TALENT WANTS TO BE

FREE:

WHY WE SHOULD LEARN TO LOVE RAIDS,

LEAKS & FREE-RIDING

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There is a crack, a crack in everything. It’s how the light comes in.
--Leonard Cohen.

Chapter 2: Innovation's Edge

Two Competing Models

In every industry, managers I talk to say that their most valuable assets walk out the door every night. General Mills, Inc. is one of the world's largest food companies, manufacturing and marketing major brands such as Betty Crocker, Cheerios, and Pillsbury. By their own estimation, the departure of a single senior marketing executive can cost the company millions of dollars as marketing knowledge, client contacts, and personal relationships walk out the door with them.[1] Not surprisingly, a natural reaction is to vigilantly protect against loss. The protectionist mentality however is dangerous because it automatically frames job mobility as a threat. Within this frame of mind, we see companies reducing efforts to develop their mobile talent; managers reacting irrationally to the departure of talent; and businesses locked in counter-productive battles in reaction to the flow of talent flow. Traditional economic analysis understands loss in the same flat way as the intuitive protectionist mentality: the orthodox economic view has beenthat human capital and intellectual property controls are necessary limitations stemming from the fact that absent such protections, employers would under-invest in employee training. The view continues with the following idea: since employees generally lack the resources to self-finance their training and skill development, they will exchange their freedom in return for training. Mobility restrictions and information controls, through non-compete agreements, non-disclosure restrictions, and patent and copyright transfers, under this view, allow and promote efficient investment in human capital.[2]

In the 1960s, Nobel Laureate Gary Becker distinguished between general and specific job training. General training includes skills that are valuable to many companies in a given industry while specific training and skills are only useful within a particular firm. Becker understood that we "cannot separate a person from his or her knowledge and skills the way it is possible to move physical and financial assets while the owner stays put."[3] Still, Becker theorized that, in a perfect market, workers would pay for their own general training and knowledge acquisition while firms would pay for specific training.[4]In this ideal world, the employer would not care if the employee left with information because the employee would already have paid for the value of training and any generally valuable information. In other words, Zuckerberg would pay the Winkelvosses for his exposure to their Harvard Connection project (and all the computing experience that comes with working on building a social network) at the moment he agreed to work on the project. Then, if he leaves to start working on his own social network ideas, no harm done, he has already

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[1]Salvatore Parise, Rob Cross, and Thomas Davenport, "Strategies for preventing a knowledge-loss crisis,"*IT Sloan Management Review*, July 1 2006.

[2]Eric Posner, Alexander Triantis, George G. Triantis, "Investing in Human Capital: The Efficiency of Covenants Not to Compete" (2004)

[3]Gary S. Becker, "Investment in Human Capital: A Theoretical Analysis," *Journal of Political Economy* 70 (1962), 16.

[4] Gary S. Becker, *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, Second Edition* (New York: Columbia University Press for the National Bureau of Economic Research, 1975), 15-37.

paid his dues. If this were actually possible, there would be no need for restraints on worker mobility.

In reality, however, most employees cannot afford the cost of learning from their employer, be it general or firm-specific skills. Economic realities create an environment where employees are almost always unable to pay for their own training and for the learning of valuable trade secrets, both because of the direct expense and because of the large pay cuts required to dedicate time to training. Most of the time, it is impractical and even impossible to assess the value of learning secrets within an organization before the secrets have been put to good use and translated into market value. As a result, according to the orthodox economic view, firms seek instead to restrict their employees' future opportunities to prevent "appropriation" of their investment. In other words: future restrictions on competition give present comfort. Allowing employers to implement such restrictions, goes the traditional economic story, encourages companies to foster investment.[5]

The classic model, which has informed (and has likely been informed by – a symbiotic reinforcement of alarms!) our control mentality, therefore predicts that without the protections afforded by non-competes, trade secrets, and patent/copyright assignment agreements, employers would under-invest in people training, research and development.[6]

The Orthodox Model

More company controls = more R&D and human capital investment

Our journey into the world of the talent wars is aimed at enriching our understanding of the human capital-innovation nexus. It adds a dynamic perspective to the orthodox economic view by looking at the investment incentives of both businesses and talented employees over time. As we shall soon see, new evidence casts serious doubt on the assumption about decreased investment by firms under more mobile regimes. But our lessons will go further than that. We will see that the model is incomplete. It fails to take into account the impact over time of human capital controls as well as the effects of such controls on human motivation. Our quest to understand talent wars brings us to the lands of the science of innovation, creativity, and productivity. I will invite you, dear reader, to consider the tradeoff between controls and freedoms within these richer lands.

Before we delve into these tradeoffs, let us compare the traditional economic model that has long-informed our control-bound mentality to the new model. The Dynamic Model differs significantly from the Traditional Model because it captures insights about the complex workings of markets. Consider the motivation of inventors. Intuitively, we know that competition enhances motivation and excellence. Also intuitively, think about the multiplier effect of successful

[5] See Paul H. Rubin & Peter Shedd, "Human Capital and Covenants Not to Compete," Journal of Legal Studies 10 (1981), 93.

[6] Mark A. Glick, Darren Bush, and Jonathan O. Hafen, "The Law and Economics of Post-Employment Covenants: A Unified Framework," *George Mason Law Review 11* (2002), 357.

generations of economic growth: talent attracts talent; knowledge builds on knowledge; talent mobility enhances professional ties; and a virtuous cycle of innovation is set into motion. We recognize these effects in our daily lives, but for years, the mentality of control has pervaded competition over talent.

While the remarkable benefits of loosening controls become clearer, our new model also acknowledges that companies have legitimate concerns. Companies rightly worry about the risks of leaking valuable information and ideas and about losing customers and employees. Our ultimate goal is not to deny the tradeoffs and the risks but to be smarter in how we deal with their overall implications. We will see how some controls are important while other control strategies have simply gone too far. Below is a graphic depiction of the model which we will soon examine more closely. You are probably familiar with many of the buzzwords in today's innovation debates: networks, collaboration, outsourcing, crowd-sourcing, flow, entrepreneurship, and social capital. The list goes on. While we know a great deal about how these ideas apply to current debates about management styles and even about intellectual property generally, our blind spot has been in our treatment of our new Sputnik – the quest for sustaining innovative human capital. Too often, these abstract ideas fail to translate to actual strategies when it comes to the most important source of innovation: people.

THE DYNAMIC MODEL

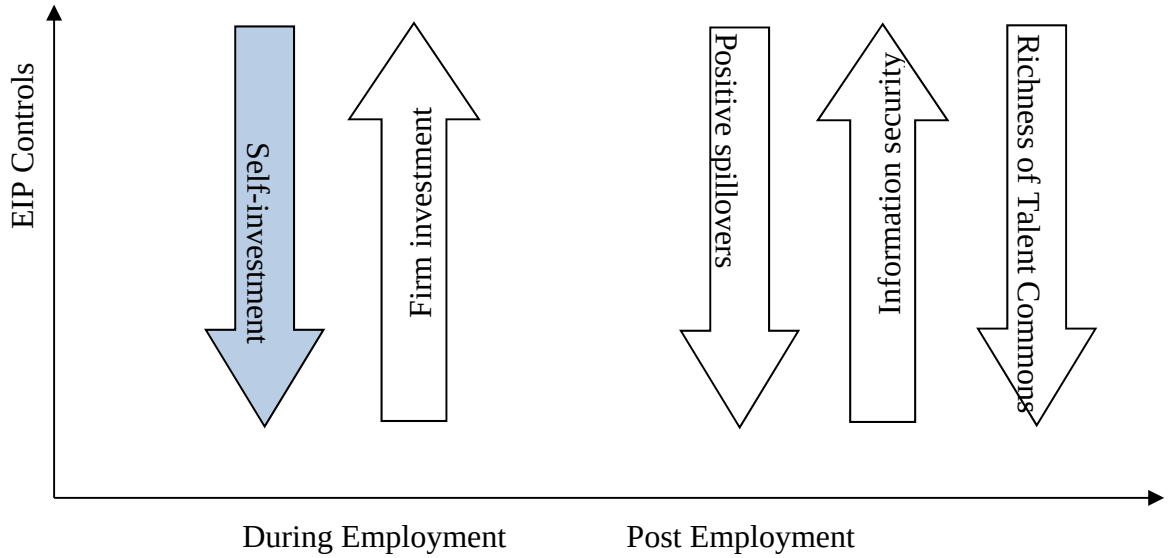
Time 0 (During employment):

1) Controls encourage firms to invest in their employees' human capital.
2) Freedoms discourage individuals to invest in their own human capital.
3) Freedoms encourages alternative reward systems that effectively trigger innovation.

Time 1 (Post-employment):

4) Controls prevent loss of talent and secrets.
5) Freedoms enhance:

- market competition
- better talent-firm fit
- reduced search costs for new talent
- "new blood" moments
- stronger inventor networks
- richer talent pools
- knowledge flows
- entrepreneurship
- regional "brain gain"



Talent is Alive, Long Live Talent

Utopist cyber thinker Stewart Brand is famous for coining the phrase "*information wants to be free.*" These words were instantly turned into the battle cry of the movements calling to eradicate intellectual property controls. Activists decry the extent to which patent, copyright, trade secrets and trademark laws have limited the use and re-use of ideas and information. A closer look at Brand's words, however, reveals that he understood the "desires" of information as more complex than simple freedom, and the world of innovation as full of conflicting pushes and pulls; costs and benefits. The phrase comes from the first Hackers' Conference in 1984 where Brand stated:

> On the one hand information wants to be expensive, because it's so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time.

Here lies the classic tension between the protection and promotion of the flow of knowledge. We want to ensure that information is produced, but we also want that same information to be put to good use once it is produced. When it comes to talent, the puzzle is more complex still. We want to invest in skill and professional growth and we want the fruits of this investment to be used for our benefit. We want talent to be nurtured, but we also want talent to thrive. For a long time now, economists have assumed that the objectives of labor mobility and human capital investment are fundamentally at odds: why invest in something (or someone) that will be leaving you? The bottom line has been that employers would be discouraged from investing in the training of mobile workers. But new hard evidence and a fresh intuition suggests otherwise. Our Dynamic Model above suggests that investment in human capital and innovation can be greater the more flow and mobility there is.

Understandably, this creates a puzzle for economists. The new evidence has led prominent legal economists Richard Posner and William Landes, who were central in crafting modern intellectual property analysis, to discuss post-employment restrictions with a tone of uncertainty: "It is not even clear," they admit, "that enforcing employee covenants not to compete generates social benefits in excess of its social costs."[7]

We have long been aware of the troubling features of information monopolies; information, by its very nature, seems to demand freedom. Without its natural flow, we cannot progress as a society, build on generations of creativity, or use knowledge to promote innovation. But notice the key feature of the talent wars: human capital controls. Human capital controls, instead of targeting information itself (be it through patent, copyright, or locking up a secret formula in a vault) are about the carrier of the information. Mobility restraints target knowledge as embodied within a person. These controls also target interpersonal relationships. Human capital controls, including non-competes, trade secrets, and pre-invention assignment requirements,do not just restrict the use of information; they restrict careers and connections that are born between people. Such is the innovation puzzle: we want to allow companies and individuals to reap the fruit of their investment, but at the same time, we want to encourage the positive outcomes from the free flow of talent and ideas. The goal we strive for must be a balance between encouraging initial investment in human capital, training, and research *and* the encouragement of information sharing, further improvement, and growth. We don't want to deprive firms of their returns from their investment in people –but, as with information, even more so with people: incentives and benefits are complex. Stages are not sequential. Balancing occurs between the firm's interest and the motivations of its employees and competitors; between individual fairness and economic welfare; and between investment in innovation and subsequent flow. But although these pairs seem to be balanced – firm versus employee; industry growth versus individual firm; initial innovation and subsequent innovations –they are not necessarily dichotomous. Often, these goals and interests are not conflicted. Talent wants to be developed, but it also wants to be free and put to good use and the most successful innovators are showing us that we can do both.

Investigating the New Model

Below is a standard contract similar to one that many of you have required employees to sign or that you have been required to sign. Let's assume your company is BioGen, an up-and-coming biotech firm. BioGen's standard employment agreement states in its preamble that the company needs to protect its rights of confidential business and product information, inventions, and customer relationships. The contract contains dozens of provisions and legalese, but at the heart of the matter sit these restrictions:

1. *Restrictions on Competition*: While employed by BioGen, and for two years after, Employee will not be employed or affiliated in any capacity by, become an

[7]William M. Landes& Richard A. Posner, *The Economic Structure of Intellectual Property Law* (Boston: Harvard University Press, 2003), 371.

independent contractor or consultant for, or perform any services for a competing organization.

2. *Nondisclosure*: Employee agrees not to use or disclose any CONFIDENTIAL INFORMATION to or for the benefit of anyone other than BioGen, either during or after Employment for as long as the information remains confidential. Employee agrees and understands that this provision prohibits Employee from rendering services to a competing organization to the extent that Employee would use, disclose, rely upon, or be induced to use confidential information.
3. *Ownership and Assignment*: All inventions and ideas shall be the exclusive property of BioGen. Employee hereby assigns all inventions and future inventions to BioGen. Any INVENTION relating to the business of BioGen with respect to which Employee files a patent application within one year following termination of Employee's employment shall be presumed to be conceived by Employee during the term of Employee's employment.

The world of human capital controls – or employment intellectual property (EIP)- is revealed in these three clauses. Companies make regular use of these standard contracts containing non-compete, non-disclosure, and intellectual property assignment provisions. These EIP strategies – the laws, contracts, and norms that shape the field – are important to every firm, large or small in every industry and they affect our likelihood of success in surprising ways. We know that human capital and intellectual property are inexorably intertwined with economic success. Under the Orthodox Model though, strategies for controlling them have been understood to benefit companies while harming the individuals who embody them. Tracking much of the ways we traditionally debated intellectual property regimes more generally, human capital controls have been commonly understood to be helping the firm who invests in ideas, skill-building, and innovation while limiting workers and future developers. These tradeoffs are illustrated in the following table, which begs the classic challenge: how to ensure that valuable assets are first developed (=allow control!) and subsequently put to good use (= allow freedom!).

Figure I: Schematic Table of Human Capital Trade-Offs

	Controls	Free Flow Alternative
Non-Competes	Protect Employer's Investment in Skills & Training	Protect Job Mobility and Freedom of Occupation
Non-Disclosure Agreements &Trade Secrets	Protect Employer's Valuable Secrets	Protect Knowledge Dissemination
Invention/ Copyright Assignment	Protect Research &Development Investment	Allow Use of Inventions and Creative Expression

Fairness *and* Welfare

The firm, the individual, and the public good are the three forces which we constantly try to balance. The triangle of interests creates inevitable tensions. In the legal world, we talk about two vectors that often need to be reconciled: *Fairness,* focusing on the individual rights of employees and the individual interests of firms, and *Welfare,* considering the overall gains and losses from a public perspective. For example, when an employee is constrained and cannot pursue their professional careers because of a post-employment restriction, this may seem unfair. But if it turns out that on the whole this constraint has led to progress in the industry, because firms confidently relied on their talent staying put, then we can say that welfare prevails.

It is easy to buy into this welfare/fairness division too much, believing that fairness and welfare *must be* polar opposites. The orthodox model suggests that welfare (i.e., more overall innovation) comes from more controls. When judges feel uncomfortable with constraining talent nonetheless, the majority of their concerns relate to issues of fairness toward the individual employee and her labor rights - an expression of the ever-present conflict between workers and capital. So courts, and sometimes legislatures, that seek to limit the control strategies employed in the talent wars, turn to fairness justifications and posit their concerns as concerns about the weaker party – the worker. In response, classic economic analysis predicts that absent severe market failure, wages will normally reflect the opportunity costs of any future contractual and regulatory restrictions on employee mobility, rendering judicial or legislative limitations on human capital controls unnecessary.[8] If you believe that people are adequately compensated for every future restriction they take upon themselves, then you might be convinced that at least from the perspective of protecting workers, we can forgo any requirements that human capital controls imposed by business be reasonable (requirements which we will soon look at more closely) and allow human capital controls to exist as long as they fulfill the regular requirements of agreements: mutual assent and an absence of unconscionable terms. But judges and legislators have recognized that the theoretical analysis offered by economists – that compensation will follow restriction - often has little to do with market realities. Signing your life away for the proverbial lentil stew seems utterly unfair.

When I came to the United States for my graduate studies, I received a Fulbright grant from the Federal Government. The grant required that I sign a contract, with the United States Government no less, promising my return to my home country upon completion of my studies at Harvard. The contract was a particularly harsh one in its terms as one could not regain freedom by returning the grant, even with high interest. Employees encountering non-compete and other human capital restrictions face a similar feeling of a loss of freedom. The words of one recent private aviation management graduate describing his decision to sign a non-compete reminded me of the same process I encountered when signing the Fulbright contract:

> "It was a week away from college. I would sign anything – I would sign my life away. You don't think of those things when you're interviewing for the position. All you can think of is becoming the CEO of the company in ten years and

[8]Treiblock.

staying with that company forever. And then reality sets in and you're underpaid and there are other companies out there."[9]

Field studies have revealed that a high percentage of employees feel compelled, perhaps even coerced, into signing a non-compete that was presented to them after they had already accepted a job offer. One recent study found that nearly 70% of those signing non-competes were asked to sign them after they had accepted the offer, probably after turning down other offers. This led the researcher of the study to argue that "ceding the rights to one's expertise may hardly be a voluntary act."[10]Further complicating the matter is that, much of the time, employees sign or simply initial a general employee handbook rather than an individualized, bargained over contract. Similarly, non-disclosure agreements are riddled with information asymmetry and timing problems.[11] Normally, at the time of hiring, the employer knows far more than the employee about the material information that will be disclosed and the nature of its operation. There may even be an incentive for the employer to keep information vague to capture broad and uncertain aspects within the language of the restriction.[12] As a result the employee is often asked to sign a non-disclosure agreement without seeing the information that is the subject of the agreement, as well as without knowing about the company and its likelihood to succeed.

Here then, from the perspective of balancing interests, restrictions are a form of exploitation. Bargaining power when agreeing to restrict one's human capital becomes a policy concern for the courts. In the words of one court: "The average, individual employee has little but his labor to sell or to use to make a living. He is often in urgent need of selling it and in no position to object to boilerplate restrictive covenants placed before him to sign. To him, the right to work and support his family is the most important right he possesses. His individual bargaining power is seldom equal to that of his employer."[13] The primary concern by courts who take this perspective is the hardship that post-employment restrictions impose on an employee who wishes to leave his job, go elsewhere, or become independent. At their most dangerous, human capital controls such as non-compete agreements temporarily prevent workers who have trained and labored in a specific field with a specific set of knowledge from using their expertise in pursuing their passions and perhaps also from earning a living. Even the "milder" forms of control, such as non-disclosure agreements, can severely limit the inventor's available career options and inventive choices.

Confronting the question of labor rights and fairness produces heated debates. A handful of commentators criticize jurisdictions that limit the enforceability of non-competes, arguing that such limitations reduce employee bargaining power by reducing employees' ability to contract for the sale of their human capital and, in turn, harming employees' wages and their employer's

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[9] Matt Marx.

[10] Matt Marx.

[11] Rachel S. Arnow-Richman, "Bargaining for Loyalty in the Information Age: A Reconsideration of the Role of Substantive Fairness in Enforcing Employee Non-competes," *Oregon Law Review* 80 2001, 2007; Estlund 2006- also not sure of this one

[12] Triantis, (Is a coma the correct punctuation mark? Is this cite incomplete?)

[13]Arthur Murray Dance Studios of Cleveland, Inc. v. Witter, 105 N.E.2d 685, 703-04 (Ohio Ct. Com. Pl. 1952).

willingness to invest in developing their skills.[14]But by far the majority of the commentators are concerned with exactly the opposite effect: that the enforceability of non-competes from a fairness perspective limits employees' right to work and to freely choose their employer.[15]From the perspective of labor advocates, every man and woman should have the right to earn a living and pursue their profession and non-competes, expansive non-disclosure agreements, and other forms of human capital controls are heavy infringements upon the pursuit of that livelihood and therefore happiness.

One aspect of the relative bargaining powers of the two sides is worth further elaboration. Unlike my Fulbright grant, renegotiation of employment contracts is possible. And breach of an employment contract merely involves money, not deportation as a contract with the Federal Government might. The Coase Theorem, the proposition by Nobel laureate Ronald Coase, which predicts that, regardless of the initial allocation of rights in society economically, efficient transactions will be reached in markets, would suggest that if buying out of a post-employment restriction is valuable enough, the former employee will renegotiate with her employer at the time of the possible breach. This analysis assumes, however, that renegotiation is available and frequent and that the cost of the breach can be covered. In reality, the costs of a breach can be sky high. In 2005, in a highly publicized dispute, Nortel, a multinational telecommunications equipment manufacturer agreed to pay $11.5 million to settle a lawsuit with Motorola after the hiring of Motorola's president. Motorola launched the lawsuit just days after Nortel announced the recruitment of Motorola's former president as Nortel's new CEO. Motorola claimed that the former president's hiring was blocked for two years by his non-compete agreement. Following a contentious beginning, Nortel and Motorola negotiated a settlement. In addition, Nortel agreed to not recruit Motorola employees, to limit communications with Motorola customers, and to limit their new CEO's ability to advise Nortel on competitive strategy or analysis of Motorola. In this case, the departing employee was the highest paid, most powerful executive in the company and his new employer had to pay millions of dollars to protect the new president's freedom. While it is unusual for the new company to go to such lengths to retain the restricted employee, the woes of the former Motorola president are not that unusual and highlight the norm. Most employees do not have the resources, information, and ability to test the validity of a restriction or to renegotiate its scope. Nor do they have the backing to risk significant monetary liabilities on a gamble if the court finds they have breached their contract. So in the end, more likely than not, most ex-employees will choose one of the survival strategies of lying low, taking a career detour, or going to a large company that promises to protect their freedom.

Innovationomics: Why Free-Riding Creates Growth

It is easy to fall into the business versus worker trap. As an employment relations and labor market scholar, I see this dynamic too frequently. Debates over the issue become flattened and distorted, as though we all know where each of us aligns before we have even heard the question. "Are you for business or for workers?" is the paradigm the popular debates seem to be

[14]Stewart E. Sterk, "Restraints on Alienation of Human Capital," *Virginia Law Review* 79 (1993)

[15]Closius and Schaffer, "Involuntary Nonservitude: The Current Judicial Enforcement of Employee Covenants Not to Compete- A Proposal for Reform," *Southern California Law Review* 57(1984.)

creating for us. In truth however, the economics of work and innovation reveal a different story than the simplistic, and sometimes dangerously paralyzing, adversarial capital/labor chant. To better understand the welfare equation – the question of the overall good that stems from controlling the flow of ideas and talent - we must dig deeper and immerse ourselves into the science of knowledge and innovation. We are in the perfect position to begin such a journey because we now know a great deal more than we knew in the past about the economies of invention and creativity, talent and competition, and geographies and growth, enabling us to reflect on how these ideas became so distorted. We are now able to utilize cutting edge technologies and empirical studies to posit economic analysis against real data about how innovation happens. While the direct consequences of human capital controls have always been clear - for example, an engineer who promised his ex-employer to refrain from competing for two years will have to find alternative work or move out of town – the collateral damage has been less clear. We now need to understand how the talent wars and human capital battles affect innovation and markets. We now need to delve into the best evidence about the aggregate effects of the talent wars.

By looking at inventors, industries, and geographies, we can examine evidence of the ways in which talent wars affect our lives. New data allows us to assess how different strategies have impacted businesses and industries. This data provides the missing link between our talent wars and economic life. It explains the connections between our strategic choices and the surprising successes and, equally important, failures of firms and regions. It explains for example why Northern California has taken the lead in the start-up world and why the fashion industry is organized differently than the publishing industry. While the meeting of innovation studies and the law is still very much in its infancy, a surge of research on innovation and entrepreneurship already offers a wealth of insights about the effects of talent wars on networks, knowledge production, inventor-ship, job mobility, and growth. As we shall see, differences among states in how they frame the talent wars serve as a natural experiment. What we find clearly at every turn is that control is a double-edged sword. The first edge is unsurprising: information leakage and job-hopping by talented workers provides competitors with an advantage. The second edge, however, is revolutionary: over the long-run information leaks and talent spillovers foster new levels of creativity and innovation that benefit not only the best and most fearless companies but the economy as a whole.

Every executive will admit this much: the most important way knowledge is diffused in the market is by the dynamic moves of people. Hiring employees from established rivals enables new companies to learn about industry technology most efficiently and rapidly.[16] Like dominos gracefully tapping each other and accelerating exponentially, workers engage with technologies, systems, and ideas, and frequently move to new companies, triggering changes in the strategic directions of the hiring business. In the midst of the movement, how do businesses react to mobility and knowledge flows? Contrary to the assumptions of the Orthodox Model, a growing body of empirical evidence suggests that successful companies, particularly in high-tech industries, are more likely to *increase* their research and development efforts and expenditure when there are increased information spillovers within the industry. In fact, high employee turnover – talent moving fluidly among businesses - is positively correlated with productivity

[16] Levin RC, Klevorick AK, Nelson RR (1987) Appropriating the returns from industrial research and development. Brookings Papers on Economic Activity (3): 783-820.

particularly in industries in which research and development are core activities.[17]These facts are ready to revolutionize our thinking: competitors such as Facebook and Google, Pepsi and Coca-Cola, and Southwest and JetBlue can zealously increase their investments, innovation *and* bottom-line profits as their most talented players' travel from competitor to competitor exchanging ideas and passion. So can smaller and newer firms. A virtuous circle is set into motion professionally and geographically; work mobility supports professional networks, which in turn enhances regional innovation and growth leading to increased opportunities and mobility. Have you ever felt that success is so present in your environment that it practically can rub off? As we shall soon see more closely, for all of these reasons, entrepreneurs often seek to be in places where innovation is "in the air." Simply put, localities with dense connections between innovators, knowledge flows, and human capital enjoy dramatically more innovation than smaller, protective, and more isolated settings. People who are creative and innovative thrive when they come into contact with other creative and innovative people. Talent attracts talent.

Beyond initial attraction, we also know now that mobile inventors are more productive than non-mobile inventors. The explanation is twofold. First, the more productive employees are also the ones who have more outside offers from other companies precisely because their talent is attractive. But, second, and more importantly, when talented people move, their productivity gets a boost because their professional world expands and their innovation capacity grows. For comparison, while studies find that mobile workers are more than four times as productive as non-movers, the same studies do not find that the workers level of education has any impact on productivity. Even historically, traveling and foreign-born inventors were significantly over-represented among the great inventors.[18]

When companies are tempted to lament employees leaving they might consider that the more an inventor moves between companies, the more active she stays in lifelong invention. Workers engage with new technologies, systems, and ideas when they move to new companies, which spur original thoughts and forces them to keep up with their profession. So mobility has an above and beyond effect on the localization of knowledge. Even after controlling for the benefits that stem from the agglomeration of industries, that is, the concentration of talent in productive regions, mobility has a significant positive effect on the likelihood that new patents will grow out of and build upon previous major patents from the same region.[19]The richer the local economy is with ideas, talent, and competition, the more likely inventors will have easy access to knowledge generated outside of their company. Economic hubs become unusually fertile places of entrepreneurial activity. Job mobility thus unleashes many of the positive qualities we seek in thriving markets. And we shall learn to understand when and how as we move along in our journey to understand the talent wars.

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[17] Almeida, "Localization of Knowledge and the Mobility of Engineers in Regional Networks," *Management Science* 45(1999);Abowdet. Al, Wages, Mobility and Firm Performance: Advantages and Insights from Using Matched Worker-Firm Data, *Economic Journal*, Vol. 116, (June 2006): F245–F285.

[18] Joseph P. Ferry, Longitudinal Data for the Analysis of Mobility in the U.S., 1850-1910.

[19]Paul Almediaand Bruce Kogut, "Localization of Knowledge and the Mobility of Engineers in Regional Networks," *Management Science*45 (7) (1999) 905–917; Zoltan Acs, *Innovation and the Growth of Cities* (Massachusetts: Edward Elgar Publishing 2002).

Corporate Warfare and Other Good News

Reflecting our fear of loss, one management strategist suggested that "a Nobel Prize-winning scientist may be a unique resource, but unless he has firm-specific ties, his perfect mobility makes him an unlikely source of sustainable advantage."[20] Wrong. If a Nobel Prize-winning scientist is part of your team, your advantages go beyond his or her constrained mobility and your ability to control it. For markets, talent moves area central way in which knowledge is diffused. Pioneering research shows that locations with greater mobility tend to have more local knowledge flows. The movement of a talented member of your team can actually help your mission to improve your company's status and product. Mobile inventors build upon the ideas from their previous firms far more often than other inventors.[21] Of course, mobility enhances a firm's access to the pre-move knowledge of the new employee.[22] But this access often produces positive effects for the sending company. When firms recruit inventors, they increase the likelihood that the inventors' prior inventions will be put to use.[23]Companies "learn by hiring" - they advance by acquiring new information by hiring inventors with prior knowledge which they can share and expand upon. Over time, the patents of those inventors who move become the most cited and valuable ones in the market.[24]

Lose the battle, win the war. What we are starting to realize is that the positive effects of mobility flow both ways. The win-lose state of mind that pervades much of the talent wars, as well as many other debates about intellectual property and human capital controls, is therefore misleading. The conventional wisdom that labels mobility as a negative event for the sending employer (the employer who has lost its employee to a competitor) has been flipped on its head by new research. By its very nature, human capital, and its ever supportive sister, social capital, is a two-way street. In a repeat game, companies can learn to view many of their departing employees as continuing assets and employee turnover as a long-term strength. Clearly, companies gain when they hire their competitor's talent. But does a competitor's gain always mirror a loss on the other side? We can think of it this way: on the receiving side, companies gain both human capital – a talented individual - and social capital, that is, the ties between this individual and others. On the sending side, an employer loses human capital, but it too gains social capital and the thickening of its network as new employees fill the void. In the jungle, when vines are cut, they grow back with more force and in more directions. In industry, new connections and communications grow to replace the lost employee. Beyond the walls of work,

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[20]Peteraf, "The Cornerstones of Competitive Advantage: A Resource-Based View," *Strategic Management Journal* 14(1993), 179.

[21]JaeyongSong, Paul Almeida, Geraldine Wu, "Learning by Hiring: When is Mobility More Likely to Facilitate Interfirm Knowledge Transfer," *Management Science* 49 (2003); J.S. Katz, "Geographical Proximity and Scientific Collaboration,"*Scientometrics*31 (1994) 31–43.

[22]Singh and Agrawal, Recruiting for Ideas: How Firms Exploit the Prior Inventions of New Hires, *Management Science* 57 (2011).

[23]Singh &Agrawal, Recruiting for Ideas: How Firms Exploit the Prior Inventions of New Hires, *Management Science* 57 (2011).

[24]Trajtenberg, "Recombinant Ideas: The Mobility of Inventors and the Productivity of Research" (paper presented at the CEPR-Conference, Munich, Germany, May 26-28 2005);Trajtenberg, Shiff and Melamed, "The Names Game: Harnessing Inventors' Patent Data for Economic Research," *National Bureau of Economic Research* (2006).

the social relationships between people endure job and location moves, creating longer distance connections and more "bandwidth" to gain and share knowledge.

But in the face of this, an important question lingers: are knowledge transfers truly bi-directional? Researchers from Wharton and the University of Maryland studied these questions, attempting to uncover the learning effects of "outbound mobility." That is, what learning processes can be detected at the losing firm - the business that sent out its talent into the world. They found that firms losing employees are more likely to subsequently cite patents (that is, use references to previous patents in their patent application) of those firms hiring their former workers and vice versa. In other words, not only the company gaining the new talent but also the company who *lost it* gained access and insight into the other's ventures. Other researchers looked at the question from a different perspective – the gains of the sending firm in their interactions in the greater market, such as representation on professional associations, technical committees, or lobbying efforts. In all of these, companies find it easier to navigate the market and reach their goals when their footprint is broader than just their current talent. When representatives know each other and when ties are built, collaboration, and even competition, can become more effective.[25]

Outbound effects – the benefits of having former employees at other places - are most pronounced when an employee moves among geographically distant companies. The Wharton/Maryland study found that the effects of an inventor moving between firms were most evident when an inventor was listed in patents granted to two different companies. While it is easy to cling to long-held beliefs that the loss of an employee is painful, the results of these studies not only demonstrate the benefits of mobility for the losing firm, but, surprisingly, also showed that these outbound mobility effects were not significantly different from those of the hiring firm. Both sides benefited greatly from the movement. Similarly, with regard to geographies, enduring social relations between inventors also benefit the sending region. The employees may be gone, but they are not forgotten.[26]Sending companies (the company an employee leaves) gain access and possible advantages in future dealings. Indeed, when an innovator leaves a region, the departure brings its own wealth of benefits. The departing inventor is more likely to cite to patents from her previous region, and the relationships formed within an institutional context may endure over time, space, and institutional boundaries.

Although the loss of talent cannot in itself become, for most companies, a widespread strategic mission, businesses can learn to better react to such inevitable losses by reaping potential benefits. The new wisdom of smart businesses is to distinguish between direct competitors and other types of poachers: existing and potential cooperators, including customers and clients, suppliers and partners. All of these other types of poachers are treated in a more welcoming fashion to share the company's talent. Just like high-tech employees, attorneys, accountants, and investment bankers all change jobs frequently. Examining the movement of patent attorneys in leading law firms over six years, research showed the ways the movement

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[25]Rafael Corredoira and Lori Rosenkopf, "Should Auld Acquaintance Be Forgot? The Reverse Transfer of Knowledge Through Mobility Ties," *Strategic Management Journal* (2010); Gina Dokko and & Lori Rosenkopf, "Social Capital for Hire? Mobility of technical professionals and firm influence in wireless standards committees," *Organization Science* 21 (2010).

[26]Ajay Agrawal, Iain Cockburn, and John McHale, "Gone But not Forgotten: Knowledge Flows, Labor Mobility, and Enduring Social Relationships," *Journal of Economic Geography*6 (2006): 571.

affected the law firm connections to Fortune 500 companies and one thing was clear: the departing destination makes a difference. The study shows clearly that when an employee leaves to work for a client, the sending law firm gains. This is particularly true if the departure is amicable and not overtly contentious. Don't believe the statistics? Then consider this example. In 2004, some of the best traders of Goldman Sachs left the investment banking firms to start their own multi-billion dollar hedge fund. Under the old framework this could be construed as devastating. An employer would likely have reacted in anger and burned the bridge. Here, however, Goldman Sachs didn't burn a bridge and soon enough, these departing employees became important clients of Goldman Sachs.[27]Similarly, the departure of a lead securities lawyer at the large firm Cooley Godward to a small, little known auction website was worrisome for the law firm. Less than a year later, their ex-employee, who had departed to work as in-house counsel for eBay, knocked on Cooley's door and hired them to be eBay's counsel for its $1.3 billion IPO.[28]To the reader who might scoff and claim those are isolated incidents, Cooley Godward recently reported landing several more important clients referred by alumni. In fact, realizing these were not isolated losses but extraordinary opportunities, the law firm launched an alumni program. It holds cocktail receptions with hundreds of former employees, maintains an alumni contact directory on its website, and includes its alumni in some of its formal events. Additionally, in its monthly newsletter it highlights alumni profiles.

Still, these days it is difficult in many situations to tell the difference between customer, vendor, and competitor. A company that may be your competitor with one product line or service may well be your customer for others.

Boomerang Hiring

Acknowledging the value of former employees is reaching every industry. Leading companies like Capital One, Microsoft, McKinsey & Co., Ernst & Young, Shell, and Procter & Gamble have all instituted similar alumni programs, which include events, conferences, and online forums. Professional social networks such as Linked-In are facilitating these efforts. From this perspective again, we see the control mentality overshadowing beneficial practices for some businesses. Some companies administer strict policies of not hiring their former employees, no matter how talented they've proven to be. But others estimate that they save millions of dollars when they re-hire their former employees.[29] It's called *Boomerang Hiring*. Embracing this new practice, Shell has a website, AlliancexShell, providing alumni with networking and information about rehiring opportunities. Leveraging the alumni resources of a company can be accomplished just like universities do with their alumni. Happy alumni become goodwill ambassadors of the company. Therefore, maintaining active relationships post-departure can be a profitable endeavor for an efficient firm. In academia, the departure of colleagues serves as a signal of the quality and rankings of the school. At the University of San Diego, we take pride in

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[27] Deepak Somaya and Ian O. Williamson, "Rethinking the War on Talent," *MIT Sloan Management Review* 49 (2008) citing Santoli, "Minting Money the Goldman Sachs Way," *Barron's* 86 (2006): 22.

[28] Laura Rich, "Don't be a Stranger: Alumni Programs Are a Great Way to Stay in Touch and Boost Business,"*Inc. (*2005): 32.

[29] Eilene Zimmerman, "The Boom in Boomerangs," *Workforce Management Online,* Jan. 2006, http://www.workforce.com/section/06/feature/24/25/79/index_printer.html

the number of faculty members who receive external offers from other schools. While we make efforts to keep them, some will inevitably be tempted, flattered and lured away and we make sure that those who do depart stay close friends. The university benefits and at times even strategically encourages some departures when such moves are likely to increase the visibility of the school and form new connections with other institutions.

In an era where we receive more information in one day than most people in the time of Shakespeare got during their entire lifetime, one of the greatest challenges of the information era is attention deficit. We are surrounded by 24/7 news alerts, research advances, budget cuts, and marketing buzzes. There is simply too much information to consume. Particular events, however, command our full attention. When an employee leaves a company, their departure can reign in our wandering attention and focus it on the outputs of competitors. Colleagues may see more clearly the gaps that led to the departure. They also begin to devote more attention to monitoring the firm for which their former co-worker left.[30]Competitors become more salient when we know someone who now joined them. But the losing company, too, can take steps to turn the loss into free publicity. If it plays its cards right, the losing company gains attention, public relations, and goodwill ambassadors in the industry.

The traditional response of companies experiencing high rates of turnover was to implement aggressive retention efforts, such as contractual restrictions on leaving and competing, and threats of litigation. These traditional routes of defense and retaliation tend to create fear among the departing employees and the poaching firms, and worse yet, may not serve the company's best interests.

In the midst of what seems initially asa disparaging situation, is it possible for companies to make the mental shift to look at the departure of key talent as a gain, and not necessarily a threat? Is it possible for them to learn to choose their battles wisely and to keep their eye on winning the war – promoting innovation and economic growth over the long run? Moving from a win-lose to win-win state of mind is not easy for anyone, especially market competitors. Competition and cooperation are dynamic as strategic alliances evolve, devolve, and re-form often between competitors. But, creative companies are adopting a more complete view. Thirsty for environments in which they can freely recruit talent in the market without an atmosphere of control and protection, they also develop ways to turn loss into gain. Employing strategic approaches to prevent the loss of valuable employees, companies are creating environments that increase employee satisfaction and decreases employee desire to leave. At the same time, they are learning how to turn inevitable losses into opportunities. They are learning, as we shall now see, how to choose their battles.

[30]William Ocasio, "Towards an Attention-based View of the Firm," *Strategic Management Journal* 18(1997): 187.

Chapter 8: Ownership and the Miracle of Innovation Motivation

To be human is to innovate. Human beings thrive on creativity. These aspects of our nature raise some fundamental questions. What drives us to engage in innovation in the arts and sciences? Is it innate passion? Curiosity? Play? The desire to learn? Ambition? Competition? The promise of wealth and fame? Psychology, sociology, business, and economics each offer different perspectives on the motivation to innovate. Naturally, the poets light the way. American poet Henry Wadsworth Longfellow wrote the following:

In the elder days of art
Builders wrought with greatest care
Each minute and unseen
For the Gods are everywhere

When internally motivated, the Gods - our internal artistic and innovative powers - are *everywhere*. In those moments and for those actions, we care about every aspect of the work. Even the unseen, uncompensated, and unglamorous aspects are important because the reward is the work itself. Arthur Miller explained his need to be creative as a physical need; a need that will cause physical ails if not pursued: "If somebody doesn't create something, however small it may be, he gets sick. An awful lot of people feel that they're treading water-that if they vanished in smoke, it wouldn't mean anything at all in this world. And that's a despairing and destructive feeling. It'll kill you."[31]Henry Miller described the best part of creative labor as being performed in a silent dream-like state. Others have described creative people as prisoners of their passion:

> "They get 'captivated,' and the only way out is to beat a path away from the point of captivity. If my attention is 'captured,' it is impossible to simply get away. The bars are not physical. They are produced by the intellectual, the emotional, or, more usually, a combination of the two. But, they are as functional as any *jail cell* you will ever construct in the material world."[32]

Artists describe their work as something they simply cannot help but do: a calling. Composer Roger Sessions described this calling as akin to a possession; the composer is "not so much conscious of his ideas as possessed by them."[33]Creativity is also commonly compared to addiction. "'Forget whiskey," says one author, "forget sex, cocaine, and chocolate; writing is the best fucking drug in the universe."[34] Indeed, the association between creation and addiction is

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[31]Arthur Miller, What I've Learned, Esquire, July 2003, at 110.

[32]J.S.G. Boggs, Who Owns This? 68 Chi.-Kent L. Rev. 889, 889 (1993).

[33]Roger Sessions, The Composer and His Message, in The Creative Process (Brewster Ghilselin ed. 1952).

[34]Tushnet, 533; citing Lyrastar, The Source of the Mississippi: What Was First?, in 1 Legacy 144 (2007).

not confined to artists. Computer programmers, for example, particularly those who engage in open source projects, have described their work as addictive very much like any other productive activity: "Programming, at least for skilled programmers, is highly creative…good programmers are compelled to program to feed the addiction."[35]

At the same time, scientists, poets, philosophers, and artists reveal that their innovation motivation is often mixed. We of course know that Artists are often recognized only after they die and scientists may not see the full significance of their discovery during their lifetime, so surely something greater than fame and fortune drives devotion. And yet, fame and fortune can hold sway over even the best. Charles Darwin, father of evolutionary thought, admitted that his love for natural science was very much aided by his ambition to be esteemed by fellow scientists. The great philosopher Rene Descartes revealed the same competitive impulses when he expressed his concern that the other great philosopher of his time, Thomas Hobbes, was intent on poaching his ideas. In a letter to a friend Descartes wrote:

> "I also beg you to tell him [Hobbes] as little as possible about what you know of my unpublished opinions, for if I'm not greatly mistaken, he is a man who is seeking to acquire a reputation at my expense and through shady practices."[36]

Going back even further to ancient Greek thought, Plato famously portrayed the human soul as a Charioteer driving a chariot pulled by two winged horses, one white, restrained and well behaved; the other black and wild. Plato's Chariot captures our human complexity. The Charioteer is our reason, which must balance the dualities of the Chariot: our inner workings and motivations. Each of us is both a creative *and* an economic being. We each have internal drives and external pulls; dark desires and enlightened rationale. Indeed, the black and white co-existence in our soul is rendered more complex by modern neuroscience, teaching us that our emotions and cognition are intertwined. If I am happy with what I am doing, I might be able to solve things better than when I am emotionally down. When I am internally driven, my external pulls are more easily tamed. We all experience complex motivations and wants, and each chariot has a very unique driver. But despite our fieriest motivations, even the greatest of thinkers, artists, and scientists admits that inner passion alone rarely sustains a lifelong career.

Earth, Wind & Fire

As we've seen, Abraham Lincoln famously described the patent system as adding "the fuel of interest to the fire of genius."[37]Motivation has been studied intensely from an economic perspective, which focuses on incentives, and from a psychological perspective, which traditionally focuses on inner drive. Recently, both perspectives have converged in studies (including by collaborators and myself) on the interplay of internal and external stimuli of motivation.[38] Let's turn to this impressive body of work to examine how incentives and variance in regulatory regimes affect individual motivation and behavior.

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[35]Eric Von Hippel, Democratizing Innovation 124 (2005).

[36] Fair science: women in the scientific community Jonathan R. Cole (1987).

[37]Second Lecture on Discoveries and Inventions (Feb. 11, 1859).

[38]Amir and Ariely 2008; Feldman and Lobel 2010; 2008.

The study of human motivation is a vibrant and growing field of research, but we've lagged behind in understanding the implications of these contemporary insights for policy and economic growth. Moreover, experimentally, although the study of motivation has been the subject of academic inquiry and thousands of studies for over a century, few of these studies link motivation to the study of contract and strategic controls – to the very real dilemmas and battles of businesses. Particularly in the areas of intellectual property and human capital there has been a stark absence of behavioral data. This disconnect has limited the potential of existing studies to inform concrete strategy and policy.

Here's what we do know about human motivation: When looking at the fundamental drivers of motivation, researchers consistently find that individual motivation depends on the goals and characteristics of the task and the work environment. The father of positive psychology, Mihály Csíkszentmihályi was one of the first to study how we reach optimal flows at work. Looking at thousands of professionals, artists, and inventors at work, he concluded that we perform best when the task is compatible with our skill levels but also hard enough to present continuous challenges. In other words, we are motivated when we are kept interested and but feel capable to perform and meet the challenges. Recent psychology research elaborates Csíkszentmihályi's lessons about a fit between *challenge* and *skill* for optimal performance. The difficulty of the task corresponds to the effort exerted in an inverse bell curve. The highest levels of effort occur when the task is reasonably difficult and the lowest levels are when the task is either very easy or very hard. More difficult tasks require greater motivation for sustained work and completion, while an overly simple task actually suppresses motivation.

People enjoy challenges but they also need to feel a sense of accomplishment. When you start training as a runner, experts caution the novices to find the right balance. If you start running too hard in the beginning your body will burn out and be vulnerable to injury. If you train by running too slowly and easily then you will never improve. The key is finding balance, run hard enough that it challenges you but not so hard that you may never want to go running again. In much the same way it would be counterproductive for a manager to give an employee a task far beyond their skill set (a 20 mile run for a beginner). Their new recruit will struggle – perhaps even give up. The key is to find tasks that utilizes skill sets and pushes employees forward.

Goals are the key to generating motivation and performance. We exert more energy when we think a goal is attainable. Indeed, we exert more effort as we get closer to attaining our goals. In experiments where people where either told to "do their best" or were given specific goals, the latter consistently led to higher performance.[39] Put simply, "when people are asked to do their best, they do not do so."[40] A *do-your-best* goal has no external reference so people define it as they go, loosely and without focus. Specific goals such as increasing speed or profit or ratings yield more focused results. At the same time, assuming ownership over specific goals - internalizing institutional aspirations - clearly increases motivation. For example, when children participate in defining their own schooling goals or when employees participate in setting work goals, they will actually set their sights to higher goals and perform better than those employees who receive their goals from their superiors.[41] Recall the practices of innovative companies like

[39]Latham and Yukl, 1976.

[40]Locke & Latham, 1990.

[41]Locke, Chah, Harrison, &Lustgarten, 1989.

Google and Atlassian; these companies give their employees discretion, grant playtime, and push employees to view the company's goals as their own, resulting in enthusiastic, innovative employees who are less likely to burnout and more likely to have high commitment.

Taking an academic look at motivation, economists and psychologists agree (like Plato and his Charioteer metaphor many years ago) that motivation drivers can be roughly divided into two categories: intrinsic and extrinsic.[42] Extrinsic motivation consists of the outside driving forces -- rewards and commands; carrots and sticks. Intrinsic motivation is generated when behavior is chosen from within, because of inner joy, interest, or perhaps a sense of morality and destiny. An activity performed for its own sake is internally motivated and an activity performed as a means to an end is extrinsically motivated. Although these definitions appear to draw simple lines, the interplay between intrinsic and extrinsic motivators is actually highly complex. We now know for example that external rewards can reduce internal motivation. Along with my collaborator Yuval Feldman, I've tested experimentally how financial incentives to behave ethically and comply with regulatory obligations might reduce internal motivation, and in fact, under certain circumstances, create less compliance. When money is introduced in the equation, people may perceive it to be the main motivator and thereby perform worse than when the financial incentive is small and work appears to be internally driven.[43]Similarly, a recent study demonstrates that when extrinsic incentives are too large, people may choke under pressure. Evidence of the negative interplay between intrinsic motivation and extrinsic drivers has led psychologists to argue that the introduction of monetary rewards decreases intrinsic motivation.[44]

As for creativity, experiments show that while extrinsic rewards do indeed normally serve as drivers for effort exertion, they are less compatible with stimulating creativity. For example, psychologists studying motivation of both adults and children find that when individuals receive rewards for their creativity, they often produce lower quality products.[45]On a gut level, the research rings true. If we love gardening, we take extra care and pay great attention to out garden, we have passion for it, probably more so than if it were just a job that a neighbor paid us to do.

Can we relate human capital controls and freedoms in similar ways to motivation and performance? What my collaborator, On Amir, and I wanted to test, for the first time, is how freedom and control of future endeavors might impact motivation in similar ways.

Our Behavioral Experiments

> "It is an immutable law in business that words are words, explanations are explanations, promises are promises, but only performance is reality."
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> – Harold S. Geneen, CEO of ITT 1959-77

[42]Feldman and Lobel 2008; 2010.

[43]Festinger and Carsmith 1959.

[44]Ernst Fehr & Armin Falk, *Psychological Foundations of Incentives*, 46 Eur. Econ. Rev. 687, 7714 (2002).

[45]Teresa M. Amabile, Creativity in Context: Update to the Social Psychology of Creativity (1996); Alfie Kohn, Punished by Rewards: The Trouble With Gold Stars, Incentive Plans, A's, Praise, and Other Bribes (1993).

Hopefully, you, dear reader, are lucky enough to have a job you love, one that you are passionate about, one whose problems you dream up solutions to in your off-time. Now what if you have signed a non-compete agreement? Would you behave differently at your job if your post-employment choices were restricted? Are some workers more (*or perhaps less*) inventive and more (*or less*) likely to take risks because of their future options? Do they work less or more creatively with a non-compete lurking over their heads? Do they exert more energy in performing their jobs when they have a more robust career trajectory? Do they think more creatively when their timeline at their firm is projected to be longer? These questions are not easy to answer. While the success of corporations and regions can be measured using systematic field data, it is far more difficult to directly observe variances in the behavior of workers. Much of the research we explored in previous chapters on the success of regions with higher mobility can be at least partly attributed to motivational effects by human capital freedoms. In other words, we hypothesized that being the subject of control can affect how people function in productive settings. Productive employment is inadvertently tied to the motivation of employees to perform, and the ways we organize work and mobility matter. People, work environments, and relationships are symbiotic. For years however these indispensable questions about the interaction between the ways we organize our talent wars and motivation remained largely unanswered.

With funding from the Kauffman Foundation's Southern California Innovation Project, we were able to run experiments with over a thousand participants and try to get some answers. In collaboration with my research (and life) partner On Amir, we designed lab and online experiments to simulate market and organizational behavior, testing employee performance as a function of human capital restrictions. We sought to identify how controls, such as non-competes, non-disclosures, and IP ownership, alter performance and motivation. Recall our dynamic model. The dynamic model challenges the orthodox assumption that control enhances innovation by suggesting not only that the flow of talent and ideas creates growth over time, but also that freedom to move and pursue your talent positively affects motivation. The experimental approach enables investigation of this prediction by isolating the effects of human capital variations while controlling for other factors - external rewards, goals, and task environment.

We decided to test two types of tasks: one that is purely effort driven and one that relied more on creativity. The Matrix search involves finding two numbers that sum up to exactly 10. We told participants that their goal was to solve as many matrices correctly as fast as possible. The Remote Associates task involves finding connections between trios of words. We hypothesized that human capital controls would reduce motivation, leading to less completion and worse performance of given tasks. At the same time, based on the science of motivation, we expected that worse performance would be significantly more pronounced in a pure effort based task like the Matrix task than in a task involving creativity, like the Remote Associates task, because the latter is more intensely fueled by intrinsic drivers. Our prediction was that higher internal motivation would lessen the negative impact of restrictions.

The experiments simulated market employment in the sense that the incentives were real: the longer and better participants performed, the more actual money they earned. Our participants were representative of the high-skilled marketplace: nearly all had an undergraduate degree and about half of them had graduate degrees and several years of work experience. We randomly assigned the participants to one of six conditions: half were assigned to a Matrix

Search task (the effort-based task) and the other half to a Remote Associates task (the creative task).

***insert visuals of the experiments here. For now they are at the end of this chapter ***

We gave all participants across all conditions the same payment scheme:

> For each correctly solved set, you can earn $0.50. Moreover, if you finish the task quickly you can gain a bonus. The bonus is structured such that you are better off solving correctly than guessing, but if your overall speed in the task is fast you can gain a larger reward.

Equally divided between the groups, we assigned a third of the participants to a non-compete condition in which participants were informed that they would be prohibited from taking the same type of task in the future stages of the experiment, a third to a partial non-compete condition, where they could buy their freedom out of the control by allocating some of their future earnings to their ex-employer, and a third group was under no such restriction.

The strongest measure of motivation to complete the task successfully is just that: completion. Participants who dropped out received no payment or compensation. We also tested time spent, quality of performance, and participant's reported enjoyment.

Quitting the Task

As in most lab and web experiments, some participants in our experiment quit midway. While in most experiments, the experimenter worries that this may cause sample selection effects and therefore will make sure the departures from the experiment are not correlated with specific conditions, in our experiment dropout rates was a dependent measure. The strongest economically meaningful behavior stemming from task motivation is forgoing payment by quitting. If our assessment of post-employment restrictions was correct, the prediction was that they would increase dropout rates. We therefore compared the dropout rates across the different conditions. As we predicted, our participants working under controls were more likely to drop out than were the groups working without restriction. There was a 20% increase in dropout rates among participants who were told that in future assignments they would not be able to choose the same task, i.e., were under a non-compete regime. Put in economic terms, people were far more likely to forgo earning opportunities when they were told that they would be restrained in the future. Or, in our terms, those bound by strong human capital controls were simply less eager to stay on task.

Performance

Apart from the striking findings of the high quit rates, we wanted to test the quality of performance among those who completed the tasks. We measured performance by the number of matrices or word trios participants solved correctly. The results again are remarkable. Participants who decided not to leave the task were no more likely to skip matrices or word trios in the restricted conditions than their control counterparts. However, those participants who completed the easier search task (Matrix) were far more likely to provide *erroneous* answers than control participants completing the same task in both restricted conditions: In fact participants were *twice* as likely to make mistakes. Participants subject to human capital controls also spent less time completing the task. By contrast, as we predicted, participants in the Remote Associates task (invoking more intrinsic motivation) had similar performance levels – same error rates, skipped answers, and time spent – whether restricted or not. These results were also present, albeit to a lesser degree, in the condition of partial restrictions that provided a mobility buy-out for the employee.

The conclusions are dazzling: our findings suggest that human capital controls directly suppress motivation. At the same time, our experiment also demonstrates that when intrinsic motivation is strong because the task is more creative, performance effects are diminished, but quitting rates remain.

R&D& Human Capital Investment

If we were to subscribe to the orthodox economic predictions, we would expect to see greater investment in R&D and skill development when companies can control the flow of the products (whether human or intellectual) of their investment. But our Dynamic Model suggests an alternative: although businesses may fear the loss of their investment, this fear is offset by the motivation of people to develop their skills and perform better. Employee's motivation increases when outside options are a reality. Supporting our model and complementing our experimental research, new field data shows that tougher human capital controls actually reduce research and development (R&D) spending and capital expenditures per employee.[46]The field data is consistent with the assumptions of our dual-sided model: non-competes may initially encourage firms to invest in their managers' human capital, yet, at the same time, discourage managers to invest in their own human capital. Empirically, the effect of non-competes on the latter – self-investment in one's human capital - appears greater than the investment of a company.

Let us elaborate on this. The orthodox economic model relies on the intuitive understanding that the more strictly a non-compete is enforced, the more a company can rely on their recruited talent to stay. According to this earlier model, reliance on job stability encourages the company to invest in building the skills of the employee. Otherwise, the company fears its investments will be lost. At the same time however, we've come to understand that the talented individuals also realize (rationally and emotionally) that under a controlled regime their options are narrowed. Non-competes, NDAs, patent and copyright transfers, and the constant threat of litigious battles render their ability to move to a different company less likely. Think of yourself

[46]Mark J. Garmaise, Ties that Truly Bind: Non-competition Agreements, Executive Compensation and Firm Investment (UCLA).

in this situation. This knowledge about limits and stagnation can discourage investment in one's skills and career options. Put differently: when a competitive tournament over talent is a less likely event, one may be less eager to show off their talent. Knowing that companies will be unable to compete for her and knowing that she is essentially bound to her current employer, she is less likely to strengthen her professional profile.

This and more: it turns out stronger enforceability of non-competes lowers executive salaries and shifts compensation from bonuses and performance-based pay to a heavy reliance on a base or fixed salary. Again this is intuitive: when in regions like California, businesses need to actively retain their talent because they cannot control their movement by requiring a non-compete, then they will offer carrots in the form of performance-based pay and incremental bonuses. This in turn will increase the commitment and incentives of creative and innovative workers to contribute to the success of their employer.

Recall UCLA management scholar Mark Garmaise's study that found non-competes strongly reduce mobility among executives – the most skilled and highly paid workers in the industry. Reflecting this, executives in jurisdictions that strongly enforce non-competes have longer job tenures. More surprising are his findings regarding compensation and investment in human capital. Tougher enforcement reduces compensation growth. In jurisdictions where non-competes are broadly enforced, the compensation of their top executives is lower than in other regions. When managers do leave their jobs in states with high non-compete enforcement, they tend to go to lower ranked position and receive a lower pay increase relative to managers who move in low-control states. In other words, to leave in these highly controlled regions, workers must make painful compromises.

But it is not only the overall compensation that varies. The *form* of compensation differs with the ways we organize our talent wars. In jurisdictions where non-competes are regularly enforced, compensation is lower but it is also more *salary*-based, as opposed to *performance*-based. Garmaise concludes that "non-competition agreements do bind human capital to firms, but in doing so they change the *quality* of that capital."

So let's recap: tougher non-compete enforcement strongly reduces research and development (R&D) spending and capital expenditures per employee, lowers executive salaries, and shifts compensation from bonuses and performance-based pay to a heavy reliance on a base or fixed salary. These findings leads the conclusion that one's own incentives to invest in her training and skill development is stronger than the company's decision: "the negative incentive effects of non-competition agreements on managerial investments in their own human capital outweigh the positive incentive effects on firm investment in managerial human capital."[47] In other words, our Dynamic Model wins.

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Experimental behavioral economics research happens in a lab setting– which means its strength is also its weakness: it fails to fully capture the realities that individuals face in real life, but at the same time, it allows us to zero in on the data and connections we want to see by eliminating all the "noise" that complicates and clutters reality. There is a growing consensus that such experiments tend to match real life behavior quite accurately. Here, we have the

[47] Mark J. Garmaise, Ties that Truly Bind: Non-competition Agreements, Executive Compensation and Firm Investment, J. LAW ECON. ORGAN.. (2009).

advantage of empirical field data supporting our experimental findings and vice versa. The studies observing differences between states that encourage or impede talent wars support the findings of our experimental work: they all point to the same conclusion. That companies invest less in research and development when they can employ strong human capital controls is evidence of a behavioral effect. It suggests that, beyond the positive effects of mobility over time, additional benefits from freedom are in play. Our experiments show that even in the sanitized lab setting, contractual controls in the background affect people's motivation and performance. Our respondents quit and erred more frequently when they were asked to commit to controls over their own human capital. And in the realities of the market, these effects are further pronounced the by expanded use of carrots – performance-based compensation – as an alternative to the sticks of confinement in places that protect the spirit of the talent wars: the freedom to move, share, and learn.

Carrots, Sticks & Golden Handcuffs

The philosophy at the famous AT&T Bell Labs was that creativity takes time. Our research demonstrates the effects of restraints on future mobility on motivation and performance. What about the reverse situation – the effects of job security and the ease in which business can fire their employees – on innovation in creative environments?

A new set of studies test the connections between dismissal laws and innovation.[48]These studies score states based on how strong or weak their legal protections against dismissal are(similar to the coding of degrees of non-compete enforcement that we've seen). The research then cross checks this dismissal protections code with data on patent filings and patent citations. The findings suggest that stronger employee protections result in more and better patenting activity. To illustrate, if a state has more laws against randomly firing employees, take, for example, protections against retaliation for blowing the whistle or anti-discrimination protections, evidence shows that these protections are positively correlated with more patents being filed. What can explain this? It may be that regulated job security provides firms with a commitment device that avoids punishing short run failures, which in turn spurs employees to undertake riskier innovation activities. Employees who know that they will not randomly be fired may be more willing to invest in long-term innovative ventures.

What is most interesting about this new set of research is that it supports our intuition that the ways market relationships are framed, sustained, and nurtured affect patterns of innovation. These studies, while still in their infancy, provide additional insights aboutthe connections between talent mobility, motivation, and innovation. Put together, a bigger, clearer picture emerges: stability can improve inventor performance when it comes from safeguards against random job loss. At the same time, restricting mobility by controlling human capital is counter-productive.

[48]Viral V. Acharyaet.al, Wrongful Discharge Laws and Innovation (2010); Viral V. Acharyaet.al, Labor Laws and Innovation (2009).

If we shift away from our control mentality what then are alternative paths to retain talent? Valuable individuals will inevitably have attractive outside offers. Pay increases are of course an option always looming in the background. As a society, our tendency is to over-compensate management positions and under-compensate the creative and inventive workers. Despite the turn of the century's disillusionment with financial markets and the leaders of corporate risk, we still carry a parochial attitude of sky-high compensation schemes for managerial executives and far less for star inventors. We tend to glorify certain types of jobs over others, creating a compensation imbalance between sectors. Responding to this imbalance, President Barack Obama cautioned, "We don't want every single college graduate with mathematical aptitude to become a derivatives trader. We want some of them to go into engineering, and we want some of them to be going into computer design."[49] Nevertheless, the talent wars have brought with them notable exceptions to the traditional gap between extremely high executive compensation and underpaid star inventors. At eBay, for example, the lead technologist reportedly earns more than twice as much as the CEO. Apple recently paid a Californian employee, an expert in portable audio/video players around $8 million to secure his continued employment. Google paid an engineer $3.5 million in restricted stock to keep him from defecting to Facebook. Google also announced a 10% raise to every employee in January 2011 despite the looming economic downturn.

Not every company, however, can pay these kinds of sums to retain their inventive employees. The composition and structure of the compensation package are just as important as the raw amount of compensation that the company provides to its employees. Although in the past compensation variance was guided more by seniority than merit, today employers try to retain their most talented and inventive employees by offering them higher salaries based on merit. Compensation streams are diverted towards employees to encourage them to stay. To try and keep their talented recruits, businesses also focus on offering more attractive work environments and ensuring atmospheres of continual learning and professional growth.

Performance-based pay is a burgeoning feature of employment compensation. Even historically, successful companies recognized that giving their employees bonuses and a portion of the profits from their inventions incentivized the employees to innovate. At the height of the talent wars, if we see controls against departure (or *sticks*) and incentives to stay (or *carrots*) as alternatives, the way we organize our talent wars will change the *composition* of compensation. As we've just seen, Garmaise's study confirms that in states where non-competes and other controls are strongly enforced, compensation consists more of a fixed salary. In states where non-competes are not(or mostly not) enforced, compensation schemes are based more on performance.

Carrots, like sticks, have complex effects on innovation. Stock options, bonuses, and profit-sharing programs induce loyalty and identification with the company without the negative effects of over-surveillance or over-restriction. Performance-based rewards increase employees' stake in the company and increase their commitment to the success of the firm. These rewards (and the employee's personal investment in the firm that is generated by them) can also motivate workers to monitor their co-workers. We now have evidence that companies that use such bonus structures and pay employees stock options outperform comparable companies.[50] And yet, while

[49]NYT 2009.

[50]Sharon Hannes, *Reverse Monitoring*, MICH. L. REV 2007 at 1444 (citing Sesil & Kroumova,)

stock options and bonuses reward hard work, these pay structures also present challenges. Measuring employee performance in innovative settings is a difficult task. One of the risks is that compensation schemes may inadvertently emphasize observable over unobservable outputs. Another risk is that when collaborative efforts are crucial, differential pay based on individual contribution will be counterproductive and impede teamwork, as workers will want to shine individually. Individual compensation incentives might lead employees to hoard information, divert their efforts from the team, and reduce team output. In other words, performance-based pay in some settings risks creating perverse incentives, driving individuals to spend too much time on solo inventions and not enough time collaborating. Even more worrisome is the fear that employees competing for bonus awards will have incentives to actively sabotage one another's efforts.

A related potential pitfall of providing bonuses for performance and innovative activities is the creation of jealousy and a perception of unfairness among employees. Employees, as all of us do in most aspects of our lives, tend to overestimate their own abilities and efforts. When a select few employees are rewarded unevenly in a large workplace setting, employers risk demoralizing others. Such unintended consequences will vary in corporate and industry cultures across time and place, but they may explain why many companies decide to operate under wage compression structures with relatively narrow variance between their employees' paychecks. For all of these concerns, the highly innovative software company Atlassian recently replaced individual performance bonuses with higher salaries, an organizational bonus, and stock options, believing that too much of a focus on immediate individual rewards depleted team effort.

Still, despite these risks, for many businesses the carrots of performance-based pay and profit sharing schemes have effectively replaced the sticks of controls. But there is a catch! Cleverly, sticks can be disguised as carrots. The infamous "golden handcuffs"- stock options and deferred compensation with punitive early exit trigger - can operate as de facto restrictive contracts. We could even think of the threat of economic loss as having a similar restraint on competition as non-competes. Should forfeiture provisions that revoke training expenses, stock options or deferred benefits if the employee leaves the company be subjected to a reasonableness analysis? Should courts scrutinize them similarly to non-competes? Not surprisingly given all we've seen, here again courts are split on the answer. A few jurisdictions uphold such provisions without regard to reasonableness and do not view them as restraints on trade. Other states see the provisions as restraints on trade and subject them to the same reasonableness analysis as a non-compete agreement.[51] In most states, courts subject forfeiture provisions to a similar, but more relaxed reasonableness analysis. For the most part, forfeiture provisions are enforceable if an employee is made reasonably aware of them. This middle ground makes sense. Forfeiture of benefits does not prohibit employees from competing and using their skills and knowledge in the market in the same absolute ways that non-competes or inevitable disclosure injunctions do. Notably, our lab experiment supports a more lenient approach, as our findings suggest that the partial non-compete, the payback condition, had a less dramatic effect on motivation and performance.

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[51]The Supreme Court of Connecticut held that permitting a forfeiture clause without a reasonableness assessment is no different than blindly enforcing a non-compete. Deming v. Nationwide Mutual Insurance Co., 905 A.2d 623, 638 (2006). The Massachusetts Supreme Judicial Court similarly tests the reasonableness of forfeitures in analogy to non-compete covenants. Bohne v. Computer Associates Int'l., 514 F.3d 141, 144 (5th Cir. 2008). See also Rochester Corp. v. Rochester, 450 F.2d 118, 123 (4th Cir. 1971).

In the Zone: How We Work and Play Successfully

Work. Art. Science. Sex. Sports. Religion. What do these have in common? In all of these activities, we humans are able to reach a state of being where the outer world disappears. When the world fades away and we reach a state of optimal experience, we lose our sense of time. Immersed in the experience, we lose any sense of self-consciousness and fully engage in the present act. Our awareness is as narrow as the activity itself. In those precious moments, we can achieve excellence as *thinking* synchs completely with *doing*. This is when we find our *flow*. How can we create these moments of perfect alignment? The ways we organize work, relationships, creative environments, and goals can all contribute to the likelihood of such optimal performance.

Known as the father of positive psychology, Mihály Csíkszentmihályi (pronounced me-high chick-sent-me-high-ee) has studied each of these human activities in which we strive for excellence. World leaders, including Bill Clinton and Tony Blair, business tycoons, and athletic stars (Dallas Cowboys coach Jimmy Johnson used Csíkszentmihályi writings in preparing for the 1993 Super Bowl) all speak about Csíkszentmihályi's impact on their lives. These days, Csíkszentmihályi is a psychology professor teaching in the sunny, laid-back land of palm trees and candy colored convertibles: California. But his life began in a much different time and in a much different place. The son of a Hungarian diplomat, Csíkszentmihályi was born in 1934 in Fiume, Italy, an area that is now part of Croatia. When he was a child, he and his family were taken prisoner during World War II and held in an Italian camp. Many of the family's friends and relatives were killed during the war and the horrific suffering Csíkszentmihályi witnessed would play a crucial role in his desire to understand the human psyche. Facing the horrors of war at such a young age, he escaped into a world of play that made the treacherous and unpredictable outside world disappear. He played chess for hours, focusing on the internal life of the game, which had its own rules, strategy, and order. Chess was a respite of safety and pattern when the rest of the world was in a state of chaos.

After the war, Csíkszentmihályi worked odd jobs, at his family's restaurant, as a travel agent, and as a traveling photographer and painter. It was during his travels as a teenager that he attended a public lecture by renowned psychoanalyst Carl Jung. From that moment, Csíkszentmihályi was hooked. From then on a moment rarely passed when he was not buried in books by Jung, Freud, and other contemporary European psychologists. Inspired to find new understanding of the human mind, he decided then that he would study psychology in the United States. He yearned to discover what motivates us and delivers us into those moments when we are our most productive selves. And so, in the 1950s at the age of twenty-two, Csíkszentmihályi immigrated to the United States.

His early experiences of war, in the labor force, in the world of art, and the world of prison - a world full of anguish and contrasts - likely triggered his interest in the psychology of *doing*. Csíkszentmihályi once said that he was surprised when he met Hungarians that had spent time in Soviet prisons. They seemed happier and more energized than he expected people with such difficult pasts to be. As a student and later a professor at the University of Chicago, Csíkszentmihályi was equally surprised to discover unhappiness was a pervasive trait among the wealthiest and freest of the world. How is it that people could survive and even flourish under the worst conditions while others lead unproductive and unfulfilling lives under the best?

When Csíkszentmihályi started his path in the study of psychology, the field was focused on human dysfunction, mental illness, and pathology. Depression and neurosis were the diagnosis de jour and treatments by medication and therapy were the conventional solutions. The mentally ill were prodded, measured, and analyzed, but regular people in their daily work and lives received very little study. There was virtually no psychology research on how one could achieve happiness and lead a productive life. Csíkszentmihályi recognized this major shortfall and decided that instead of adopting the negative or corrective focus of psychology, he would focus on the positive. The field he created is appropriately called "positive psychology." He began studying what it takes to find optimal experience in what we do. He interviewed people about their creative and innovative moments. He timed and observed them during different activities throughout their day. He coded a variety of experiences and compared responses in a multitude of human behaviors. Being an artist, a researcher, an avid mountain climber, and having a garden variety of temp jobs under his belt, Csíkszentmihályi sought commonalities among the optimal experiences of every human activity. From work to leisure, from sex to meditation, his research uncovered patterns that help us find the golden zone. He discovered there were key aspects in each of the activities that proved excessively important: clear goals, feedback, and the availability of apparent points of success.

Csíkszentmihályi teaches us that, whatever the work setting, individuals need a sense of control and purpose in their careers in order to reach their full potential. In every domain of life, tasks must be challenging, but they must also maintain a good balance between one's ability level and the level of challenge. This is the principle of *Fit*: work should match our abilities but continue to challenge us, otherwise we will either get frustrated and give up or get bored and give up. We also need to feel that we have a sense of control over the situation or activity. This is the principle of *Control*: we need a sense of directing our path, a sense of choosing our productive existence.

Fit and control! Think about this crucial duo as the insight we need to meet our new Sputnik challenge: the talent wars. The best combination to nurture talent is a good fit between jobs and talent and the ability to dynamically adjust this match. People are at their best when they make use of their skills in the jobs best suited for them. When the stars align and these factors are present, we find ourselves in an optimal state in which our productive activities become *intrinsically* rewarding.

We've all had those moments, runners call it "hitting your stride," other athletes talk about "being in the zone," and musicians aim to "find their groove." For all of us, in those moments we are completely immersed in the task at hand and, for us, time stops. During those times, the world fades out; we ignore other needs that typically drive us – food, time, and ego. The externalities all temporarily vanish and all that matters is our current activity. Csíkszentmihályi describes this as "being completely involved in an activity for its own sake. The ego falls away. Time flies. Every action, movement, and thought follows inevitably from the previous one, like playing jazz. Your whole being is involved, and you're using your skills to the utmost." In these moments, in these environments that support our productive spirit, we experience flow, a mental state fully immersed and focused in an activity.

The Tiger and the Jungle: *Pay for Play*

"Before the beginning of great brilliance, there must be chaos." - I Ching

Carl Jung, the influential Swiss psychiatrist who inspired the young Csíkszentmihályi to travel to Chicago and study psychology, believed that innovation happens not through the intellect but through the basic instincts of play and necessity. Jung reflected, "The creative mind plays with the object it loves." But what is this *object of love*?

Environments can enhance or stifle natural ability; the best approach to thinking about managing people is creating environments that augment raw talent. Consider the analogy of linguistic environments. Compelling new research in linguistics and science suggests that the high mathematical proficiency levels of Chinese children at an early age can be explained at least in part by looking at language structure, rather than innate skills. In Chinese, word characters that represent numbers are shorter and simpler than those in most other languages, making it easier for kids to jumpstart their math learning. Addition and subtraction, multiplication and division, all become simpler because the numbers are represented in a simpler way, allowing children to focus on the tasks at hand more quickly and easily. The linguistic/math trajectory gives us a great metaphor for how organizational environment functions in the background of human innovation. Just as language serves as the background infrastructure of number representation and practical learning, organizational and contractual environments are the building blocks of an innovative path. The same way children learning math in Chinese are a step ahead of the children learning math in other languages, people working in an environment that nurtures their talent will rise above. Work environments are the metaphoric "language" that we draw upon in the process of production.

Thomas Edison said that to invent, you need a good imagination and a pile of junk. As chaos and ambiguity are transforming into virtues of modern management theory, the study of play is becoming a serious line of research. Playing with "junk" is no longer the privilege of children or mad inventors tucked away into their underground labs. There is a science of play. The National Institute for Play studies the biological, social, and physical science behind the power of play, explaining that "play is as basic and as pervasive a natural phenomenon as sleep." Seriously researching play helps teach us how play creates competencies in the various aspects of our lives. Studies of play show, for example, that creative engineers who move up the ranks to management positions will lose their innovative edge if they stop using their hands and playing with the equipment and machines they oversee.

So how do we cultivate a "creative sandbox" at work? Take for example IDEO in the Silicon Valley. IDEO's founder, Tom Kelly, describes IDEO's "secret formula" to innovation as "a blend of methodologies, work practices, culture, and infrastructure." A modern Renaissance environment of multi-disciplinarity and constant innovation demands commitment, leadership, and vision. The extraordinarily innovative design company has created a signature work environment focused on the freedom to play. Kelly muses, "new ideas come from seeing, smelling and hearing – being there…If you're not in the jungle, you're not going to know the tiger." At IDEO, there is no *delete* button, only *recycle:* the company retains the ideas and

designs from all of its projects as a metaphorical grab bag from which its employees can extract inspiration in future projects. As other companies have recognized the successfully unique philosophy of the company, IDEO has increasingly been lending its talents to other businesses, engaging in active consulting on management and innovation strategies.

The idea of "being in the jungle" as Kelly puts it helps us think about environments of control and freedom, both from within and from outside the firm. For creativity to flourish you need for your employees to recognize the tiger. You need to allow freedoms to explore and connect. You need to allow failure and mistakes; risks and change. Recall the behavioral study thattests the relationship between "feeling lucky" and "being lucky" (and perhaps even, as my students tell me, "getting lucky" in its salacious modern sense). In the controlled experiment, the experimenters also randomly planted dollar bills on street along the path. Those who felt lucky were far more likely to stumble on the dollar bills and discover the lost treasure. Companies like IDEO encourage their talented employees to 'feel lucky' by granting them the freedom to play and take risks. At IDEO, creative designers are encouraged to physically play, touch, and tinker with all sorts of toys: "Many designers put plastic parts, toy, prototypes, drawings, and sketches on display in their offices. One engineer, Dennis Boyle, has an amazingly eclectic assortment of items that he constantly talks about and brings to brainstorming meetings to inspire new designs. A few years ago, it included 23 battery-powered toy cars and robots, 13 plastic hotel keys collected during trips, a flashlight that goes on when the handle is squeezed, an industrial pump, 11 prototypes of a portable computer, 14 prototypes of a computer docking station, six computers in various stages of disassembly, 15 binders from past projects, a pile of disk drives, a collection of toothpaste tubes, a toy football with wings, a pair of ski goggles he designed, a Frisbee that flies underwater, and dozens of other products and parts."[52]

IDEO's work culture reflects the understanding that innovation happens through interaction, play, and proximity to other creative processes. But like Edison mused about finding 10,000 ways that didn't work, innovation inevitably involves risks and ways that don't work are necessary compliments to success. To encourage experimentation and risk taking, Google allows its creative employees twenty percent of their work time - or an entire day each week to play and explore. Whatever inventions and ideas the playful time yields, Google owns. Several important products have come out of this playtime, including Google News and Google+. Atlassian, the successful Australian software company, has made headlines with its pioneering approach to employee playtime linked to innovation. As part of its efforts to ignite the brilliance of its members, it allows engineers to spend 20% their time to work on their innovative ideas and deliver back fresh directions. It also created intense quarterly "FedEx Days," during which all employees simultaneously get 24 hours to work on and deliver a passion project. The science of flow similarly dovetails with the conclusion that playtime, freedom, and experimentation are key features of productive work. Csíkszentmihályi explains that "the more a job inherently resembles a game – with variety, appropriate and flexible challenges, clear goals, and immediate feedback – the more enjoyable it will be regardless of the worker's level of development."

[52]Hargadon and Sutton, Building an Innovation Factory, in the Harvard Business Review on Innovation 2001 at 61-62.

Passion and the Modern Paradox of Work

> "Behold the turtle. He makes progress only when his neck is out. Let the creative employee stick out his neck."
>
> -- Gerard I. Nierenberg, author of Fundamentals of Negotiations[53]

Among management leaders, there is a debate about how performance is affected by subjective experiences. One side of the debate believes that the more we are satisfied with our work and being at work, the better we perform. The other side counters that external pressures, deadlines, and the threat of losing your job are the best motivators. Although the debate continues, we know that in work settings, as well as in controlled lab settings, positive emotions are tied to higher creativity while negative moods are tied to lower creativity. A psychology study of several hundred employees working on twenty-six team projects asked the workers to write daily diary entries during the project. The study also asked the team leaders to report on the performance of team members. The conclusion was that people perform better when they have stronger intrinsic motivations, including passion and love for their work, and positive perceptions of their team, their leaders, and their organization. In each of the teams, members were over 50% more likely to have creative ideas when they reported the most positive emotions that morning. They even found that the more someone was in a positive mood one day, the more creative they were on the next day. People were also more creative when they viewed their organization as open to new ideas, able to evaluate new ideas fairly, and willing to reward creative work. More generally, they found that people performed better on all fronts: productivity, creativity, collegiality, and commitment, when they were internally motivated and perceived the organization as open and collaborative.

Resonating with our explorations of play and stochastic innovation, a growing number of copyright scholars argue that because play is inherently unpredictable, we should limit copyright protections to allow its full expression.[54]According to this view, people will create and play with existing materials even in the absence of a promise to protect their creation as legal property: "creativity, as lived, is more than a response to incentives, working from fixed and random preferences."[55]An essay strongly titled, *Money Ruins Everything* explains that many creative people "do not have commercial interest as their primary motivating force, and so propertization of their work is irrelevant to their production of innovative material. But more than this, propertization may be inconsistent with their continued creativity and so may not just be irrelevant but actively inimical to the development of this modality of production."[56] And some

[53]Fundamentals of Negotiations 107 (1973)

[54]Julie Cohen; Neil Netanel, Copyright's Paradox (Oxford Univ. Press 2008); Lydia Pallas Loren, The Pope's Copyright's? Aligning Incentives with Reality by Using Creative Motivation To Shape Copyright Protection, 69 La. L. Rev. 1 (2008).

[55]Rebecca Tushnet, Economies of Desire: Fair Use and Marketplace Assumptions, 51 WM. & MARY L. REV..513 (2009).

[56]John Quiggin and Dan Hunter, Money Ruins Everything, 30 Hastings Comm. &Ent. L.J. 203, 214-15 (2008).

further argue that that type of pure, natural innovation is different, and often better, than that of those with profit goals as their main driver.

Job satisfaction (like dissatisfaction) has ripple effects. In my research with my longtime collaborator, social psychologist and law professor Yuval Feldman, we studied motivation and perception of roles at work. Our psychology experiments follow a tradition of research that compares monetary and intrinsic motivations of individuals within organizations. In a series of experiments, we examined the reasons for corporate ethical behavior.[57] Do people respond purely to financial calculations when deciding, for example, to report their supervisor for corporate fraud? Our research findings offer a clear: NO. In fact, like earlier psychology experiments, we find in our studies that in some instances, compensation can lower motivation to do the right thing, rather than increase it.[58] Focusing on this line of research, we investigated how employees responded to corporate misconduct: whether or not they would choose to report financial fraud, health and safety violations, environmental pollution, and various other types of wrongs. You can see how the insights connect: people are motivated in their daily job performance and in their roles as employees more broadly by factors that go beyond pure financial rewards. They care about fairness and ethics and will be happy to forgo certain monetary incentives in exchange for a better work environment. Sure, people are rationally motivated, as they should be, by economic calculations and self-interest, but like in most all of our interactions as human beings, money doesn't define the entire enterprise.

Supporting our experimental studies on mixed drives, research on the motivations of programmers engaged in open source projects such as Linux and Mozilla repeatedly finds that most programmers are not motivated solely, or even primarily, by material rewards. Open source participants demonstrate mixed motivations, including gaining technical expertise, contributing to a common good, building reputation, and expanding professional connections. According to an MIT-based study, for most open source projects, intrinsic motivations such as intellectual stimulation and the joy of the creative process outweigh extrinsic motivations such as pay and career advancement. Indeed, in the hacker counterculture, representing a shared identity of the free software community, hacking a lot and for pleasure is a badge of honor. In *The New Hacker Dictionary*, we find:

> Hacker n. [originally, someone who makes furniture with an axe] 1. A person who enjoys exploring the details of programmable systems and how to stretch their capabilities, as opposed to most users, who prefer to learn only the minimum necessary. 2. One who programs enthusiastically (even obsessively) or who enjoys programming rather than just theorizing about programming. 3. A person capable of appreciating hack value. 4. A person who is good at programming

[57]Feldman &Lobel, The Incentives Matrix, A Study of the Comparative Effectiveness of Monetary Rewards as Compliance Systems, forthcoming Texas Law Review (2010).

[58]Interestingly, in our experiments, we find gender differences. The women in our experiments were far more likely to report corporate misconduct and cared more than men about protection against retaliation rather than monetary incentives.

> quickly…8.[depreciated] A malicious meddler who tries to discover sensitive information by poking around…The correct term for this sense is cracker.[59]

Hackers invest time and effort in productive work that carries little or no profit incentives for them. The desire to create and innovate is strong. Innovation and productive work are part of human flourishing. Traditionally, IP law is neutral regarding the values and aesthetics of innovation and attempts to be indifferent to the motivations, social or economic, of the creator and inventor. In copyright law, for example, "the writer who churns out formulaic potboilers for no other reason than to pay her rent is indistinguishable qua economic actor from the journalist who seeks through her works to enrich political debate, the scholar who advances a theory in the hope of convincing others of its explanatory power, or the poet who endeavors through words to transfigure others' imaginative horizons."[60] However, thick descriptions of the art of production matter to how we regulate and incentivize individuals and institutions. When people create and work in ways that do not follow their immediate financial interest, claims about incentives should be reassessed. The realities seen in open-source programs like Open Office, Wikipedia, and Mozilla and other innovative ventures challenge the orthodox story of economic incentives as the single factor in spurring creative production.

In every work setting, we know that the ingredients for optimal productive environments do not depend solely and perhaps not even primarily, on material conditions such as higher pay. Nobel Laureate Daniel Kahenman was among the first to develop a grounded account for how individuals have intrinsic preferences for processes and mechanisms that go beyond the desire for particular outcomes.[61] We often care about the ways we interact and work more than the tangible terms and conditions of our jobs. We care about our professional ties and our personal abilities to grow and dream. We care about the relative trajectories of our careers. We alsocare about the signals of fairness and pride and values that the corporation embodies. A sense of progress and innovation creates excitement and motivation. A sense of futility creates frustrations and hinders productivity. Our lab experiments as well as the empirical studies indicate that future constraints affect present motivation. We also know that other features of the work environment, including a culture of openness, organizational pride, and professional growth, lead workers to engage more in work. Happiness and the joy of being playful at work create a virtuous circle with innovation: happier workers are better workers; better workers are happier. In a nutshell, in choosing to stay or leave a job, money does not always buy happiness. A study of India's booming high-tech labor market describing the rise of "a global war for talent" concludes that the best companies to compete in retaining their employees have realized that no matter the environment, employees care about non-tangible rewards, such as pride, satisfaction, fair treatment, and support from management.[62] Ambitious individuals with great

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[59]Raymond 1996.

[60] Anne Barron, Copyright Infringement, 'Free-Riding' and the Lifeworld, *in COPYRIGHT AND PIRACY: AN INTERDISCIPLINARY CRITIQUE, Lionel Bently, Jennifer Davis and Jane Ginsburg, eds., Cambridge: Cambridge University Press, 2010.*

[61]Kahneman, Knetch, &Thaler, Fairness as a Constraint on Profit Seeking: Entitlements in the Market, 76 American Economic Review 728 (1986).

[62]MIT Sloan Management Review, How to Retain Talent in India (2008).

career aspirations readily substitute some monetary compensation for work at the best companies.[63]

Motivation and performance are inextricably linked to environments. Psychologists and organizational strategists since Csíkszentmihályi have attempted to sort out the types of creative environments that will enhance moments of flow and increase the likelihood of the great payoffs hoped for in the war for talent. Up until now, few have considered the ways in which the fight for recruiting, luring and retaining talent itself shapes the art and science innovation and motivation. We've figured out only half of the puzzle: increasing flow in moments of complete focus at work; but we've neglected the bigger picture – optimizing the flow of talent and ideas in a sustained way.

In his study of work, Csíkszentmihályi encountered a paradox: we're happier at work but we wish we weren't there. In order to study optimal experience in work settings, Csíkszentmihályi used a research tool called the Experience Sampling Method (ESM). In ESM studies, subjects are beeped (via a pager or hand-held device) every few hours, at random intervals during the day. Subjects then write down what they are doing and how they feel: happy or frustrated, bored or challenged. When Csíkszentmihályi and his research team timed people at different times of the week and day, they found that people experienced challenge and felt skillful at work far more often than in leisure. Even so, people wished to be doing something else to a much greater extent while working than in leisure. They felt more satisfied in their moments of flow, reported more positive experiences, happiness, feeling stronger, cheerful and more energized. Yet, they still wanted to experience less work. Csíkszentmihály iattributes these findings not to an inherent preference of people to be in a relaxed, non-working state, but rather in the modern worker's relation to work.

Happy workers are more likely to be productive, collaborative, and committed. They are more likely to invest more time at work and to work beyond the confines of their regular work hours. Interviews with dozens of employees working in the Silicon Valley reveal that companies are at times willing to modify software projects in order to allow a better fit with their employees' interests.[64] Talented workers are given the freedom to work on projects that they enjoy. But why are most of us reporting not being too happy at work? Are our work settings conducive to enhancing satisfaction? What gives people great satisfaction is being useful, self-reliant, and understanding that work is closely tied to one's identity and personal growth. When people feel trapped in their jobs, they are, to use Csíkszentmihályi's term, in a state of apathy. For people to be in a state of challenge and to reach optimal innovation motivation, they need to believe in their ability to grow professionally. They need to know that their skills and talents, their innate passion and knowledge, are portable. They need their human capital to be part of their identity. Talent wants to be free.

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Our quest to find flow, motivation, and joy at work enriches the standard economic analysis of human capital and intellectual property. Our experimental and field studies allow us to gain a better appreciation of the patterns in which ideas, people, and groups in networked,

[63]Framco AM, Filson D. 2006. Spin-outs: knowledge diffusion through employee mobility, journal of economics 37: 841.

[64]Kathleen Gregory.

institutional, and individual settings flow. The traditional incentive model is elegant. The idea that has dominated much of intellectual property law is that people are purely economically rational. But real life is not so straightforward: motivation and performance always involve a mix of push and pull. Talent can be nourished and encouraged. It can also be crushed and suppressed. To win the talent wars, we need focus on the achieving the former and resisting impulses that lead to the latter.