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“ONE IS KNOWN BY THE COMPANY ONE KEEPS”: IMPRINTING EFFECTS OF A FIRM'S NETWORK ENTRY ON ITS FUTURE STATUS

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ABSTRACT

Given the importance of network status, this study seeks to understand how *newcomers* - young organizations entering interorganizational networks - attain such privileged positions. Drawing on literature in imprinting and network theory, we develop a model and hypotheses regarding the direct and moderating effects of the newcomer's ego-network characteristics in the year of network entry on its status, and examine their persistence over time. We test proposed relationships on a panel data of 411 U.S. venture capital firms (3,627 observations) and show that with some diminishing returns over time, the characteristics of initial partnerships exert a long term influence on newcomer's status.

INTRODUCTION

Network status is increasingly recognized as an important factor that benefits various organizational outcomes. While prior research has established the primacy of network status both as a resource that facilitates other facets of organizational performance, and as an important performance outcome in itself (Shipilov & Xiao Li 2008), much less is known about the process through which newcomers to the network achieve high status. Due to the known privileges that status brings, young organizations entering industry networks strive for moving up the industry's status hierarchy (Larson 1991).

We use an imprinting perspective to investigate how and why a *newcomers* initial partnering influences its status. The imprinting perspective can be traced to Stinchcombe (1965) who observed that history matters because the past continues to influence the present. Complementing Stinchcombe's proposition are findings from the network literature, which posit that social networks evolve in path dependent ways (Gulati & Gargiulo 1999; Walker et al. 1997), where a history of past relationships influences the formation of future ones (Gulati & Gargiulo 1999). Accordingly, to develop and test a comprehensive model of status imprinting, we build on literature in imprinting and network theory to theorize how, why, and how long may the initial social context that young organizations enter by forming their first partnerships influence their status.

In developing and testing the model of status imprinting, we make three primary contributions. First, entrepreneurship research on imprinting conditions has traditionally focused on economic aspects surrounding organizational early years, but for the most part ignored the initial social context (Marquis 2003) which Stinchcombe (1965) originally theorized about. This study responds to the critique of seeing organizations as “undersocialized” and atomistic in their evolution (Gulati et al. 2000), and contributes to entrepreneurship research on imprinting by highlighting the importance of the initial network relationships for the development of newcomers' network position (Milanov & Fernhaber 2007). Second, while prior research explained the immediate

mechanisms of status enhancement (Washington & Zajac 2005), and how past relationships influence the formation of new ones (Gulati & Gargiulo 1999), there is little understanding of de novo entrants to the network. We contribute to literature on network evolution by tracing the origins of status to the days of newcomers' network entry. Finally, the time dimension is often called for in network literature, but seldom explicitly tested (Soda et al. 2004). By including time as a contingency to the endurance of initial social structures' effects we respond to recent calls for more dynamic network research (Parkhe et al. 2006) and offer a dynamic model of status imprinting that on one hand highlights the long term reverberations of initial partnering strategies for the newcomer's status, and on the other -- acknowledges their diminishing returns.

SOCIAL IMPRINTING

In order to tell a rich social imprinting story we must answer two questions: (1) why would the initial social conditions be crucial and (2) what mechanisms can explain the extent of their continuing influence? The crucial consequences of first partnerships are well established within entrepreneurship literature. Initial partners act as an endorsement of quality for a young organization (Stuart et al. 1999) and influence how external audiences perceive it (Singh et al. 1986). In this sense, we know that direct interorganizational relationships help discriminate among actors based on their socio-structural and relational attributes (Gulati & Gargiulo, 1999). Social attributes are especially important for young organizations: because their internal quality is for the most part unobservable to network incumbents (Powell et al. 1996), incumbents evaluate newcomers' quality "by the company they keep", where first partnerships represent the basis to set initial quality perceptions in incumbents' minds. Moreover, because inter-organizational relationships jointly contribute to organizational sense-making in forming new partnerships (Gulati & Gargiulo 1999), the first "social impression" projected in the network is likely to influence network incumbents' interest to interact with the newcomer. Consequently, the initial social context appears to represent a crucial signal of quality for young organizations – one which will have a primary role in shaping their initial social attributes, incumbents' perceptions of their desirability as prospective partners, and resulting initial social standing in the industry.

The continuing influence of the initial social standing is likely perpetuated through various self-reinforcing social processes (Gould 2002; Merton 1968). Specifically, social judgments have a self-validating character, where current attributions of quality that incumbents hold about other network members are often a result of prior attributions, which themselves may be a product of earlier attributions, and so on. By extension, one can trace this self-reinforcing mechanism back to the organization's first social attributes that stem from the initial social context surrounding its network entry. Reflecting this pattern, general findings from the social network literature point to an endogeneity in the dynamics of interorganizational networks, where the pattern of past relationships in the network informs the formation of new ones (Gulati & Gargiulo 1999). These conclusions again highlight the need to study newcomers and their first partnerships, as they likely represent the origins of the focal organization's future partnerships, its status in the industry network, and all the privileges it brings.

Origins of status: Initial partners' prominence and initial structural embeddedness

Both the sociology and entrepreneurship literatures emphasize the importance of initial partners' identity for the evaluation of young organization's quality (Baum et al. 2000; Podolny & Scott Morton 1998; Stuart et al. 1999) where the partners' prominence is widely recognized as important in such evaluations. Prominent actors are those that are extensively involved in relationships with other actors (Wasserman & Faust 1994) and it is this involvement that makes

them visible to other actors (p.173). By extension, initial partners' prominence likely imprints a newcomer in two ways: (1) by providing the newcomer with an access to multiple other potential partners, and (2) acting as a source of information about the newcomer to a wider audience. More broadly, prominent partners increase a newcomer's social recognition by setting the stage for the initial opportunity set of viable partners (Gulati 1998). Due to extensive relational history, prominent organizations are perceived to have sharpened evaluative and collaborative capabilities (Powell et al. 1996; Stuart et al. 1999), which makes them good judges in selecting new partners. Hence, the mere fact that the newcomer passed the "due diligence" of the prominent partner raises its quality perception among network incumbents. For the above reason, having prominent partners has been equated to getting an endorsement of quality (Stuart et al. 1999). As the positive signals from the initial social context are theorized to initiate the self-reinforcing mechanisms through which network incumbents' attributions evolve (Gould 2002), we expect that initial partners' prominence will positively imprint a newcomer's status:

Hypothesis 1: The prominence of a newcomer's initial partners will be positively associated with its status

While prominence of initial partners reduces audiences' uncertainty about the newcomer by replacing quality-specific information with information about newcomer's position in the overall social system (Jensen 2003), the structure of the relationships around it provides additional explanation to understanding the formation of status. A term describing the overall structure of relations is structural embeddedness (Granovetter, 1992), which is defined as the extent to which organization's direct partners are connected to one another (Echols & Tsai, 2005; Granovetter, 1992). Thus, high structural embeddedness refers to networks where the newcomer's partners are mutually tightly connected, whereas low structural embeddedness describes situations where the presence of such relations is rare.

The pervasive relationships in a newcomer's ego network mean that in addition to information, norms of behavior travel easily across network boundaries (Granovetter 1985), which promotes cognitive similarity among members (Simsek et al. 2003) and often results in organizations pursuing similar strategies or in a formation of "strategic blocks" (Gulati, 1998). A newcomer with a structurally embedded network may consequently have a stronger group identity (Soda et al. 2004), where the dense ego network may serve as a reference group in the external audiences' evaluation of its quality. On the contrary, organizations with sparse ego networks potentially suffer from a "dilution" of their social identity, because the lack of a cohesive reference group does not provide a coherent and unison signal of quality, which increases the uncertainty surrounding such organizations in external audiences' minds. Similarly, embedded newcomers may be seen as pursuing a collaborative networking strategy, rather than a brokering or opportunistic one, due to norms of reciprocity and trust that govern embedded relationships (Simsek et al. 2003). Finally, because embedded networks facilitate knowledge transfer (Uzzi 1997), network incumbents are likely to attribute such newcomers with a greater learning experience and a better understanding of the industry. Therefore, they may be more interested in establishing bridging ties (Baum et al. 2003) with structurally embedded newcomers as they seek to tap into "pockets of knowledge" in the network (Powell et al. 1996).

Hypothesis 2: A newcomer's initial structural embeddedness will be positively associated with its status

Although prominence and embeddedness both contribute to the shaping of the newcomer's identity and status through social signals about the focal organization, they do so in different ways.

While prominence of initial partners reduces audiences' uncertainty about a newcomer by replacing quality-specific information with information about the newcomer's position in the overall social system (Jensen, 2003), structural embeddedness reduces uncertainty by breeding familiarity, signaling a newcomer's trust-worthiness and its access to a collaborative learning environment. This implies that the effect of initial partners' prominence may depend on the extent to which there are relationships between the prominent organizations surrounding the newcomer. Where initial partners' prominence is high, and the connections between these organizations are dense (there is high structural embeddedness), the newcomer will likely be considered to belong to the "elite clique" in the network.

A prominent dense social structure may exhibit an imprint of positive signals for both the quality of the newcomer, as well as the trusting and learning behavior learned in densely embedded local networks, where the interaction of positive signals is likely to influence status over and above their additive effects. While the direct ties with prominent partners serve as sources of signals of endorsed quality, the indirect ties among newcomer's direct contacts enhance such signals by embedding them in a trusting context (Ahuja, 2000). Extensive relations between an organization's prominent partners contribute to a collective monitoring of member organizations (Baum et al. 2003), and a greater selectivity in accepting new group members, which enhances the endorsement effect, as the individual organization passed the due diligence of multiple prominent organizations. Finally, because dense networks are characterized by knowledge spillovers and tacit information sharing (Uzzi 1997), newcomers who start in embedded prominent social contexts are likely to be perceived as benefiting from access to privileged top-tier information possessed by prominent actors. Given these arguments, we expect:

Hypothesis 3: A newcomer's initial structural embeddedness will enhance the effect of initial partners' prominence such that the positive relationship between the newcomer's initial partners' prominence and its status is more positive the greater the initial structural embeddedness

Time-contingencies of social imprinting

Due to the lack of observable records of quality of young organizations, the above section primed the importance of a newcomer's initial social context in providing historical preconditions that shape its evaluations and status (Larson 1992). However, our understanding of status imprinting would remain naïve if we assume that audiences disregard diverse information about the newcomer as it accumulates over time on the account of the established social signals of quality that were developed early in the organization's history. Thus, while endurance of the initial conditions across time is a premise central to Stinchcombe's (1965) ideas, any imprinting model needs to account for the effect of time to examine its pervasiveness (Bamford et al. 2000).

Prior research reported that some network structural forms *per se* endure longer than others (Burt, 2002). Moreover, different social structural arrangements are more or less persistent in the extent to which they add value and influence organization outcomes over time (Soda et al., 2004). For a young organization, the extent of its embeddedness in the organizational field is critical for its immediate survival (Oliver, 2001), but the value of ties to institutional actors in the field becomes less important in explaining organization survival as time goes on (Hager, Galaskiewicz & Larson, 2004). Similarly, the effect of social attributes which acts as a signal of quality to reduce the uncertainty about the organization may taper off over time, as more information on the organization becomes available (Jensen, 2003).

As organizations age, they accumulate cognitive legitimacy (Hannan & Freeman 1984), which means they are held accountable and reliable in commanding resources - - whereby organization's longevity represents a signal of quality independent of initial social attributes (Hager et al. 2004). As newcomers spend more time as network incumbents, external audiences may become aware that a track record of an organization's past operations exists, which can serve as a direct basis to evaluate their quality (Podolny & Scott Morton 1998). Consequently, as awareness of availability of other information about the organization grows over time, the external audiences may consider the signaling information of initial social attributes as having less substance. Therefore, it is likely that the important impact of organizations' initial social context may diminish in explaining its status as time passes. Therefore:

Hypothesis 4a: The positive association between a newcomer's initial partners' prominence and its status will diminish over time (as time since network entry passes)

Hypothesis 4b: The positive association between a newcomer's initial structural embeddedness and its status will diminish over time (as time since network entry passes)

METHODS

Sample

The empirical context for this study is the Venture Capital (VC) industry because the significance and increasing practice of forming relationships through co-investments in portfolio companies (so called syndicates) in the VC industry is widely acknowledged (Lerner 1994), and the benefits of status are well established not only for the VC firm (Podolny 2001; Seppa 2003), but for the outcomes of companies in its portfolio as well (Hochberg et al. 2007). To construct our database, we use VentureXpert, a proprietary database of Venture Economics, which has been used in numerous VC related studies.

The sample consists of 411 U.S.-based limited partnership firms, involved in venture-related investments and founded in the 1980 – 1995 period, which entered the industry network through syndicated relationships within the first three years of their founding. We start identification of VCFs for the sample in 1980 due to the institutionalization of the private equity industry in this period. As 2004 presents the last available year of complete data, the selection window closes in 1995, to ensure at least 10 years of operation for the firms which were founded in that year. While prior studies examined a 6-year period to test the effect and the endurance of initial conditions (Bamford et al. 2000; Baron et al. 1999), a 10 year period should allow for a more stringent test of the imprinting hypotheses.

Measures

Prior to calculating network measures, we first constructed network adjacency matrices. In the VC context, a network relationship between two VCFs is observed when these firms jointly invest (syndicate) in a portfolio company in the same year (Podolny, 2001). While the sample is composed only of private limited partnerships, other types of firms also participate in VC investing (such as investment banks or corporate subsidiaries) and a large percentage of them enjoy prominent positions in the industry's social structure (Florida & Smith, 1993)¹. Therefore, they were included as members of the industry network. Following prior network literature in diverse industries (e.g. Ahuja, 2000; Gulati & Gargiulo, 1999), and most importantly, the VC industry (Hochberg, et al., 2007), we constructed the network adjacency matrices as 5-year

moving windows. UCINET 6.81 (Borgatti et al. 2002) was used to calculate all network measures.

VCF status (t+1). A commonly accepted measure of a firm's network status uses Bonacich's (1987) centrality measure (e.g. Podolny, 2001; Sorenson & Stuart, 2001). Based on this measure, a VCF's status is dependent on the number of other VCFs with which it has participated in financing particular portfolio companies, as well as the status of those firms. The scores are calculated for each VC firm in the network and normalized by the maximum status score in the industry for the respective year (Podolny, 2001).

Initial Partners' Prominence. Prominence is operationalized as a firm's degree centrality score (Stuart, et al., 1999), defined as a count of the number of distinct relations in the network involving that firm (Wasserman & Faust, 1994). The measure is first calculated for all firms in the industry network. To arrive to a cumulative measure for each newcomer, we sum the degree centrality scores across its direct partners. The obtained summed raw scores are normalized by taking the maximum value of partners' prominence across all network incumbents as a denominator for the respective year. The variable enters the analyses as a time-invariant covariate.

Initial Structural Embeddedness is operationalized as the focal firm's ego-network density (Rowley et al. 2000). The measure is calculated as the number of present connections between a firm's syndicate partners divided by all possible connections between them (Wasserman & Faust, 1994). The measure is time invariant and recorded for the year of firm's entry to the network.

We included several control variables to help eliminate some alternative explanations for our findings. We control for a VCF's *experience* in the market as it may signal its capabilities (Sorenson & Stuart 2001) and increase its desirability as a partner if other network incumbents seek to gain access to their expertise. We take a cumulative count of the number of disbursements (investment deals) a VCF makes, updating the variable on a yearly basis (Podolny, 2001). We control for *newcomer's size* because it can signal a firm's capacity to cooperate and/or do without cooperation (Walker, et al., 1997), hence influencing partnering preferences and subsequent status. Size is operationalized as the number of funds from which a VC firm draws in a given year (Podolny, 2001). Next, we control for *newcomer's age at network entry* because some VCFs do not automatically participate in syndicated investments in the year of founding, so they may have some "pre-established legitimacy" prior to the social signals afforded by the initial network partners. This time-invariant variable takes a range of values from zero to two years. Because firms operating from regions with higher industry clustering may be more attractive as partners than other firms, we control for *newcomers' location* by introducing two dummies, for Massachusetts and California. To account for the extent to which network incumbents discriminate among partners based on their social profiles in the network (Gulati & Gargiulo, 1999), we introduce a control for *industry network structural differentiation*. Following Gulati and Gargiulo (1999), this construct is operationalized by first computing the centralization index of the industry network, which is measured as the standard deviation of eigenvector centrality scores of the organizations in the industry in that year (Wasserman & Faust, 1994). Prior to calculating the standard deviation of the scores, each firm's score is normalized by dividing its eigenvector centrality score by the highest eigenvector centrality score among the network firms in the industry for each year. This is necessary in order to make the measure comparable across time. Moreover, we control for another "asocial" quality indicator that the audiences are likely to use as an assessment criterion of the newcomer. In the VC context, the strongest signal of VCF's quality is sent by making a "home run" or achieving a "golden exit" (Bygrave & Timmons 1992) by taking portfolio companies public through an IPO. Such events are often taken to measure performance in the VC industry (Hochberg et al. 2007). Therefore, we introduce the *number of*

IPOs that the focal VCF achieved in each year as a control variable in all models. Finally, we control for time-period effects (Gulati & Gargiulo, 1999; Walker, et al., 1997) and enter a collection of year-specific indicator variables, for all years but the first in the panel (1981-2004). These dummies help control for temporal heterogeneity, which could influence the dynamics of industry's status structure.

Consistent with other imprinting studies (Boeker 1989) it was necessary to control for the *time since the firm entered the syndicate network*. VCFs which remain longer in the network have had an extended time period to build up their status, accumulate legitimacy, or enhance their "network experience", all of which could aid the firm in building its status. The variable is measured as the number of years from the network entry till the respective year in the study. In the first set of analyses, this variable is used as a control, while the second set of analyses relaxes this control to test whether the initial social context has a diminishing influence on a firm's status over time. As described in more detail in the analytical methods section, this variable is transformed into a series of dummy time-indicator variables, coded one for a firm's network membership in each of the consecutive years.

Analytical Methods

This research employs a longitudinal research design and tests the hypotheses set forth on a panel data set spanning years from 1980 to 2005, with time-variant variables updated yearly. Because the major theoretical variables of interest (as well as important location control variables) are time-invariant, we use random effects estimation to predict status (Wooldridge 2002).

The second set of analyses tests the diminishing influence of hypothesized imprinting variables over time. Empirically, we expect that the estimated coefficient of imprinting variables explaining status will differ across time points (with each additional year the firm stays in the network) and wish to test it against the null hypotheses that the coefficients remain constant over time. We opted to represent time using indicator (time-dummy) variables because hypotheses H4a and H4b only propose that the imprinting variables will diminish over time in their impact on status, and make no specific predictions regarding the speed at which this will occur. This approach allows the data to show the differential effects of the imprinting variables that occur in each year (Neter et al. 1996). The resulting models for testing H4a and H4b introduced respective interactions of imprinting variables with time dummies. Following the estimation of each model, we test the null hypothesis of equality of the interaction coefficients using the Chow test (Wooldridge 2002:431-2). Those coefficients with significant difference over time are plotted to determine whether the nature of the change is in the hypothesized direction.

RESULTS

In Table 1, we present the results of the first set of analyses, testing the influence of imprinting factors of the initial social context on VCF status (hypotheses 1 to 3). Model 1 introduces all the control variables. Models 2 and 3 add the main effects for initial partners' prominence and initial structural embeddedness. In Model 4, we add the interaction term between the two variables describing the initial social context (testing hypothesis 3). In Table 1, each column reports the results for a dependent variable measured at time $t+1$. Each row contains the effects of an explanatory variable measured at time t , or in the case of the imprinting variables, at the time of a VCF's network entry. All models included year effects (dummy variables) that are not reported to conserve space and enhance the readability of the table. As evidenced in Table 1, all models are significant and each subsequent model improves the fit of its preceding model, as suggested by the

significant increase of the Chi-square statistic.

Hypothesis 1 proposed that the prominence of a firm's initial partners will be positively associated with the firm's status. Reading of Model 2 shows a positive and significant coefficient (coefficient = 2.345, $p < 0.001$), providing support for hypothesis 1. Hypothesis 2 posited that a firm's initial structural embeddedness will be positively associated with the firm's status. Model 3 within Table 1 shows that the estimated coefficient is positive and significant (coefficient = 0.387, $p < 0.001$) which confirms the hypothesized effect. Hypothesis 3 suggested a moderating effect and argued that a firm's initial structural embeddedness will enhance the effect of the firm's initial partners' prominence such that the positive relationship between initial partners' prominence and the firm's status is more positive the greater its initial structural embeddedness. The hypothesis was tested in Model 4. Significance was achieved in the expected direction (coefficient = 2.680, $p < 0.001$). We plotted the results following established methods (Aiken & West 1991). In Figure 1, the two lines on the graph respectively represent situations when the newcomer has low and high initial structural embeddedness. As Figure 1 illustrates, the steeper slope of the line representing firms with high initial structural embeddedness suggests that VCFs entering the network with highly prominent initial partners will achieve a higher status when their initial partners are highly connected, which supports hypothesis 3.

The second part of analyses begins with testing the imprinting variables as they influence a firm's status over time (hypotheses 4a and 4b). Due to the size of these models and to preserve the clarity of exposition, from Table 2 we omit control variables and time-dummies, and report the coefficients of the hypothesized interactions with time-dummies (to reveal their pattern over time) only for the first 10 years a firm spends in the network. The 10-year cut-off was chosen because the average (and median) number of firm-year observations in the data is 9. Following that, we present a Chow test which tests the equality of respective coefficients. Results of the full models are available from the authors.

Hypothesis 4a proposed that the positive association between a firm's initial partners' prominence and the firm's status will diminish over time. Model 5 in Table 2 below shows the coefficients of the initial partners' prominence and the respective year-dummy interaction terms, for the first 10 years the firm remains a member of the network.

All the interaction terms of initial partners' prominence and the respective year-dummies are negative and significant, and overall demonstrate a decreasing trend². Moreover, the Chow test ($\chi^2(23) = 234.10$, $p < 0.001$), suggests that the influence of a firm's initial partners' prominence on the firm's status is significantly different from one year to the next. In Figure 2 we illustrate these results, where each line represents the influence of a firm's initial partners' prominence on the firm's status for a consecutive year the firm spends as a network member. For the purpose of clarity, the figure shows the influence of a firm's initial partners' prominence on the VCF's status for the first 9 years of firm's network membership. The plot in Figure 2 suggests that the firms with high initial partners' prominence will have a higher status in the network, but that this effect will decrease for each subsequent year that the firm remains a member in the network. Overall, the plot in Figure 2 and the Chow test support hypothesis 4a.

In hypothesis 4b, we proposed that the positive association between a firm's initial structural embeddedness and the firm's status will diminish over time. Model 6 in Table 2 reports the obtained coefficients and the test of their equality. Again, all the interaction terms' coefficients are significant and overall reveal a decreasing trend of a firm's structural embeddedness' influence on the firm's status over time. The Chow test confirms that the coefficients are not mutually equal ($\chi^2(23) = 320.16$, $p < 0.001$), implying that the influence of a firm's initial structural embeddedness on

the firm's status changes significantly over time. The obtained coefficients were used to generate the plot in Figure 3.

The decreasing slopes of the lines in Figure 3 suggest that the positive influence of a firm's initial structural embeddedness on the firm's status will diminish over time. Together, the Chow test and the plotted results in Figure 3 give support to hypothesis 4b.

DISCUSSION

Using social network theory, this research was set to contribute to the existing imprinting literature by highlighting the social context and the importance of the initial network relationships for the development of a firm's status. While numerous studies have examined the direct privileges of network status, this study shows that access to such privileges may be in part determined already in the early days when the young organizations enter the industry network.

The significant findings for the direct effects of a firm's initial partners' prominence confirmed that the initial interorganizational relationships do help to discriminate among the firms based on their socio-structural and relational attributes in the year of network entry (Gulati & Gargiulo, 1999) but more importantly, have an enduring impact in shaping the firm's status. The important implication of the first hypothesis is that the impact of a firm's prominent partners extends beyond the economic short term benefits on its performance (Stuart et al., 1999) into positioning the firm in the social domain.

The results also confirmed that the firms that enter the industry network by forming partnerships with a closely knit group of network incumbents experience a positive imprinting influence on their status. This result contributes to the ongoing debate between the structural hole (Burt 1992) and closure forms of social capital (Coleman 1988), and opens up new arenas of inquiry in understanding the contingent benefits of structural embeddedness (Burt, 1998).

Current literature offers two distinct arguments for how a sparse network may contribute to a firm's status. One argument is that the firm in the sparse network has access to non-redundant information which may be seen as a valuable resource desired by potential partners of high status (Shipilov & Li, 2008). Alternatively, other work argues that the disconnected networks benefit the firm's status because they enhance the reach of the signals sent from the focal firm (Tortoriello, et al., 2004). In contrast to our results, both studies found that the firms with sparse ego-networks achieved higher status. We believe that the difference in results can be explained by two considerations. First, the cited studies focus on established network incumbent firms, whereas we focus on the newcomers to the network. As opposed to incumbent firms, the newcomers still experience the liabilities of newness, and lack observable characteristics of quality (Bae & Gargiulo, 2003). Thus, while the established firms -- which already accumulated internal attributes of quality -- may benefit from the wider distribution of such information through sparse networks (Tortoriello et al., 2004), the newcomer unlikely enjoys the same benefits of sparse networks, as the firm does not have such signals to begin with.

Second, research on benefits of sparse networks for the firm's status focuses more on the function of networks as "pipes" transmitting information and does not consider that occupying a certain position in the network represents a signal in itself -- or a "prism" through which an actor is judged (Podolny 2001). More specifically, while the pro-brokering arguments focus on the redundancy of information flow to the firm (Shipilov & Li, 2008), or *about* the firm (Tortoriello et al. 2004) through network "pipes" -- these arguments do not acknowledge that a firm's structural

embeddedness may represent a *signal in itself*, through the “prism” function. In line with the latter, the newcomers embedded in sparse networks will likely be labeled as “brokers” rather than “collaborative players”, which may be at odds with their newness in the network. This is consistent with Burt (1998) found that one’s legitimacy affected one’s returns to social capital. The above discussion highlights that the rules and dynamics of network evolution discovered by looking at incumbent firms are not necessarily applicable to newcomers (Bae & Gargiulo 2003; Walker et al. 1997) and contributes to recent efforts to reconcile the differences between the two forms of social capital as not necessarily contradictory, but rather playing different roles, which are valuable for different populations or purposes (Burt 1998).

Lastly, we argued that the effect of initial social attributes may taper off over time, as more information on the firm becomes available (Jensen 2003). This argument was supported with both of the newcomer’s initial social attributes which indicates that the theorized diminishing returns to the initial social signals are quite robust. Although our findings are consistent with some prior research on the endurance of initial conditions (Bamford et al. 2000), Eisenhardt & Schoonhoven in their 1990 study find that the influence of the initial economic environmental conditions on a new venture’s growth amplifies over time. The contrasting findings point to the need to further examine the time-contingencies of the initial condition’s influence on various firm outcomes.

Like all research, this study suffers from certain limitations which must be acknowledged. First, although we positioned this research to understand the formation and changes of the firm’s imprinted status, its relationship to firm’s performance was only assumed. While prior literature acknowledged that especially for young companies, achieving social status is one of their ultimate aspirations (Larson, 1991) and that network status can be seen as “network performance” (Shipilov & Li, 2008), we encourage future research to address whether initial social factors indeed imprint different aspects of economic performance. Second, although choosing the VC context lent itself well to understanding the mechanisms of social imprinting and antecedents to the firm’s status, care should be taken in generalizing these results beyond the US VC industry. Likewise, we acknowledge that some VCFs may be omitted in our sample due to the chosen time frame (1980-2004), as they may have operated and died before 1980. Additionally, our results should be interpreted with caution due to a form of survivor bias which may have been introduced by excluding 81 firms with single observations from the analyses.

CONCLUSION

In studying newcomers and status imprinting, perhaps our strongest message is in highlighting the potent role that newcomers’ initial relationships have in their ability to access network resources in the long term. In that respect, we extend the established short term benefits of initial partnerships in mitigating liabilities of newness (Baum et al. 2000), to include insights on their enduring consequences for the newcomer’s status. At the same time, our findings inform practitioners to look beyond the explicit value of their initial dyadic collaborative efforts and realize the hidden value of future status which lurks from the socio-structural pattern of their first relationships.

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NOTES

1. Following Podolny (2001), we define industry network members by observing the pool of all investors in the VC industry, where a firm is included as a participant in the network-year if it made at least five venture-related investments in a specific round year.
2. The negative coefficients of initial partners' prominence and time dummies' interaction terms should be interpreted in relative terms: for example, a negative interaction coefficient in year 4 means that initial partners' prominence influence in the fourth year is smaller compared to the omitted first year baseline effect.

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Table 1: Random Effects GLS Regression of Initial Social Context on VCF Status ($t+1$)^a

	Model 1	Model 2	Model 3	Model 4
VCF Experience	0.023 (0.018)	0.003 (0.018)	0.001 (0.018)	-0.000 (0.018)
VCF Number of Funds in Year ^a	0.692*** (0.032)	0.702*** (0.032)	0.703*** (0.032)	0.700*** (0.032)
VCF Age at Network Entry	0.010 (0.061)	-0.007 (0.057)	-0.025 (0.057)	-0.033 (0.057)
Location: CA	0.753*** (0.094)	0.655*** (0.088)	0.656*** (0.088)	0.661*** (0.088)
Location: MA	0.494*** (0.144)	0.511*** (0.135)	0.468*** (0.136)	0.467*** (0.136)
Years Since Network Entry ^b	0.584*** (0.030)	0.524*** (0.030)	0.521*** (0.030)	0.521*** (0.030)
Industry Network Structural Differentiation	-0.369 (1.260)	-2.264* (1.217)	-1.865 (1.222)	-1.847 (1.222)
VCF IPO count	0.081*** (0.011)	0.081*** (0.011)	0.081*** (0.011)	0.081*** (0.011)
VCF Initial Partners' Prominence (IPP) ^b		2.345*** (0.283)	1.831*** (0.360)	1.611*** (0.370)
VCF Initial Structural Embeddedness ^b			0.387** (0.169)	0.565*** (0.181)
IPP x Initial Structural Embeddedness				2.680*** (1.010)
Constant	-3.265*** (0.476)	-3.223*** (0.454)	-3.410*** (0.459)	-3.522*** (0.461)
Chi square (d.f.)	2302.51*** (32)	2414.95*** (33)	2424.36*** (34)	2435.12*** (35)
Δ Wald Chi Square (Δ d.f.)		112.44***(1)	9.41*** (1)	10.76*** (1)

*** p<0.001, ** p<0.05, * p<0.1; ^a log linear transformation; ^b square root transformation; ^c variable is scaled by 1/100. Note: year dummy effects are included in estimation, but are not shown. Standard errors in parentheses. All models have 411 VCFs and 3627 observations.

Figure 1

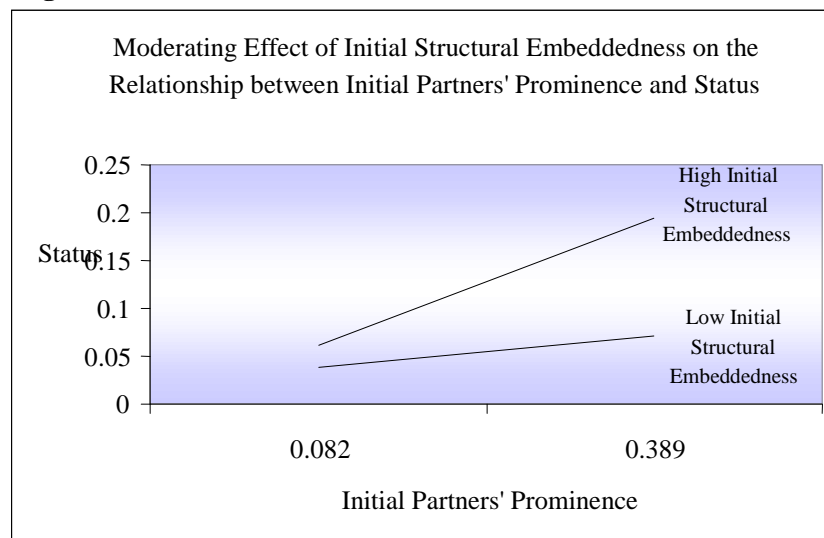


Table 2: Random Effects GLS estimates of Initial Partners' Prominence (Model 5) and Initial Structural Embeddedness (Model 6) on Status^b over Time (only selected coefficients shown)

	MODEL 5: INITIAL PARTNERS' PROMINENCE OVER TIME	MODEL 6: INITIAL STRUCTURAL EMBEDDEDNESS OVER TIME
<i>All control and time-dummy variables are included in both models, but omitted due to space limitations. Results consistent with those in Table 1</i>		
VCF Initial Partners' Prominence (IPP) ^a	4.53*** (0.37)	2.61*** (0.31)
VCF Initial Structural Embeddedness (ISE) ^a	0.38** (0.14)	1.32*** (0.17)
Year-in-network Dummy (VCF's 2 nd year in network)	0.58*** (0.05)	0.62*** (0.05)
Year-in-network Dummy (VCF's 3 rd year in network)	0.82*** (0.06)	0.89*** (0.05)
Year-in-network Dummy (VCF's 4 th year in network)	0.95*** (0.06)	1.04*** (0.06)
Year-in-network Dummy (VCF's 5 th year in network)	1.01*** (0.07)	1.11*** (0.07)
Year-in-network Dummy (VCF's 6 th year in network)	0.87*** (0.07)	0.97*** (0.07)
Year-in-network Dummy (VCF's 7 th year in network)	0.82*** (0.08)	0.92*** (0.08)
Year-in-network Dummy (VCF's 8 th year in network)	0.76*** (0.09)	0.85*** (0.08)
Year-in-network Dummy (VCF's 9 th year in network)	0.69*** (0.09)	0.79*** (0.09)
Year-in-network Dummy (VCF's 10 th year in network)	0.50*** (0.11)	0.58*** (0.1)
<i>.... (further dummies omitted due to space limitations)</i>		
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 2 nd year in network)	-0.97** (0.33)	-0.39** (0.16)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 3 rd year in network)	-1.44*** (0.33)	-0.63*** (0.16)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 4 th year in network)	-1.91*** (0.34)	-0.81*** (0.16)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 5 th year in network)	-2.35*** (0.35)	-1.03*** (0.17)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 6 th year in network)	-2.54*** (0.36)	-1.20*** (0.17)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 7 th year in network)	-2.49*** (0.37)	-1.15*** (0.18)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 8 th year in network)	-2.38*** (0.38)	-1.27*** (0.18)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 9 th year in network)	-3.12*** (0.39)	-1.42*** (0.19)
IPP (Model 5) or ISE (Model 6) x Year-in-network Dummy (VCF's 10 th year in network)	-2.86*** (0.41)	-1.57** (0.19)
<i>..... (further interactions omitted due to space limitations)</i>		
Constant	-6.14*** (0.42)	-5.49*** (0.41)
Degrees of Freedom	81	81
Chi square	3740.60***	3924.00***
Chow Test Results (Test of equality of interaction coefficients)	IPP x time-dummy coefficients: $\chi^2(23) = 234.10***$	ISE x time-dummy coefficients: $\chi^2(23) = 320.16***$
*** p<0.001, ** p<0.05, * p<0.1; ^a square root transformation; ^b log linear transformation; Note: dummy year effects included in estimation, but not shown. Standard errors in parentheses		

Figure 2

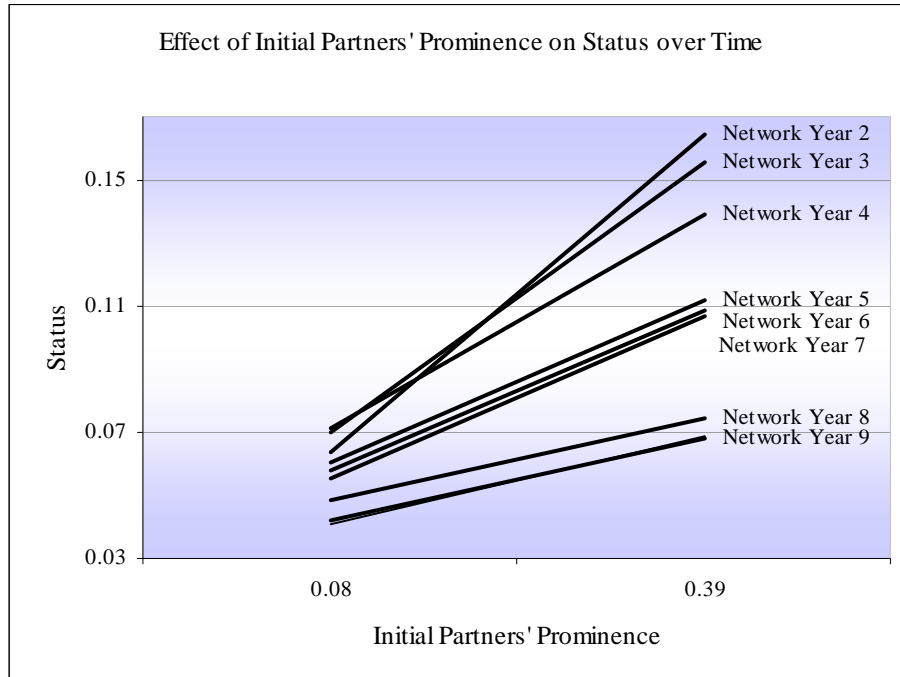


Figure 3

