

# KAUFFMAN DISSERTATION EXECUTIVE SUMMARY

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Of Experience and Enterprise:  
Careers, Organizations and Entrepreneurship

By

Weiyi Ng

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Committee in charge:

Professor Toby E. Stuart, Chair

Professor Ming D. Leung

Professor Noam Yuchtman

Professor Morten T. Hansen

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## **Abstract**

I examine the antecedents of entrepreneurship through the empirical analysis of > 2 million resumes, sampling the high technology start-up ecology in the United States. Chapter 1 characterizes the primary issues concerning the question of entrepreneurial entry. Chapter 2 establishes the conceptual careers framework and distinguishes two types of entrepreneurial activity: high potential ventures and common self-employment. Chapter 3 exemplifies an application of the framework: I study the effect of career status on entrepreneurial entry and funding by examining different forms of entrepreneurial activity of the alumni of companies that experienced prominent liquidity events. Chapter 4 suggests future directions.

**ON EXPERIENCE AND ENTERPRISE:  
CAREERS, ORGANIZATIONS AND ENTREPRENEURSHIP**

EXECUTIVE SUMMARY

Introduction

Who becomes an entrepreneur? In asking this question, we implicitly assume that an entrepreneurial career has two states: a prior state whereby she is *not* an entrepreneur, and then a state whereby she becomes one. Immediately two supra-questions emerge: “what is an entrepreneur?” and “when does entrepreneurship begin?”

The question of what is largely conceptual. It refers to the multitude of enterprise and self-employment activity that comes under the vague umbrella of “entrepreneurship.” Yet these activities are wildly disparate, from the self-employed graphic designer to the Founder of the nextbigthing.com. In essence, “almost everybody is an entrepreneur”: the use and abuse of the term in both academic and popular realms threatens to render the term meaningless.

The question of when addresses the issue of the founding event. Largely, the founding event marks a career transition: from non-entrepreneur to entrepreneur. The success of the founding event becomes secondary to the definition. Yet in most cases, we only observe entrepreneurs that experience a certain degree of success. This is evident not just in predominant entrepreneurial archives (e.g. incorporation databases, venture funding databases), but perhaps more dangerously as documented in airport bookstores through popular accounts of entrepreneurial founding. Consider that at its very beginning, the founding event is no more than an idea, the associated list of

claims, a shift in personal career identity and an attempt. It is insufficient to learn from the mythologies and stories of late stage successful ventures. To study the drivers of entrepreneurial entry is to pinpoint the beginnings of all entrepreneurial attempts and be agnostic to their success or failure.

In addition, entrepreneurial founding events are rare. While prior research has offered several explanations and developed theoretical models that explains why people transition to entrepreneurship, the rarity and complexity of the phenomenon means that the predictive power of these models are wanting. The scientific examination of entrepreneurs also demands a control group: a “risk-set” of would-be entrepreneurs from which comparisons can be made and differences observed.

The dissertation addresses these issues in two parts. The first lays out the conceptual and methodological frameworks: I examine entrepreneurial entry through the framework of careers via large sample data analysis. The second examines and identifies one particular reason for entrepreneurial entry: I examine the effect of career status gain on the likelihood of founding and funding. Finally, I conclude by sketching the predictive power of such a framework and suggest a program of research ahead.

Part 1.

*Of Hobos and Highfliers: Disentangling the Classes and Careers of Technology-Based Entrepreneurs*

Sociological career theory broadly describes an individual’s career as a consecutive intertwining of *phases* and *phrases*. The former refers to the chain of employment and educational spells and workplaces that so characterizes urban

careers; the latter refers to the meaning derived from the occupation of these states and the portrayal of these meaning to define the individual's place in society.

Adopting this careers perspective, we theorize entrepreneurship as but just a phase in the course of a career. Given that these phases are interlinked, and given that the modern career is highly mobile and varied, it is easy to consider that different prior career pathways will result in different likelihoods of entering different types of entrepreneurship.

This framework is examined through the analysis of over 2.2 million resumes that constitute the high-technology start-up ecology in the United States. With the aid of People.Co, a head-hunting and lead generation start-up in the high-technology sector, these resumes are sampled through the websites AngelList, CrunchBase and LinkedIn. This forms a plausible entrepreneurial risk-set: a sample of the population that is at-risk of starting high potential ventures.

These resumes list hundreds of thousands of entrepreneurial attempts. These are accompanied with job and company descriptions: *phrases* of the entrepreneurial career state which form identity statements made by entrepreneurs to their various intended audiences. Two main groups of entrepreneurs inhabit the sample: high potential entrepreneurs and the self-employed freelancers. Given that the activities of these two groups are starkly different, and given that they have different stake-holders (investors in the former and clients in the latter), we have good reason to expect that we can discern these types through their respective text descriptions: we distinguish entrepreneurial types through their *phrases*.

Machine learning applied to these phrases successfully classified these ventures into either high potential ventures (as defined by founding events with the intent of seeking out > \$100,000 in venture funding) or self-employment (as mostly characterized by contract type labor). This classification algorithm not only allows us to disentangle to two different types of entrepreneurship, it also allows us to observe the entrepreneurial entry event at the point of the change in the individual's identity (from known employment, education or unemployment, to the two entrepreneurial types). As such, we now are able to observe entrepreneurial attempts regardless of its outcome or success.

We then examine the *phase* transitions to founding high-potential startups or entering self-employment: i.e. we examine the careers that lead to entrepreneurship. This task is non-trivial. Consider this: to characterize a person's career, we are interested in her employment characteristics (type of jobs, occupational status), educational characteristics (major and degree of education) and time dependent factors such as age (as measured from college graduation) and calendar year (reflecting responses to macro-economic conditions). The data that correspond to these fields are massive and messy. The analysis sample comprises about 1.2 million unique job titles; 300 thousand unique education majors; and over 12 million person-year observations of career states. To structure this data, we applied unsupervised learning algorithms to cluster and group these job titles and education majors into dominant categories that describe the technology sector.

Through statistical analysis of the founding probabilities of each type, we show that the two types of entrepreneurs have prior careers that are opposed in every career

dimension: Together, these results show that not only do these different groups of entrepreneurs, so-called "hobos and highfliers", exhibit stark differences in identity claims, but the individuals who create these ventures depart from fundamentally different social positions and career pathways.

We conclude that an imprecise and overly broad definition of entrepreneurship is not only unhelpful for understanding the backgrounds of entrepreneurs, it also hampers the academic accumulation of systematic knowledge. This research suggests that future studies of entrepreneurship must adopt precision in the definition and measurement of the character and timing of entrepreneurial entry events.

Part 2.

### *Vicarious Experiences: Entrepreneurial Responses of Alumni to Liquidity Events*

I apply the careers framework to consider one potential factor that might drive an individual to entrepreneurship: an individual's career status.

To do so, I examine the effect of status gain on entrepreneurial entry and success by examining different forms of entrepreneurial activity around liquidity events: initial public offerings (IPOs) and large scale acquisitions. These events represent the most coveted outcomes amongst high potential entrepreneurs. The highly desired liquidity events constitute highly visible, positive transformative episodes: rumors of the potential of such events abound in the venture community and permeates technology and business media. Given the low base rates of venture success and noisy signals of entrepreneurial ability, management and technical team members that are associated with high IPO/acquisition potential startups greatly enhances entrepreneurial

opportunities available as these form valuable and rare points of data about the ability to guide the nascent firm towards a successful exit. These associations prove to be extremely attractive to resource holders and investors and thus confer status to the associates.

However, such events do not only offer status gain, they also create liquidity and as such accords members of the companies significant wealth. To disentangle and more accurately identify the effect of status, a group that only benefits from the status gain of a liquidity event without the associated wealth gains must be identified. I propose to consider the entrepreneurial activity of the company's alumni, who because of taxation laws and the nature of Incentive Stock Options (ISOs), are very unlikely to benefit from the liquidity event should they leave the company well before the knowledge its likelihood.

In the United States, venture backed companies are well known for the organizational depth and intensity of using ISOs as employee compensation. Young, cash-strapped technology start-ups seeking to economize on liquid resources use incentive stock options (ISOs) to compensate employees. ISOs give the employee options to buy shares in the company at an exercise price (strike price), a price usually set at the time of employment. Typically, ISOs in venture-backed startups vests linearly over 4 years: should the employee choose to leave before the 4-year schedule, she is entitled to a linearly prorated share of options. Most ISO contracts also feature a one-year cliff: employees who leave before a year of employment will not be entitled to any options whatsoever. Upon leaving the company, the normative ISO contract gives the ex-employee 90 days to exercise their options before the options are forfeited. A

liquidity event therefore allows technology start-up employees to exercise these options to receive the cash compensation they deserve.

However, the nature of ISOs and taxation imply that the monetary largesse is not distributed uniformly; alumni who have left well before the event are unlikely to exercise their options. Should an employee choose to leave the company before liquidity, the employee has normatively 90 days to exercise the option. The monetary benefits of exercising an option pre-liquidity is a risky one. Not only is the liquidity of the stock not guaranteed, the spread price – a difference between the market value of the stock and the strike price – is subjected to alternative minimum taxation (AMT). In the pre-liquidity scenario and depending on the spread price and the amount of options awarded, this can imply that the exercising of options (buying and holding the shares) will cost the leaving employee large amounts of cash and subsequently be subjected to alternative minimum taxation for theoretical capital gains.

I examine a prospective sample of over 300,000 resumes of graduates of the top 23 science, technology, engineering and mathematics (STEM) colleges in the United States. In general, I find that these alumni are on average 23% more likely to enter into high potential entrepreneurship and 17% less likely to enter into contract self-employment around large scale liquidity events, suggesting that a career status gain pushes entrepreneurs towards prestigious entrepreneurial entry and away from common freelancing. Robustness checks were implemented by further isolating the cohort of graduates with similar career backgrounds to the alumni to create a closer comparison group; the results hold.

However, I find no significant results in the likelihood of subsequently attracting venture investments; such forms of status gain confer no significant funding advantages to the nascent venture. This suggests that such status gain only serves to lower the perceived founding threshold of the entrepreneur and is largely ignored by external investors.

## Conclusion and Discussion

The dissertation begun by considering the main issues in a systematic, empirical study of entrepreneurial entry (Introduction). Through the careers framework (Part 1) I have introduced the career framework of entrepreneurship and demonstrated its application by disentangling entrepreneur types and detailing the pre-entrepreneur careers. I also detail the data collected, study methods and empirically described the landscape of the high technology start-up labor ecology in the United States. I then demonstrated the potency of this conceptual framework and the empirical possibilities (Part 2). Here, I demonstrated how positive career events might affect career trajectories, revisiting the question of the effect of status on entrepreneurial propensities, and demonstrating that in tandem, the data and career framework at hand allows for a deeper more nuanced probing of such topics.

In addition, I have described and introduced a novel new dataset: public resume collections of particular human and organizational ecologies. The conceptual contributions and methodologies as described here merely form the beginnings of a research program; the dissertation suggest a clear pipeline of research ahead. The potential branches and foliage of research directions are many, and include:

- 1) Examinations of the demographic inequalities in entrepreneurship through inferring genders by considering people's first and last names.
- 2) Considering the careers of entrepreneurs post founding event.
- 3) Predictive modeling of entrepreneurs (predicting who is likely to found a company/engage in self-employment even before they do).
- 4) Merging the data with patenting information allows for the examination of career antecedents on patenting and technological innovation.