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Heroic Repair: Labor and Disaster

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The 1906 San Francisco Earthquake and Fire broke physical information and communication technologies at the very moment that people wanted to connect with loved ones using the telegraph – the quickest way to send messages. Sending telegrams was one means by which people connected with each other, but the telegraphic infrastructure, like much of the physical infrastructure, was badly damaged. Telegraph operators labored long hours to repair the telecommunications infrastructures or to enact workarounds. The telegraph companies credited employees with taking great personal risk to ensure that the world knew about the disaster -- these operators and engineers were called "heroes." However, even as these employees worked in exceptional circumstances and were celebrated for their heroic actions, they were reproducing the "normal" ordering of information infrastructures. Telegraph companies were taking money from people to ostensibly deliver telegrams via speedy but broken telegraphic infrastructure when in reality often sending the telegrams through the mail. These heroic telegraphers went on strike less than a year after the earthquake and fire when Western Union refused their requests for temporary raises to accommodate the cost-of-living increases in the damaged San Francisco area. While the capitalists running the telegraphic infrastructure publicly celebrated the improvisational work of their employees as heroic, the telegraph did not do what its clients paid for and swindled them. After 89 days the strikers went back to work with no gain. It was a moment of extraordinary upheaval and creative repair which nevertheless seemed to reinforce ordinary political economic ordering.

Keywords: crisis, critical disaster studies, infrastructure labor, repair, information and communication infrastructure

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Introduction

The April 18, 1906 San Francisco Earthquake and Fire destroyed the residences of about half of the population of San Francisco – approximately 200,000 people. Those people dispersed throughout the Bay Area. Many families were separated as they fled the fire to the western parts of San Francisco, to the south to Daly City, to the east across the bay to Oakland and Berkeley and north to Marin County.[1] An individual's entire social geography would have radically shifted as people dispersed, and the means by which people reconnected to each other in these desperate moments—the information infrastructures available to the public—was equally disturbed and even destroyed. Telegraph industry trade publications and the popular press described the labor of those continuing to work on the telegraph as "heroic." Telegraph operators and engineers were lauded for their role in enabling communications after the earthquake in apocryphal tales:

> While huge structures of stone and steel rocked their doom, and whole streets of tenanted buildings crashed to the earth while flames and explosions were blotting out lives by the hundreds, property by the millions, one slender span of wire 500 miles long withstood the forces of ruin that were turning a city mad.
>
> Over this fragile cable, linking the first and second cities of a great State, a heroic operator, keeping his post while others fled away, flashed to the world the first news of the worst, the most spectacular disaster in the annals of this country.[2]

Telegraph company employees worked to ensure that news could still be sent after the earthquake and amidst the destructive fire. The trade publication, *The Telegraph Age*, described telegraph workers particularly dramatically:

> The awful tide of disaster, by earthquake and fire, which swept over San Francisco on April 18 and on subsequent days, and almost wholly wiped that fair city from off the face of the earth, presented a scene of horror of which no one not present can possibly have any adequate conception. Examples of personal heroism, shown under the most dreadful of conditions calculated to distract humanity, in which the highest type of Christian character, many courage and devotion to duty were manifest, were exhibited without end, and reflect in the highest possible manner the worth and fortitude of the inhabitants of the stricken city. Many such scenes had their picturesque side in the fearful drama being enacted, vividly appealing to the popular imagination, but none the less because unseen, was the work performed by the telegraphers less heroic. Remaining at their keys in imminent danger from falling walls and approaching fire, these men performed their duty and gave to the world news that shocked mankind with its terrible story, told with a wealth of detail and fidelity to truth the like of which has never hitherto been equaled.[3]

The telegraph companies credited telegraph operators with the work of ensuring that the world knew about the disaster, taking great personal risk to do this.

Here I focus on the concept of "heroic repair," a category of work described in post-earthquake narratives to highlight the work of telegraph operators after the earthquake. The term heroic repair is borrowed from Simon Schaffer, whose discussions of heroic repair focus on

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[1] Dyl, *Seismic City: An Environmental History of San Francisco's 1906 Earthquake.*

[2] "Sister City Stunned By Tidings of Doom" *Los Angeles Times*, April 19, 1906.

[3] "The Telegraph in the San Francisco Calamity," *Telegraphic Age,* May 1, 1906

scientific instruments which supported colonial activities such as survey work. [4] These tools, not made for the lands and circumstances in which they were being used, frequently broke, and stories of the "heroic repair" work became part of the legacy of Europeans traversing and occupying foreign lands.[5] Schaffer's "hagiographic repair story" shows how objects were manufactured in Europe but used in climates that might affect materials in unexpected ways. The repair work by colonial surveyors occupies a space less of repair than of generative creation as technologies were adapted to new environs, but also as scaffolding for "colonial power relations."[6] This version of noted and lionized repair helped the powerful maintain control in the face of the chaos of "foreign" lands.[7] Thus, following the 1906 Earthquake and Fire, heroic repair not only highlights the work of the telegraph operators, but also the context of telegraphy corporations and essential worker labor relations. As I explore below, heroic repair actually served to reproduce the "normal" working of the telegraph company focused on profit-maximizing and reinforcing existing social relations.[8]

The heroic repair perspective in some ways contrasts with research on infrastructure, maintenance, and repair, which finds that repair work is of low status, dismissed as unimportant, overlooked and underfunded, particularly when viewed next to the valorized showpieces of high capitalism such as "innovators," and "entrepreneurs."[9] Moments when repair work is not only noticed but called heroic could invert the otherwise overlooked status of repair work. Calling work heroic seems to lionize the oft-ignored creative maintenance and repair efforts of people who make telegraphic infrastructures run. But, as this essay explores, the label of "hero" is disingenuous. In this story, the heroic repair work is used to shield the telegraph corporations from accusations of fraud as a San Francisco Grand Jury accused the telegraph corporations, particularly Western Union of collecting fees for sending messages by telegraph when they were in fact mailing them and sending them by messenger via train or boat.

Furthermore, though heroic repairers experienced a moment of laudatory attention, this was short lived. While one might hope that the heroic efforts of the telegraph company employees might afford them some kind of appreciation when it came time to negotiate pay and working conditions in the post-earthquake and fire Bay Area, this was not the case. These heroic telegraphers went on strike less than a year after the earthquake and fire when Western Union refused their requests for temporary raises to accommodate the cost-of-living increases in the damaged San Francisco area. The strike was taken up by operators all over the country. Nevertheless, after 89 days it failed. In the moment after the earthquake, the visibility of telegrapher labor was raised only to come crashing to earth a year later. Drawing on this case, I argue that the concept of heroic repair articulates the relations of power amongst the different actors who produce information and communication infrastructure. The work of the heroic repairers was both extraordinary post-earthquake and very ordinary in that it reinforced the

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[4] Schaffer, "Easily Cracked."

[5] Schaffer, 713.

[6] Schaffer, 713.

[7] As ethnographers such as Brian Larkin, Nikhil Anand, and Lilly Nguyen note, infrastructures are rarely smoothly functioning in parts of the world outside of the privileged enclaves in the USA and Europe. Larkin, *Signal and Noise : Media, Infrastructure, and Urban Culture in Nigeria*; Anand, Lewis, and Straw, *Hydraulic City*; Nguyen, "Infrastructural Action in Vietnam."

[8] Hochfelder, *The Telegraph in America, 1832-1920*; Schwantes, *The Train and the Telegraph*; Wolff, *Western Union and the Creation of the American Corporate Order, 1845-1893.*

[9] Graham and Thrift, "Out of Order"; Jackson, "Rethinking Repair"; Russell and Vinsel, "After Innovation, Turn to Maintenance."

centrality of the telegraph companies and did little to shift the balance of power from labor to management within the telegraph companies.

During the COVID-19 pandemic, public figures have engaged in lengthy discussions of the heroism of essential workers. At the beginning of the pandemic, some surmised that this revaluing of the essential workers might empower workers to organize and gain labor rights. While essential workers and heroic repairers take extraordinary risks and exercise enormous creativity during crises, this paper shows that moments of infrastructure labor visibility during disasters do not necessarily translate into "wins" for labor. That is not to say that COVID cannot be transformative – perhaps it will be the kind of "focusing event" that can transform labor policy.[10]

Below I consider heroic repair through the methodological lens that, paradoxically, disasters can be opportunities to understand expectations of the "normal" workings of the everyday. I will then describe the context of the heroic repair of the telegraph after the San Francisco Earthquake and Fire. I briefly contrast this heroic repair of telegraphic infrastructure with the slower practices of the bureaucratic technologies deployed by the post office before examining the plight of the heroic telegraphers after the earthquake. Last, I zoom out even further and return to Schaffer's notion of "heroic repair" as an analytic to uncover colonial relations and show how heroic repair also articulated settler colonial relations. In the essay conclusion, I return to the theme of disasters as catalysts for change or continuity. I suggest that, perhaps because information and communication infrastructures and the organizations that power them are so core to publics' experience of disasters, their stability and continuity is crucial making the political economic relations which produce seem so stubborn.

Disasters and the "normal"

In the sense that it shores up the ordering of power, heroic infrastructural repair is both extraordinary and "normal". In the case of the 1906 earthquake, work was called "heroic" because it saved infrastructure, and, to a certain degree, reduced the anxiety of the instability of being "primitive", restoring powerful entities, such as telegraph companies, to their rightful position as a background "working" technology – this is "normal".

Disaster researchers from different fields consider whether disasters are the products of the "normal" workings of society and sites to see how the "normal" gets reconstructed, versus ideas that disasters are an exceptional opportunity to witness the most basic aspects of "human nature." Disaster historian Steven Biel writes that efforts to respond to disasters are often efforts to restore normal.[11] For historians, disasters can both destroy evidence and be an impetus for recording expectations of everyday living and saving it in archives; moments of upheaval prompt documentation as survivors lament their suffering and change in terms of their expectations of how things *should* be working.[12] Because of this, historians of disaster have suggested that disasters are, paradoxically, revealing research sites to understand everyday life. Disasters are situated in spaces amongst people who reflect and refract the past when their present moment is violently disrupted. What people believe is "normal" is clear when the fragility of the normal order is both

[10] Kraft, *Havoc and Reform*; Birkland, *Lessons of Disaster*; Ellis, *Letters, Power Lines, and Other Dangerous Things.*

[11] Biel, *American Disasters*, 5.

[12] Walker, *Shaky Colonialism.*

broken and revealed.[13] The "normal" that is revealed post-earthquake often comprises already dominant institutions and ideologies. Biel and others suggest that this "normal" may "lay . . . bare the injustices, inequities, or inefficiencies rather than the beneficence of the status quo."[14] The efforts to "return to normal," are efforts to reinscribe and reinforce pre-disaster racial, sexual, class and gender social orderings.

But that is not to say disasters are not catalysts of change. Anthropologist Vivian Choi describes disasters as both exposing "the most embedded of social issues," where "disasters have the potential to highlight and even exacerbate existing social tensions, at the same time also creating new ones."[15] While disasters can be moments to understand the most embedded social structures, or the most subtle beliefs about how things should be, disasters can also be moments where institutions are upended or people can imagine just distribution of resources.[16] Even if disasters don't impact policy in the short term, realignments of power can happen in decades-long aftermaths of disaster.[17] This account shows that disasters can both precipitate change and motivate dominant institutions to resist changes.

The idea that disasters are a site to understand what people believe is normal, in the sense of what everyday information infrastructure should be, is counterintuitive. Contemporary stories of disaster often highlight the extraordinary – incredible feats of human action such as heroic repair. What I want to suggest is that disasters are both. Crises can tell us a lot about how dominant groups expect the world to work; disasters reveal arrangements of powerful institutions. *And* disasters occasion extraordinary actions to "get back to normal." The heroic work that brings these infrastructures back to normal is part of the political economy of infrastructure production.

Methodologically, it is not just historians who suggest that moments of breakage might be salient for analysts to understand the everyday in extreme moment, infrastructure researchers also find that breakdowns are important moments for historical and infrastructural research. Infrastructures ideally function as "enabling resources" to users until they are not enabling; in other words, infrastructure is taken for granted until it doesn't work. A key quality of the infrastructural ideal is that its inner workings are transparent to those for whom it is an enabling resource, but as information geographers Stephen Graham and Nigel Thrift observe, "The sudden absence of infrastructural flow creates visibility, just as the continued, normalized use of infrastructures creates a deep taken-for-grantedness and invisibility."[18] Infrastructure researchers in STS describe infrastructures as relational – one person's infrastructure is another's daily work.[19] For example, a postal employee's daily work to keep infrastructure running may be infrastructure (an invisible enabling resource) to others. Those whose practices make use of infrastructures as

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[13] Sarat and Lezaun, *Catastrophe*, 1.

[14] Biel, *"Introduction,"* 6.

[15] Choi, "After Disasters," 173–74.

[16] Solnit, *A Paradise Built in Hell: The Extraordinary Communities That Arise in Disaster*; Davies, *Saving San Francisco: Relief and Recovery after the 1906 Disaster*; Finn, Srinivasan, and Veeraraghavan, "Seeing with Paper."

[17] Choi, "Anticipatory States"; Fortun, *Advocacy after Bhopal Environmentalism, Disaster, New Global Orders*; Walker, *Shaky Colonialism*; Birkland, *Lessons of Disaster*; Ellis, *Letters, Power Lines, and Other Dangerous Things*; Kraft, *Havoc and Reform*.

[18] Graham and Thrift, "Out of Order"; Marvin and Graham, *Splintering Urbanism : Networked Infrastructures, Technological Mobilities and the Urban Condition*; Star and Ruhleder, "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces"; Bowker and Star, *Sorting Things Out: Classification and Its Consequences*.

[19] Star and Ruhleder, "Steps Toward an Ecology of Infrastructure: Design and Access for Large Information Spaces." See Sandvig for a discussion of the "relationists." Sandvig, "The Internet as an Infrastructure."

enabling resources are also constitutive of infrastructures' "normal" working. The 1906 earthquake was a moment where telegraph "users" no longer had the privilege to take the working of the infrastructure for granted. Because infrastructure is relational and embedded, experiences with different sociotechnical assemblages as infrastructure will be multiple, as there are also many information infrastructures.

Heroic to the Extreme

At the time of the 1906 Earthquake and Fire, San Francisco was the wealthiest and most powerful city in the Western United States, so much so that geographer Gray Brechin termed it *Imperial San Francisco*.[20] In addition to a substantial military presence, San Francisco was dominated by several corporations and wealthy industrialists. Many of those people had accumulated fortunes from the extractive and railroad industries. The telegraph was key to the workings of many American corporations at this time – it helped coordination of and centralization of control within sprawling enterprises.[21] Newspapers, the dominant organs of San Francisco's public sphere, relied on the telegraph for their work.[22] The biggest American telegraph company at this time was indisputably Western Union.[23]

The telegraph, as I noted earlier, was greatly in demand after the earthquake and as the fire burned San Francisco. People mobbed telegraph offices attempting to send telegrams to San Franciscans, and people in the Bay Area went to telegraph offices in droves to send telegrams to people outside the Area.[24] Two telegraph companies connected San Francisco to continental United States: the Western Union and the Postal Telegraph-Cable Company. Popular histories of the 1906 Earthquake and Fire often quote the last telegram sent by the Chief Operator from the Postal Telegraph Office in San Francisco at 2:20pm on the day of the earthquake. :

> The city practically ruined by fire. It's within half block of us in the same block. The Call building is burned out entirely, the Examiner building just fell in a heap. Fire all around us in every direction and way out in the residence district. Destruction by earthquake something frightful. The city hall come stripped and only the framework standing. The St. Ignatius church and college are burned to the ground. The emporium is gone, entire building, also the old Flood building. Lots of new buildings just recently finished are completely destroyed. They are blowing up standing buildings that are in the path of the flames with dynamite. No water. It's awful. There is no communication anywhere and entire phone system is busted. I was to get out of here or be blown up.[25]

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[20] Brechin, *Imperial San Francisco*.

[21] Hochfelder, *The Telegraph in America, 1832-1920*; Wolff, *Western Union and the Creation of the American Corporate Order, 1845-1893*.

[22] Kielbowicz, "News Gathering by Mail in the Age of the Telegraph: Adapting to a New Technology"; Blondheim, *News over the Wires*.

[23] John, *Network Nation: Inventing American Telecommunications*; Hochfelder, *The Telegraph in America, 1832-1920*; Schwantes, *The Train and the Telegraph*; Wolff, *Western Union and the Creation of the American Corporate Order, 1845-1893*.

[24] "Crowds Begging Temblor News," *Los Angeles Herald,* 19 April 1906; "Chicago People in Much Anxiety," *Chicago Daily Tribune*, 19 April 1906; "Inquiries Swamp Telegraph Lines," *Chicago Daily Tribune*, 20 April 1906.

[25] Van W. Anderson, "The Story of the Bulletins," *The Pacific Monthly,* Vol 15, p744.

Harrowing accounts of telegraph operators and telegraph office managers describe the workers' effort to find working telegraph lines in San Francisco and Oakland; the work of telegraph operators was described as "heroic to the extreme."[26] For example, Postal Telegraph office employees rushed to work after the earthquake, including the telegraph operators and the electrician who made repairs and assisted with the onslaught of telegrams. As the fire spread, the operators were required to evacuate their building, grabbing their equipment and fleeing.[27]

Telegraph company employees worked quickly to establish new offices to replace the ones that burned in San Francisco. The newspaper stories of the repair labor of the telegraph company employees underscores how important the working telegraphic infrastructure was to the power of the newspaper companies and thus how important these repairers were. Newspapers relayed the first news of the earthquake sent over Western Union cables by Chief operator, H. J. Jeffs:

> Perched on a thirty-foot pole, Jeffs gave the capital the first story of the disaster sent out by wire at 8:30 o'clock in the morning. In quick succession, by means of relays, Los Angeles, Salt Lake, Denver and other places heard of calamity that had befallen the metropolis of the Pacific Coast. For eighteen hours Jeffs stuck to his lofty perch trying with the patience of Job to straighten the tangle in the wires with a small set of testing instruments he had obtained at the pier. This was a heroic task, for the mighty sway of the temblor had brought the wires together, tying them up in great confusion.[28]

Jeffs repaired crossed and broken wires and set up a makeshift office in Western Oakland where the cables that connected burnt San Francisco with Eastern California emerged from the bay. Several days after the earthquake, more equipment arrived via train and the new Oakland office was connected to other Western Union offices.[29]

Heroism as a shield

While the telegraph employees were enabling the telegraphic infrastructure to continue working, it was working in a very limited capacity. Yet Western Union continued to collect thousands of telegrams from people throughout the afternoon of the day of the earthquake.[30] They also collected fees from their customers who believed that Western Union could send the telegrams by wire. But the telegrams were sent by mail and messenger, drawing complaints from San Franciscans and resulting in a Grand Jury investigation and report. In newspaper articles that anticipated the release of the Report, Secretary of the Grand Jury Myrtle Serf gossiped about the investigation

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[26] Several first person accounts of post-earthquake telegraphy heroicism appeared in the trade publication, *Telegraph Age*: H. J. Jeffs, "The Western Union in the San Francisco Disaster," *Telegraph Age*, 1 June 1906; Paul Cowles, "The Associated Press Men's Work at San Francisco — How the Earthquake News was Gathered and Sent Out," *Telegraph Age*, 1 June 1906; J. W. Whiteley, "Personal Experience of the Telegraphers at San Francisco at the Time of the Earthquake and Fire," *Telegraph Age*, 16 June 1906; A. J. Esken, "Personal Experience of the Telegraphers at San Francisco at the Time of the Earthquake and Fire," *Telegraph Age*, 16 June 1906.

[27] Esken "Personal Experience of the Telegraphers at San Francisco at the Time of the Earthquake and Fire" *Telegraph Age*.

[28] "Telegraph Office Perched on Pole: How the Western Union Built a New Plant in Four Days," *San Francisco Chronicle*, April 30, 1906

[29] Jeffs, "The Western Union in the San Francisco Disaster," *Telegraph Age*.

[30] James B. Stetson, "San Francisco during the eventful days of April 1906: personal recollections," page 10, Bancroft Library. Last accessed on 23 April 2012: http://content.cdlib.org/view?docId=hb4p3007dw&brand=oac4.

noting that evidence of Western Union mailing telegrams was piling up: "F. McCann of Alameda, who volunteered his information, testified that he saw a messenger boy on the Owl train from Los Angeles on the night of the 19th who said he had 5,000 telegrams for San Francisco and Oakland which he was bringing here."[31]

The San Francisco Grand Jury issued a report in June 1906 which found that Western Union and the Postal Telegraph-Cable Company took $1,000,000 in fees to send telegrams -- telegrams which were then sent through the mail, a service that was free to earthquake survivors. Western Union in particular was called out as culpable in the report. Widely quoted it argued: "The committee believes that the company [Western Union] committed the grossest fraud in maintaining its sign purporting to be doing a telegraphic business, when in reality it was taking the people's money and sending messages by messenger or by mail."[32] The report argued that Western Union had two telegraph lines to the Eastern United States – thanks to the heroic repairers – in the week following the earthquake. One line was dedicated to government business and the other to the Southern Pacific Railroad. The report further alleged that there were only two linemen to do repairs, in their view an inadequate response to the catastrophe. However, as the Grand Jury report stated and the companies confirmed, the telegraph companies knew that the telegrams were going to be sent through the mail or delivered on paper via boat or train. To the Grand Jury, this was an outrageous abuse of vulnerable people.

Western Union was unapologetic and defiant in the face of the report. The company's bosses used the work of repairers, lauded in the pages of the newspapers (who were dependent on the telegraph) and telegraphic trade press, to defend themselves:

> The celerity with which these facilities were restored has been commented upon in the most favorable terms by everybody connected with the telegraph service or having knowledge of the great difficulties which were surmounted.... On the Saturday following the beginning of the work 180 operators were at work. While this building [in West Oakland] was in the process of construction a large force of men was at work testing out and repairing our submarine cable under the bay and our underground system in San Francisco.[33]

Colonel Clowry of the Western Union attempted to explain that mailing telegrams was standard operating procedure in times of disaster:

> Of course we mailed messages. We always do in a crisis of this sort. That's nothing new. Whenever there is trouble and we can't get our messages through we telegraph to the nearest point we can reach and then either mail or send special messengers with the messages. There is never a time on this continent that our lines are not down somewhere. Suppose a storm destroys our lines in Iowa. There will be a big accumulation of messages in Chicago, with no possibility of forwarding them under thirty-six hours. Then we would send a special messenger by train to the nearest station beyond the break and telegraph from there.[34]

These practices were apparently so common that the company bosses argued: "Much the same thing was done at Galveston, Baltimore, and other disasters."[35]

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[31] "Grand Jury Inquiring into Telegraph," San Jose *Evening News,* 7 June 1906.

[32] "Want to Indict Western Union," *San Francisco Call*, 14 June 1906.

[33] "Malice! Says Western Union to Grand Jury," *San Francisco Chronicle*, 17 June 1906.

[34] "The Telegraph Companies Refute the Action of the San Francisco Grand Jury," *Telegraph Age*, 1 July 1906.

[35] "Telegraph Men Reply: Call Charges Wicked," *New York Daily Tribune*, 16 June 1906.

The Grand Jury had anticipated the argument that mailing telegrams was standard operating procedure:

> You will also find throughout the testimony a mass of contradictions between the various officials and employees who are examined. You will find testimony stating that it is a rule of the Western Union Telegraph Company to mail telegrams, when their service is such that they cannot transmit by wire. But your committee desires to state that on no form of telegraph blank, nor in any information publicly given has such a claim ever been made.[36]

Regardless of whether sending telegrams by messenger and mail were standard practices known to the Western Union bosses and employees, they were a surprise to the Grand Jury, who presumed that the public would also be perturbed by their report findings.

Still, telegraph company bosses reiterated the sacrifice of the telegraph operators who spent their post-earthquake days working rather than attending to their families, telling patrons that they were simply obeying "common carriage" laws by accepting all the messages, and reminding the public that they sent telegrams for the newspaper companies and the relief organizations for free.[37] Further, the telegraph companies implicated the heroic telegraph operators as the people who decided what to send by mail: "When they [telegraph operators] got messages they sent them, frequently by mail, to the place they thought was most likely to reach the receiver."[38] The work of the heroic repairers was used as a shield and source of blame for deceptive profiteering by the telegraph companies.

The Grand Jury also recommended that President Theodore Roosevelt take up the cause with a Federal Grand Jury investigation because San Francisco's Grand Jury report could only account for misconduct in San Francisco. Yet, that Grand Jury argued, Western Union was in violation of interstate commerce laws. The fraudulent collection of fees for a service they could not provide took place nationally as people across the globe were trying to get in touch with San Franciscans.[39] The recommendation to elevate charges might have also been because the power of the Western Union seemed so absolute. As one San Jose newspaper lamented after discussing how many of its residents had likely been defrauded by the Western Union: "The distressing feature of the matter is that there seem to be no ways of punishing this corporation."[40]

Telegraph company managers and newspaper companies calling worker's labor "heroic" in the pages of daily newspapers and the telegraphy trades presses was self-serving to the extreme, particularly because newspapers relied heavily on the telegraph to do their work.[41] The heroic label created heroes for unpopular telegraph companies engaging in fraudulent business practices.

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[36] "Western Union Company Scored," San Jose *Evening News*, June 14, 1906.

[37] A joint press conference from the heads of the Western Union Company and the Postal Telegraph Company was the responses to charges of fraud were countered. Quotes from the conference appeared in many venues friendly to the telegraph companies. e.g. "Telegraph Officials Answer Fraud Charge," *New York Times*, 16 June 1906, and "Telegraph Men Reply: Call Charges Wicked," *New York Daily Tribune*, 16 June 1906.

[38] "The Telegraph Companies Refute the Action of the San Francisco Grand Jury," *Telegraph Age*, 1 July 1906.

[39] "'Big Stick' for Western Union," San Francisco *Call*, 15 August 1906

[40] "Western Union Company Scored," San Jose *Evening News*, 14 June 1906.

[41] Richard John notes that typical Americans did not send telegrams because the pricing made it out of their reach for everyday usage. John, *Network Nation.*

Saved by the mail

Even if the telegraph was not used by working class people to communicate with their family on a regular basis, a much more familiar technology, the postal system, was familiar and attempting to be up and running after the earthquake. In the days that followed the earthquake, the postal system allowed San Franciscans to send mail for free after the earthquake and fire in order to let people know that they were okay.[42] The postal system also delivered the mail for the telegraph, essentially acting as the last infrastructural mile (in addition to telegraph messengers) in the face on the broken telegraph.[43] In fact, it was not only the action of Western Union to defraud customers, but then to also make use of the relief pricing from the post office that truly galled the Grand Jury and received national attention: "It appears that they were not content with taking the money of the people and not rendering service, but attempted to come into the 'bread line' as one of the stricken populace."[44]

The post office employees continued service by adapting their existing work practices to deal with the massive relocation of San Franciscans.[45] They first used the same mail-forwarding techniques that they used in ordinary circumstances. They also developed a series of mail annotations to accommodate the refugees who were living in camps, often the most low-resource Californians. [46] Mandates for universal service surely shaped the work of the post office who served all of those affected by the earthquake at no cost. It is also notable that infrastructure which was made through very human labor "worked" after the earthquake, where the functioning of the telegraph infrastructure was severely challenged. [47]

The earthquake was catastrophic. Some telegraph company employees undertook challenging repairs and creative workarounds, sometimes putting themselves at risk, in order to ensure the smooth operation of the telegraphic infrastructure. Repair of the telegraphic infrastructure in 1906 that was called heroic referred to the work of telegraph company employees, some of whom were engaged in repair, others who stayed at their keys despite the destruction and difficulty around them.[48] But at the same time that telegraph company employees were working around the clock to collect telegrams and taking money to supposedly send them by wire, they were actually sending them through the mail – something that would have been free to the telegraph company customers. But these innovative fixes and work practices did not happen in a vacuum; they were significantly shaped by pre-disaster postal and telegraphic infrastructure practices.[49]

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[42] William F. Burke, "The Great Fire of 1906-XXXV. How the Post Office Rose superior to the Disaster--Unstamped Cuffs as Mail Matter," *The Argonaut*, 18 December 1926; "Letters sent without stamps," *San Francisco Chronicle*, 21 April 1906.

[43] Downey, *Telegraph Messenger Boys*.

[44] "Telegraph Folk on Frisco Grill: Grand Jury Says Companies Collected for Messages that Weren't Wired," *The Minneapolis Journal*, 15 June 1906; "Western Union Company Scored," San Jose *Evening News*, June 14, 1906.

[45] Finn, *Documenting Aftermath*.

[46] In Randy Stehle, *Postal History of the 1906 San Francisco Earthquake and Fire* (La Posta Publications, 2010): 7 & 12.

[47] Finn, *Documenting Aftermath*.

[48] Telegraph operators and workers were certainly not the only people – or things -- who were referred to as heroes. For example, Louise Herrick Wall, describes "the automobile is the unquestioned hero of the San Francisco Fire," Louise Herrick Wall, "Heroic San Francisco: A Woman's Story of the Pluck and Heroism of the People of the Stricken City," *Century* Magazine (1906), 586.

[49] Carrigan, "Towards a Postcolonial Disaster Studies," 131. I'm drawing on Brian Carrigan's approach to disasters which emphasizes: "the importance of pushing back at the dominant strains of risk-based analysis, which tend to

Information infrastructure researchers who examine breakdown in order to study how infrastructures function also focus on the repair and maintenance practices which keep socio-material entities in whatever state is labeled as "working." Focusing on repair work is a political move that both elevates the overlooked "information labor" involved in making and remaking infrastructure in the face of breakdown, as well as highlighting the challenge of infrastructure sustainability.[50] Historians and design researchers have also championed repair as a radical approach to technology stories. Under the banner of "The Maintainers," historians have put forth a research agenda focused on maintenance and repair as a turn away from popular preoccupations with "innovation," or worse, inventors as a driver of world change.[51] For maintainers, it is not the innovators who should be admired for enabling remarkable change in the popular availability of technology, but rather it is those who maintain these vast and complex technical systems that ought to be noticed and elevated in academic and policy work. Design researchers have similarly put forth a radical vision of repair, focusing on repair as an anti-consumerist, anti-capitalist, anti-consumption practice which influences the political economic order, the environment, as well as community empowerment. From this perspective, repair can be both the everyday restoration of normal functioning of a technology and an opportunity to reimagine economic orders.[52] Repair work can also make plain that an object's intended function is not determinate of its use and that repair can bring opportunities for "conservative innovation", which incrementally improve a system.[53] In the words of Steve Jackson, "repair occupies and constitutes an *aftermath*, growing at the margins, breakpoints and interstices of complex sociotechnical systems as they creak, flex, and bend their way through time."[54]

In this rare, acute disaster moment, repair of the telegraphic infrastructure reinforced the dominance of institutions including telegraph companies, newspaper companies, and the post office. The celebration of the heroic repair supported and legitimized the telegraph companies. But it was the endurance of the post office's work practices that ultimately propped up the telegraph companies. Those deep-pocketed institutions were able to recover quickly and because of the pressing need for news after a disaster, reinforced their centrality in the public information infrastructure. Thus, if disasters are sites for observing the "normal," or the sometimes invisible workings of information infrastructure, "normal" must include the political-economic order.[55]

Heroic repair and normal working

The sociotechnical earthquake effects of the earthquake were born out in information labor and, later, workers' wages. Yet, by 1906 Western Union's telegraphers' real wages had been falling for decades. A new union of telegraphers, the Commercial Telegraphers Union of America (CTUA, also referred to as the CTU) was formed in 1903 with over 8000 members and 60 chapters, affiliated under the AFL, and was demanding higher wages, better working conditions and equal

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focus more on *future* apocalyptic scenarios, and to look instead at how postcolonial texts depict *past and present* experiences of real-world catastrophes along with their deep-lying causes."

[50] Downey, "Making Media Work: Time, Space, Identity, and Labor in the Analysis of Information and Communication Infrastructures"; Downey, *Telegraph Messenger Boys*; Graham and Thrift, "Out of Order."

[51] Russell and Vinsel, "After Innovation, Turn to Maintenance."

[52] Jackson and Kang, "Breakdown, Obsolescence and Reuse."

[53] Hughes, *Networks of Power*; MacKenzie, "Why 'the Social Aspects of Science and Technology' Is Not Just an Optional Extra."

[54] Jackson, "Rethinking Repair."

[55] Perrow, *Normal Accidents*.

pay for women.[56] A year after the 1906 earthquake, Bay Area telegraph workers went on strike for 89 days.

The aftermath of the 1906 earthquake left telegraphers unable to afford the cost of living in the Bay Area. In 1907 San Francisco telegraphers asked for a temporary 25% raise that cost.[57] When their demands were not met, they began a local strike on June 21, 1907. As Vidkunn Ulriksson detailed in *The Telegraphers*, a deal with Western Union for a 10% raise had been reached in New York, but because of the telegraphers' mistrust of communications via telegram (the telegraphers knew too well that the telegraph companies could intercept their telegrams), the news did not seem to have made it to Bay Area telegraphers prior to their decision to strike. Or, the telegraphers thought that the offer from Western Union was an inadequate response.[58]

While the strikers in San Francisco and Oakland were supposed to have reached an agreement and were to return to work, in July a conflict between a Los Angeles based telegrapher and a San Francisco-based "scab" led to the Ageleno telegrapher being fired. The Angeleno telegraphers struck starting on August 7, 1908. Two days later, Chicago telegraphers refused to work with the non-union Angeleno telegraphers and followed the Los Angeles telegraphers.[59] The Commercial Telegraphers Union of America authorized the strike on August 15, 1907, though the San Francisco telegraphers initiated the nationwide strike.

According to one analysis of the 1907 strike, one of the chief grievances of the strikers was that women and men were not paid the same rate for equal work and that hiring more women was used to depress wages.[60] For example, in San Francisco, telegraph workers who were identified as men received an average of $70 a month, where women might see only half that (after accounting for the fact that they had to pay for the typewriter they used).[61] Raising the wages of women was often not motivated by ideas of fairness and equity, but it was an effort to ensure that men's wages and jobs were protected. Yet, according to Thomas C. Jepsen in his history of women in telegraph offices, women's suffrage and women's labor movements strongly supported women in the telegraph labor movement. Jane Addams and other member of the National Women's Trade Union League promised to support them.[62] Though women telegraphers struck, picketed, and held leadership positions, newspaper companies objectified them and treated them with condescension. Even their fellow men strikers asked that their compatriots smile for photographs to be published in newspapers that would make the strike look good.[63] Where men were heroes saving the telegraphic infrastructure after the earthquake, women's visages leant sympathy to mainstream opinions about the strike.

During the 1907 strike Western Union crucially started experimenting with devices that automated aspects of telegrapher work, machines that would later reshape and displace telegraphy

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[56] Ulriksson, *The Telegraphers, Their Craft and Their Unions.*, 60–61; Jepsen, *My Sisters Telegraphic*, 166–67; Downey, *Telegraph Messenger Boys*, 175–77; Craypo, "The Impact of Changing Corporate Structure and Technology on Telegraph Labor, 1870-1978."

[57] Jepsen, *My Sisters Telegraphic*, 166–81.

[58] Jepsen, 168.

[59] Union employees all over the country had been struggling with the telegraph companies over wages, hours and working conditions over the past several years, tensions had been escalating throughout 1907. Ulriksson, *The Telegraphers,* 75-79. Jepsen 169-170.

[60] Butler, *Women and the Trades.*

[61] Jepsen, *My Sisters Telegraphic*, 168.

[62] Jepsen, 170.

[63] Jepsen, 176–77.

labor.[64] The strike ultimately failed because the strikers did not have enough funds to supplement the striking telegraphers, the unions underestimated the deep pockets of the telegraph companies (who lost millions of dollars of business), unstable union leadership, and the number of replacements that were available to displace strikers -- the telegraph companies had been training cheap replacements as soon as they noted the whiff of labor organizing.[65] Furthermore, other blue collar wage earners did not identify telegraphers as being part of their group and so telegraphers were less able to attain a strike fund.[66] The strike officially ended November 9, 1907 with no gains for the Western Union employees.[67]

"Hagiographies of industry and empire"

The "heroic repair" described in the celebratory narratives that open up this paper demonstrate that some repair work was anything but discounted or underappreciated after the earthquake. The overlooked everyday repair work which describes the socio-material relations that underpin working infrastructures are in contrast to the "hagiographies of industry and empire" that Simon Schaffer highlights, which tell of "heroic recuperation of disorderly hardware."[68] In this paper, I have described how the heroes are repairing telegraphic infrastructure in service of industry. Following Schaffer's heroic repairer traversing through the colonies, I want to understand how post-disaster telegraphic repair projects related to the pursuit of empire as well. After the 1906 earthquake and fire, the repair of telegraphic infrastructure is tied to the projection of power. Heroic was used to described men's telegraphy work – or, based on the pronoun choices, what was assumed to be men's work. Scholarship on repair and maintenance often traces its intellectual roots to feminist histories and feminist care ethics which highlight overlooked, taken-for-granted, and deliberately ignored women's labor and affective work.[69] Yet, while telegraphers were sometimes men, identifying the workers as men obscured the work of dedicated women operators who were 12% of the telegraphy workforce. Heroic repair rhetoric not only served the telegraph companies but reinforced particular versions of manhood.[70]

As was the case with the development of the American telegraph in the nineteenth century, infrastructures for coordination and communication are often situated in narratives of empire, colonialism, and imperialism. Contemporary writers have noted that the project of empire and the project of the continual production of infrastructure are often inextricably linked: infrastructures, in the service of empire, are projections of power, symbols of modernity, deeply embedded in political economic structures, and producing a techno-politics.[71] Far-reaching

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[64] Craypo, "The Impact of Changing Corporate Structure and Technology on Telegraph Labor, 1870-1978," 293–96.

[65] Ulriksson, *The Telegraphers, Their Craft and Their Unions.*; Jepsen, *My Sisters Telegraphic*, 180.

[66] Jepsen, *My Sisters Telegraphic*, 179.

[67] Ulriksson, *The Telegraphers, Their Craft and Their Unions.*, 87.

[68] Schaffer, "Easily Cracked," 709.

[69] e. g. Russell and Vinsel, "After Innovation, Turn to Maintenance"; Puig de la Bellacasa, *Matters of Care*; Cowan, *More Work for Mother*; Rosner, "Making Citizens, Reassembling Devices"; Houston et al., "Values in Repair."

[70] Poster, "Subversions of Techno-Masculinity: Indian ICT Professionals in the Global Economy." Poster describes a variety of forms of techno-masculinity including an instance in 2005 where Indian IT call-center workers supported victims of flooding in Texas: "Such Indian IT professionals are performing a version of manhood that counters transnational business masculinity and other domineering forms common to the global North."

[71] Miriyam Aouragh and Paula Chakravarrty, drawing on John Durham Peters' *The Marvelous Clouds* "…understand infrastructure as *both* the material stuff of cables and wires that have long been seen as modern public goods as well as the 'soft' and more amorphous networks of cultural exchange shaped by European (and American) colonial power (p. 37)." Aouragh and Chakravartty, "Infrastructures of Empire," 564; Peters, *The Marvelous Clouds :*

telegraphic infrastructure was understood by the British and French powers as an essential component for their colonial projects.[72] For example, the maintenance of the British empire relied on the telegraph and the maintenance of the telegraph infrastructure—so much so that it drove innovation around submarine cables after the 1857 Indian Rebellion.[73] Brian Larkin argues that that symbolic value of infrastructure to Empire in Nigeria was to demonstrate that the British were in control and capable of great things.[74] The telegraph served multiple imaginaries; as Paul Gilmore explains, "in terms of race, the telegraph was celebrated for extending the conquest of the disembodied white mind over both the globe and the bodies of inferior, primitive peoples."[75]

In the Western United States, the telegraph was instrumental to the settler colonial project. The existence of the settler American "imagined community" heavily relied on the social connectivity fomented by the telegraph, often so much so that a broken telegraph was seen as a threat to social cohesion (or something like that).[76] Stories of how telegraphic infrastructure was installed and destroyed in "Indian country" were told in the context of expansion of the United States in the mid-nineteenth century.[77] White American narratives of telegraph deployment in Western North America in the mid-nineteenth century recounted stories of Native and First Nation peoples destroying or repurposing telegraph cables.[78] Early stories of telegraphers placed them on the settler colonial "frontier" where they built and repaired telegraphic infrastructure. Though the project of the cross-continental telegraph was first completed in 1861, telegraphic infrastructure didn't stabilize until the end of the Civil War when the Union Army was freed up to protect the telegraph cables and offices from Native peoples.[79] According to James Schwoch in his history of the telegraph in the Western United States, the telegraph in the nineteenth century was continually destroyed by weather and white and native peoples, and repaired by employees of telegraph and railroad corporations or US Signal Corps as it was deployed across the United States, and used in the service of controlling land and Native people and reinforcing settler colonial power.[80]

The 1906 Earthquake and Fire threatened San Francisco's status as the dominant western city of the American settler colonial project.[81] The repairers are labeled heroic here because of their work helped preserve the status of San Francisco. The rhetoric of heroic telegraphic repair, then, needs to be situated within political economic order dominated by the fraudulent and powerful Western Union as well as functioning telegraphic infrastructure as a central artery of American empire. [82]

Toward a Philosophy of Elemental Media, 37. Also see: Larkin, *Signal and Noise : Media, Infrastructure, and Urban Culture in Nigeria*; Larkin, "The Politics and Poetics of Infrastructure."

[72] Headrick, *The Tentacles of Progress*, 97–144; Headrick, *The Tools of Empire*.

[73] Headrick, *The Tools of Empire*.

[74] Larkin, *Signal and Noise : Media, Infrastructure, and Urban Culture in Nigeria*.

[75] Gilmore, "The Telegraph in Black and White," 806.

[76] Anderson, *Imagined Communities*.

[77] Thompson, *Wiring a Continent*; Schwoch, *Wired into Nature*.

[78] Schwoch, *Wired into Nature*.

[79] Rens, *The Invisible Empire*, 20, 76; Coe, *The Telegraph*, 38–45; John, *Network Nation: Inventing American Telecommunications*, 99; Schwoch, *Wired into Nature*.

[80] Schwoch, *Wired into Nature*.

[81] Rozario, *The Culture of Calamity: Disaster and the Making of Modern America*.

[82] Schwoch, *Wired into Nature*; Hochfelder, *The Telegraph in America, 1832-1920*.

Conclusion

Disasters are widely understood to be sociomaterial phenomenon, not "Acts of God", In the case of the 1906 earthquake, reverberations were felt beyond the shifting of tectonic plates.[83] The case of heroic repair discussed in this essay involved workers making real sacrifices to make is possible for people to continue to use the public information infrastructures. But as this label did not translate into real status changes for the workers in terms of wages, it raises questions about why this work was called heroic, what heroic repair tell us about this moment, and perhaps, how better to analyze communication and information infrastructures work after disasters more broadly.

The organizations with deep pockets and skilled employees were the ones that were able to recover and argue for heroic repair. In reconstituting the telegraphic infrastructure in the weeks after the earthquake and fire, the story points towards the ongoing process of producing information infrastructure, even in post-disaster response within massive dislocation of people and destruction. Still, the telegraphic infrastructure work, heroic labor, though able to support a few lines for powerful companies and the government, did not enable most people to send telegrams into or out of San Francisco. Heroic labor was masking what San Francisco Grand Jury labeled a fraudulent enterprise – charging people for telegrams that were not sent electronically but went through the mail. While the Western Union claimed this was routine, they only explained this standard practice after they were labeled fraudulent by the San Francisco Grand Jury. And though the heroic telegraphers were pointed to as a defense for the telegraph companies, they were also, -- according to the telegraph bosses -- partially responsible for the fraud because they were taking the telegrams and money from customers.

Heroic repair includes creative practices to make the telegraphic infrastructure "work" post-earthquake. But, to deliver most messages, the telegraphic infrastructure required another, much older, infrastructure to complete their task of sending messages – the post office. It was the banal bureaucratic efforts of the post office which ensured that many telegrams were delivered. This story of destruction, innovation, and the human ability to repair is not merely about recovery of the physical dimensions of infrastructure, but also more significantly, the social production of infrastructure and the endurance of the organization of work.

A year after they heroically restored the infrastructure of the telegraph companies to something approximating working condition -- after sitting "at the keys" as the city burns around them, after leaving their families to attend to the work of infrastructuring, after risking life and limb to put the telegraph system back together, after all of this labor is lionized by the telegraph operator bosses and the newspapers -- the telegraphers asked for a raise to cope with the cost of living increases in the Bay Area due to the housing shortage fueled by the earthquake and fire and were rejected. The telegraph companies denied them the 25% wage increase and the telegraph operators in San Francisco struck and failed to secure improvements. This is the legacy of the symbolism of heroic repair: it worked to shore up telegraph companies to make money from desperate people based on lies, allowing them to accumulate the power and reputation abandon these supposedly heroic laborers when the latter asked for living wages. Histories of telegraphic infrastructure and empire echo this dynamic.

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[83] Tierney, *The Social Roots of Risk*; Knowles, "Defending Philadelphia"; Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America*.

Scholars of cyberinfrastructures often point to narratives of continuity – infrastructures are hard to change. Even extraordinary information practices such as heroic repair after the 1906 Earthquake and Fire remade "normal" relations. That is not to say that disasters are not catalysts of long-term broad social change—they can be. This case suggests one answer to a speculative question: do narratives of continuity have a specific resonance in the case of information and communications infrastructures? In moments of crisis, there is tremendous convergence upon these infrastructures – people need them to contact loved ones and make sense of what has happened. The desire for infrastructures to be better, stronger, more resilient after a disaster (encapsulated by the slogan "build back better") suggests why the extraordinary and celebrated improvised infrastructural work makes it easier for the dominant, deep pocketed institutions to remain so even when they are engaged in deceiving their customers.

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