1. Introduction

Visibility has become a popular topic for theorizing in management and communication (Brantner & Stehle, 2021; Brighenti, 2007; Treem et al., 2020), in part due to the rise of technologies that make people and things visible in new ways to new audiences. For example, scholars have developed theories of visibility for *communication* (Leonardi, 2014), *information* (Stohl et al., 2016), and *behavior* (Leonardi & Treem, 2020). Despite growing attention, one kind of visibility that has yet to be theorized is the visibility of *worker qualifications.* This is somewhat surprising, since as I will show, qualifications visibility (QV) has important theoretical implications for labor search, itself a critical element of organizational staffing. A major increase in QV has been triggered by new technologies that capture and display data on workers and their

While some qualifications can be observed directly, more often they are made visible though *representations* of various sorts, such as resumes or assessment results. These representations serve as containers for communicating particular subsets The most important trend regarding QV is the increasing digitization of qualifications themselves, and digitization of the methods used to represent and assess them. In the analog era, qualifications were represented with printed resumes or other physical artifacts that were only accessible to people who had copies of those artifacts. However, platforms such as Indeed and LinkedIn now provide representations of resumes, recommendations, test scores, and so on (Brenner et al., 2020; Roulin & Levashina, 2019; Van Dijck, 2013). Work samples can now be stored and shared digitally. Emerging digital selection tools (see (Woods et al., 2020) for a review) automate both the interview process (Hickman et al., 2022; Lukacik et al., 2022) and the initial analysis of qualifications (Sajjadiani et al., 2019), and make the results available for viewing throughout the hiring organization (Feloni, 2017). Status markers (Levina & Arriaga, 2014) and the scores generated by various *reputation systems* (Kokkodis, 2021; Resnick et al., 2000; Tadelis, 2016) also serve as representations of qualifications, in that actions promoting reputation (such as for performing well in completing some task) will also usually provide evidence of qualifications (such as to perform such tasks in the future).

2.2 Visibility is *Inherently Relational*

Visibility is inherently *relational* (Brighenti, 2007; Leonardi & Treem, 2020; Treem et al., 2020), in that it links an audience of potential viewers to the things to be viewed. With QV, the things to be viewed are representations of qualifications. This relational linkage occurs on a *field of visibility*, which is a physical or virtual space that encompasses both the audience of viewers and the people or things to be viewed (Brighenti, 2007).

The audience depends on which context is salient. For qualifications, the relevant context is labor search and person-job matching (Caldwell & O'Reilly III, 1990; Edwards, 1991). T39 Tf1 0 0 1 317.7 408

of visibility that is viewable by salient actors. Visibility fields can be physical, such as the city streets in which Goffman (1971) studied the visible connections between urban dwellers. In my case, visibility fields are metaphorical. For example, 100 resumes stacked on a recruiter s desk can be treated as a visibility field that connects one recruiter to 100 applicants. The presence of , but not necessarily noticeable. The visibility fields for qualifications are increasingly determined by LMTs (such as job boards), which connect an audience of recruiters to a set of jobseekers who have a presence on the LMT. In fact, these technologies create fields of *mass visibility*, where many thousands of individuals congregate.

Qualifications are *noticeable* to the extent that they are likely to draw the attention of salient actors that are scanning a field of visibility. Resumes at the bottom of a pile of 100 are less noticeable than those on the top even though they are equally detectable because of their presence in the pile. One of the tensions I develop later (in Section 4.2.1), is that as more jobseekers crowd onto a particular field of visibility constituted by an LMT (such as by applying for a job on a recruitment portal) this swells the ranks of people who are detectable, but each becomes less noticeable. While noticeability does feature in some prior conceptualizations of visibility (e.g., (Brantner & Stehle, 2021; Treem et al., 2020)), detectability does not.

To sum up, the QV dimensions identified above constitute W*nBT/F3 12.039 Tf1 0 0 1 213.69 596.63 Tm0 g0 G

other data to decide who is the best fit), and *acquisition* (filling the position) (Phillips, 2023, p. 9). Hired individuals are then *deployed*, i.e., assigned to their initial jobs and tasks, and then guided through subsequent movements to new ones.

In the practitioner literature, these stages are often depicted as a *funnel* (e.g., (Holmes, 2019)). Many candidates enter the process (represented by the wide end of the funnel), but at each stage some get winnowed out until just a few emerge with job offers (see Figure 1). Most funnel depictions assume the recruiter is trying to hire a new full-time employee. However, the same stages apply albeit with some modification to two other hiring scenarios: *internal hiring* (i.e., using existing employees to fill open positions (Phillips, 2023, Chp. 10)), and hiring *gig workers* (Aguinis & Lawal, 2013)).

Figure 1. The Hiring Funnel[2]

3.1.1 Labor Matching

A general process of *labor matching* lies at the center of the external, internal, and gig hiring scenarios. Many benefits flow from effective matches for individuals (e.g., higher job satisfaction), employers (e.g., a more productive and stable workforce), and the economy as a whole (e.g., more efficient allocation of labor) (Barrick & Parks-Leduc, 2019; Caldwell & O'Reilly III, 1990; Weller et al., 2019).

Of particular interest here is *person-job matching*, which Heneman (2019, p. 6) has argued is foundational not just to the hiring process, but to *all* staffing activities. A similar perspective is taken in (Weller et al., 2019). The primary goal of person-job matching is the creation of high-quality matches, i.e., the placement of people into jobs for which they are well-suited owing to high *person-job fit* (Caldwell & O'Reilly III, 1990; Edwards, 1991) and high *person-organization fit* . More specifically, a high-quality match is one in which the qualifications and motivations of a person are well-aligned with the requirements and rewards of the job[3] (Edwards, 1991; Heneman et al., 2019, p. 18).

After individuals have been hired, managerial attention turns to staff *deployment*, which encompasses the placement of new hires into their initial job roles and their subsequent movement through the organization into new roles, projects, and tasks (Bidwell, 2020; Heneman et al., 2019, p. 10). The latter facet of deployment often involves labor search and matching,

[2] The specific stages depicted here are based on those described in (Phillips, 2023, Chp. 10).

[3] Here I use job to refer to any aggregation of work, ranging from roles, to specific projects, assignments, or tasks, whether they be performed by regular full-time employees, gig workers, or other kinds of non-standard workers (Cappelli & Keller, 2013; Cascio & Boudreau, 2017).

because an is usually enabled by the existence of a manager somewhere looking for a person like them.

3.1.2 Digitized Qualifications and Labor Matching Technologies

As with digital platforms more generally (Goldfarb & Tucker, 2019), most labor matching technologies (LMTs) perform two basic functions: facilitating matching and improving transaction efficiency. I define an LMT *as any platform or technology relevant to labor search that gathers and stores data on worker qualifications and makes this data available to recruiters and hiring managers* (Table 2 describes a dozen kinds of LMT.) I highlight the term *matching* because their matching function is most salient to this paper, although many of them do much more than match candidates to jobs. For example, online labor markets also enable clients to collaborate with, monitor, and pay gig workers (Agrawal et al., 2015).

Some LMTs are *public* while others are *firm-specific*. *Public* platforms are operated by

Online Labor Markets	**Online labor markets** (e.g., Upwork, Freelancer) match external gig workers to employers that have tasks to complete (Agrawal et al., 2015; Constantinides et al., 2018; Kokkodis, 2021). Employers create task specifications, list necessary qualifications, conduct searches, and then hire and monitor gig workers. Gig workers create profiles, designate qualifications, and then search and apply for jobs.
Talent Acquisition Suites	**Talent acquisition suites** (i.e., Greenhouse, IBM Kenexa) support all aspects of the hiring process for an employer, including managing connections to job boards, marketing and brand management, pre-hire skills assessments and psychological testing, online candidate interviews, candidate scoring, background checks, and applicant tracking (Bersin, 2017). These suites serve as a hub that combines candidate data gathered from external sites (e.g., job boards) with data directly solicited from applicants (e.g., via application blanks, questionnaires, and tests).
Recruitment Portals	**Recruitment portals** are used by employers to promote their employment brands, list open positions (Baum & Kabst, 2014), connect candidates to digital selection tools (e.g., application blanks, psychometric testing, asynchronous video interviews (Woods et al., 2020)), and feed data to other platforms (e.g., talent acquisition suites and talent communities) (Heneman et al., 2019, p. 232).
Talent Communities	**Talent communities** (e.g., PwC Talent Community) allow employers to build and curate a collection of high-potential future job candidates that the firm would like to stay connected to (Phillips, 2023). Individuals self-

platform. As with other LMT

that perform a one-
populations of potential job candidates are made visible to which recruiters.

Table 4: LMT Scope

Category

Table 5. Locus of Control Over Platform Presence, Data Extent and Data Access

LMT Type	Locus of Control Resides Primarily with LMT Operators or Individuals or is Balanced for:		
	Platform Presence	**Qualifications Data Extent**	**Qualifications Data Access**
Traditional Job Boards	**Individuals:** People decide whether to create a presence.	**Individuals:** People create profiles and list qualifications. Employers may solicit additional data during applicant screening.	**Individuals:** People designate whether their profiles are available to all, or only selected employers**.**
Comprehensive Job Boards	**LMT Operators:** The platform operator unilaterally creates a presence for a set of individuals.	**LMT Operators:** The operator decides what data to host, although it usually must enlist other institutions (e.g., universities) to supply the data.	**LMT Operators:** The operator determines who has access to what data.
People Aggregator Sites	**LMT Operators:** The operator unilaterally decides which individuals to gather data about. While some aggregators allow people to opt out in principle, in practice very few are aware they are being aggregated or that they can opt out.	**LMT Operators:** The operator decides what data to host, conditioned on what third parties have made available to aggregate.	**LMT Operators:** The operator determines who has access to what data.
Professional SNS	**Balanced:** While people decide whether to create a presence, evolving norms can create substantial pressure to have a presence on some platforms, such as LinkedIn.	**Individuals:** People craft their profiles and list qualifications, and some make public posts. Colleagues can offer skills endorsements, but individuals are empowered to delete them.	**Individuals:** People decide what data to include in their profile, which also determines how discoverable they will be via search engines**.**
Credential Networks	**Individuals:** People decide whether to create a presence, but if credential networks become sufficiently popular, individuals could have the same pressure to create a presence that they have now on some professional SNS.	**Balanced:** People create profiles and list	

time or inclination to make their good performance visible to others). Watson et al. (2023) describe an *information compression* paradox, where adding data that has low variation to a decision process actually reduces the amount of useful information. An emerging literature investigates a *hypervisibility/(in)visibility* paradox in which members of marginalized groups are prone to be excessively visibility in terms of negative scrutiny, but insufficiently visible in terms of positive recognition (Settles et al., 2019).

Continuing in this vein, I consider three paradoxical tensions pertaining to the effects of LMTs on QV (Figure 3). In all three cases the paradox arises because some factor connected to LMTs increase QV in one way but diminish it in another.

Figure 3: Paradoxical Tensions in the LMT QV Relationship

3.3.1 Crowding on the Field of Visibility

> *"And when I'm old and I've had my fun, I'll sell my inventions so that everyone can be superheroes. Everyone can be super! And when everyone's super... no one will be." – Syndrome, the villain from Pixar's The Incredibles.*

LMTs connect recruiters and jobseekers on a *field of visibility*:

Regardless of why it happens, crowding matters because of its paradoxical effect on visibility. As with the superpowers referenced in the quote above which are by definition powers that exceed some normal baseline visibility also has a relative quality. Imagine a field of visibility in the form of a football stadium. If a single tuba player stands alone at the 50-yard line, they will be highly visible to an observer perched up in the stands. Now imagine this tuba player is just one of a 1000 spaced out on the field. Even if our observer still has an unobscured line of sight, the original tuba player will be effectively invisible under this revised scenario.[8]

It is not a new idea that something can be perfectly visible in principle but effectively invisible in practice. Experiments have shown that *banner blindness* negates the influence of online banner ads (Benway, 1998) and *inattentional blindness* can hide a gorilla in our midst (Drew et al., 2013).
mechanisms involved will vary depending on the context. I elaborate those mechanisms now to

While classic economic models assume search frictions away, these frictions occupy a central position in search theory (Chade et al., 2017; Rogerson et al., 2005). A search friction is anything that raises the cost of finding and/or learning about something an individual or firm wants, such as a product to buy, a person to date, college to attend, or an employee to hire. Application frictions are a category of search friction that arise when an actor must first apply for permission to e when

of scholarly attention: a need, however, for research from the [individual-as-signaler] (Celani & Singh, 2011, p. 232). The rise of LMTs creates a corresponding rise in the ability of employers to manage the signals they receive from applicants.

matter in the context of labor search. The quality of a jobseeker, such as determined by the apparent level of person-job and person-organization fit, is obviously crucial. Firms want to avoid receiving applications from individuals with low self-

performances of expertise. In particular, individuals tended to portray their expertise in ways that would lead to desirable future work assignments and avoid undesirable ones.

Despite its popularity, Hogan (2010) has questioned the use of stage play metaphor with respect online presence, and has suggested an *art exhibition* as an alternative metaphor. In particular, Hogan argued the need to distinguish b] TJp1 6648.5nh dital

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deter or make more easily detectable

Accessibility of Qualifications. Labor search involves multiple rounds of screening and selection in which candidates are evaluated on progressively more detailed criteria, as depicted in the hiring funnel. Recall that qualifications are accessible when actors can easily locate, retrieve, to data that is already codified, and also to the ease with which employers can extract and codify additional data and make that data available to recruiters, such as through psychometric testing (Tippins, 2015) or machine learning methods (Hickman et al., 2022; Sajjadiani et al., 2019).

Increasing accessibility allows each round of screens to be based on a fuller picture of candidate qualifications, which should improve search efficiency by avoiding certain kinds of Type I and Type II errors. Type I errors i.e., passing someone on to the next stage of the funnel who should have been ejected results in a waste of resources to identify the mistake in subsequent rounds of screening, or even worse, to bear the costs of mistakenly hiring an unqualified worker. These errors can occur when an employer lacks access to data (such as skills test results) that would show that a candidate is weaker than they appear to be (e.g., because a candidate has exaggerated their skills). Type II errors, by contrast, involve ejecting someone from the hiring funnel who should not have been. This carries the potential opportunity cost of hiring a less qualified worker in their place or no worker at all. These errors can occur when an employer lacks access to data that would have shined a more favorable light on a candidate, such as that they possess some skills that were (for whatever reason) not voluntarily disclosed. In sum, those Type I and II errors that arise from a lack of accessibility result in the waste of search resources, which means they reduce LS efficiency.[10]

Interpretability of Qualifications. Indicators of qualifications are interpretable when these

increased interpretability improves search efficiency by helping to avoid Type I and Type II errors. Decreasing misinterpretations that overrate a candidate helps to avoid Type I errors, while decreasing misinterpretations that underrate candidates avoids Type II errors.

Potential Boundary Conditions.

promotion or transfers (Weller et al., 2019). As a third potential advantage, Bidwell (2011) found that internal hires were

variety of LMTs that magnify QV and shape it in non-obvious ways. Accordingly, the central contributions of this paper are: (1) to develop the concept of qualifications visibility and elaborate its dimensionality, (2) to delineate how it is magnified and shaped by LMTs, and (3) draw on theories of visibility, signaling, and strategic self-presentation to devise a theoretical model of labor search that places QV at its center. These contributions have potential implications for a number of broad literatures (e.g., visibility, LMTs, labor search, signaling, strategic self-presentation). However, here I will focus on two literatures in particular: (1) visibility in organizations and society, (2) labor search in the context of organizational staffing, particularly as it relates to hiring and staff deployment.

Visibility in Organizations and Society. As already noted, visibility has received growing attention as a theoretical concept. Some scholars take a broad perspective on visibility in (e.g., (Brantner & Stehle, 2021; Brighenti, 2007, 2010; Leonardi & Treem, 2020)) while others focus more narrowly on visibilities related to social media, knowledge management, or other communication technologies (Leonardi, 2014; Leonardi & Treem, 2012; Safari et al., 2022; Treem & Leonardi, 2013; Treem et al., 2020; Yoon et al., 2024). A closely related stream considers the implications of pervasive personal data digitalization (PDD), such as for human autonomy and dignity (Davidson et al., 2023; Leidner & Tona, 2021; Zuboff, 2023). Of course, digitized personal data must first be made *visible* to people and algorithms (such as through the LMTs described in this paper) in order to have implications for autonomy and dignity analyzed in this literature. Even so, the visibility of worker *qualifications* has not been a focus in the visibility[15] or PDD literatures. QV as developed here and the explication of how it is shaped by

the transparency paradox (Leonardi & Treem, 2020, p. 1213)
to provide greater transparency into communication, information, and operations can actually

Labor Search in the Context of Organizational Staffing. Although QV has potential

the HR domain, specifically for labor search. A natural starting point for scholars would be to investigate the

For example, Proposition 2b turns on the fact that application frictions can create credible signals of quality and intent that increase visibility through the interpretability pathway. In the HR literature that uses signaling theory as a lens (Connelly et al., 2011), research has taken the employer-as-signaler perspective almost exclusively (Celani & Singh, 2011), and has mostly attended to actions that employers can take to make themselves more visible in ways that send credible signals, rather than how to interpret signals from applicants. As a result, Celani and Singh have called for a rebalancing of scholarly attention, as previously noted. The rise of LMTs creates a corresponding rise in the ability of employers to judge and manage the signals they receive from applicants. Future research could use signaling as a theoretical basis, and prior work on the college application process (Avery & Levin, 2010; Knight & Schiff, 2022; Smith et al., 2015) as an empirical model for how to study job application frictions, and the circumstances in which they can create credible signals of job-seeker quality and intent. While public data on the use of mechanisms that increase (or reduce) applications frictions in hiring are less accessible than for college admissions, it should be possible to get some insights from scraping recruitment portals, or enlisting the active cooperation of specific firms. In addition, existing HR studies on realistic job previews (RJPs) (Bretz Jr & Judge, 1998; Phillips, 1998; Ryan et al., 2000), including one that has taken a signaling frame (Capitano et al., 2022), could be a source of research design ideas for studying Proposition 2b. Finally, it might be interesting to extend theorizing to distinguish between two different kinds of application frictions: those that make it more difficult for candidates to decide if a firm is application-worthy, and those that make it more difficult to actually apply once the application decision has been made. Perhaps only the latter sort of friction has the paradoxical effects posited in P2b.

As a second example, researchers could use Proposition 2a (LMT-related crowding and QV), and Proposition 2c (LMT-enabled strategic-self presentation and QV), to support a new stream of research on the evolution and efficacy of jobseeker tactics in an era of increasing QV and the potential employer responses to these tactics. Such research could use strategic self-presentation as a theoretical lens. For example, field researchers could engage with jobseekers to discover what kinds of tactics they employ to remain noticeable on increasingly crowded visibility fields, and the implications of those tactics for the interpretability dimension of QV.[16]

Appendix A: Visibility Concepts in Prior Work

Source	Category	Definition	Facets
This paper	**Qualifications visibility** in labor search	Qualifications visibility is the ease with which salient actors can discover, access, particular jobs or tasks	
Stohl et al. 2016[17]	**Information visibility** to facilitate organizational transparency	Information visibility is "the combination of three attributes: availability of information, approval to disseminate information, and accessibility of information to third parties" (p. 124)	disseminate parties
Treem et al. 2020	**Communication visibility** pertaining to individual messages in organizations	"Communication visibility refers to the outcomes of activities through which actors strategically or inadvertently: (a) make their communication more or less available, salient, or noticeable to others, and (b) view, access, or become exposed to the communication of others, as they (c) interact with a particular sociomaterial context" (p. 46).	visibility of communication by making it more or less *available*, *salient* or *noticeable to* others
Leonardi & Treem 2020	**Behavior visibility** in organizations and society	Behavioral visibility is the "sociomaterial performance of the behavior of people, collectives, technological devices, or nature in a format that can be observed by third parties through minimal effort such that patterns, causes, or motives can be inferred (regardless of the veracity of those inferences)" (p. 1605)	of people, collectives, devices, and nature that can be observed with minimal effort
Brantner & Stehle 2021	**Digital visibility** of individuals in organizations and society	"'Digital visibility' refers to perceptibility sense of being noticeable (this understanding is closest to the original understanding), in being heard or noticed, or in the sense of being respected or recognized" (p. 93)	recognized

[17] Of the visibility concepts highlighted here, my approach most closely corresponds to Stohl et al. (2016). Their a*vailability* actions, and then storing inscribed information in physical files or digital systems, can be seen as an enabling condition for my notion of *discoverability*. Their *approval*, which grants permission to see stored information, maps most closely to my notion of *accessibility*. Finally, their *accessibility*, which comprises enabling conditions that make it easier and more feasible for a person to retrieve and interpret information to which they have been granted access, overlaps with my *accessibility* and *interpretability* dimensions.

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