INTRODUCTION

hmmmmm The past decade has seen a proliferation of transient labor. Stemming from the recognition that complex tasks might be achievable — and indeed trivial — through the effective management of the "crowd", researchers have rapidly begun exploring the space for opportunities to facilitate new (and revisit familiar) forms of work [1, 12]. Broadly, this work has imagined the various applications of "gig"–based work, and making it work for "requesters" — academics, industries, and to some extent end–users who might benefit from the product of crowd–powered work [3, 4, 8]. Since then, the application of digitally mediated environments acting as rapid "hiring halls" for on–demand tasks has found purchase far beyond the context of "information work" like Amazon Mechanical Turk (AMT); livery services (Uber), cleaning (Handy), and various other services (TaskRabbit) have garnered the interest of both industry and research.

Researchers have made efforts to understand the *people* that have gravitated toward on–demand work since its emergence and popularization, but as the form of work has grown and changed, so too have the demographics of workers [9, 11]. Some of this research has been motivated by the realization of the sociality of gig work, and the frustration and disenfranchisement that these systems embody [5, 10]. Other work has focused on the outcomes of work, reflecting on the resistance workers express against digitally mediated labor markets [7]. Bringing this broader body of work together, perhaps we can think of this as documenting the "fallout" of on–demand labor; workers increasingly expressing frustration with the disenfranchisement of the work–flows pioneered by researchers in the decade leading up till now, and researchers beginning to appreciate the unforeseen costs of transient labor and the impacts both on the work and the workers.

Piecework as a lens to understand gig work

These bodies of literature have conversed, and indeed begun to identify that their theories are interrelated in some way, but thus far a convincing model for making sense of — let alone predicting — the phenomena in on–demand labor has proven elusive. For instance, making sense of why workers on AMT (or "Turkers") are frustrated with their workplace is understandable in its own context, but the relationship between the work itself ("turking") and the myriad social outcomes has only briefly been explored [2].

We offer a framing for *all* on–demand work as a modern instantiation of "piecework", referenced briefly by Kittur et al. in 2013 as a loose analogy to the form of work emerging at the time, but not given as much weight as it perhaps could have been [6]. "Piecework" here makes use of a term historically used to describe work done in the home, in manageable tasks, often involving clear instructions and payment only for work completed, not work done (the differentiation then being that one would be paid for the *output* of the work, not the *duration*).

This framing prompts us to note several immediately apparent similarities: 1) this form of work began in the home 2) the worker is paid for each discrete piece of work done, regardless of time or effort; and 3) the worker's status (not only socially,

but also economically) is ambiguous, or at least the subject of some controversy.

But more than this, the framing of on–demand labor as piecework (re–instantiated) allows us to attempt to make sense of the broader research on this new form of work by evaluating this work through a much more refined lens. More concretely, by looking at task–based or "gig" work as an instantiation (or even a continuation) of piecework, and by looking for patterns of behavior that the corresponding literature predicts on this basis, we can 1) make sense of the phenomena so far as part of a much larger series of interrelated events; 2) bring into focus the ongoing work among workers, system–designers, and researchers in this space; and finally, 3) offer predictions of what social computing researchers, and workers themselves, should expect to see on the horizon of on–demand work.

We'll look at a broad range of cases under a number of major themes we propose as broadly describing the types of research being done in crowd work and more generally in what we argue is contemporary piecework. After validating this lens as a way of reasoning about on–demand labor, we'll attempt to use this perspective to suggest areas of research worth anticipating, and developments we should expect to see in the maturation of digitally mediated work. Finally, we will offer design implications based on this research... [*al2: ???*]

notes/what i want to get across...

- *on–demand labor has consumed an increasing proportion of the labor market in the past ten years [Pew research on on–demand labor]; the work has ranged from Turk work processes*

- *some of it has been about resisting Uber & other gig labor platforms [1, 7]; some researchers have tackled understanding this new instantiation of work, but come up short (how).*

- *(what binds this together)*

- *we offer a framing on this topic that situates the research so far on a timeline of the maturation of another form of work that emerged approximately 150 years ago — that is, piecework — which convincingly suggests that on–demand labor in the form of Turking, driving for Uber, etc... are in fact little more than piecework re–surging today.*

- *this paper will trace the body of research describing microwork — and later gig work — and place it in the context of historical piecework and the industrial revolution as a whole.*

- *informed by this new lens, we'll then turn our attention to the future of this re–emergent form of work, and suggest ways that researchers and users of on–demand labor might influence the outcomes we predict in this paper.*