(When) Is Hiring Strategic?
Human Capital Management as a Design Decision in Organizations

Daniel W. Elfenbein
Washington University in St. Louis
elfenbein@wustl.edu

Adina D. Sterling
Stanford University
adinad@stanford.edu

August 19, 2018
Submission for the Strategy Science special issue on
What makes a decision strategic? Integration of Strategic Management Research

Abstract

This paper examines when, and under what specific conditions, who-to-hire is a strategic decision. We identify four mechanisms involved in hiring that add to the “strategicness” of human capital decisions. We argue to the degree that hiring outcomes are influenced by these mechanisms, the hiring decision is not a nearly-decomposable choice that can be treated independently from a firm’s other strategic decisions. We note there is a pressing need for an understanding whether and when hiring is strategic given the trend toward AI-based hiring. By delving into the mechanisms and conditions that make hiring strategic, we highlight gaps and opportunities for researchers and provide a broader conceptualization of how and why firms acquire human capital.

Keywords: strategic human capital, labor markets, hiring, algorithms, networks

Acknowledgments: This paper has benefitted from helpful conversations with Seth Carnahan, John deFigueiredo, Michael Leiblein, Todd Zenger, as well as the Stanford Macro OB Group. All errors remain our own.
INTRODUCTION

An often-repeated corporate aphorism holds that “our [firm’s] people are our greatest asset.”¹ Although there is intense debate, both within and outside the academic community, about whether this aphorism holds true (and more importantly, perhaps, whether executives behave as if it were true), it does not follow directly from this claim that people, and the processes through which people are brought into the firm, are necessarily strategic. An asset, or a process that acquires or manages the asset, may be important without being strategic.

Following the prior literature, including several pieces within this issue, we argue that this is a not a “distinction without a difference.” While important choices demand caution and careful attention, strategic choices demand a different type of managerial attention: one that recognizes interdependencies between choices and overcomes the challenges associated with actors whose knowledge sets are merely ‘local’ or compartmentalized (Van den Steen 2016). Within organizations, while simple delegation can, in principle, lead to optimal decision-making for important choices – e.g., the location of a new production facility, the selection of an IT service vendor, or implementation of a TQM system – such delegation may fail to achieve optimal results when decisions are strategic. As hiring decisions in organizations are often delegated to hiring managers that may not be involved in day-to-day operations (Hoffman, Kahn, and Li 2017) or to external firms (Fernandez-Mateo 2009), a critical question is whether hiring decisions can and should be considered in isolation, as such delegation implies, and when these decisions should take into account more holistic aspects of a firm’s context – which we refer to

¹ http://www.goldmansachs.com/who-we-are/people-and-culture/
https://www.inc.com/james-kerr/your-people-are-your-most-important-asset.html
as the firm’s workplace organization or organization design (Ranson, Hinings and Greenwood 1980; Puranam, Raveendran, and Knudsen 2012).

The question of whether and when hiring is strategic is of increasing importance for at least two reasons. First, automated approaches to hiring decisions are growing in prominence. Advances in artificial intelligence, machine learning, and data availability – together with the fact 57% of costs for US businesses are salaries and benefits – are leading to an explosion in usage of predictive analytics to advise on, or even make, hiring decisions. While an extensive discussion of such a technological shift is beyond the scope of this article, it is worth noting that even as machines become more sophisticated in selection, they do so largely based on ‘local’ optimizing rather than a ‘global’ view that accounts explicitly for the interdependencies of hiring with other design choices. When hiring is non-strategic, existing machine learning approaches might operate rather well (although see Luca, Kleinberg, and Mullainathan 2016; O’Neil 2016 for a discussion on why careful attention may still need to be paid to avoid discrimination); however, when hiring has strategic elements, which we define below, algorithmic optimization efforts combined with A/B testing are likely to be insufficient to deliver the desired results.

2 A robust literature on strategic human capital has arisen over the past decades (Becker, 1962), but its focus has largely been on identifying the conditions under which firms can appropriate value and/or obtain super-normal returns by hiring workers who deliver value well in excess of the wages they receive (Wright, Coff, Moliterno 2014). These are important considerations, to be sure. However, they offer limited insight about the organization of hiring decisions within the firm, the constraints in that impinge upon hiring decisions in differing ways, the relevance of sourcing labor through employment as opposed to other means, and the contingent nature of when value might be realized.

3 https://www.bls.gov/lpc/ [accessed 8/7/2018]. We thank Seth Carnahan for providing this information.


5 In “Productivity and Selection of Human Capital with Machine Learning” Chalfin et al. 2016 provide evidence of a reduction of police force misbehavior, improving with machine learning (ML). Their model is about what we term ‘local optimization.’ Their ML-predicted distribution is reported to reduced shootings by a predicted 4.81% when the bottom decile of officers hired were replaced by officers performing in the middle segment.
Second, attention to when hiring is a strategic decision promises to shed light on the complex set of factors that affect the acquisition of human capital. For instance, more than 50% of hiring in the U.S. and other countries occurs through social networks (Franzen and Hangartner 2006; Rubineau and Fernandez 2012). Empirical evidence on the effectiveness of this practice is mixed, with some studies suggesting benefits to this practice and others finding detriments (Burks, Cowgill and Hoffman 2015; Pinkston 2014). Nonetheless, the importance of referrals and references for candidate selection, not to mention the relevance of social networks for spreading knowledge of job openings themselves, highlight that a firm’s effective ability to generate candidates and assess their quality evolves dynamically as the firm hires, creating both opportunities and potential homophily traps (Rider 2012; Ibarra 1992). Treating hires in isolation from one another, or gravitating towards a ‘best athlete’ model of candidate selection, may be hazardous.

A return to the question, “what makes a choice strategic?”, we contend, can unlock new insight when applied to the question of hiring. Although there may, as yet, be no succinct and universally recognized answer to this question, the literature points toward four factors that make decisions more strategic, and consequently render one-off decisions by unitary organizational actors, external agents, or one-size-fits-all optimizing algorithms increasingly ineffective. Building on a game-theoretic tradition in economics, Ghemawat (1991) argues that irreversibility is a central feature of strategic decisions. Irreversibility fosters commitment among stakeholders,

---

6 Lab and field experimental studies suggest that firms do not always select the highest quality candidates for jobs (see Galperin et al. 2018; Rivera and Tilcsik 2016). In observational research, some studies suggesting high quality candidates are more likely to be sourced through networks (Burks, Cowgill and Hoffman 2015), some finding limited benefits to referral-based hiring practices (Merluzzi and Sterling 2017; Pinkston 2014; Fernandez, Castilla, and Moore 2000); and still others suggest that the benefits of recruiting high-quality candidates via employee networks may be real but short-lived (Castilla 2005).
irrevocably changes the choices available to competitors, and introduces path dependence by narrowing some set of options while unlocking others. A second set of considerations that make decisions strategic is the extent to which activities in an organization reflect interdependencies (Van den Steen 2016) and generate payoffs that are contingent on fit, alignment, or complementarities among one another and with the firm’s organizational design choices (Levinthal and Warglien 1999, Rivkin and Sigglekow 2003). Interdependencies generate severe challenges for organizations in searching for and implementing design decisions, and place a premium on knowledge sharing and coordination across and among decision-makers. A third school of thought, not unrelated to the first, focuses on how conflict and competition define strategic choices. If the value of different alternatives depends on competitors’ responses, then organizational decision-makers must put themselves in the shoes of these competitors and forecast how they will react to each alternative. A fourth perspective emphasizes organizational learning under uncertainty. When the capacity of an organization to evaluate and exploit new opportunities resides in networks or routines, past experience (and personnel) will impact the effectiveness of present-day search, generating a learning-based path dependency.

Each of these factors individually raises the complexity of decision-making and places a premium on developing and communicating a guiding policy (Rumelt 2011), but they are often present in combination with one another. In our view, the relevant goal for scholars is not simply to distinguish strategic from non-strategic choice, but rather to be able to isolate conceptually the factors that generate “strategicness,” whether individually or in combination with one another. Thus our approach to addressing these questions is to focus on whether the individual mechanisms that generate “strategicness” are relevant for the study of modern-day hiring
practices. The issue of *irreversibility*, for example, pertains to questions about difficulty in terminating workers, whether employment fosters mutual commitment, and the conditions under which it generates benefits for the firm that exceed what it could obtain through obtaining labor in a spot market or through repeated contracting. For hiring decisions, the issue of *interdependencies* underscores the importance of understanding the structure of work, how heterogeneous skills across individuals in an organization substitute for or complement one another, and raises questions about the nature of firm-specific human capital. A focus on *competition*, highlights the need to understand how timing decisions impact hiring outcomes and how within-industry hiring affects both source and destination firms. Examining hiring as a process of organizational *learning under uncertainty*, demonstrates the importance of viewing hiring as a dynamically evolving capability, in which an organization’s ability to identify and assess talent is a function of its experience, and organizations may both “learn to hire” and “hire to learn.” The upside to attention on “strategicness,” then, is that it can both elucidate organizational, analytical, and behavioral remedies that can guide policy and illuminate promising questions for researchers.

Our contention is the analysis of strategic choices demands a different sort of scholarly attention, especially in the context of human resources practices. When hiring is strategic—i.e., connected in meaningful way to prior choices the firm has made, its asset base, and the competitive context—selection that neglects these critical features may be misguided and lead to costly mistakes (Abowd and Kramarz 2003). The value to pharmaceutical firm, for example, of a hiring a biological scientist with strength in basic research, may depend highly upon whether that firm has adopted an open science policy (Cockburn and Henderson 1998) as well as the routines
that exist for the development of basic science with the firm (Feldman and Pentland 2003). Similarly, the value of hiring a marketing-oriented CEO vs. a finance-oriented CEO, may depend on the functional background of the prior CEO because of the structural and design decisions the CEO has made in the past (Yen 2014). Moreover, Lazear and McCue (2018), document extensive and persistent heterogeneity in rates of employment churn, i.e., job separation and hiring replacements, across the population of U.S. firms. While some of this inter-firm heterogeneity in employment churn can be explained by industry effects, a significant proportion of within-industry heterogeneity exists, implying the impact of hiring decisions will frequently require both an understanding of competitive context, firms’ policy choices, complementary assets, and history.

**WHAT DOES IT ACTUALLY MEAN TO HIRE?**

We turn our attention the nature of modern-day hiring practices, and we consider whether the mechanisms involved lead to “strategicness.” The vernacular usage of "hire" may or may not be consistent with strategic considerations. In principle, an organization can receive services from a person as a transaction, through a multi-period contract, or via employment. Conversely, many firms pay people for services in ways that may technically meet the classification of employment, but are not consistent with the term hiring used here. Hiring as we define it here occurs when an individual is internalized by a firm at the beginning of an employment relationship. By “relationship,” we refer to the fact an employer has the authority to dictate behavior versus merely contract for some output (Simon 1951), and also that the employee has an expectation that, conditional on acceptable performance, she/he will be able to continue at the
firm (Baker, Gibbons and Murphy 2002). Our focus, then, is distinct both from spot-market labor transactions, in which an organization would hire a worker for short, pre-specified period of time, and from a simple contracting relationship, in which an organization hires a worker to complete a specific job. According to common legal doctrine, hiring involves "the duty of care" that is received from employers by employees, and vice versa (Cappelli 2018). That is, obligations exist between employers and employees and each is legally required to work in the best interests of the other, as well as avoid conflicts of interest (Cappelli and Keller 2013). As we discuss below in the section on irreversibility, establishing such relationships involve both sunk costs in hiring and separation.

To give some intuition to our overall approach, consider what is frequently referred to as the ‘best athlete’ approach to hiring. Without a doubt, the best athlete approach—i.e. hiring the most talented person available—may lead to optimal selection under certain, limited conditions. The information needed to make a hiring decision under a ‘best athlete’ approach is related to the potential employee’s demonstrated ability, skills, and historical track record of performance, thereby limiting the scope for a hiring manager’s idiosyncratic preferences to come into play. Yet, a best-athlete approach to hiring is, by its very nature, disconnected with and independent from prior hiring choices, and other existing assets and routines of the firm. There is nothing strategic about this choice, in the sense that a manager (or an algorithm) with only limited (or, following Van den Steen (2016) ‘local’ knowledge of the firm’s capabilities, policies, or

---

7 We recognize that multiple distinctions exist in how firms access labor markets. Baker, Gibbons, Murphy (2002) outline four modes: spot outsourcing, relational outsourcing, spot employment and relational employment, where the distinction between outsourcing and employment depends on the ownership of the (non-human) productive assets. We think of our main interest in this paper as relating to relational employment, but acknowledge that some of our arguments can apply to other modes as well.
competitive context, has sufficient information to select the desired candidate under this approach.

Importantly, a shift to strategicness takes us one step closer to the way some organizations actually hire. Our own research and interviews with managers suggest they strive for more “strategicness” in selection but they struggle with how to do so, and so instead choose on the basis of “cultural fit” and used as some proxy for the likelihood that that people in the organization will get along (Rivera 2012; Srivastava et al. 2017). For the sake of scholars and practitioners alike, by interrogating if and when hiring is a strategic decision, and when it is, what makes it so, we can get to a significant set of shifts that scholars ought to make when considering how firms acquire human capital. We provide a list of some of these shifts Table 1.

For instance, strategicness moves us from emphasizing selection of best athletes to selection of those that fit best with existing people, assets, and policies. It moves us from thinking about how a person’s skills align with a job, to how a person aligns with a job within a specific firm.

[INSERT TABLE 1 HERE]

WHEN IS HIRING STRATEGIC?

Irreversibility and path dependence

As noted in the introduction, we consider four attributes that make decisions strategic – irreversibility, interdependencies, competition, and organizational learning under uncertainty –

---

8 For example, one of the authors conducted interviews with a few dozen hiring managers, and many stated they hire for cultural fit, as a way to know who would likely perform well in the organization.

9 Managers regularly report this is the case. See https://hbr.org/2018/01/how-to-hire.

10 Van den Steen’s (2016: 2617) states that “[i]Irreversibility … does not necessarily make a decision more strategic, but it always increases the value of strategy and makes decisions with which the irreversible decision interacts more strategic.” As our main concern is with the conditions under which a strategic (i.e., holistic) approach to
and apply them to the decision to hire. Of these four factors that contribute to making decisions strategic, irreversibility has long been noted as playing a central role (Ghemawat, 1991; but also see Van den Steen, 2016: 2617). Definitions of irreversibility emphasize the importance of some unrecoverable, i.e., sunk, cost in changing a given state of the world, which both creates and destroys real options (Trigeoris and Reuer 2017). In terms of employment, this condition is be met if hiring is both costly and transforms the exchange relationship between the individual and firm in some important way, or if hiring is costly to reverse. In this sense, the question is whether hiring changes the commitment between firms and individuals in ways that it does not when firms merely contract labor.

In considering whether irreversibility is a central feature in hiring, we draw upon literature in economics, sociology and organizational behavior that examines potential changes in commitment between individuals and firms that hiring produces. Economists have long recognized that legal institutions and other considerations make firing costly for firms (Hamermesh 1993, DiTella and MacCullough 2005). In the human capital tradition, arguments that build on Becker (1962) contend that, because firing is costly, employment generates expectations in workers that their relationship with the firm will endure, prompting them to invest in firm-specific skills, despite the fact that it may raise their dependence on that firm because those skills are less valued elsewhere. Hiring, then, may generate a virtuous cycle of mutual dependence, in which employees create more value than contractors or spot-laborers. In organizational sociology, hiring similarly impacts the commitment of workers toward firms and vice versa, because employees and firms make investments in the relationship. For employees, decision-making about hiring, we implicitly argue for a somewhat broader definition of “strategicness” than Van den Steen.
this is not simply limited to investments in firm-specific skills, but also involves adjusting their beliefs and values in ways that align with the firm through socialization (Etzioni 1961). In organizational behavior, employment induces a psychological contract about what is expected by individuals with respect to firm behavior (Rousseau 2001), through a process of identification (Kelman 1958; O’Reilly and Chatman 1986) that generates loyalty and attachment (Kanter 1972; O’Reilly and Caldwell 1980). Because of investments individuals make in firms and vice versa, psychological contracts, and socialization, the employment relationship requires some cost to break it once hiring commences even when employees strongly disagree with executives leading firms (Bolton, deFigueiredo and Lewis 2017). Hiring, therefore, from the standpoint of the firm and individual, leads to fewer options than prior to the hiring relationship commencing (Autor 2003).

While the semi-irreversible nature of hiring, in many cases, has the potential to expand the value-creation potential of the firm-individual pair, it by no means is guaranteed to do so. Firms’ commitments to employees may be unsustainable in challenging competitive environments, or in times of economic contraction. Tournaments and up-or-out policies create strong incentives for employee effort, but for many workers limit expectations of relationship continuity (Phillips 2001). Bennett and Levinthal (2017) develop a model that demonstrates that mutual commitment—the firm’s ability to credibly promise promotions and the worker’s willingness to go above and beyond the call of duty to improve the firm’s processes—depend on the firm’s growth rate. A related perspective argues that relational contracts are challenging to build, are history dependent, and may be affected by individual managers with heterogeneous capabilities (Gibbons and Henderson 2012). The impact, then, of hiring on perceived mutual
commitment between employee and firm is, we believe, both an empirical matter and an object of managerial discretion. Firms that seek to limit their commitments to their workforce, may naturally find hiring less strategic, and vice versa.

Beyond the value of commitment, a second key mechanism operates through irreversibility to generate path dependence in hiring decisions. Specifically, previously hired individuals currently working for the organization serve as important mediators that provide information to their acquaintances and friends looking for jobs about what it is like working for the employer, while also providing information to the employer about a candidate’s skills and work ethic (Granovetter 1985; Fernandez and Weinberg 1997). Because candidates with social relationships to employees are more apt to be hired, this establishes a path dependence in hiring based on historical choices of who was hired previously. Path dependence is generated through search: those with existing social relationships in the organization are likely to be alerted about jobs and to locate positions at the firm although even when they are not actively searching (Small 2009) and are constrained by the spaces or geographic locations of workplaces (Bayer, Ross, and Topa 2008; Sorenson and Dahl 2016).

This path dependency has implications, especially if a firm is hiring for growth versus replacement, or vice versa. In the U.S. approximately three-quarters of all hiring is to replace workers that have left the firm, be it voluntarily or involuntarily, while the remaining one-quarter is for the purposes of replacing human capital (Lazear and McCue 2018). Hiring for replacement vs. strategic growth may influence the desire of a manager to reach into new labor pools, depending on the direction of the firm’s overall strategy. However, the ability of the manager to do so, and to do so in a timely way, is apt to be constrained by who has been hired in the past.
Network hiring tend to reproduce the same human capital within the firm, because “employees typically refer candidates from a small homogenous portion of the available labor pool, as initial job-holders are replaced by others with increasingly similar attributes” (Rider 2012: 455). To the degree that managers decide to try to hire to learn through the acquisition of new knowledge (Almeida and Kogut 1999; Song, Almeida and Wu 2003) their ability to do so through hiring may depend on the constraints of the networks they have hired from in the past.

Finally, firms are constrained in their human resource selections because prior decisions about who-to-hire and how those individuals are paid affects the degree to which new hires can be selected, contingent on social comparison costs (Nickerson and Zenger 2008; Kacperczyk, Beckman, and Moliterno 2015). Social comparisons costs arise because individuals respond to allocative outcomes and the degree to which such outcomes are perceived as fair (Festinger, 1954). Studies find that organizational decision-makers respond to social comparison concerns within organizations leading potentially to sabotage and lower morale when inequities are perceived (Nickerson and Zenger 2008; Bartling and Von Siemens 2010). When social comparison costs are high firms attempt to keep wages secret (Larkin, Pierce and Gino 2012), and they are more likely to provide equal pay for workers that might learn of one another’s pay (Gartenberg and Wulf 2016). As a result, historical decisions about pay, and the perceptions of the existing workforce about the fairness of this pay, generate constraints about the wages that can be offered to a prospective recruit, and thus narrowing the set of candidates from which the firm can hire.

In sum, the theoretical attention paid to the employment relationship points toward “true hiring” frequently being synonymous with a definition of irreversibility, which is a key pillar of
what makes a decision strategic. Irreversibility creates commitment among stakeholders, changes the choices available to competitors, and introduces path dependence because there is a narrowing of the options available. In the case of hiring, a relationship between a firm and a prospective employee may change in ways that would not be possible if the firm merely contracted labor. Beyond the simple attachment that arises from the fact that firing is costly, firms and their managers may seek to promote commitment using a variety of mechanisms.

*Interdependencies and complementarity*

The literature on strategy has long emphasized the importance of understanding the complementarities among activities and assets (Milgrom and Roberts 1986), recognizing that 'fit' is a central concern. In some cases, new hires' contribution to an organization may simply be additive. In these cases, the value creation potential of a new hire can be largely assessed in isolation from prior hires - examples may include real estate agents, auditors, delivery personnel, cashiers, or IT Help Desk specialists - rendering the optimal decision of whom to hire, and what wage to offer, independent from prior hires (which determined the existing pool of employees) and future hires. While simple additivity of employee contributions does not make these hiring decisions unimportant, it does make them significantly less demanding in terms of managerial attention and the space of alternatives that need to be considered.

In other cases, however, a new hire’s expected contribution is a function of the skills of existing employees, firm assets, routines, and/or firm policies. Neglecting the interdependencies between the particular profile of skills brought by a potential employee and these existing features of the firm can come at great cost. Where these interdependencies are important, relying
on analytics driven by common, or cross-industry, data or on the input of functional experts is likely to lead to erroneous decisions.

Consider, for example, a shortstop on a major league baseball team. Increasingly, major league baseball organizations have been using analytics to measure the value of a player’s contributions: for non-pitchers, a player’s contribution can be decomposed into offensive wins above replacement (OWAR) – a measure of the player’s contribution in hitting relative to an ‘average’ available substitute player – and defensive wins above replacement (DWAR) – a measure of the player’s contribution in fielding relative to an ‘average’ available substitute. These measures can be combined into a single WAR measure, and significant data analysis goes into projecting the shortstop’s future WAR value. Both historical measures and future measures allow for a ranking of each player’s value. Yet it is clear that the value of a particular player to a particular team cannot be accurately summarized by these WAR measures. First and foremost, the value of a free agent shortstop has less value to a team that already has a healthy, productive player at the position, who is signed to a long-term contract. Second, and more interestingly, perhaps, is the fact that a strong fielding shortstop will be more valuable to a team whose pitching staff induces more ground balls, as opposed to fly balls or strikeouts. By contrast a team whose pitchers generate a high rate of strikeouts will find the fielding skills of the shortstop less important. Thus, the potential defensive contribution of the free agent shortstop to the team depends on its existing stock of pitchers. Moreover, since strikeout rates depend on whether (Kent and Sheridan 2011), the team’s home location (a fixed asset) impacts the predicted importance of the shortstop’s defensive ability. Lastly, the fielding contribution depends on the team’s policy as well: certain pitching coaches emphasize the skills required to successfully
“pitch to contact” – typically throwing sinking pitches low in the strike zone – whereas others emphasize strikeouts, which require pitchers to develop and refine an entirely different repertoire (Bracking 2012). Figure 1 offers an illustration of these main sources of interdependency.

Recognizing these interdependencies is critical to accurately evaluating a prospective employee’s contribution to the organization and making the correct hire. Accounting for these interdependencies, however, is not simple. It is well known from studies of systems in theoretical biology (e.g., Kaufmann 1993) and complementary work in strategic management (e.g., Rivkin 2000, Ghemawat and Levinthal 2008) that as more interdependencies between choices are introduced, complexity rises, and the effectiveness of feedback and learning from “local search” – i.e. measuring the performance impact of a particular decision – is undermined. As far back as Barnard (1938), scholars have recognized the resulting importance of top executives in setting guiding policies (Rumelt 2011) that improve the chances that an organization will effectively manage the interdependencies between workers skills, organizational assets, and firm policies. While Van den Steen (2016)’s formal model does not directly address worker skills, it highlights the importance of coordinated choice, and could naturally be extended to incorporate choices about hiring in a market with heterogeneous worker skills. Unsurprisingly, the need for “alignment” between strategy and organization, has been a staple of management textbooks (e.g. Saloner, Shepard, and Podolny 2001).

Interdependencies between employee’s skills, and between the collective profile of individual skills and firms’ assets and policies also create challenges for scholars who might seek to map the relationship between individual attributes and organizational performance, assess the
impact of training programs on productivity, or to assess the impact of quits on productivity or profitability. A relatively small empirical literature explicitly addresses these interdependencies. In studies of biological science, examinations of collaboration networks have enabled scholars to uncover the impact of superstar researchers on collaborators within and across organizations (Azoulay et al. 2010, Oettl 2012). Empirical study of such interaction effects is challenging; in both papers cited above, the unexpected death of the focal actor presents the exogenous variation required to identify the value created by the scientist through interactions with others. Chen and Garg (2018) use the unexpected injury to superstar basketball players to examine their contributions, and interestingly how organizational routines adapt in their absence and following their return.\footnote{Ethiraj and Garg (2012) also examine complementarities among players in the NBA, highlighting the difference between team-oriented ability and individual-oriented ability.} Other studies in the securities industry (Groysberg et al. 2008, Groysberg and Lee 2009) and medical services (Huckman and Pisano 2006) are highly suggestive of strong interdependencies between individuals and organizations, but rely on movement between organizations – rarely a truly exogenous process – for identification. Bresnahan, Brynjolfsson, and Hitt (2002) examine complementarities between corporate IT investment, workforce attributes, and organizational design choices in cross-sectional data. Analysis of three-way interactions such as these are challenging to interpret.

An alternative approach to understanding the importance of complementarities between individual (and organizational) attributes utilizes matching models. Garicano and Hubbard (2005) show that skill complementarity between partners and associates leads to positive assortative matching in the legal industry. In follow-on work, Garicano and Hubbard (2007) develop a model of interactions between organizational form and the depth of an individual’s
knowledge in the legal industry and find support for their propositions. Mindruta (2013) and Mindruta et al. (2016) examine the impact of individual scientists on the formation of inter-organizational research and development alliances, and articulate the patterns of complementarity between multiple dimensions of researcher ability and organizational knowledge and assets. In doing so, they utilize the maximum score identification approach pioneered by Jeremy Fox and colleagues (Fox 2010, Fox and Bajari 2013, Fox and Santiago 2014). These methods hold great promise for future scholarly investigations into the nature and consequences of complementarities between individuals and between individuals and organizations, as they relate to hiring.

Finally, we contend that a focus on interdependencies and their sources, holds promise for drawing important distinctions between complementarities and firms-specific human capital, both of which are factors that contribute to firms’ ability to appropriate rents from employees. Clearly, not all complementarities between employees constitute firm-specific human capital. Drawing on the example above, the performance impact of a pitcher’s ability to generate ground balls depends on a shortstop’s fielding skill. These skills are complementary, but cannot be viewed as firm-specific. By contrast, a shortstop learning the hand-signals that the manager uses to position him during the game or a pitcher developing a sinker-ball pitch to generating more ground balls, would clearly represent firm-specific knowledge and skills, respectively.

Overall, interdependencies between workers, and between workers and firms’ assets undermine the effectiveness of the best-athlete model, and place a premium on mapping the system of interdependencies, actively managing them, and incorporating them explicitly into hiring decisions. Algorithmic-based hiring decisions that neglect these interdependencies will
underperform, as will organization design decisions that don’t effectively aggregate interdependencies within or across functions.

**Competition, bargaining, and rent appropriation**

Issues of competition impact hiring in several ways. A long-standing theoretical perspective, dating back at least to Becker (1962) suggests that in a competitive labor market, workers wages will be bid up to their “marginal productivity” or, at least, to the non-firm specific component of it. This, in turn, impacts the incentives for both workers and firms to invest in general and firm-specific skill, as discussed above. Dynamic models, such as Jovanovic (1979), examine the role of competition in matching employees with firms with which their skills enable them to create the most value; however, because the value of the individual-firm match is *ex ante* uncertain, worker mobility results. A more nuanced perspective (Campbell, Coff, and Kryscynski 2012), recognizes that labor markets differ in their competitiveness, with supply frequently exceeding demand. Indeed, the downward trend of labor’s share of GDP,\(^\text{12}\) and the stagnation of median wages in the US despite increases in labor productivity,\(^\text{13}\) together suggest that at an economy-wide level firms have been quite effective at leveraging bargaining power stemming from opportunities to replace labor with capital or to globalize. By contrast, in markets in which talent is, presumably both scarce and not easy to replace, such as the market for CEOs, professional soccer players, or cardiothoracic surgeons, individual earnings have increased dramatically. Indeed, evidence suggests that organizations frequently over-pay for top talent (Groysberg 2010).

\(^{12}\) See [https://fred.stlouisfed.org/series/LABSHPUSA156NRUG](https://fred.stlouisfed.org/series/LABSHPUSA156NRUG) [accessed 8/7/2018]

These value appropriation considerations, which result from inter-firm competition\textsuperscript{14}, have been well-studied and have yielded a focus on firm-specific human capital and alignment between organizational values and workers (presumably heterogeneous) non-pecuniary motivations. At the same time, other competitive issues have received considerably less attention. For example, in labor markets in which talent is both relatively scarce and heterogeneous, the timing at which an employer hires becomes critical. Timing affects the likelihood of filling the position (all the good candidates may be matched if a firm waits until all offers are on the table), the level of uncertainty around candidate’s ability and its value (rival offers reveal information about the candidate, and the candidate’s performance record reduces uncertainty about her ability over time), and the pay the candidate is likely to receive (as the number of rival offers is likely to drive the pay that the worker can demand). Roth and Xing (1994) examine markets in the UK, Japan, and the US for medical, managerial, and legal talent, and find that as a whole, hiring firms have incentives to “jump the gun,” which, in aggregate, pushes hiring forward in time. As Sterling (2014) points out, these timing issues lead some firms to limit their attention to candidates who they deem likely to accept their offers. Beyond this, however, little scholarly attention has been devoted to heterogeneity in approaches to timing labor markets and their consequences. Given the obvious tradeoffs associated with different timing strategies, and their interdependencies with firm assets and policies (incentives, promotion policies, separation, training), this is likely to be a promising area of future inquiry.

A second, and perhaps even more critical, competitive aspect of hiring that lies outside of the traditional competitive labor markets perspective, relates to knowledge and capability

\textsuperscript{14} Substitution between local labor, non-local labor, and capital, shape this competition.
acquisition by the hiring firm, and the resulting impact on the capabilities and performance of the source firm. Hiring a critical employee away from a rival may not only improve the capabilities of the destination firm, it may, at the same time, degrade the capabilities of the source firm. When these are head-to-head competitors, the net impact on performance – essentially the value created hiring the critical employee – results from the net improvement in the destination firm’s capabilities. A growing empirical literature addresses these considerations explicitly.\textsuperscript{15} Several of these studies build on employer-employee matched datasets in the legal industry. Campbell et al. (2012) examine the performance impact of employee mobility to existing rival law firms and to startups. Exits to startups have larger negative performance impact on source firms; some of this impact is likely to stem from selection, i.e., elite talent are more likely to become founders. Carnahan and Somaya (2013) study the talent war for patent attorneys and find both positive and negative effects for source firms whose attorneys, respectively, leave to become inside counsel for their clients or for their clients’ rivals. Tan and Rider (2017) examine the moves between law firms of different status and find that middle-status firms gain status when losing employees to high status firms. A parallel literature examines the impact of non-compete agreements on employee mobility, pay, and innovation. Marx, Stumsky, and Fleming (2009) use a change in Michigan state law to show that non-compete agreements are effective in limiting employee mobility. Marx (2011) reports that more than half of all US technical workers sign non-compete agreements, documents firms’ motivations in requesting that workers sign these agreements, and explores how firms make strategic choices to improve and exploit their bargaining power in ensuring that workers sign them. Collectively, this work suggests that hiring from competitors, is

\textsuperscript{15} A longer-standing literature recognizes that employee mobility is a source of knowledge spillovers and absorptive capacity.
both empirically important in many settings and generates both direct and indirect effects on performance.

Yet another stream of research focuses combines issues of competition and complementarity highlighting that firm status is a complementary asset that can impact both value creation and value appropriation. Bidwell et al. (2015) find that high status firms were able to attract strong talent and pay them average market wages early in the careers of employees, because working at a high status firm was a strong signal that individuals sought out for the purposes of future employability. Sterling, Rider, and Wang (2018) argue that high status firms may have greater flexibility and freedom in how they arrange workers within organizations compared to lower status ones because status is a non-pecuniary benefit that leads employees to acquiesce when faced with less stability. In essence, heterogeneity in firms, and firm assets (e.g. like status which posits a unique structural position for firms) allows firms to attract talent in ways that rent can be appropriated.

Whether the competitive issues highlighted above impact talent assessment and hiring decisions depends, of course, on context. In principal, firms can hire from one of 5 different pools: (P1) individuals employed by competitors, (P2) individuals employed by non-competitors, (P3) unemployed individuals, involuntarily separated from a prior job, (P4) unemployed individuals entering the workforce for the first time, and (P5) unemployed individuals returning to the workforce. The competitive impact of timing, raised above, is most important in relationship to P4. The impact of hiring on rivals applies only to P1. Thus, hiring from P2, P3, and P5 is likely to be less strategic than hiring from pools P1 and P4.
Thus far, we have laid out a set of reasons that hiring demonstrates mechanisms consistent with the decision being strategic in nature. A fourth dimension affecting whether or not a decision is strategic is how the decision relates to uncertainty. Uncertainty about a decision can exist because a decision is a complement with other features of a firm or a firm’s assets, i.e. it has interactive effects with other contemporaneous or prior decisions. Uncertainty can also exist because even after a set of investigations ensues whereby knowledge about a current state is gained, there exists some future state that is unknowable i.e. what has been referred to as residual uncertainty (Van den Steen 2016). What, if either of these components of uncertainty, do hiring decisions entail?

Researchers have predominantly focused on how employers utilize signals, such as educational credentials or job tests, to gather additional information about the skills and abilities of prospective employees. This aspect has gotten the lionshare of attention but is not strategic because it is merely about information-gathering that resolves uncertainty. The aspect that is strategic is the fact that after gathering signals that a prospective employee meets some quality or skill threshold, there is nonetheless uncertainty about how such a prospective employee will, through the deployment of skills and motivation, interact or complement other employees and the core routines of the organization. That these interactions exist, and could put a greater value on, not a verification of skills, but on the value of investigations of these interdependencies prior to the hiring decision being made.

Before arguing that firms seek to understand, and react to such interdependencies prior to selecting employees, we first try to illustrate further how the perspective we take differs from
even arguments that appear on the frontier of the way hiring is conceptualized. Some scholars have argued that hiring is fundamentally about organizational learning, wherein knowledge about a certain category of candidates is used to inform future decisions (Huber, 1991; Denrell and Le Mens, 2007; Erev and Roth, 2014). In a useful recent example, Leung (2017) suggests that organizations “learn to hire” based on prior experience, and update routines accordingly. Pivoting off literature about the effects of social categories such as nationality, gender, or race on employer hiring decisions (Arrow, 1973; Pager and Karafin, 2009), Leung finds that employers learn based on prior experiences with employees of varying national backgrounds, and this influences future selection: a positive/negative hiring experience with someone from a country increases/decreases the odds of hiring someone of the same nationality in the future. This is consistent with a real options approach to hiring (Leiblein, Chen, Posen 2016). While the aforementioned example is in the context of an online labor, this has implications in other contexts, including how labor is sourced as a firm moves into new geographic regions (Hernandez 2014; Hernandez and Kulchina 2018).  

The notion that organizations learn to hire is important, but decisions that affect organizational learning, on their own, need not be strategic. The directed focus we give to the interactive nature of uncertainty in hiring extends beyond any one job, selection decision, or social category of worker, in an aim to highlight other organizational features that interact with hiring decisions, in ways that cannot, generally be known ex ante, and which we refer to herein as interactive uncertainty. This interactive uncertainty is not resolved with traditional screening methods. In contrast, employers can try to gain some insight into this uncertainty through a form

---

16 We also recognize that firms not only learn-to-hire but also hire-to-learn (e.g. Song, Almeida and Wu 2003) which may also have implications for the strategicness of hiring.
of temporary employment or a trial (Sterling, 2014; Oyer and Kuhnen, 2016). Unlike at-will employment wherein an employment relationship has commenced but can be terminated ‘at will’ trial employment provides employers the chance to observe employees in the firm without the employment relationship that we defined previously in place. During this observation period, employers are not only observing the skills and abilities of prospective employees, but the interactive or complementary effects of employment across employees, as trial employees perform work in the context of organizations. After observing these interactions, employers may adjust the way that assess the value of workers (Sterling and Fernandez 2018).

Above we noted that there are two aspects of uncertainty that come into place in hiring, and not yet addressed residual uncertainty. Residual uncertainty can remain even after interactive uncertainty has been reduced. In hiring, often the most immediate way residual uncertainty emerges is because for employment to commence, both parties (employers and job-seekers) must agree to the realization of a relationship. Employers, except in extreme situations, make the first pass meaning that they direct offers to candidates. The fact that the job-seekers then have a chance to accept, reject, or negotiate new terms of an offer is a type of residual uncertainty. It is about some future (unknown) state regarding whether or not an employment relationship will actually commence and its nature if it does.

On its surface, it may appear that this has strategic decisions in the way we have defined them above, but we suggest that even when it comes to the commencement of a relationship, historical choices and social factors affect this. What are these historical choices? Employees that have been hired in the past. Employers have a slate of options to encourage commencement or acceptance of offers by candidates, but these options come with constraints. Employers may not
have the option to ratchet up wages to engage acceptance. Existing employees may matter because employers use them to gain acceptance of offers by candidates, or to at least have them let go of offers early that they have no intent to accept (Sterling 2014). For this reason, even residual uncertainty related to hiring that seems on the surface to have little to do with interactive aspects (like whether or not a person will accept a job) does in fact have historical, path dependent elements. The fact that managers must hire in this “shadow of the future” needs to be cogently accounted for in studies of strategic human capital and deserves further research.

CONCLUSION

We argue that the question, “when is hiring strategic?” raises critical issues for scholars and managers alike. We focus on a notion of hiring is akin to Baker, Gibbons, and Murphy’s (2002) definition of relational employment, and begin by noting that, in practice, initiating and terminating such relationships are costly. These sunk costs are a form of irreversibility, which, along with other factors generate commitment between employer and employee supporting cooperation, specific investment, and otherwise difficult to contractible exchanges. The degree to which this commitment is fostered can, itself, be thought of as a strategic choice of the firm, and the degree to which a prospective employee has the propensity to change his behavior as a result of the commitment may be difficult to discern. We further examine how interdependencies between employees, and between employees and firm assets and policies generate complementarities that should be actively managed. Insights from Van den Steen (2016), Rumelt (2011), and others, we argue, must be brought to the forefront in specifying more clearly how these complementarities, as opposed to simple notions of firm-specific human capital, should be
managed within organizations. Similarly, they need to be explicitly addressed in empirical studies of strategic human capital. We further demonstrate that inter-firm competition does not simply affect wage levels, but also impacts the timing and poaching from rival firms in certain subsets of the labor market. Finally, we examine hiring as a process of learning under uncertainty and argue that a firm’s hiring capability evolves dynamically as the result of prior decisions. We argue that the literature needs more empirical and theoretical studies of hiring through this lens. The work of Leung (2017) and El Zayati, Coff, Ganco, and Posen (2018) represent excellent steps in this direction.

Future directions

In the discussion above, we have highlighted a number of directions for future work. We conclude by noting one final area that both draws upon the question, “is hiring strategic” and deserves further scholarly attention: the rise of technology-enabled freelance work. Sometimes referred to as “the gig economy,” this new way of organizing work promises to redefine certain segments of the labor market. As the nature of work has changed, and so has the nature of the need to organize that labor within the organization (Kalleberg 2009; Bidwell, Briscoe, Fernandez-Mateo and Sterling, 2013). From 2005 to 2015, independent contractors in the U.S. labor force increased their representation by 50 percent (Katz and Krueger 2016). Oyer (2016) documents an even greater increase among so-called "independent workers" who comprise those engaged in freelancing on IT-enabled platforms such as UpWork, Uber, or Postmates. While precise estimates are hard to come by, studies suggest that about one-third of U.S. workers are employed as independent contractors, including those that work multiple jobs (Oyer 2016). In
2017, more than three million jobs were filled through Upwork alone, and a similar number were filled through its competitor Fiverr.

The implication is that firms may choose between hiring employees or sourcing work via these “spot labor markets” in ways that would have been unthinkable a decade ago. This includes both high-skill workers such as software engineers, designers, and consultants, as well as medium-to-low-skill workers such as drivers, construction workers, carpenters, plumbers, and home health care workers. At the executive level, startups have been willing to hire “fractional” CMO, CFOs or even CEOs. While this flexibility is attractive in many situations and for many firms, it is only by understanding deeply the question of “what makes hiring strategic” that we can accurately assess the value of commitment, complementarity, and learning forgone via this approach.
REFERENCES


Brackin, Dennis.  2012. Science behind pitching to contact.  


Table 1. Implications of Viewing Hiring as Strategic

<table>
<thead>
<tr>
<th></th>
<th>Hiring is ...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>… not strategic</td>
</tr>
<tr>
<td><strong>Approach</strong></td>
<td>Best athlete</td>
</tr>
<tr>
<td><strong>HR Assessment</strong></td>
<td>Fit with organizational culture</td>
</tr>
<tr>
<td><strong>Delegation</strong></td>
<td>Delegate hiring to HR / best judge of talent</td>
</tr>
<tr>
<td><strong>Path Dependence</strong></td>
<td>Search occurs without constraints</td>
</tr>
<tr>
<td><strong>Value creation / willingness-to-pay</strong></td>
<td>Depends on individual attributes and portfolio of skills</td>
</tr>
<tr>
<td></td>
<td>Market correctly assesses the value of individual’s skills to firm (absent discrimination)</td>
</tr>
<tr>
<td><strong>Hiring vs. Contracting</strong></td>
<td>Depends simply on risk-adjusted price</td>
</tr>
<tr>
<td><strong>Dynamics</strong></td>
<td>Individual attributes sought and valued are stable over time</td>
</tr>
<tr>
<td></td>
<td>Hiring for replacement</td>
</tr>
<tr>
<td><strong>Algorithms</strong></td>
<td>Industry-wide data is useful in predicting candidate productivity</td>
</tr>
<tr>
<td></td>
<td>Predictions improves rapidly with use of internal data</td>
</tr>
</tbody>
</table>
Figure 1. Interdependencies between Employee Skills, Firm Assets, and Policies