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Why Do Firms Fail to Engage Diversity? A Behavioral Strategy Perspective

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Why Do Firms Fail to Engage Diversity? A Behavioral Strategy Perspective

Abstract

Persistent failure to engage diversity—less favorable treatment of atypical but potentially valuable human resources—is puzzling because it implies labor-market inefficiencies and untapped opportunities. This paper addresses this puzzle from a behavioral strategy perspective and outlines four limits—cognitive, searching, reconfiguring and legitimacy (CSRL)—that deter firms from sensing, seizing, integrating and justifying valuable diversity. The case of *Moneyball* is used to illustrate how these CSRL limits prevent mispriced human resources from being arbitrated away sooner, with implications for engaging cognitive diversity beyond sports. A behavioral strategy as arbitrage perspective illuminates why both justice- and performance-centric perspectives in the diversity literature may be counterproductive, failing to address various behavioral/social limits to diversity engagement. The paper also discusses how the hype surrounding artificial intelligence is creating greater CSRL limits to engaging diversity and, in turn, more untapped opportunities. It contributes to the strategy literature by outlining a template for searching for untapped opportunities and also limits to exploiting them: While debiasing and strategizing may help overcome some CSRL limits, passing all these limits and monopolizing untapped opportunities usually depend more on exaptation and luck.

Keywords: behavioral strategy, diversity, behavioral failures, strategic opportunities, CSRL limits to arbitrage

1. Introduction

Although firms are supposed to evaluate employees based on merit, many studies show that well-qualified workers may not be hired or promoted for reasons irrelevant to merit (van Dijk et al. 2017, Eberhardt 2019, Galinsky et al. 2015). Some suboptimal evaluations result from explicit, taste-based discrimination (Becker 1971), while others derive from automatic, implicit biases, such as stereotyping or homophily (Fiske and Taylor 2013). A statistical account of discrimination (Arrow 1973) suggests that when obtaining a reliable signal of individual merit is costly, it is not irrational to predict candidates' merit based on easily observable characteristics, such as age, race or gender. Many scholars urge firms to overcome discrimination and engage diversity, with justifications based either on a justice-centric

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3 view (e.g., including disadvantaged candidates is the right thing to do to fix decades of prejudice) or on
4 a performance-centric view (e.g., recruiting team members with non-overlapping cognitive diversity
5 improves performance of complex tasks). Regardless of the mechanisms of discrimination and tactics
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7 to counter it, research shows that many firms still fail to engage diversity (Dobbin et al. 2015),
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9 undervaluing qualified but atypical individuals while favoring those who fit positive stereotypes.
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14 Persistent failure to engage diversity is puzzling from a strategy point of view because it implies
15 labor-market inefficiency (cf. Barney 1986) and that money is being left on the table (Denrell et al.
16 2003). Firms that discriminate are likely to pay a performance penalty for failing to recruit the most
17 qualified workers, whereas firms that overcome discrimination may gain advantages (Becker 1971), for
18 instance by recruiting atypical workers undervalued by rivals (Liu et al. 2017, Siegel et al. 2018). Over
19 time, competition should select out biased firms, correcting labor-market inefficiency, so why do many
20 firms still fail to engage diversity? In other words, why are valuable but atypical human resources, as
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22 untapped opportunities, not yet arbitrated away?
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31 This paper addresses persistent failure to engage diversity from a behavioral strategy perspective.
32 Recent studies integrate various “behavioral failures” to predict when behavioral forces preserve market
33 failures and, in turn, untapped behavioral opportunities (Denrell et al. 2019, Gavetti 2012, Zuckerman
34 2012). These works share an analogy with behavioral finance, in that rational traders may earn abnormal
35 returns by arbitraging mis-evaluations of stocks by “noise traders” who overreact to unexpected and
36 dramatic news events (DeLong et al. 1990). However, rational traders may not always be able to exploit
37 these opportunities when “limits to arbitrage” deter exploitation and hence preserve market
38 inefficiencies (Shleifer and Vishny 1997). Here, I build on these previous works and propose a
39 conceptual framework that outlines four limits to arbitrage—cognitive, searching, reconfiguring and
40 legitimacy (CSRL)—in the context of diversity. These CSRL limits help explain the mechanisms that
41 allow biases against qualified but atypical (and biases in favor of stereotypical) human resources to
42 persist, and illuminate approaches to earn superior returns by overcoming these limits.
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56 The application of CSRL limits to arbitrage is illustrated using the case of *Moneyball* (Lewis 2003),
57 which occurred in the context of Major League Baseball (MLB). Team advantage is strongly associated
58 with recruiting superior players who contribute to team wins, yet most teams judge players based on
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3 their “look”—whether or not they fit the stereotype of successful players. The Oakland Athletics (the
4 A’s) and their manager, Billy Beane exploited this opportunity by acquiring undervalued players (e.g.,
5 counter-stereotypical but with more competence than implied by their salary) from rivals, and achieved
6 impressive winning percentages with almost the lowest payroll in the MLB between 1999 and 2003.
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11 *Moneyball* is often portrayed as a triumph of data analytics; yet this is insufficient to explain the A’s
12 success, because data on MLB players and the “sabermetric” methods used for analysis had been
13 publicly available for decades. A greater puzzle is why such exploitation did not occur sooner. As will
14 be elaborated, data analytics is only one of the factors that helped the A’s address the searching limit
15 by identifying undervalued players, particularly among the unconventional. Other CSRL limits deterred
16 MLB teams from appreciating, imitating or justifying Beane’s approach, allowing the A’s to enjoy
17 superior returns until Michael Lewis’s (2003) book helped eliminate several of these limits. This case
18 has important implications beyond professional sports: “If Lewis is right about the blunders and the
19 confusions of those who run baseball teams, then his tale has a lot to tell us about blunders and
20 confusions in many other domains” (Thaler and Sunstein 2003, p. 1390). If the labor market can be
21 inefficient in the MLB, where the economic stakes of flawed recruitment are extremely high and there
22 is no obvious economic barrier to exploiting inefficiencies, one might expect labor-markets outside
23 sports to entail larger mispricing, greater CSRL limits, and more untapped opportunities.

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39 Applying a behavioral strategy perspective to the debate on diversity makes interesting theoretical
40 and practical contributions. First, it complements the growing literature on diversity by providing a
41 novel lens that sees failure to engage diversity as being protected by various behavioral and social limits
42 to arbitrage. Firms fail to engage diversity not necessarily because they disagree with the reasons for
43 diversity engagement, such as those based on a normative, justice-centric view (e.g., including workers
44 with disadvantaged identities) or a pragmatic, performance-centric view (e.g., complex tasks require
45 diverse teams with non-overlapping cognitive repertoires); such failures may result from context-
46 dependent factors that prevent firms from overcoming CSRL limits. For example, candidates with
47 valuable diversity may be ruled out because they do not “look” qualified, or their contributions/outputs
48 may be discounted by important stakeholders, such as media, investors and customers. More generally,
49 this paper contributes to the literature by providing a distinct behavioral strategy as an arbitrage
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3 perspective that complements normative and pragmatic mainstream views. Unpacking and addressing
4 CSRL limits holistically is essential for doing the right thing and/or improving performance more
5 effectively.
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10 This paper also contributes to the strategy literature by illustrating how strategy theories can be both
11 descriptive and prescriptive. Superior performance is usually attributed to firms' control over valuable
12 resources that enable structural advantages or isolate them from competition and imitation (Rumelt
13 1984). However, strategy theories have been largely silent on why some firms are able to identify and
14 acquire these resources at a lower cost than the value they generate (Barney 1986, Denrell et al. 2003).
15 This paper follows recent studies urging examination of behavioral forces that preserve strategic market
16 inefficiencies, because inefficiencies are necessary for the presence of strategic opportunities (Denrell
17 et al. 2003, 2019, Fang and Liu 2018, Gavetti 2012). This approach has both descriptive implications,
18 such as how heterogeneous exaptation to arbitrage limits explains performance differences, and
19 prescriptive implications, such as what firms should do to overcome these limits and gain superior
20 performance. Here, I organize the various behavioral failures documented in the diversity literature into
21 four major limits to arbitrage. Future research might apply this template and explore inefficiencies and
22 prescriptive strategies for exploiting opportunity in other strategically important contexts, such as
23 mergers and acquisitions, resource allocation and sustainability challenges.
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39 Finally, presenting failure to engage diversity as an attractive opportunity has interesting practical
40 implications. Compared with prevalent but ineffective debiasing and training approaches to engaging
41 diversity (Kalev et al. 2006), a behavioral arbitrage perspective (with *Moneyball* as an analogy) may
42 nudge more strategists to evaluate diversity differently and engage in the arbitrage activities necessary
43 to eliminate market inefficiencies. This by no means suggests that exploiting behavioral opportunities
44 is easy: "what is strategically attractive is so precisely because it is extremely difficult to achieve"
45 (Gavetti 2012, p. 14). Understanding the four limits will help strategists to assess their context-
46 dependent constraints and develop feasible exploitation strategies more systematically. One ambition
47 is for the idea of strategy as arbitrage to be diffused to such an extent that it will eliminate inefficiencies
48 and allow merit to determine pay and career prospects in the long run, as demonstrated by the diffusion
49 of the "*Moneyball* strategy" in many professional sports after 2003 (Lewis 2016). A behavioral strategy
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3 perspective may provide a surprisingly effective approach to help non-sports industries fix their
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5 persistent failure to engage diversity.
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7 The structure of this paper is as follows. Section 2 reviews the theoretical foundation of behavioral
8 strategy as arbitrage. Section 3 outlines CSRL limits in the context of diversity, and illustrates how they
9 preserve labor-market inefficiencies, using the case of *Moneyball*. Section 4 discusses how Billy Beane
10 and the A's overcame the CSRL limits and scoped conditions necessary to exploit behavioral arbitrage
11 opportunities. The paper concludes by discussing the broader implications of the CSRL framework,
12 including how hype surrounding artificial intelligence (AI) may strengthen various limits to engaging
13 diversity rather than weakening them.
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23 **2. Theoretical Foundation of Behavioral Strategy as Arbitrage**

24 A central concern of strategy is to develop prescriptive advice on how to gain superior profits. An
25 implicit assumption is that the market is so inefficient that it allows profit opportunities to exist. If the
26 market were efficient, the price of acquiring resources would reflect the value they create, precluding
27 the possibility of obtaining superior profit (Barney 1986). Since firms' traits and actions are enabled by
28 various resources which are ultimately acquired in the factor market, the scope for prescriptive
29 strategies depends on the inefficiency of factor markets.
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37 The perspective of behavioral strategy as arbitrage is predicated on an assumption that market failure
38 is necessary for the presence of strategic opportunities and superior profit (Denrell et al. 2003). A
39 valuable resource may be mispriced owing to "behavioral failures" (Gavetti 2012), such as failing to
40 recognize resource value because of cognitive distance or inertia (Tripsas and Gavetti 2000). To
41 promise attractive opportunities, biases must be difficult to spot or act on, otherwise the resulting
42 mispriced resources will attract competition and soon be arbitrated away (Denrell et al. 2019). Superior
43 profit is realized when a strategist manages to overcome these behavioral failures through superior
44 intelligence and insight, or luck and exaptation, and acquires undervalued resources ahead of rivals.
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54 This perspective resembles and is partially inspired by the idea of "limits to arbitrage" in financial
55 markets (Shleifer and Vishny 1997). Since the idea of behavioral strategy as arbitrage builds on, but
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3 also deviates from, the common understanding of arbitrage, I first review the limits to arbitrage in
4 financial markets before extending this analogy to strategic factor markets.
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7 ***2.1 Limits to Arbitrage in Financial Markets***

9 Bona fide arbitrage is about taking advantage of price imbalances in separate markets. Traders may
10 profit if they can simultaneously buy and sell the same assets priced differently in different markets.
11 Bona fide arbitrage is risk-free for traders who have access to relevant price information and
12 transactions. Unlike arbitrage in financial or factor markets, bona fide arbitrage opportunities are often
13 created not by misvaluations, but by economic and technological barriers to price convergence. For
14 example, traders with exclusive access to a purpose-built cable between Chicago and New York were
15 able to profit by placing front-run orders four milliseconds ahead of other trades (Lewis 2014). Traders
16 who overcame this entry barrier to superior technology were able to arbitrage the price difference and
17 earn risk-free profits. Such abnormal returns persisted until the price imbalance was arbitrated away
18 when most investors recognized this strategy and acquired similar technology. This implies that
19 attractive bona fide arbitrage opportunities are protected by strong entry barriers. Traders who are able
20 to overcome these barriers can monopolize the profit until the competitive asymmetry disappears.
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34 Arbitrage in financial markets relates to how rational traders take advantage of other investors'
35 biased evaluations (Barberis and Thaler 2003). For example, suppose Firm A's fundamental value is
36 \$10 per stock share. Imagine that a group of noise traders becomes overly pessimistic about Firm A's
37 prospects, pushing its stock price down to \$5. A rational trader, Trader X, can profit by acquiring the
38 undervalued Stock A, and can hedge the risk by shorting a substitute stock, for example of Firm B
39 operating in the same industry with a similar prospective cash flow to Firm A. If Firm A's stock price
40 subsequently bounces back to its fundamental value of \$10 (i.e., when the market recovers from the
41 overreaction), the profit earned by Trader X is the temporary price difference ($\$10 - \$5 = \$5$) times the
42 volume of Stock X acquired, minus the cost of the hedge. If Firm A's stock price subsequently deviates
43 further from its fundamental value of \$10, for example due to a piece of industry news that negatively
44 impacts on both Firm A and Firm B, and hence pushes Firm A's price, say, from \$5 to \$3 and Firm B's
45 price from \$10 to \$8, then Trader X can attenuate the loss (i.e., the decrease of \$2 in Firm A's share
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3 price times the acquired volume) through the hedge. That is, Trader X can sell Stock B at \$10, with the
4 acquisition cost equal to its current price of \$8.
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7 Supporters of the efficient market hypothesis believe that prices in financial markets are generally
8 correct because of arbitrage activities (Fama 1970). Asset mispricing may occur temporarily, but cannot
9 persist because traders will identify mispricings as profit opportunities and arbitrage them away. Such
10 scholars argue that there is “no free lunch” (Friedman 1975): no investment strategy can beat the market
11 by continuously earning excess risk-adjusted average returns, because market inefficiencies and asset
12 mispricing cannot persist due to arbitrage activities.
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16 However, behavioral finance research shows that “no free lunch” does not imply that “prices are
17 correct” owing to limits to arbitrage (Barberis and Thaler 2003, Shleifer and Vishny 1997). Traders
18 may identify a mispriced asset, but arbitraging the mispricing may be infeasible for at least three reasons.
19 First, there is a hedging risk because the substitute stock is rarely perfect. For example, Stock B’s price
20 may not decrease enough (or at all) when negative industry news is announced, suggesting a failed or
21 insufficient hedge. Second, there is a capital risk because traders rarely invest their own money. “A
22 separation of brains and capital” (Shleifer and Vishny 1997) exposes traders to the risk that they may
23 lose capital support if their investors are not immune to the misvaluations upon which the arbitrage
24 opportunity is based, as illustrated by Michael Lewis’s book, *The Big Short* (2011). The third type of
25 risk concerns implementation: mispricing may occur, but it may not lend itself to a feasible arbitrage
26 strategy (Shiller 1981), or the cost of implementation, such as the borrowing cost to implement
27 sufficient short selling in a hedge, may be too high. As Keynes put it, “[t]he market can stay irrational
28 longer than you and I can remain solvent” (Shilling 1993, p. 236). Overall, these limits suggest that
29 although an arbitrage opportunity may exist, it may be too costly or risky to be feasible. A mispricing
30 may be identified, but with no profitable investment strategy (i.e., “no free lunch”), allowing the
31 mispricing and market inefficiencies to persist (i.e., prices are incorrect).
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53 **2.2 Limits to Arbitrage in Strategic Factor Markets**

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55 The analogy of limits to arbitrage in financial markets can be extended to strategic factor markets.
56 Barney (1986) argues that abnormal returns would not exist if the strategic factor market were efficient,
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3 because the price of acquiring a resource would reflect the value this resource could create. One has to
4 assume factor market failure to allow the possibility of strategic opportunities (Denrell et al. 2003).
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7 Recent advances in behavioral strategy revisit this assumption and illustrate how behavioral forces
8 may preserve factor market failures (Gavetti 2012). For example, Fang and Liu (2018) highlight how
9 cognitive biases, such as status quo and homophily biases, can be translated into approaches that enable
10 firms without structural or resource advantages to disrupt industry incumbents. Denrell et al. (2019)
11 demonstrate that the way in which people are fooled by randomness creates an alternative source of
12 opportunity, but highlight the sociocognitive complications of pursuing such opportunities. The purpose
13 of this paper is to propose an integrative framework based on the idea of limits to arbitrage, and to apply
14 it in the context of diversity in order to search for untapped opportunities in the labor-market. This
15 builds on decades of research documenting various “behavioral failures” in decision making, mental
16 representations, organizational learning and social interactions, but turns these findings on their head.
17 That is, behavioral opportunities are more attractive when behavioral failures are more difficult to
18 overcome. If these failures are easy to spot and act upon, mispricing and inefficiencies are unlikely to
19 persist as attractive opportunities. If they are difficult to overcome, they will create limits that protect
20 untapped opportunities from being recognized and arbitrated away. The behavioral failures
21 documented in the literature predict both market inefficiencies and sources of untapped opportunities.
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39 To illustrate some of these behavioral failures, consider a thought experiment. Let us assume that
40 resource X is valuable—obtaining X will increase a firm’s sales revenue or decrease its production cost,
41 or both. Much of the strategy research focuses on how firms may develop capacity to sense, seize and
42 integrate resource X as a profit opportunity (Teece et al. 1997). However, Barney’s critique (1986)
43 holds that resource X’s expected profit-generation capacity will approach zero if many firms can sense,
44 seize and integrate resource X. For resource X to remain attractive, one must focus on failures—namely,
45 why many firms fail to sense, fail to seize, or fail to integrate resource X to such an extent that resource
46 X remains mispriced or underutilized relative to the value it can generate.
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55 Firms may fail to sense resource X’s value owing to various rationality bounds. No firm with
56 unlimited cognitive capacity to evaluate every resource carefully would overlook resource X.
57 Boundedly rational individuals and firms may overlook resource X because they have to simplify the
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3 world through cognitive shortcuts, such as decision heuristics and mental representations (Gavetti 2012,
4 Kahneman 2011). These simplifications may be fast and frugal heuristics if decision makers are able to
5 modify them over time through immediate and reliable feedback (Gigerenzer and Goldstein 1996).
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7 Otherwise, they are likely to create systematic mistakes and blind spots that are shared by many
8 individuals and firms as a result of superstitious learning, imitation and diffusion (Kahneman et al.
9 1982, Levinthal and March 1993, Zuckerman 2012). For example, firms tend to cluster around a few
10 strategic groups, and firms within such groups usually develop and share similar mental models, such
11 as how to compete in their industry (Porac et al. 1995). If resource X is cognitively proximate to these
12 firms, most of them will sense and compete for it, making its superior profit-generating capacity self-
13 defeating. A necessary condition for resource X to remain valuable is that it is cognitively distant from
14 these firms, so they will systematically overlook it owing to the bounds of their shared mental model,
15 even though it is easily assessable (Gavetti 2012). This predicts that many firms, particularly
16 incumbents that take a mental model for granted, will make the similar mistake of ignoring resource X,
17 preserving it as an untapped opportunity.

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33 Even when firms sense resource X's value, they may fail to seize it owing to various limitations in
34 measuring and learning its correct value. For example, firms may not profit from resource X if they
35 cannot overcome information asymmetry and distinguish it from the "lemons" (Akerlof 1978). Firms
36 may learn from experience to undervalue resource X when its value cannot be accurately estimated
37 without complementary resources (Cohen and Levinthal 1990, Mosakowski 1997) or substantial
38 experience (Denrell and March 2001). Moreover, firms may develop bias in favor of their own resource,
39 resource Y, if it has led to prior successes (Audia et al. 2000). Salient success in an industry may also
40 generate halo effects and fads, making some resources more popular than justified by their value
41 (Pontikes and Barnett 2017, Rosenzweig 2007). These are just some of the traps documented in the
42 literature on experiential and social learning. A shared feature of these learning failures is that many
43 firms tend persistently to seize less valuable resources, abandon the more valuable resource X
44 prematurely, or both, preserving resource X as an undervalued opportunity.

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58 Even when firms sense resource X and avoid seizing the wrong resource X, they may fail to integrate
59 and realize its full value due to organizational dynamics. Firms may not be motivated to integrate
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3 resource X when their current performance is coded as successful. Even when motivated to change,
4 firms may underutilize resource X if it is competency-destroying (Henderson and Clark 1990). For
5 example, it may create new products that cannibalize existing products' market share, or the innovation
6 enabled by resource X may challenge a firm's existing power and status hierarchy. Strong resistance to
7 integrating novel resources is to be expected from well-managed firms (Hannan and Freeman 1984,
8 Nelson and Winter 1982). Even when resource X promises improvement in the long run (a positive
9 "content effect" from adopting resource X), firms may not survive the cascading disruptions to routines
10 in the short run (a negative "process effect" from adopting resource X). Underutilization, failures or
11 abandonments after seizing resource X may stigmatize it on the market, preserving it as an apparently
12 unattractive opportunity.

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14 Even when firms have the capacity to sense, seize and integrate resource X, they may choose not to
15 engage it if doing so would be socially destructive (Correll et al. 2017). For example, firms may not
16 profit from resource X if important stakeholders discount the output value owing to its uniqueness or
17 incomprehensiveness (Litov et al. 2012, Zuckerman 1999). Firms may distance themselves from
18 resource X if engaging it implies deviation from taken-for-granted norms or institutional logic (Oliver
19 1997). Engaging resource X may be so detrimental to the reputation and status of a firm and its
20 managers that they ignore what appear to be obvious opportunities (Jonsson and Regnér 2009).
21 Interdependency may also create pluralistic ignorance around valuable resources, where many
22 recognize resource X's value but no one is daring enough to break the "iron cage" (DiMaggio and
23 Powell 1983). Apparently low-hanging fruits are thus protected like the emperor's new clothes.

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25 I have outlined several behavioral failures that operate as limits to exploiting resource X as a valuable
26 resource. These operate as filters: some firms may fail to become aware of resource X due to rationality
27 bounds; among those that sense resource X, some may fail to seize the right resource X owing to
28 learning traps; among those who sense and seize resource X, some may fail to integrate it due to inertia
29 and conflicts of interest; and among those who sense, seize and integrate resource X, some may fail to
30 justify it and its output due to deviations from conventions and norms. Strong limits to arbitrage in the
31 factor market suggest that behavioral failures may be so powerful that no firm can pass through all these
32 filtering limits. Thus, the bad news is that the factor market is inefficient, but the good news is that

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3 resource X will remain a valuable opportunity. Until some firms manage to supersede all these limits,
4 behavioral failures will protect factor market inefficiencies from being arbitrated away, preserving
5 resource X as an untapped opportunity.
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9 This section has illustrated a few of the behavioral failures that limit arbitrating of factor market
10 inefficiencies. The perspective of behavioral strategy as arbitrage aims to integrate existing behavioral
11 science findings. One analogy is how Porter's Five Forces Framework turned industrial economics on
12 its head, showing how well-known economic forces that are detrimental to perfect competition are in
13 fact useful for predicting an industry's profitability. Similarly, behavioral strategy as arbitrage utilizes
14 knowledge developed in behavioral sciences and illuminates how well-known "behavioral failures"
15 may help predict when non-economic limits create and sustain strategic opportunities.
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24 Finally, the framework of behavioral strategy as arbitrage is context-independent, but applying the
25 theory to search for opportunities arising from particular behavioral failures is context-dependent.
26 Given the prevalence of documented behavioral failures, inefficiencies might be predicted in many
27 markets. However, context-dependent information and knowledge are required to identify how exactly
28 these behavioral failures preserve inefficiencies in particular markets, and how to overcome these limits.
29 In the next section, I will apply this perspective to the context of diversity and outline four specific
30 limits to arbitrage, using *Moneyball* as an illustrative example.
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40 **3. CSRL Limits to Arbitrage in the Context of Diversity: The Case of *Moneyball***

41 Here, I apply the perspective of behavioral strategy as arbitrage to the context of diversity, and
42 explore why many firms fail to engage diversity. I follow Jackson et al.'s (2003, p.802) definition of
43 diversity as "the distribution of personal attributes among interdependent members of a work unit".
44 Failing to engage diversity means that managers or firms, knowingly or unknowingly, fail to recruit
45 atypical but qualified members when assembling a team to fulfil its goals. Note that consideration of
46 "qualified" in management is often team composition- and goal-dependent. For example, the
47 performance bonus of engaging diversity is greatest when a team faces a complex task and its members
48 have non-overlapping cognitive diversity (Page 2017). Since measuring cognitive diversity and judging
49 the interdependent merit of team members is challenging, these difficulties create precisely the limits
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3 that prevent firms from reliably sensing, seizing and integrating sufficiently diverse team members. As
4 will be illustrated by the case of *Moneyball*, qualified but atypical individuals may be underestimated
5 even when their merit is only weakly dependent on team composition and the task is not complex.
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7 Greater failures can therefore be predicted when judging merit depends on more factors. These
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9 behavioral failures to engage diversity suggest the persistence of unrealized performance bonuses as
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11 untapped opportunities. Here I outline four specific limits—cognitive, searching, reconfiguring and
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13 legitimacy (CSRL)—to arbitrage in the context of diversity. I illustrate their application using
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15 *Moneyball* before discussing examples beyond sports.
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18 19 20 **3.1 The Cognitive Limit**

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22 The cognitive limit to arbitrage relates to how boundedly rational individuals and firms make
23 systematic, suboptimal decisions when they simplify the complex world through decision shortcuts or
24 mental representations. In the context of diversity, this limit focuses on the possibility of overlooking
25 valuable but counter-stereotypical candidates (or overly favoring stereotypical candidates). A
26 stereotype is an overgeneralized belief about the warmth and competence of a certain category of people,
27 usually centering around easily observable traits such as gender, race, age, build or sexual orientation
28 (Fiske and Taylor 2013). Which stereotypes are favored is context-dependent, but the presence of a
29 widely acknowledged stereotype suggests that many individuals and firms share a similar mental model
30 in that context, creating and preserving similar blind spots in their evaluations.
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34 ***Moneyball.*** One of the most important sources of competitive advantage in the MLB is finding
35 skilled players. The most reliable basis for predicting skills is track record, so players are hired based
36 on who have performed better and more reliably than their peers. However, an important limitation of
37 this approach is that players with strong and reliable track records, such as incumbent MLB and college
38 baseball players, are expensive. Most teams are unable to win bidding wars for these players against
39 richer teams like the New York Yankees. Thus, many are forced to search for talent among those with
40 less reliable track records, such as high schoolers.
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44 MLB teams identify talents with limited track records by sending their “scouts” to observe high-
45 school games and report good players as potential draft picks back to the team manager. However, it is
46 very difficult to judge better players simply by observing their performance: “One absolutely cannot
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3 tell, by watching, the difference between a .300 hitter and a .275 hitter. The difference is one extra hit
4 every two weeks” (Lewis 2003, p. 68). As a result, scouts (largely retired baseball players) tend to use
5 a representative heuristic based on their prior experience (Tversky and Kahneman 1974): good players
6 tend to have a certain “look”, the main feature being that they look like fit, powerful players. This
7 suggests that some competent players, particularly if they are overweight, slower or shorter than average
8 baseball players, may be skipped by default. In contrast, young players who look similar to prototypical
9 MLB players are judged to have greater potential to succeed in the MLB.
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18 Judging talents using a representative heuristic is likely to be a fast and frugal decision shortcut.
19 After all, many stereotypes emerge from a strong correlation between displaying such traits and superior
20 performance. MLB scouts usually have to travel to hundreds of high schools per year, with limited time
21 at each school. The representative heuristic is useful because it helps scouts to screen hundreds of
22 candidates by having just a quick look.
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29 However, this heuristic may become ineffective: a blind spot may develop, particularly when it
30 diffuses and becomes a dominant mental model for scouts when predicting high-school talents.
31 Stereotypical predictions are based on correlations, and judgments based on imperfect correlations will
32 inevitably lead to omission and commission errors (Christensen and Knudsen 2010, Csaszar and
33 Levinthal 2016). Some players may be falsely drafted if they have the look but cannot really perform
34 as the stereotype predicts; this is a commission error. This had been the case for the A’s manager, Billy
35 Beane, who had perfectly fitted the stereotype in high-school, but had never lived up to expectations in
36 the MLB. Detecting commission errors is not particularly difficult in the MLB, because self-fulfilling
37 processes are relatively weak compared with other sports such as basketball (Mauboussin 2012). That
38 is, an overrated baseball player is unlikely to meet performance expectations simply because his
39 manager, teammates and fans falsely believe he will meet them.
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51 A stronger cognitive limit in the MLB is the detection of omission errors. Some players may be
52 falsely dismissed: they might help teams to win games, but are overlooked because they are too counter-
53 stereotypical. This may happen even to individuals with a strong track record to the contrary, such as
54 “submarine pitcher” Chad Bradford (Lewis 2003 Chapter 10). Bradford played for the Chicago White
55 Socks and was briefly promoted to the major league thanks to a pitcher’s injury. Bradford’s excellent
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3 performance continued, but he was demoted to minor league when the teammate recovered. The White
4 Socks manager did so because he attributed Bradford's wins to good luck, despite his track record.
5 Denying competent players despite clear evidence to the contrary may result from the diffusion of
6 representative heuristic applications. Over time, fewer competent but counter-stereotypical players will
7 be available for observation in the MLB, making it increasingly difficult to correct omission errors. For
8 example, a successful submarine pitcher like Bradford was probably a sample of one to the White Socks
9 manager. He may have been right to dismiss this atypical case, but this sensible judgment was built on
10 a larger sampling bias: team managers could not see Bradford's merit because he was too "cognitively
11 distant" (Gavetti 2012). Yet the distance was created because too many team managers had adopted the
12 same mental model, to such an extent that it reinforced a conventional, though flawed, wisdom that
13 players without the stereotypical look cannot be good. Counter-stereotypical but competent players like
14 Bradford remain undervalued human resources because many experienced managers are blind to these
15 players' merit owing to their oversimplified representations of the world.

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31 **Beyond sports.** This discussion suggests that recognizing counter-stereotypical merit outside sports
32 is likely to be more challenging, because it is less about evaluating individuals' physical traits and more
33 about their invisible cognitive diversity. Consider that an executive wants to assemble a team to address
34 a complex task: whom should she recruit to join this team? According to the logic of generating a
35 diversity bonus (Page 2017), she should first evaluate the nature of the task, in terms of the types of
36 knowledge, tools or experience essential to address this task. She should then recruit members with
37 non-overlapping cognitive resources that match the task requirements. This ideal scenario suggests the
38 presence of cognitive limits that deter the executive from recruiting a sufficiently diverse team to
39 address the complex task.

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For example, the executive is likely to take a cognitive shortcut by predicting cognitive diversity based on identity diversity, just as MLB managers predict merit using the representative heuristic. Identity diversity may contribute a diversity bonus, but its influence is likely to have a mediating or moderating effect on cognitive diversity. For example, identity diversity in teams may positively moderate the expression of cognitive diversity: people are more likely to appreciate an opposing opinion if it comes from a person of a different social category (e.g., status or race) than a similar one (Dumas

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3 et al. 2013). On the other hand, people may have idiosyncratic experiences because of the social
4 categories to which they belong. The resulting differences in experiences, rather than their differing
5 social belonging, may be useful cognitive resources for generating diversity bonuses. This suggests that
6 identity diversity in teams is, at best, an unreliable indicator of a team's cognitive repertoire.
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11 However, people, organizations and policy makers usually mistakenly equate identity diversity with
12 cognitive diversity, because the former is more easily recognizable and measurable than the latter. This
13 occurs even though research shows that demographically diverse crowds (by gender and race) are
14 typically not much wiser than homogeneous crowds (Oliveira and Nisbett 2018). A shared mechanism
15 of many decision biases is a substitution effect (Kahneman 2011): humans usually substitute a difficult
16 question (e.g., does this candidate have different cognitive resources from existing team members?)
17 with an easier question (e.g., does this candidate "look" different from existing team members?). This
18 implies that the cognitive diversity of an identity-diverse team may be overrated unless the executive
19 resists the temptation to apply oversimplified mental models when evaluating team members and their
20 cognitive repertoire.
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32 In summary, the cognitive limit to arbitrage may deter firms from engaging valuable human
33 resources when qualified candidates deviate from what a stereotypical, competent employee should
34 look like. The limit may be so strong that managers deny clear evidence contrary to their mental
35 representations (e.g., the case of Bradford). Thus, valuable but atypical human resources remain
36 untapped opportunities.
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43 ***3.2 The Searching Limit***

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45 The searching limit to arbitrage is about how individuals and firms systematically fail to identify
46 and seize valuable but cognitively distant resources due to various learning failures. In the context of
47 diversity, this limit focuses on the difficulty of identifying undervalued human resources among
48 counter-stereotypical ones, and overvalued ones among stereotypical ones. Even when firms manage
49 to apply a different mental model and recognize the possibility of labor-market inefficiencies,
50 identifying and seizing the right "hidden gems" is non-trivial. For example, the data or metrics
51 necessary to measure the value of atypical resources may not exist (Litov et al. 2012), suggesting that
52 managers may fail to compute the correct values critical to evaluate opportunities. Moreover, to find
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3 the “hidden gems”, one usually needs to experiment with many atypical candidates. This, in turn, creates
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5 variances in performance sufficient to deter many managers from continuing on the path of more distant
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7 search and exploration (Denrell and March 2001). Valuable human resources may thus remain
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9 mispriced, even when firms sense the presence of inefficiencies.
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11 *Moneyball*. The case of *Moneyball* is usually portrayed as a triumph of data analytics. Yet the A’s
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13 and Billy Beane were not the first team or manager to recognize the inefficiencies in the MLB and
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15 attempt to use data and statistical methods to search for valuable but mispriced players. Many MLB
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17 teams had evaluated players using available data since the 1980s. The challenge was not that data were
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19 difficult to acquire, but that many performance measures in the existing data were, in fact, misleading.
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21 Applying statistics to existing data may strengthen misevaluations because the results look scientific,
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23 but it enhances only confidence, not competence. Managers need to experiment with alternative, more
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25 reliable measures to overcome the searching limit, but such activities entice them into various learning
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27 traps that deter them from seizing the right “hidden gems”.
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31 Take hitters’ statistics for example. Hitters are evaluated on both their offensive and defensive
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33 capacity, and two performance measures are widely used. On the offensive side, a good hitter is
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35 expected to have a high average runs batted in (RBI) score, which credits a hitter for making a play that
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37 allows runs to be scored. The problem with this measure is that it correlates not only with the hitter’s
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39 offensive capacity, but also with his teammates’ capacity. To gain a higher RBI, a hitter needs more of
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41 his teammates to be on base in the first place. A good hitter may be undervalued if he happens to be in
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43 a less resourceful team with fewer competent teammates, whereas a mediocre hitter may be overvalued
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45 if he is fortunate enough to be in a stronger team. On the defensive side, a good hitter (as fielder) is
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47 expected to make fewer errors. According to the MLB official website, an error refers to a judgment by
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49 the official scorer that a fielder “fails to convert an out on a play that an average fielder should have
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51 made”. The problem with this measure is that it is vague and subjective. To make an “error”, a fielder
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53 needs to be close enough to where the ball falls to allow a miss or catch to be recorded in the first place,
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55 implying that a fielder with poorer judgment or slower movement may make fewer errors than a better
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57 fielder. Moreover, the record of errors is determined entirely by the official scorer, who receives no
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59 feedback on his judgments and is unlikely, in a few seconds, to have the cognitive capacity to compare
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3 an observed miss against all counterfactuals that “an average fielder” might have made. The implication
4 is that searching for a valuable hitter based on existing metrics may create systematic over- and
5 underestimations because many measures are confounding, imprecise and subjective.
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9 Now consider pitchers’ statistics. Many sabermetricians agree that performance measures for
10 pitchers are more reliable than those for hitters (Lewis 2003). An exception is for “closing pitchers”, or
11 “closers”, who specialize in getting the final outs in a close game when their team is leading. When a
12 closer is used and the team wins, it is framed as the closer “saving” the game; otherwise it is framed
13 as a “blown save”. The problems with this measure are twofold: it is based on a small sample size, and
14 the framing makes the outcome sound more important than it actually is. A closer is used mainly in
15 final innings, meaning that their performance is based on much smaller samples than those for starting
16 or relief pitchers. However, their less reliable performances may be exaggerated because of the phrase
17 “save”: they may receive too much credit for wins (or blames for losses), even though many outcomes
18 may have been achieved largely without their intervention.
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30 Another learning trap occurs when the above misvaluations lead to disappointing performance.
31 That is, social learning and benchmarking may encourage inefficient metrics to persist in the MLB.
32 When underperforming, most teams follow a standard search strategy of learning from the most
33 successful (Haunschild and Miner 1997), such as the New York Yankees. However, rich teams like the
34 New York Yankees can afford to keep players who not only do well on existing measures (such as high
35 RBIs, low errors or more saves) but also perform reliably well. Learning from these salient successes
36 seems to confirm the robustness of existing performance metrics, but this strategy may only work for
37 the richest teams that have no need to make trade-offs.
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47 **Beyond sports.** A specific searching limit in the context of diversity is a misplaced belief in
48 meritocracy. There is a “no test exists” rule when assembling a diverse team: “no test applied to
49 individuals will be guaranteed to produce the most creative groups” (Page 2017, p. 95). Complex tasks
50 require a cognitively diverse team; however, the team’s cognitive diversity cannot be recognized in
51 isolation or ex ante, but must be identified along with the team composition and expansion. A
52 candidate’s cognitive resource is useful only when it produces additional ideas or perspectives that
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3 differ from those of existing team members. Yet cognitive differences that are useful for filling the gap
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5 are only recognizable after an existing team has tackled the task and realized its own shortcomings.
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7 Rather than appreciating the “no test exists” rule and hiring team members sequentially,
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9 organizations often believe that they can solve complex problems by recruiting the “best individuals”
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11 according to objective criteria. This belief holds when addressing non-complex tasks, as the most able
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13 and creative individuals are expected to master all the skills and ideas necessary to solve the task (e.g.,
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15 a difficult mathematical problem). However, this belief in meritocracy becomes a searching limit that
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17 deters the executive from recognizing that a better team could potentially have been assembled.
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19 Importantly, the “no test exists” rule does not undermine individual ability or creativity. This limit
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21 highlights that the common practice of recruiting the best candidates according to objective criteria may
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23 create a searching limit. Teams cannot discover their mistakes unless they experiment with candidates
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25 who are sufficiently different from existing members, or even unqualified based on objective criteria.
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28 Finally, even when an executive correctly identifies that the assembled team is insufficiently diverse,
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30 she may be trapped by the “hot stove effect” when searching non-locally (Denrell and March 2001).
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32 Executives may be shocked by hiring errors, because attempts to hire a cognitively diverse member
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34 usually entail experimenting with many atypical hires. Such experiments may lead to long-term
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36 performance improvement, but a specific hire may cause an immediate disaster and lead to a premature
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38 termination of searching.
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41 In summary, the searching limit to arbitrage may deter firms from seizing the right “hidden gems”,
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43 even when they sense labor-market inefficiencies. Existing data and measures may be systematically
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45 misleading, but various experiential and social learning traps may deter managers from discovering
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47 these flaws or from experimenting with alternative measures and candidates. As a result, valuable
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49 human resources may remain under the radar.
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52 ***3.3 The Reconfiguring Limit***

53 The reconfiguring limit to arbitrage relates to how firms systematically fail to integrate valuable
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55 resources owing to resistance to change or failure to reorganize routines. In the context of diversity, this
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57 limit focuses on the difficulty of fully realizing the potential of atypical hires in teams. Even when firms
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59 manage to sense and seize the right “hidden gems”, this does not necessarily mean that other employees
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3 or team members will appreciate their value, particularly when the acquired resources are
4 unconventional. This may lead to underutilization of these resources or even a self-fulfilling prophecy,
5 whereby they fail to create value because many falsely believe that they cannot do so. Valuable human
6 resources may remain underutilized or abandoned prematurely, even when firms sense and seize them.
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11 **Moneyball.** Billy Beane and the A's were not the first MLB manager and team to overcome the
12 cognitive and searching limits. Many MLB fans, particularly Bill James (author of the famous
13 *Historical Baseball Abstract*), recognized the inefficiencies in the MLB and created alternative, more
14 effective measures to evaluate players. Most MLB teams ignored these advances in sabermetrics. Some
15 did follow them, but failed due to the reconfiguring limit: they failed to overcome resistance from
16 internal stakeholders.
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24 Take, for example, John Henry, a short-lived owner of an MLB team, the Miami Marlins. He had
25 made a fortune by exploiting the inefficiencies of financial markets, and believed that he could replicate
26 his success in the MLB:
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30 *People in both fields operate with beliefs and biases. To the extent you can eliminate both and*
31 *replace them with data, you gain a clear advantage...Many people think they are smarter than*
32 *others in baseball and that the game on the field is simply what they think it is through their set of*
33 *images/beliefs. Actual data from the market means more than individual perception/belief. The*
34 *same is true in baseball* (cited in Lewis 2003, p. 56).
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41 Based on his belief that he could profit from inefficiencies in the MLB, Henry acquired the Marlins
42 in 1999, and adopted more efficient metrics for evaluating, recruiting and managing players. However,
43 the Marlins experienced some of the worst performances in their history under Henry, and he sold his
44 shares in the team in 2002. Henry's problem was social and political: his approach was so different
45 from the conventional MLB playbook, and how he implemented it as an outsider was so radical, that
46 the entire team (manager, coach, scouts and players) resisted the change through non-cooperation.
47 Many of these internal stakeholders had been successful MLB players themselves, and had benefited
48 from the existing value system, such as having the right look or high performance on popular (but
49 misleading) measures. They hesitated to adopt an approach that might harm their self-identification,
50 even though it would obviously be beneficial in searching for the most important resources in this
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3 business. These internal stakeholders defended their value system so strongly that they would rather
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5 lose games than lose their identity.
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7 Similar challenges had occurred at the A's before Beane became manager. Beane's predecessor,
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9 Sandy Alderson, had also adopted sabermetrics to improve player recruitment. The problem was that
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11 many acquired players were instructed by the A's coach to do the opposite of what they were hired for.
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13 Traditionally, base-on-balls was considered a pitcher's error and an irrelevant measure of wins. The
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15 sabermetrics approach suggests that this (as well as the on base rate) is an important measure because
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17 it is more highly correlated with wins than other popular measures such as batting averages. More
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19 importantly, high base-on-balls should be credited to hitters, because they are likely to have unusual
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21 patience and superior judgment that exploits pitchers' weaknesses. However, all these "hidden gems"
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23 trained or acquired by Alderson suddenly lost their patience or judgment because their coach, Tony La
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25 Russa, told them to unleash their natural aggression and swing freely. Alderson never challenged La
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27 Russa for ruining the recruitment strategy: "there was no very good reason for this; it's just the way it
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29 was, because the guys who ran the front office typically had never played in the big leagues" (Lewis
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31 2003, p. 60). La Russa overgeneralized from his experience as an MLB player, and rejected insights
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33 from people like Alderson as outsiders who had never been MLB players. The A's had embraced
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35 sabermetrics long before Beane became manager, but they failed to overcome the reconfiguring limit
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37 because possible improvements were blocked by powerful gatekeepers in this sport who disallowed
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39 changes that contradicted their worldview.
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43 **Beyond sports.** Recruiting and including cognitively diverse team members does not necessarily
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45 imply that their cognitive diversity will be effectively expressed, communicated, assimilated and
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47 integrated. Even when a sufficiently diverse team is assembled, unique perspectives and knowledge
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49 may be left unassimilated unless the team has a culture or norm that encourages people to challenge the
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51 status quo and value differences. Worse, existing team members may not understand the logic of
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53 generating diversity bonuses, and may interpret atypical hiring that deviates from objective criteria as
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55 discrimination or favoritism, leading to hostility to the new recruit. This may generate a diversity
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57 penalty rather than a bonus (Leslie 2018). For example, recent studies show that when females or racial
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59 minorities are hired as executives or CEOs, they may not perform as expected because male or white
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3 executives may withdraw support owing to their loss of identity (McDonald et al. 2017). This implies
4 that simply including diverse team members is insufficient because of reconfiguring limits.
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7 In summary, the reconfiguring limit to arbitrage may deter firms from integrating atypical resources,
8 even when they manage to sense and seize these valuable resources. Resistance from existing members
9 may be so strong that the valuable resources may be set up to fail. As a result, unconventional but
10 valuable human resources may be underutilized or even stigmatized in the labor-market.
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15 16 **3.4 The Legitimacy Limit**

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18 The legitimacy limit to arbitrage relates to how firms fail to justify to external stakeholders that the
19 output from unconventional resources is indeed valuable or the process of generating the output is
20 legitimate. In the context of diversity, this limit focuses on how external stakeholders may dismiss the
21 performance bonus from engaging diversity if they discount or refuse to acknowledge the process or
22 output.
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29 **Moneyball.** One might think that the number of wins is the most important performance measure to
30 MLB teams. It turns out that team wins, and in turn ticket sales, are indeed important to their fans, but
31 they are not necessarily the most relevant consideration for team owners and management. There is
32 conventional wisdom about how an MLB team should be run, and deviating from such wisdom may
33 attract disapproval from the MLB “social club” (Lewis 2003). According to Voros McCracken, a
34 sabermetrician, the problem with the MLB is:
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41 *It's a self-populating institution. Knowledge is institutionalized. The people involved with baseball*
42 *who aren't players are ex-players... They aren't equipped to evaluate their own systems. They don't*
43 *have the mechanisms to get rid of the bad. They either keep everything or get rid of everything,*
44 *and they rarely do the latter (cited in Lewis 2003, p. 239).*
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51 The implication is again “a separation of brains and capital”, as highlighted in the limits to arbitrage
52 in financial markets (Shleifer and Vishny 1997). Even if managers recognize efficient approaches to
53 winning more games and making more money, they cannot convince their owners, who listen to those
54 who appear to be more legitimate in this sport, even when their knowledge is outdated or flawed.
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59 The social cost of adopting an unconventional approach may outweigh the economic benefit of doing
60 so. Managers who adopt unconventional approaches may not get credit when they succeed. For example,

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3 the A's unusual success—winning many games with a limited budget—became so salient that the MLB
4 organized a committee to study this “aberration”, but its conclusion was mainly that “they’ve been
5 lucky” (Lewis 2003, p. 122). Many guards of the “MLB club” (such as ex-players as commentators)
6 criticized Beane’s approach and queried why, if his approach was so effective, the A’s not won the
7 World Series championship. However, such criticisms reveal that they are not fact-based but taste-based.
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9 The design of many professional sport seasons is structured to mock rationality: successes in season
10 games, where the sample size is much larger than in the playoffs, are more reliable (Denrell et al. 2015),
11 but teams and fans care much more about the playoffs where the outcomes depend more on luck. The
12 MLB insiders did not acknowledge the A’s successes because how they were produced was not to their
13 taste. Pointing out flaws in their criticisms would be unlikely to change their evaluations, but would
14 enhance “anti-intellectual resentment” (Lewis 2003, p. 99): outsiders who have never played in the
15 MLB and know nothing except how to produce numbers on computers have no right to challenge the
16 MLB’s taken-for-granted rules. Billy Beane was criticized precisely because his unconventional
17 approach led to successes that humiliated the insiders, and because Beane, as an ex-player himself,
18 betrayed this club. Other teams and managers may have hesitated to follow in Beane’s footsteps for fear
19 of a social backlash.

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22 On the other hand, managers who adopt unconventional approaches may become scapegoats when
23 they fail to meet expectations. This happened to Paul DePodesta, an assistant to Beane at the A’s, who
24 was good at analyzing players’ value using sabermetrics principles. He was hired as general manager
25 of the Los Angeles Dodgers in 2004, but was fired shortly after a terrible season. The reason for his
26 termination was mainly bad luck: several players whom DePodesta hired later proved to be valuable,
27 but six of them were injured in 2005. The Dodgers’ 2005 season resulted in the team’s worst record
28 since 1992, and its owner, partly influenced by two strong “anti-Moneyball” sports columnists at the
29 *Los Angeles Times*, fired DePodesta as a result. The implication is a typical agency problem: achieving
30 mediocre performance by following convention is a more reliable survival strategy for MLB managers,
31 even though some are aware of more efficient approaches.

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34 **Beyond sports.** Even when a team is able to sense, seize and integrate unconventional resources,
35 the legitimacy limit may still impede realization of the diversity bonus. The executive must convince
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3 relevant stakeholders that the diversity bonus is real. Research shows that if performance measurement
4 is based on subjective evaluation or is socially constructed, evaluations are likely to reflect evaluators'
5 biases (Becker 1971). For example, a diverse team may generate a novel artistic innovation that spans
6 multiple categories in a surprising way. However, if there are no objective criteria for evaluating this
7 artistic output, evaluators may use other cues such as judgments based on creators' stereotypes, or may
8 conform with high-status colleagues' evaluations. This suggests that diversity bonuses may be
9 generated, but discounted so heavily that they are no longer profitable. Take venture capitalists (VCs)
10 as another example. VCs may correctly identify the uniqueness of undervalued start-ups, such as having
11 entrepreneurs from atypical backgrounds or developing an unconventional innovation. However, they
12 may be unable to profit from this superior insight if they cannot convince other investors of its value.
13 If VCs rightly foresee this legitimacy limit, they may forgo this start-up, failing to realize the diversity
14 bonus despite recognizing it. Similarly, analysts may not understand a firm's atypical strategy and may
15 discount it (Benner and Zenger 2016), limiting the acquisition of diverse assets (Zuckerman 1999).

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In summary, the legitimacy limit to arbitrage may deter firms from engaging valuable diversity even
when they privately know that doing so might lead to superior performance. Self-interested managers
may choose not to engage obvious opportunities that may appear illegitimate to important stakeholders
if their incentives are structured to punish unconventional successes and reward legitimized mediocrity
or even failures.

4. Overcoming CSRL Limits to Arbitrage Mispriced Diversity

The case of *Moneyball* illustrates how CSRL limits deter many MLB teams and managers from
sensing, seizing, integrating or justifying valuable but atypical players. These strong limits preserve
behavioral failures and labor-market inefficiencies, so undervalued players remain untapped
opportunities. Teams that are able to supersede these limits more effectively than their rivals can
monopolize the opportunity and earn contrarian profit. This was the case for the A's and its manager,
Billy Beane between 1999 and 2003. Beane and the A's exploited an untapped opportunity in the
MLB—recruiting and utilizing valuable but atypical players to gain more wins—because they managed
to overcome all the CSRL limits more effectively than their rivals. As discussed, some teams, such as

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3 the Miami Marlins under John Henry, overcame some CSRL limits, but the remaining limits still
4 effectively deterred them from allowing *Moneyball* to occur sooner. As will be elaborated, overcoming
5 all the CSRL limits usually depends not only on becoming more rational or strategic, but also on being
6 in the right place at the right time: if strategists happen to have “preferential access to the missing piece
7 of the puzzle, identifying the opportunity might be easy” (Denrell et al. 2003, p. 985).
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13 In terms of the cognitive limit in the MLB, a shared mental model may have been so popular that
14 many teams and their management could not see how atypical players (such as Chad Bradford) might
15 actually be competent. What motivated Beane to pay attention to, and eventually adopt, a different
16 mental model was largely his personal, idiosyncratic experience. Beane had been a promising high
17 schooler, but his MLB career had been disappointing. He knew from experience that the conventional
18 practice of drafting stereotypical players with the right “look” was taken-for-granted but flawed. In fact,
19 Beane turned his experience on its head by using “his antitheses” as a guide. That is, he sought players
20 unlike himself, such as young men “not looking good in a uniform...couldn’t play anything but
21 baseball...had gone to college” (Lewis 2003, p. 117). Hundreds of high schoolers were falsely drafted
22 into the MLB because they, like Beane, had a stereotypical look, but only Beane took advantage of this
23 blunder and turned it into a heuristic that allowed him to see what his rivals failed to see.
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37 The searching limit in the MLB is about identifying the right “hidden gems” among atypical
38 candidates. This task is non-trivial, because most atypical players are not competent, as rightly predicted
39 by the representative heuristic. Teams searching for the truly undervalued among atypical players face
40 many learning traps. As discussed, the challenge is not only about analyzing data, but also about
41 collecting and analyzing more reliable data. This limit was not particularly challenging to Beane. His
42 predecessor at the A’s, Sandy Alderson, had adopted sabermetrics principles in the 1990s (including
43 collecting, purchasing and analyzing unconventional but more reliable performance metrics),
44 suggesting that Beane had already gone through part of the learning curve when he took over the A’s
45 in late 1997. Hiring Paul DePodesta, a Harvard-trained economist, as his assistant improved the A’s
46 efficiency in searching for undervalued players, but was probably not essential for the A’s success,
47 since many fans would have loved to contribute equivalent skill and knowledge freely to any MLB
48 team willing to listen to them.
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3 What is more surprising is Beane's strategic exploitation of rivals being constrained by the searching
4 limit. As discussed, many closing pitchers may be overvalued because their performance is based on a
5 small sample size and is sensitive to framing. Beane reassigned some of the A's above-average relief
6 pitchers as closers, and many soon seemed more valuable than they actually were. Rivals that persisted
7 in using the number of games "saved" were fooled and became overenthusiastic when Beane proposed
8 deals to trade these closers. The A's benefited from this "sell high" strategy and winner's curse in trades.
9 Good deals based on apparent but misleading superior performance were engineered to allow the A's
10 to gain more resources to recruit undervalued players.
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12 What deterred some teams (such as the Marlins) from exploiting inefficiencies in the MLB ahead of
13 Beane was the reconfiguring limit. In fact, the A's had been deterred by the same limit before Beane
14 took over because their coach, Tony La Russa, had refused to utilize competent but atypical players
15 hired by Alderson. The solution was to replace him with a low-profile coach, Art Howe, who "was
16 hired to implement the ideas of the front office" (Lewis 2003, p.61). Beane also ensured that incentives
17 were structured to reward players for delivering what they were hired for, such as high base-on-balls,
18 and to punish them if they followed the conventional playbook, which actually harmed performances,
19 such as stealing bases or sacrificing strikes. Importantly, unlike Alderson, Beane had the authority to
20 implement this unconventional strategy: he had been an MLB player himself, and everyone knew he
21 "was the guy destined for the Hall of Fame who never panned out" (Lewis 2003, p.57). He was a living
22 example of the inadequacy of the conventional MLB playbook for scouts and players at the A's. Beane
23 also facilitated the integration of atypical players by reducing the influence of his own biases. Knowing
24 that his own judgments might also be influenced by stereotypes, Beane tended to meet the players he
25 hired infrequently. By reducing his exposure to salient but misleading cues, he was more likely to
26 evaluate and utilize players based on their contributions to wins, rather than by their "look".
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28 Finally, the legitimacy limit was very strong in the MLB. The MLB playbook probably only worked
29 for the richest teams, but other teams felt pressured to follow these rules, even though some may have
30 privately known that they were not the most efficient (Correll et al. 2017). The fact that Beane managed
31 one of the poorest teams in the MLB and could not afford to go after the same players as other teams
32 probably enabled the A's to overcome the legitimacy limit more effectively than their rivals. Owing to
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3 the resource constraint, the A's owner ignored journalists' criticisms of Beane's approach and allowed
4 him to experiment with different types of players to enhance performance, effectively relaxing this
5 limit. Moreover, Beane utilized the A's underdog status to his advantage: he justified his acquisition of
6 apparently flawed players by his lack of resources. The A's management got excited when they realized
7 that the "flaw" that caused rivals to discount some players in the deals was "something that just doesn't
8 matter" (Lewis 2003, p. 116). The A's deal counterparts were fooled because they believed that
9 pursuing "flawed" players was a legitimate move for resource-poor teams like the A's.
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14 In summary, Billy Beane and the A's managed to overcome all the CSRL limits in the MLB and
15 monopolized an untapped opportunity. The A's won many games despite having one of the lowest
16 payrolls, as it systematically acquired players from rivals at a lower price than implied by their
17 contributions to winning. Beane's idiosyncratic experiences and the A's circumstances enabled them to
18 be less blind and less constrained, allowing them to exploit the opportunity. How Beane strategized
19 with his experience and circumstances also played an important role in integrating and justifying the
20 atypical resources more effectively than their predecessors. Overall, planned and unplanned behavioral
21 asymmetry between Beane, the A's and other MLB teams and managers explains why it was Beane
22 who successfully exploited this opportunity.
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27 This discussion of factors contributing to the success of the A's and Beane also potentially reconciles
28 two competing views on the origin of great strategies and performance. Many strategy researchers
29 consider great strategies to be "rooted in meaningful departures from a prevailing status quo—the
30 cognitions, practices, routines, and institutions that stabilize a market or competitive order at any given
31 point in time" (Gavetti and Porac 2018, p. 354). They suggest systematic pathways to greatness, such
32 as by deepening, extending or replacing the existing market or competitive order (p. 364). An alternative,
33 more pessimistic view is that there is no such systematic pathway (Andriani and Cattani 2016, Denrell
34 et al. 2003, March 2006). As the case of *Moneyball* illustrates, Beane's and the A's departure from the
35 status quo was a mixture of exaptation (e.g., turning personal failure into unique insights into
36 inefficiencies), luck (happening to be in a poor team with an enlightened predecessor as mentor and a
37 less hands-on team owner) and strategy (e.g., Beane maximized returns from his (un)fortunate
38 experiences and his team's limited resources). Exceptional performance is likely to occur in exceptional
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3 circumstances (Denrell and Liu 2012), implying that great strategies can *improve* performance, but are
4 insufficient to *achieve* great performance. Great performance, such as radical innovation, exceptional
5 growth/return or unprecedented achievements, is more likely to occur in contexts where most firms are
6 deterred by various limits in cognitions, practices, routines, and institutions, except for a few that
7 happen to overcome the limits by being closer to the right time and right place.
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13 This view should not discourage strategists, as it just adds one more clue to solving the strategic
14 paradox that attractive opportunities should not be easy to exploit. Popular strategy theories teach us
15 that attractive industry opportunities are protected by strong limits that deter entry (Porter 1980), and
16 that attractive resource opportunities are protected by strong limits that deter imitation and substitution
17 (Barney 1991). The behavioral strategy as arbitrage perspective resembles this logic and suggests that
18 attractive behavioral opportunities cannot be low-hanging fruit, but must be protected by strong limits
19 that deter deliberation, learning, changes and being contrarian. Whoever can overcome all these limits
20 will monopolize the contrarian profit. Addressing the strategic paradox is challenging, and this paper
21 contributes an overlooked piece to the puzzle of searching for greatness by looking for sticky behavioral
22 failures that may help strategists identify untapped strategic opportunities.
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34 35 **5. In Search of Behavioral Arbitrage Opportunities** 36

37 This paper introduces four limits—cognitive, searching, reconfiguring and legitimacy—that deter
38 firms from engaging diversity. These operate like filters (see Figure 1): some firms may fail to sense
39 valuable diversity due to cognitive distance; for those that sense it, some may fail to seize the truly
40 valuable opportunities owing to the difficulty of overcoming learning traps when experimenting with
41 atypical resources; for those that sense and seize valuable diversity, some may fail to integrate it due to
42 internal resistance to change or disrupted routines; for those that sense, seize and integrate valuable
43 diversity, some may fail to justify to important stakeholders that engaging these atypical resources is
44 legitimate. The CSRL limits may be so strong that no firm can overcome them all, protecting the
45 untapped opportunity of valuable diversity from being arbitrated away, sometimes for years as in the
46 case of *Moneyball*. This is bad news for labor-market efficiencies and meritocracy, but good news for
47 strategists who understand the CSRL framework when searching for behavioral arbitrage opportunities.
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[Insert Figure 1 here]

More generally, the perspective of behavioral strategy as arbitrage provides a template for searching for systematic behavioral failures and, in turn, untapped opportunities. The focus of this paper is on how CSRL limits preserve labor-market inefficiencies and behavioral opportunities. It extends previous work on behavioral finance and strategy to the context of diversity, and argues that the various behavioral failures identified in the diversity literature may become a guide to untapped opportunities. Future research might utilize this approach and outline the specific limits that preserve inefficiencies in strategically relevant contexts.

Importantly, untapped strategic opportunities are not necessarily tied to any particular approach (e.g., wisdom of the crowd trumps experts), method (e.g., data analytics trumps conventional evaluations) or presumption (e.g., diversity enhances performance). “Astroball” (Reiter 2018), an update of the evolution of the *Moneyball* strategy, illustrates how one of the worst-performing MLB teams, the Houston Astros, won the 2017 World Series by rediscovering the value of scouts’ judgment. Untapped opportunities emerge when too many people share similar enthusiasms for a particular approach, method or presumption (e.g., replacing scouts with data analytics) to such an extent that all alternatives become too “cognitively distant” to them. For example, when the *Moneyball* strategy became a “fad” after 2003, scouts’ inputs into hiring decisions were severely marginalized and underestimated. Thus opportunities exist for those who are willing to try (and are capable of) becoming contrarian, as the Houston Astros did. Nevertheless, the Astros’ success may trigger another cycle of diffusion, imitation and socialization, and a new set of CSRL limits as well as strategic opportunities. To paraphrase Mark Twain, as a strategist, “whenever you find yourself on the side of the majority”, it is time to search for contrarian opportunity.

This perspective urges researchers and practitioners to focus on failures in searching for attractive strategic opportunities. Greater difficulty in overcoming the limits predicts inefficiencies, which is bad news; but the good news is that the same behavioral failures also predict more attractive, untapped opportunities. This paper thus provides a stepping stone for future theoretical and empirical research on behavioral sources of competitive advantage by translating well-known behavioral failures into roadmaps for strategic opportunities.

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3 Behavioral strategy as arbitrage also contributes to the diversity literature by providing a distinct
4 perspective that complements the two mainstream views of why firms should engage diversity. Much
5 research and many practices address diversity from a normative, justice-centric perspective (Nkomo et
6 al. 2019), stipulating that firms should encourage the inclusion of individuals with certain disadvantaged
7 social identities, such as female, black or immigrant. Others emphasize a pragmatic, performance-
8 centric view (Page 2017), stating that firms that engage diversity—solving complex tasks by assembling
9 cognitively diverse teams—are likely to earn a performance bonus. Behavioral strategy as arbitrage
10 suggests that both perspectives are incomplete. Taking a normative but behaviorally naïve perspective
11 on organizations has been shown to backfire: doing the right thing, such as fixing historical social
12 injustice through affirmative action, without considering the CSRL limits may reinforce rather than
13 attenuate the disadvantages of certain identity groups (Dobbin et al. 2015). One challenge is that many
14 who take a normative stance believe that “pragmatic logics carry less weight than normative arguments”
15 (Page 2017, p. 6). This belief may also create greater CSRL limits, because those who have a perceived
16 moral high ground are more likely to make biased judgments and discount viable alternatives if
17 something does not fit their moral values. This is known as the “paradox of meritocracy” (Castilla and
18 Benard 2010). On the other hand, the pragmatic view does not yet address the behavioral and social
19 limits associated with exploiting the performance bonus from engaging diversity. The logic of
20 generating a diversity bonus may be clear theoretically, but behavioral failures prevent these bonuses
21 from being exploited practically. The perspective of behavioral strategy as arbitrage illuminates the
22 importance of unpacking the forces that generate behavioral failures when engaging diversity in order
23 to do the right thing, improve performance, or both. Organizations should also clearly distinguish
24 between normative and pragmatic perspectives, because being stuck in the middle creates greater CSRL
25 limits.

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28 Finally, recent hype around AI serves as an interesting illustration of the relevance of CSRL limits.
29 Many AI algorithms, similar to human cognitions, predict behaviors or categories based on
30 simplifications of complex reality and generalizations of the inferences obtained. Although effective in
31 many ways, this simplification may create overgeneralization and predictable blind spots. For example,
32 algorithms can only optimize what can be quantified, but many subtle characteristics, such as cognitive

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3 diversity in teams, cannot yet be measured and quantified reliably, leading to systematic misevaluations
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5 by naïve AI users. Moreover, AI is only as smart as the data it is fed, but existing data may reflect
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7 decades of accumulated human biases and social injustice. This is why Amazon ditched its AI recruiting
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9 tool that favored males for technical jobs. This incident also suggests that less salient biases than gender
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11 stereotypes may be utilized by algorithms, creating subtle “iron cages” that trap future generations.
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13 Even if strategists overcome the cognitive and searching limits in algorithms, it is still challenging for
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15 existing organizations to integrate and adapt to AI. For example, who should be held accountable when
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17 AI predictions go wrong, particularly when the algorithms are too sophisticated to be comprehended by
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19 managers and stakeholders, such as predictions based on deep learning algorithms? Although some
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21 managers appreciate these concerns about AI, they may be forced to adopt it prematurely when investors
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23 or the media uncritically believe that AI combined with big data is the solution to every problem.
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25 Unfortunately, taken together, the hype surrounding AI may actually reinforce existing CSRL limits
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27 that deter firms from engaging diversity. However, the good news is that these limits also preserve
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29 attractive, untapped opportunities for firms that are able to predict results based on algorithms that allow
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31 enriched representations, to sanitize big but polluted data, to redesign organizational structures to adapt
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33 to AI, and to rebel against the myths of AI and their true believers.
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36 37 38 **References**

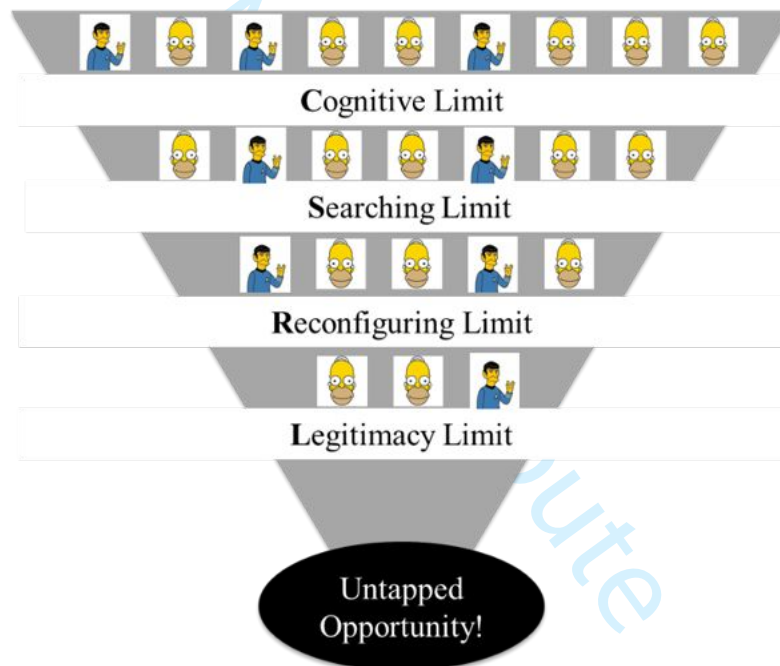
- 39 Akerlof GA (1978) The market for “lemons”: Quality uncertainty and the market mechanism.
40 *Uncertainty in Economics*. (Elsevier), 235–251.
- 41 Andriani P, Cattani G (2016) Exaptation as source of creativity, innovation, and diversity:
42 Introduction to the Special Section. *Ind Corp Change* 25(1):115–131.
- 43 Arrow K (1973) The theory of discrimination. *Discrimination in labor markets* 3(10):3–33.
- 44 Audia PG, Locke EA, Smith KG (2000) The paradox of success: An archival and a laboratory study
45 of strategic persistence following radical environmental change. *Academy of Management*
46 *Journal* 43(5):837–853.
- 47 Barberis N, Thaler R (2003) A survey of behavioral finance. *Handbook of the Economics of Finance*
48 1:1053–1128.
- 49 Barney J (1991) Firm resources and sustained competitive advantage. *Journal of Management*
50 17(1):99–120.
- 51 Barney JB (1986) Strategic factor markets: Expectations, luck, and business strategy. *Management*
52 *Science* 32(10):1231–1241.
- 53 Becker GS (1971) *The Economics of Discrimination* (University of Chicago Press, Chicago, IL).
- 54 Benner MJ, Zenger T (2016) The lemons problem in markets for strategy. *Strategy Science* 1(2):71–
55 89.
- 56 Castilla EJ, Benard S (2010) The paradox of meritocracy in organizations. *Administrative Science*
57 *Quarterly* 55(4):543–676.
- 58 Christensen M, Knudsen T (2010) Design of decision-making organizations. *Management Science*
59 56(1):71–89.
60

- 1
2
3 Cohen WM, Levinthal DA (1990) Absorptive capacity: A new perspective on learning and
4 innovation. *Administrative Science Quarterly* 35(1):128–152.
- 5 Correll SJ, Ridgeway CL, Zuckerman EW, Jank S (2017) It's the conventional thought that counts:
6 How third-order inference produces status advantage. *American Sociological Review*
7 82(2):297–327.
- 8 Csaszar FA, Levinthal DA (2016) Mental representation and the discovery of new strategies.
9 *Strategic Management Journal* 37(10):2031–2049.
- 10 Delong JB, Shleifer A, Summers LH, Waldmann RJ (1990) noise trader risk in financial-markets.
11 *Journal of Political Economy* 98(4):703–738.
- 12 Denrell J, Fang C, Liu C (2015) Chance explanations in the management sciences. *Organization*
13 *Science* 26(3):923–940.
- 14 Denrell J, Fang C, Liu C (2019) In search of behavioral opportunities from misattributions of luck.
15 *Academy of Management Review* 44(4):896–915.
- 16 Denrell J, Fang C, Winter SG (2003) The economics of strategic opportunity. *Strategic Management*
17 *Journal* 24(10):977–990.
- 18 Denrell J, Liu C (2012) Top performers are not the most impressive when extreme performance
19 indicates unreliability. *Proceedings of the National Academy of Sciences* 109(24):9331–9336.
- 20 Denrell J, March JG (2001) Adaptation as information restriction: The hot stove effect. *Organization*
21 *Science* 12(5):523–538.
- 22 van Dijk H, Meyer B, van Engen M, Loyd D (2017) Microdynamics in diverse teams: A review and
23 integration of the diversity and stereotyping literatures. *Academy of Management Annals*
24 11(1):517–557.
- 25 DiMaggio PJ, Powell WW (1983) The iron cage revisited: Institutional isomorphism and collective
26 rationality in organizational fields. *American Sociological Review* 48(2):147–160.
- 27 Dobbin F, Schrage D, Kalev A (2015) Rage against the iron cage: The varied effects of bureaucratic
28 personnel reforms on diversity. *American Sociological Review* 80(5):1014–1044.
- 29 Dumas TL, Phillips KW, Rothbard NP (2013) Getting closer at the company party: Integration
30 experiences, racial dissimilarity, and workplace relationships. *Organization Science*
31 24(5):1377–1401.
- 32 Eberhardt JL (2019) *Biased: Uncovering the hidden prejudice that shapes what we see, think, and do*
33 (William Heinemann, New York, NY).
- 34 Fama EF (1970) Efficient capital markets: A review of theory and empirical work. *The Journal of*
35 *Finance* 25(2):383–417.
- 36 Fang C, Liu C (2018) Behavioral strategy: In search of an alternative source of profitability. *Advances*
37 *in Strategic Management* 38(1):209–219.
- 38 Fiske ST, Taylor SE (2013) *Social Cognition: From Brains to Culture* (Sage, New York, NY).
- 39 Friedman M (1975) *There's No Such Thing as A Free Lunch* (Open Court Publishing Company,
40 LaSalle, IL).
- 41 Galinsky AD, Todd AR, Homan AC, Phillips KW, Apfelbaum EP, Sasaki SJ, Richeson JA, Olayon
42 JB, Maddux WW (2015) Maximizing the gains and minimizing the pains of diversity: A
43 policy perspective. *Perspectives on Psychological Science* 10(6):742–748.
- 44 Gavetti G (2012) Toward a behavioral theory of strategy. *Organization Science* 23(1):267–285.
- 45 Gavetti G, Porac J (2018) On the Origin of Great Strategies. *Strategy Science* 3(1):352–365.
- 46 Gigerenzer G, Goldstein DG (1996) Reasoning the Fast and Frugal Way: Models of Bounded
47 Rationality. *Psychological Review* 103(4):650–669.
- 48 Hannan MT, Freeman J (1984) Structural inertia and organizational change. *American Sociological*
49 *Review* 49(2):149–164.
- 50 Haunschild PR, Miner AS (1997) Modes of interorganizational imitation: The effects of outcome
51 salience and uncertainty. *Administrative Science Quarterly* 42(3):472–500.
- 52 Henderson RM, Clark KB (1990) Architectural innovation: The reconfiguration of existing product
53 technologies and the failure of established firms. *Administrative Science Quarterly* 35(1):9–
54 30.
- 55 Jackson SE, Joshi A, Erhardt NL (2003) Recent research on team and organizational diversity: SWOT
56 analysis and implications. *Journal of Management* 29(6):801–830.
- 57
58
59
60

- 1
2
3 Jonsson S, Regnér P (2009) Normative barriers to imitation: social complexity of core competences in
4 a mutual fund industry. *Strategic Management Journal* 30(5):517–536.
- 5 Kahneman D (2011) *Thinking, Fast and Slow* (Penguin, London, UK).
- 6 Kahneman D, Slovic P, Tversky A (1982) *Judgment under Uncertainty: Heuristics and Biases*
7 (Cambridge University Press, New York, NY).
- 8 Kaley A, Dobbin F, Kelly E (2006) Best practices or best guesses? Assessing the efficacy of corporate
9 affirmative action and diversity policies. *American Sociological Review* 71(4):589–617.
- 10 Leslie LM (2018) Diversity initiative effectiveness: A typological theory of unintended consequences.
11 *Academy of Management Review* 44(3):538–563.
- 12 Levinthal DA, March JG (1993) The myopia of learning. *Strategic Management Journal* 14(8):95–
13 112.
- 14 Lewis M (2003) *Moneyball: The Art of Winning an Unfair Game* (WW Norton & Company, New
15 York, NY).
- 16 Lewis M (2011) *The Big Short: Inside the Doomsday Machine* (WW Norton & Company, New York,
17 NY).
- 18 Lewis M (2014) *Flash boys: A Wall Street Revolt* (WW Norton & Company, New York, NY).
- 19 Lewis M (2016) *The undoing project: A friendship that changed the world* (Penguin UK).
- 20 Litov LP, Moreton P, Zenger TR (2012) Corporate strategy, analyst coverage, and the uniqueness
21 paradox. *Management Science* 58(10):1797–1815.
- 22 Liu C, Vlaev I, Fang C, Denrell J, Chater N (2017) Strategizing with biases: Engineering choice
23 contexts for better decisions using the Mindspace approach. *California Management Review*
24 59(3):135–161.
- 25 March JG (2006) Rationality, foolishness, and adaptive intelligence. *Strategic Management Journal*
26 27(3):201–214.
- 27 Mauboussin MJ (2012) *The Success Equation: Untangling Skill and Luck in Business, Sports and*
28 *Investing* (Harvard Business School Press, Cambridge, MA).
- 29 McDonald M, Keeves GD, Westphal J (2017) One step forward, one step back: White male top
30 manager organizational identification and helping behavior toward other executives following
31 the appointment of a female or racial minority CEO. *Academy of Management Journal*
32 61(2):405–439.
- 33 Mosakowski E (1997) Strategy Making Under Causal Ambiguity: Conceptual Issues and Empirical
34 Evidence. *Organization Science* 8(4):414–442.
- 35 Nelson F, Winter S (1982) *An Evolutionary Theory of Economic Change* (Harvard University Press,
36 Cambridge, MA).
- 37 Nkomo SM, Bell MP, Roberts LM, Joshi A, Thatcher S (2019) Diversity at a Critical Juncture: New
38 Theories for a Complex Phenomenon. *Academy of Management Review* 44(3):498–517.
- 39 Oliveira S de, Nisbett RE (2018) Demographically diverse crowds are typically not much wiser than
40 homogeneous crowds. *PNAS* 115(9):2066–2071.
- 41 Oliver C (1997) Sustainable competitive advantage: Combining institutional and resource-based
42 views. *Strategic Management Journal* 18(9):697–713.
- 43 Page SE (2017) *The Diversity Bonus: How Great Teams Pay Off in the Knowledge Economy*
44 (Princeton University Press, Princeton, NJ).
- 45 Pontikes EG, Barnett WP (2017) The non-consensus entrepreneur organizational responses to vital
46 events. *Administrative Science Quarterly* 62(1):140–178.
- 47 Porac JF, Thomas H, Wilson F, Paton D, Kanfer A (1995) Rivalry and the industry model of Scottish
48 knitwear producers. *Administrative Science Quarterly* 40(2):203–227.
- 49 Porter ME (1980) *Competitive Strategies: Techniques for Analyzing Industries and Competitors* (Free
50 Press, New York, NY).
- 51 Reiter B (2018) *Astrobball: The New Way to Win It All* (Crown/Archetype, New York, NY).
- 52 Rosenzweig P (2007) *The Halo Effect* (Free Press, New York, NY).
- 53 Rumelt R (1984) Towards a strategic theory of the firm. *Competitive strategic management (1984)*
54 *Lamb, RB. Englewood Cliffs, NJ: Prentice Hall. 556–570.*
- 55 Shiller RJ (1981) Do stock prices move too much to be justified by subsequent changes in dividends?
56 *American Economic Review* 71(3):421–436.
- 57
58
59
60

- 1
2
3 Shilling AG (1993) Scoreboard: A frank self-appraisal of where I went wrong and where I went right
4 in the year just past. *Forbes* 151(4):236.
5 Shleifer A, Vishny RW (1997) The limits of arbitrage. *Journal of Finance* 52(1):35–55.
6 Siegel J, Pyun L, Cheon B (2018) Multinational firms, labor market discrimination, and the capture of
7 outsider’s advantage by exploiting the social divide. *Administrative Science Quarterly*
8 64(2):1–28.
9 Teece DJ, Pisano G, Shuen A (1997) Dynamic capabilities and strategic management. *Strategic*
10 *Management Journal* 18(7):509–533.
11 Thaler RH, Sunstein CR (2003) Market efficiency and rationality: The peculiar case of baseball.
12 *Mich. L. Rev.* 102(6):1390–1403.
13 Tripsas M, Gavetti G (2000) Capabilities, cognition, and inertia: Evidence from digital imaging.
14 *Strategic Management Journal* 21(10-11):1147–1161.
15 Tversky A, Kahneman D (1974) Judgment under uncertainty: Heuristics and biases. *Science*
16 185(4157):1124–1131.
17 Zuckerman EW (1999) The categorical imperative: Securities analysts and the illegitimacy discount.
18 *American Journal of Sociology* 104(5):1398–1438.
19 Zuckerman EW (2012) Construction, concentration, and (dis) continuities in social valuations. *Annual*
20 *Review of Sociology* 38(1):223–245.
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23 **Figure**



45 *Figure 1. In search of untapped opportunities using CSRL limits as filters*

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