The Relationships of Workers to Work, Peers, and Others Crowd work's perspective. The relationships of workers with their peers and with requesters are nuanced and not especially well–understood. Researchers have begun to appreciate the sociality of crowd workers in labor markets; still, the study of these communities is made more challenging by the limited access to workers on these sites of work inherent to digital spaces made without social affordances [6, 22]. We can break this general body of work into two subgroups: workers' relationships 1) with requesters, and 2) with other workers. We'll look at workers' relationships with work itself, which we'll discover gives us insight into why people engage in crowd work in the first place.

[al2: some topic sentence that brings together the debate where one side blames Turkers for being bad at Turking and another side blames requesters for not understanding Turkers as a culture of people.] Some research frames this tension as the Turker's problem (see, for example, Gadiraju et al.'s work, which frames the problem of unpredictable work as the result of "malicious" crowd workers), [4, 26, 8].

Early on, Irani and Silberman highlighted the information asymmetry between workers and requesters on AMT, leading to the creation of *Turkopticon*, a site which allows Turkers to rate and review requesters [11]. Salehi et al. took this critique on information asymmetry and power imbalances a step further, designing *Dynamo*to facilitate Turkers acting collectively to bring about changes to their circumstances — this led to the Academic Requester Guidelines [25]. This unbridled power that requesters have over workers and the resultant stress and frustration that this generates has been part of the undercurrent of research into the tense relationships between workers and requesters [5, 25].

The frustration that workers experience dealing with requesters seems to precipitate frustration and mistrust between crowd workers, as well. Salehi et al. describes "megadrama" among workers on forums for Turkers; Irani and Irani and Silberman discuss the culture of crowd work and the study thereof. Gray et al. quantifies and maps this social network of Turkers. McInnis et al. takes these observations and considers what a crowd work platform might look like if it were to be designed more inclusively [25, 9, 10, 6, 19]. The overarching theme of the research in this space has been documenting the struggle of crowd workers and attempting to intervene in constructive ways, while walking the balancing act (especially in the cases of Irani and later Irani and Silberman) as we think about the culture of crowd workers.

Piecework's perspective. The questions surrounding the ways pieceworkers related to managers might be best answered by the work that has been done in the emergence and proliferation of labor unions. The primary avenue for workers to interact with managers has been through laborer advocacy groups such as the American Federation of Labor, (one of the forerunners of the largest and most politically influential labor union in the United States). Looking through that lens, we find copious research on the relationships between workers and requesters [16, 1, 18, 12]. One component of collectively negotiating with managers has been the process of collective

action, a topic which has been substantively explored but is not quite yet answered [7, 23].

Answering how workers related to one another is arguably more challenging for a number of reasons. For one thing, the research methods we typically associate with the exploratory study of cultures — Anthropology, and namely participant—observation, ethnography, etc...— didn't exist quite as we know them at the turn of the 20th century, and wouldn't for several more decades. Still, we can look at primary sources, like *The problem of piece work* to give us some hint of how they related to each other [13].

The ethos of American labor advocacy organizations "not only as railroad employees but also as members of the larger life of the community" and other notions of affiliation and recognition of shared underlying goals and hopes. I could point to Riis and be like "what *he* did was illustrate through this relatively new medium — photography — how bad pieceworkers had it, foreshadowing this later urging by nascent labor advocacy groups to recognize that workers all shared these problems and needed to associate."

This can also foreshadow crowd sourcing efforts like *Turkopti-* con and *Dynamo*.

What's different about crowd work. The differences between crowd workers and pieceworkers seem defined largely by the differences in the places of work. Whereas it arguably became inevitable that workers would have a place to meet, discuss, and collaborate when they began sharing places of work, online spaces make it much harder to do so. Crowd workers can "lurk" and do tasks, or just do the occasional one—off task, without any affiliation with — or even knowledge of — communities of peers [al2: multiple citations that labor unions came out of factories here] [22, 20, 3].

While the historical management of workers had to be done by hiring a foreman, who necessarily had an intuitive — perhaps sympathetic — relationship with workers, the foreman of the 20th century has largely been replaced by the algorithm of the 21st century [15]. The result of this change is that the agents managing work are now cold and logical, if unforgiving. Where a person might recognize that the "attention check" questions proposed by Le et al. ensure that malicious and inattentive are stopped, some implementations of these approaches ([see 4] only seem to antagonize workers [14, 4].

Implications for crowd work research. What we've done in the field of crowd work might be able to tell us something about piecework just as piecework has told us so much about crowd work. Crowd work research doesn't just benefit from digital media allowing us to make relationship networks like Gray et al. do; we benefit from the firmer theoretical basis of Anthropology that existed in a radically different form at the turn of the 20th century, when piecework began to emerge. Malinowski, Boas, Mead and Boas and other luminaries throughout the first half of the 20th century effectively defined Cultural Anthropology as we know it today; participant—observation, the etic and the emic understanding of culture, and reflexivity didn't take even a resemblance of their contemporary forms until these works [17, 2, 21].

References

- [1] John S Ahlquist and Margaret Levi. *In the interest of others: Organizations and social activism.* Princeton University Press, 2013.
- [2] Franz Boas. *Race, language, and culture*. University of Chicago Press, 1940.
- [3] Jennifer Earl and Katrina Kimport. Digitally enabled social change: Activism in the internet age. Mit Press, 2011.
- [4] Ujwal Gadiraju et al. "Understanding Malicious Behavior in Crowdsourcing Platforms: The Case of Online Surveys". In: *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. CHI '15. New York, NY, USA: ACM, 2015, pp. 1631–1640. ISBN: 978–1-4503–3145–6. DOI: 10.1145/2702123. 2702443. URL: http://doi.acm.org/10.1145/2702123. 2702443.
- [5] Mary Gray. Fixing the Chaotic Crowdworker Economy. Aug. 2015. URL: http://www.bloombergview.com/articles/2015-08-12/fixing-the-chaotic-crowdworker-economy.
- [6] Mary L. Gray et al. "The Crowd is a Collaborative Network". In: Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing. CSCW '16. New York, NY, USA: ACM, 2016, pp. 134–147. ISBN: 978–1-4503–3592–8. DOI: 10. 1145/2818048.2819942. URL: http://doi.acm.org/10. 1145/2818048.2819942.
- [7] Russell Hardin. *Collective action*. Resources for the Future, 1982.
- [8] Panagiotis G. Ipeirotis, Foster Provost, and Jing Wang. "Quality Management on Amazon Mechanical Turk". In: *Proceedings of the ACM SIGKDD Workshop on Human Computation*. HCOMP '10. Washington DC: ACM, 2010, pp. 64–67. ISBN: 978-1-4503-0222-7. DOI: 10.1145/1837885.1837906. URL: http://doi.acm.org/10.1145/1837885.1837906.
- [9] Lilly Irani. "The cultural work of microwork". In: *New Media & Society* 17.5 (2015), pp. 720–739.
- [10] Lilly C. Irani and M. Six Silberman. "Stories We Tell About Labor: Turkopticon and the Trouble with "Design"". In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. CHI '16. New York, NY, USA: ACM, 2016, pp. 4573–4586. ISBN: 978–1-4503–3362–7. DOI: 10.1145/2858036.2858592. URL: http://doi.acm.org/10.1145/2858036.2858592.
- [11] Lilly C. Irani and M. Six Silberman. "Turkopticon: Interrupting Worker Invisibility in Amazon Mechanical Turk". In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. CHI '13. New York, NY, USA: ACM, 2013, pp. 611–620. ISBN: 978–1-4503–1899–0. DOI: 10.1145/2470654.2470742. URL: http://doi.acm.org/10.1145/2470654.2470742.

- [12] Sanford M Jacoby. "Union-management cooperation in the United States: Lessons from the 1920s". In: *Industrial & Labor Relations Review* 37.1 (1983), pp. 18–33.
- [13] American Federation of Labor. Railway Employees Dept and United States Railroad Labor Board. *The problem of piece work*. The Problem of Piece Work nos. 1-16. Bronson Canode Print. Co., 1921. URL: https://books.google.com/books?id=NN5NAQAAIAAJ.
- [14] John Le et al. "Ensuring quality in crowdsourced search relevance evaluation: The effects of training question distribution". In: SIGIR 2010 workshop on crowdsourcing for search evaluation. 2010, pp. 21–26.
- [15] Min Kyung Lee et al. "Working with Machines: The Impact of Algorithmic and Data—Driven Management on Human Workers". In: *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. CHI '15. New York, NY, USA: ACM, 2015, pp. 1603–1612. ISBN: 978–1-4503–3145–6. DOI: 10.1145/2702123.2702548. URL: http://doi.acm.org/10.1145/2702123.2702548.
- [16] Margaret Levi et al. "Union democracy reexamined". In: *Politics & Society* 37.2 (2009), pp. 203–228.
- [17] Bronislaw Malinowski. Argonauts of the Western Pacific: An account of native enterprise and adventure in the archipelagoes of Melanesian New Guinea. Routledge, 2002.
- [18] Jamie K McCallum. *Global unions, local power: the new spirit of transnational labor organizing*. Cornell University Press, 2013.
- [19] Brian McInnis et al. "Taking a HIT: Designing Around Rejection, Mistrust, Risk, and Workers' Experiences in Amazon Mechanical Turk". In: *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. CHI '16. New York, NY, USA: ACM, 2016, pp. 2271–2282. ISBN: 978–1-4503–3362–7. DOI: 10.1145/2858036.2858539. URL: http://doi.acm.org/10.1145/2858036.2858539.
- [20] Brian James McInnis et al. "One and Done: Factors affecting one–time contributors to ad–hoc online communities". In: *Proceedings of the 19th ACM Conference on Computer–Supported Cooperative Work & Social Computing*. ACM. 2016, pp. 609–623.
- [21] Margaret Mead and Franz Boas. *Coming of age in Samoa*. Penguin, 1973.
- [22] Vincent Miller. *Understanding digital culture*. Sage Publications, 2011.
- [23] Mancur Olson. Logic of collective action public goods and the theory of groups Rev. ed.. 1965.
- [24] Jacob August Riis. How the other half lives: Studies among the tenements of New York. Penguin, 1901.

- [25] Niloufar Salehi et al. "We Are Dynamo: Overcoming Stalling and Friction in Collective Action for Crowd Workers". In: *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. CHI '15. New York, NY, USA: ACM, 2015, pp. 1621–1630. ISBN: 978–1-4503–3145–6. DOI: 10.1145/2702123. 2702508. URL: http://doi.acm.org/10.1145/2702123. 2702508.
- [26] Victor S. Sheng, Foster Provost, and Panagiotis G. Ipeirotis. "Get Another Label? Improving Data Quality and Data Mining Using Multiple, Noisy Labelers". In: Proceedings of the 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. KDD '08. Las Vegas, Nevada, USA: ACM, 2008, pp. 614–622. ISBN: 978-1-60558-193-4. DOI: 10.1145/1401890.1401965. URL: http://doi.acm.org/10.1145/1401890.1401965.