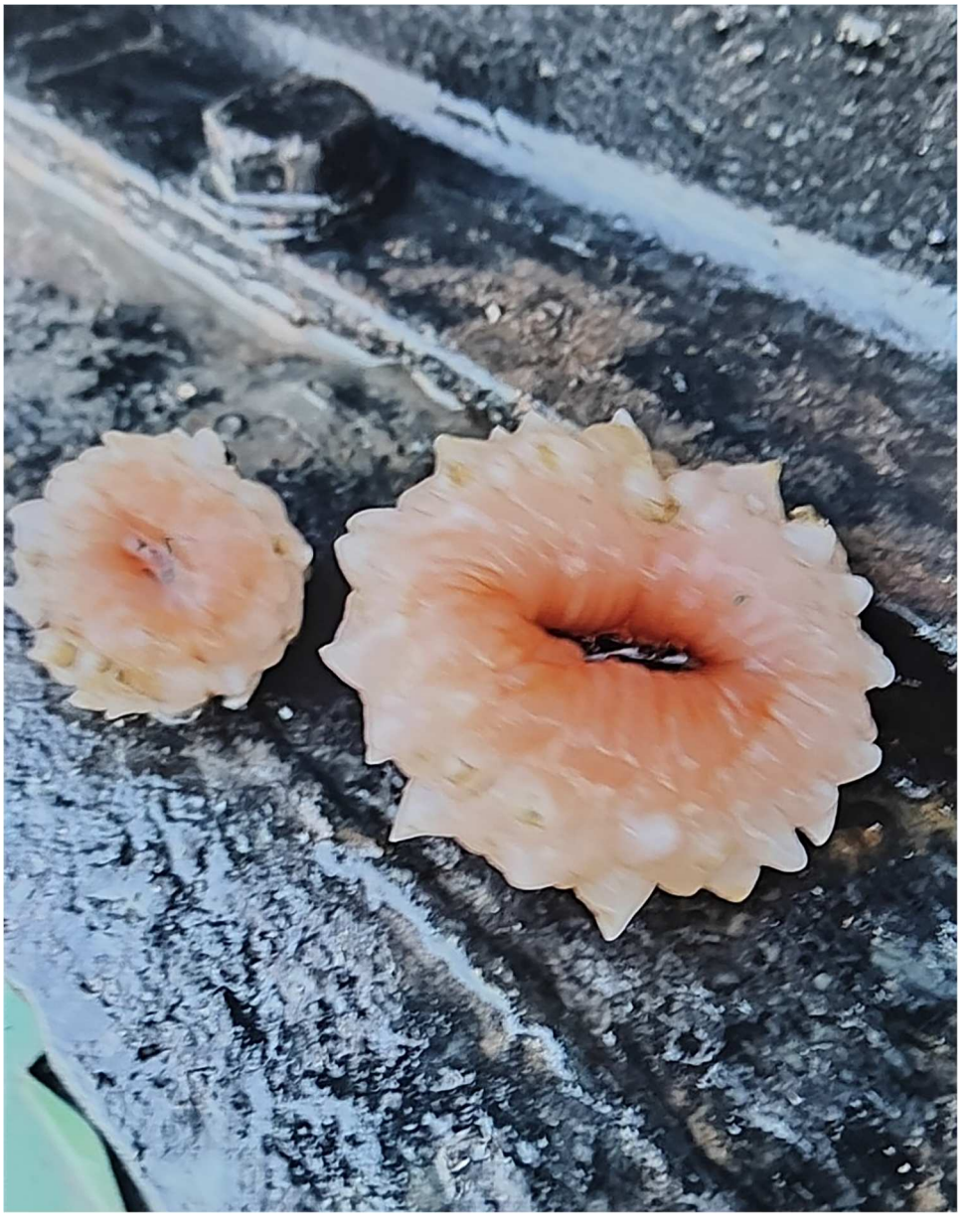

Figure 12. Sea monster: Source, authors images (2025).

data centers) has changed both the experience of the Internet for Cape Town users. As the captain tells us, "if one cable is down, they just route communication through another." This makes disruptions in the SCI almost imperceptible, making invisible and routine the labors of infrastructural durability (Stokes & De Coss-Corzo, 2023) carried out by the *Léon Thénevin* and its crew.

Coda: disruption otherwise

A few months later it is the (southern) summer of 2025. We are now in the chilly, temperature-controlled and windowless meeting room of Cape Town's (and one of Africa's) largest colocation data center. Here, several of the cables maintained by the *Léon Thénevin* have their terrestrial landings (managed by dedicated middle-mile providers), branching into rows and rows of server cabinets. On the screen, as part of a well-rehearsed presentation from their marketing manager, a slide is showing the cable map of the world. It is demonstrating the strategic centrality of Cape Town, and hence of the data center itself, to the geography of the Internet. The map is more than reminiscent of the telegraphic spaghetti that we have seen in the 1901 Eastern Telegraph Company network: it is almost a carbon copy of it. As a data center engineer explains to us, a new disruption is on the horizon. Thanks to its geographic centrality, across different routes between the Atlantic, Indian and even the Pacific oceans, Cape Town is the "perfect location" for the increasingly data-hungry and profit-yielding operations of machine learning. This favorable future of offshored AI training, they go on to explain, will be possible not just because of the city's unique position, but also because of a resilient Internet infrastructure that, almost uncannily, never breaks down. In reality, it does.

Still, these two stories of Cape Town's advantages, which fill the eyes of data center managers with hope, do speak to the two meanings of durability that we have explored in the retelling of our visit to the *Léon Thénevin.* Durability must be understood as the "infrastructural inheritance" (Cupers & Sewordor, 2025) of a colonial past, that which replicates older geographies of imperialism into the legacies, locations, connections, economies and monopolies of Internet infrastructure, but also as the care-full, laborious voyages of repair that the *Léon Thénevin* undertakes at each breakdown – however imperceptible these may be in a city of redundant connectivity.

Just like durability holds many meanings, so does disruption. Disruptions are both the malfunctions repaired by the *Léon Thénevin*'s crew and the promissory innovations imagined by the tech enthusiasts, startups and investors that populate the Silicon Cape. The durabilities that the ship makes concretely visible actually show how mutual and contingent these apparently different worlds of disruption are. In this ambivalence, yet another meaning of disruption may emerge, well beyond the mythical attributes that business schools and bullish techies attach to technological change. In a city like Cape Town, still wounded by the racialized violence of its past, to think of disruption might take us to the undoing of hegemonic legacy systems that have their roots in that past. Across sectors, from finance to mobility, settled infrastructures are seen to hinder progress, exclude swathes of the population, and consolidate power in the hands of a few. Could disruption be an intervention there? Of course, as the cable ship shows, the intricate economies of the Internet are not external to these colonial legacies. But perhaps more effective, affordable, and dynamic alternatives could be the disruptions that we

want? "Infrastructure," writes Cowen (2020), "is not only a vehicle of domination – it is also a means of transformation." In Cape Town, many activists, organizers, experts, academics, bureaucrats and even businesses are well aware of this possibility (Odendaal, 2023). It is the possibility of a *disruption otherwise*, which mirrors the *durability otherwise* that we encountered in the caretaking that the *Léon Thénevin* offers to a broken, likely unjust, undersea world.

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Note

1. After all, even access to the invisible infrastructure of the Internet is often hard to plan as a unified research strategy. In this case, our visit to the cable repair ship became possible because of a serendipitous encounter. Just like other ethnographic "fields," first-hand observations of Internet infrastructure is a "patchwork" of privilege, fortuitous circumstances, planning and waiting (Günel & Watanabe, 2024).

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