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Research Article

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Of Human Seismographs: The Multifaceted Roles of Pictures in the Meaning Making of Earthquakes

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Abstract: This article investigates the multifaceted roles that pictorial representations of the human body have played in earthquake visualizations. From the first conventional repertoires in early modern Europe to the photographic iconographies of the early-twentieth-century United States, human bodies have served as tangible proxies—human seismographs—visualizing not only the actual intensity of the seismic forces but also the severe disruption of contemporary cultural ideas, beliefs, and worldviews. As a general pictorial motif, the human body moreover allows viewers to emotionally identify and develop empathy, enhancing the pictures' cultural efficacy. Drawing on samples from San Francisco's earthquake of 1906, the study shows how the staging of bodies has stayed a central signifier of the cultural disruption even after seismology brought about the demystification of earthquakes. With the financialization of earthquakes and the shift of the public's attention to the aftermath of earthquakes, human bodies became materialized ideology, strategically appropriated in order to promote political, economic, and ideological agendas. As such, the human body emerges as a juncture in the popular earthquake iconographies linking—but also complicating—competing categories such as, for instance, mind and matter, private and public, local and (trans)national, individual and collective.

Keywords: human body, visual culture, earthquakes, photography, disaster illustrations

At least since the early modern era, visualizations of earthquakes have constituted one of the most popular types of disaster illustrations that at the same time played an integral role in the scholarly explication of seismic phenomena. Due to the low literacy levels at the time and the lack of comprehensive scientific explanations of earthquakes, these pictures substantially participated in the public construction, imagination, and framing of seismic catastrophes up to the twentieth century. As a result, the study of these early visualizations grants deeper insight into the contemporaneous processes of making meaning out of earthquakes. In this context, the physicality of the human bodies depicted is of a particularly crucial nature for the cultural construction of disaster experiences. The schematic representation of human bodies, as scholars such as Joanna R. Sofaer argue, invites viewers to establish a connection between their own corporality and the "humanness" of the bodies depicted, offering an affective connection through time and space. Bodily matter consequently opens a venue for the viewer to imagine the sensual experience of the scene depicted and develop affects such as empathy. In this sense, the human body is more than mere "matter," it becomes the central crossroads interlinking mind with matter, i.e. sensual experience and ideological worldviews with the external physical environment (cf. also Bell and Ficociello; Totaro).

From the invention of the printing press on, human bodies in earthquake pictures have thus served as seismographs indicating the physical intensity of the shaking of the earth and the accompanying emotional

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distress. More importantly, however, they have also worked as materialized indicators for the pressing political, economic, and cultural concerns that have been intricately entwined with seismic disasters. Focusing on the (in)visibility of human bodies, this contribution will follow Ingrid Gessner, Miriam Nandi, and Juliane Schwarz-Bierschenk's call in this special issue to renew the "focus on culture in its concrete physicality and embodiment" (309). In particular, it will explore how academic attention to this "pictorial matter" leads to a better understanding of how pictures of seismic disasters (re)negotiated the impact of earthquakes and at the same time expose fervently contested contemporaneous political, economic, and social concerns.



Figure 1: Sixteenth-century European woodcut print showing the paradigmatic repertoire of picturing earthquakes.

The first earthquake visual (figure 1) discussed in this article is a sixteenth-century woodcut print manufactured in Europe, nicely illustrating the first stable pictorial repertoire of earthquake representations and thus the paradigmatic iconography of staging human bodies in early historical disaster pictures. The woodcut is today widely believed to have originated in the context of the Basel earthquake of 1356, yet, over its early years, it has come to illustrate numerous different earthquakes (according to the pictorial conventions of the time often even within one and the same print publication) such as temblors in Italy, Switzerland, Japan, and Turkey (Kozák and Čermák 9; Leikam, *Framing* 58-59). Through its (multiple) inclusion in widely-circulated European descriptions of the world such as Sebastian Münster's *Cosmographia* (first ed. 1544), according to Anne Rücker and Frederik Palm the most well-known text right after the Bible (i), it started to serve as a model for later print makers (Leikam, *Framing* 56-58). Book-length publications, however, were far from the only source of this type of disaster illustration. Rather, with the invention of movable type, an entire market of mass-produced broadsides focusing on what art historian Aby Warburg termed "cosmic sensationalism" (622) emerged.

The early repertoire of visualizing the body in earthquake illustrations typically stages human figures in front of an urban silhouette, which is surrounded—especially in the air—by a vividly animated natural environment. Figure 1 lays out this paradigmatic tripartite structure: Right in the center, the woodcut shows the violent annihilation of a city—the epitome of human activity and the location of political, religious, and economic power. Above in the sky, piled up clouds emphasize kinetic movement, creating a threating mood and signify the cultural disorder. They also accentuate the divine causation of the earthquake. Against this backdrop, the woodcut positions several small persons in the very foreground. Each of the figures embodies one specific gesture or movement that signifies a strong emotion: On the right, two people are frantically

running around with their arms raised in the air, indicating panic and fear. On the left, viewers can observe two other figures kneeling in prayer with their palms pressed together, equally signifying terror and the reaching out to a higher power in a moment of emotional despair.

In this context, the human body functions as a material manifestation of the affective state: Since physical pain and other strong feelings of distress, as Elaine Scarry notably expounds in her study *The* Body in Pain (1985), resist language and cannot easily be shared in words, the visualization of suffering bodies in the woodcut prints attains emotional efficacy: The physical body becomes "a signifying medium, a vehicle of expression, a mode of rendering public and communicable what is essentially private (ideas, thoughts, beliefs, feelings, affects)" (Grosz 9). The use of very common and widespread gestures and facial expressions-in a similar context termed "Pathosformeln"/"pathos formulas" by Aby Warburg-in the staging of fear and distress facilitate the implied viewers' ability to easily decode the emotions displayed in the woodcut. The efficacy of the emotional identification with the depicted gestures is further enhanced by the omission of specific indicators of gender, ethnicity, or class, mainstreaming the affective impact of the disaster experience for a wider audience.

Up until the first half of the twentieth century, the (depiction of) the embodied response to an earthquake was indeed taken as a main indicator for its actual strength. Early seismic scales such as the Rossi-Forel Scale or the better-known Mercalli Scale graded the magnitude of earthquakes by the intensity of human reactions to it. For instance, the Modified Mercalli Scale distinguishes "moderate" (category V) from "strong" (category VI) tremors by describing the former event as "felt by nearly everyone" with "many awakened" while classifying the latter as "felt by all" with "many frightened" (US Geological Survey). It can thus be said that the body in the early dominant iconography of earthquake representations not only provides a signifier for the affective horror of this type of disaster, but, more importantly, it also literally makes the intensity of the earthquake shocks visible. Thereby, human bodies become embodied seismographs, lending a form and tangibility to forces that have often been described as invisible (cf., e.g., Jackson 409-10).¹

The staging of the physicality of the body in the dominant early modern European iconography has further implications: The miniature size of the persons in the woodcut—particularly in comparison with the ample open foreground and mighty clouds—mirrors the prevalent contemporary world-view, which was dominated by the idea of an omnipotent and all-determining God. Hence, the figures' diminutiveness reproduces their supposed powerlessness and lack of agency in the face of disasters. Particularly the generalized portrayal of the people depicted moreover lays out a common assumption at the time, namely that all individuals are equally affected by the earthquake.² Finally, the dramatic, at times very exaggerated exhibition of human desperation in the woodcut prints also attests to the severity of the disruption of one's worldview. The pervasive appeal of these visualizations of disaster in turn attests to the muchtheorized delight in vicariously experiencing dangerous situations from the protective distance of pictorial spectatorship (Apter, Danger; The Dangerous Edge; Burke; Shaw).

In the early modern European iconography, human bodies become the prism through which the earthquake experience is mediated. Not only do they visualize the seismic waves and provide a measure of their intensity, they also communicate the affective implications of the earthquake and the challenge of making sense of the inexplicable shaking of the earth. Over the course of the next couple hundred years, the first stable earthquake repertoire stayed productive and spread outside of Europe. With transnational trade and immigration, it also reached the North American colonies (Reilly). Due to the intensifying nation building and the rise of national states, the iconography—on both sides of the Atlantic—becomes much more culturally specific. For instance, pictures of seismic disasters in the United States showed "typically American" settings such as New England town silhouettes or log cabins in the sparsely settled mid-West (Leikam, Framing 83-103). While some core elements of pictorial repertoire such as the setting changed, the

¹ While the visualization of earthquakes via the human body is a common strategy of the early modern European repertoire, it is also not the only such strategy. The swaying or destroyed buildings similarly embody the earthquake and hence also enable the visual representation of seismic forces that are otherwise undetectable to the eye.

² From today's standpoint, this assumption is highly problematic since it glosses over the existence of systemic inequalities that make some persons much more vulnerable to the violence and destructiveness of disasters and that scholarship has worked so hard over the last couple decades to debunk as false (cf., e.g., Hewitt; Rozario; Steinberg).

depiction of the human bodies stayed largely the same.³ This only changed with the advance of photography and print technologies and the demystification of earthquakes from "divine signs" into mere "mechanic processes" in the second half of the nineteenth century. In the following, the changes and temporal adaptations of the previously established repertoire of picturing human bodies in earthquake pictures will be illustrated with specific examples from the 1906 San Francisco earthquake and fire.⁴

The 1906 San Francisco Earthquake is of crucial importance to analyses of disaster representations for several reasons: Firstly, with more than 5,000 deaths, the annihilation of one third of the city center, and about 200,000 disaster refugees, it constitutes—up to this day—one of the largest urban American disasters (Fradkin 189-91; Mosher). Secondly, since the earthquake and fires took place at a time of rapid metropolitan growth and intensive urbanization, the incident was also perceived as a test case of how the newly grown American cities would weather major catastrophes. As a result, news of how San Francisco coped with the disaster was avidly awaited in large parts of the world. Lastly, due to the concurrence of the 1906 disaster with the first peak of amateur photography, the 1906 San Francisco Earthquake was not only one of the most photographed events since the invention of the camera (Cohen 183), but it also generated novel visual iconographies and reinforced existing photographic repertoires (Leikam, *Framing* ch. 3). Within the cornucopia of photographic disaster visualizations, (in)visible human bodies played a central role again in the pictorial staging of earthquakes.

The most striking change in repertoire was the absence of the paradigmatic body gestures of fear, terror, and panic—the pathos formulas—that were so abundant in the modern European iconography of earthquake representations and that served as human seismographs: With the beginning scientific demystification of earthquakes through seismic theories and the general inability of contemporaneous cameras to capture movement in an adequate quality, the prevalent iconic motifs shifted to depictions of the time of the aftermath. While there were some illustrations—mostly drawings and lithographs—that visualized people in distress, dead and injured bodies were conspicuously absent from the news coverage, sensational press reports, and instant disaster memorializations. The majority of images featured bodies as calm onlookers meandering through the destroyed city after the actual earthquake, personifying the cognitive mastery of seismic phenomena. This iconography further turned the focus from the immediate emotional disruption to considerations of an earthquake's cultural and economic impact. In this sense, the human body becomes a seismograph for the pressing political, economic, and social challenges of the historical moment.

This invisibility of human desperation and death partly resulted from the increasing tendency to remove pain from public life and to relegate its prominence to highly scripted occasions in very specific spaces (such as the private sphere, the funeral home, or museums). The reluctance to include dead or injured bodies in earthquake and fire narratives was also fostered by the strong efforts made by the city and local business elites to present the disaster story as one of success, optimism, and resilience (cf., e.g., Fradkin; Hansen and Condon). In addition, the equation of what William Etter calls the "good" (i.e. healthy and socially conforming) body with a functioning "body politic," images of "unhealthy" or "defective" human bodies was seen to threaten nineteenth-century American master narratives. After all, ideological tenets such as individualism, self-determination, and steady economic progress all rested on the basic assumption of a strong and healthy body that enabled all Americans to work together to generate an exceptionally productive and thriving nation.

In light of the invisibility of bodily pathos formulas, San Francisco's ruinscape became one of most popular pictorial earthquake tropes and ideological images. At the time, the foregrounding of material damage—the ruins—attested, on the one hand, to the increasing scientific and engineering interest in seismic processes as well as to the ongoing financialization of disasters in the West. On the other hand, and

³ For exemplary discussions of pictures, see Leikam, Framing 92, 95, 101.

⁴ On April 18, 1906, at 5:12 in the morning, an extended segment of the San Andreas Fault ruptured with an epicenter not far from San Francisco, leading to an earthquake with an estimated magnitude (Mw) of 7.9. As a result of the earthquake, numerous fires were started, among others, through ruptured gas lines, tipped over lamps and stoves, and damaged chimneys. Exacerbated greatly by short-sighted human decisions, the earthquake and fires razed considerable parts of the city. With an estimated damage of several billion U.S. dollars, the 1906 San Francisco earthquake and fire still represent one of the costliest disasters in American history (see, e.g., Fradkin; Hansen and Condon; Geschwind).

maybe even more importantly, it also found its origin in the prevalent social concern whether the upcoming modern (American) metropolises would be safe and dependable long-term living environments. On an affective level, however, human bodies remained crucial frames: Visually as well as rhetorically, the city's destroyed buildings—especially iconic landmarks such as City Hall—were conceived of as human bodies. Images thus pictorially highlighted the deformed "heads" or "limbs" of edifices in their composition, and verbal texts referred to the buildings' "gaping wounds" or their "gaunt skeletons" (cf., e.g., Sedgwick). In this manner, the human body nonetheless continued to provide an affective construct for the emotional identification with the ruined city and gave a tangible shape to the pain and nostalgia emanating from the permanent disappearance of the previously familiar cityscape.



Figure 2: 1906 photograph showing a bread line at St. Mary's Cathedral.

Social and economic contexts also greatly influenced the pictorial repertoire of staging the human body in disaster photographs, turning bodies into one of the most contested motifs of the popular earthquake pictures. Firstly, bodies played a crucial role in the efforts of countering the prevalent fears that the earthquake and fire had plunged the city into a chaotic and uncontrollable urban zone of danger. Secondly, they also featured large in the strategic transformation of the bleak stories of death and destruction into glorious tales of the phoenix rising from the proverbial ashes. In the course of the second half of the nineteenth century, as historian Carl Smith explicates in *Urban Disorder and the Shape of Belief*, the modern city with its volatile social order and unprecedented amounts of flux had already been watched by the expanding American middle-class with great anxiety. The occurrence of disruptive events such as, for example, the Chicago fire of 1871, the 1886 Haymarket Riots, and various other violent strikes further fueled deep skepticism about the long-term possibilities of ordering and controlling urban spaces. These nationwide concerns had severe economic implications: The threat of the withdrawal of investment money was seen to severely jeopardize the expansion and the improvement of urban infrastructures and San Francisco's predominance on the

West Coast. As a result, images of bodily postures that enacted social order and control—such as the long lines of people patiently and calmly waiting to receive food, water, and clothes from the disaster relief organizations (see figure 2)—became one of the most popular and iconic sights in the photographic archive of the immediate aftermath of the San Francisco earthquake and fire.⁵

These so-called "bread line" images—one paradigmatic type of pictorial repertoire trying to make sense of earthquakes at the beginning of the twentieth century—nicely visualize the resignification of the human body that started to take place at the turn of the twentieth century: Whereas the body had been a prominent indicator for the intensity of the earthquake (or other similar catastrophes) in earlier pictorial repertoires, it now assumed the role of an indicator for the capability to successfully overcome the earthquake and manage the full recovery. In this context, it was precisely the absence of the pathos formulas—one of the standard pictorial conventions of the time—and the inclusion of the seemingly relaxed body postures of the people waiting patiently one after the other in line that conferred the notions of calmness, order, and control. This meant that the pictorial proxies of chaos and movement in body language (such as running, waving, shouting) were replaced by static components (such as bodies standing still, bent knees, loosely hanging arms, relaxed facial features).

The connotations of social order and control were also enforced visually by the multiple repetition of bodies that resulted in extended symmetrical form (i.e. the lines; see figure 2). The bread line photographs played a crucial role in the public framing of the repercussions of the disaster for the city since they were deemed, according to news coverage and political pamphlets, to show the successful establishment of order after the chaotic disaster. Commercial and political elites often moreover remarked that the lines were composed by refugees from all walks of (white, middle-class) life, which they took as visual evidence that the earthquake and fires had acted as "social equalizers."

Thorough research (cf., e.g., Davies; Fradkin; Hansen and Condon), however, exposes the image of social order and collective harmony as a deceptive one: On the one hand, the narratives of social order, equality, and harmony hid the fact that racial minorities were forced to move outside the city center and thus literally rendered invisible in most of the bread line photographs. They also glossed over the many instances of racialized as well as class and gender-based violence and discrimination that abound all through the city. On the other hand, these boosterish narratives also concealed the multifaceted external pressures that were exerted to keep the bodies controlled and in order in public spaces. For example, especially relief stations and refugee camps were tightly patrolled by armed soldiers and policemen, encouraged by the mayor's (illegal) ordinance to shoot any person committing a crime. The strategic promotion of the bread line images in commercial pamphlets, the local press, and government publications hence exposes how intricately human bodies have been entangled in struggles for cultural, political, and economic hegemony.

After the abolishment of relief stations in great public places, the images of bread lines were superseded by visual motifs that presented the much-needed pictorial affirmation of the city's immanent and certain rise back to its former grandeur. Human bodies again constituted vital elements in these narratives that highlighted silver linings, which continues the long history of reading bodily gestures as materialized indicators of the social, political, and economic distress brought about by disasters. Portraying the 1906 earthquake and fires as nothing more than another banal episode in a long series of frontier hardship, the local news coverage went to great lengths to emphasize San Franciscans' resilience, ingenuity, and serenity. In this respect, the stereograph titled "True Grit: Barber Painting Sign on Tent Stretched on Sidewalk of Former Place" (figure 3) delivers a paradigmatic example: Published in one of the most popular earthquake series, the image shows a man in the process of painting the word "Shaving" on the side of a canvas tent set

⁵ While the emergence of the bread line photographs as one of the disaster icons of 1906 was far from the result of a top-down endeavor, San Francisco's press fostered positive portrayals of the aftermath greatly. With the many strong ties between media and political as well as economic elites, the city's press was very sympathetic to the cause of presenting a sanitized version of the disaster aftermath.

⁶ While the bread lines functioned as an ideal indicator for the social order, they ran the risk of becoming ideologically problematic in the long run. Since the persistence of masses of San Franciscans in need in public places, the city feared, could suggest the incapability or unwillingness of its people to participate actively in the rebuilding process, it started to abolish publish relief stations after a couple of weeks (Leikam, "Visualizing Hunger").

up in a giant heap of charred rubble and debris. The contrast of the utter destruction with the unperturbed and purposeful human action pictorially enacts optimism and the belief in a timely return to quotidian routines.



Figure 3: Left half of a 1906 stereograph with the title "True Grit—Barber painting sign on tent stretched on sidewalk of former place."

Pictures such as these foregrounded men in productive actions (e.g., removing rubble, lifting, laying bricks, or constructing new edifices) in public places, glorifying masculine characteristics such as muscular strength, indomitable will, and endurance. The repeated juxtaposition of men in action in public places with instances of material and economic progress such as restored factories or rising skyscraper facades presented the male bodies (as well as the masculine character traits typically associated with them) as the heroic guarantors of successful rebuilding. In this and similar disaster photographs, the display of the physical integrity of the human body becomes the affectively charged material condensation of disaster optimism and the visual reassurance of the city's certain recovery. Several stereograph companies specialized in this type of popular disaster motif by assembling entire photographic collections of builders and other craftsmen such as steelworkers or derrick men at work. Even though women equally contributed to the rebuilding, it was the healthy (white) male body in the public sphere that came to stand in as physical embodiment of San Franciscan—and as such American—reactions to disaster.⁷

As in the case of the bread line motifs, the bodies in this iconography functioned as "cultural seismographs," indicating San Francisco's potential to recover fully from seismic catastrophe. They hence became epitomic for contemporaneous American ideologies, especially the belief in unfettered progress, technology, and individualism. The fact that these disaster iconographies (from the nostalgic framing of San Francisco's ruins as bodies to the replacement of pathos formulas of fear and panic by the calmness and patience of the survivors to the glorification of the physically healthy, white male body as guarantor

⁷ Yet another image type displayed San Franciscans visibly enjoying themselves in the disasterscape. These photographs, for example, showed mostly men (but also women) in seemingly relaxed poses (either sitting leisurely in make-shift furniture in ruins laughing at the camera or posing laidback in front of their refugee tents or street kitchens, which often featured funny signs such as "Bachelor's Retreat" or "Palace"). The motifs humorous differed from the rebuilding scenes, yet, both aimed at playing down the impact of the earthquake and fires as mere trifles for a resilient and ingenious former frontier outpost such as San Francisco.

of successful rebuilding) endured over time shows their pervasive appeal and their cultural efficacy. Consequently, they played a crucial role in the incorporation of the optimistic disaster rhetoric, which had initially been put forward mostly by the city and its business leaders, into the long-term cultural memory of the 1906 earthquake (Leikam, *Framing* ch. 6).

This case study has exposed the multifaceted roles pictures have assumed in the meaning-making processes of earthquakes. As affectively charged cultural artifacts, the visuals of human bodies are of crucial import to making sense of disasters and inextricably entangled with the social, economic, political, and ideological challenges of the time. This pertains not only to visualizations of earthquakes but also of other disasters and similar instances of momentous cultural disruption more generally. With the increasing financialization and politicization of disasters, the efforts to strategically appropriate pictorial renderings of the human bodies in order to promote particular political, economic, or ideological agendas and assume narrative authority has intensified in recent decades. The effacement of Richard Drew's "Falling Man" photograph from America's cultural memory (cf., e.g., Keiper) and the collective shock at the resurgence of bodies "so poor and so black"—as Wolf Blitzer put it in one of his live comments—in the visual coverage of Hurricane Katrina (cf., e.g., Negra; Wailoo et al.) are just two cases in point. Human bodies thus continue to serve as "cultural seismographs," signifying the severe disruption of the quotidian routines and ideological worldviews by catastrophes. As such, images of the human body constitute a juncture in popular disaster iconographies, linking—but also complicating—competing categories such as, for instance, mind and matter, culture, and nature, private and public, local and (trans)national, individual and collective.

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