

**Economic Action Does Not Take Place in a Vacuum: Understanding Cisco's Acquisition and Development Strategy\***

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Typically, economists and finance researchers have considered corporate acquisitions as arm's length transactions consummated in a relatively perfect market for corporate control, an appealing story no doubt, but it consigns the real world difficulties of managing the acquisition process into a black box. The key to making a successful acquisition does not begin with strategy and end with integration, rather it begins with understanding and participating in the external ecosystem and ends with managing the internal dynamics by which the newly acquired firm will be integrated. This paper finds that traditional "economistic" perspectives ignore the social and organizational dimensions within which the acquisition process is embedded. In tandem with the economist's erasure of the social; the temporal and processual dimensions were ignored. Put differently, acquisitions are treated as point-in-time events occurring in an environment that operates like the stock market in which corporate control, organizational knowledge, and employee fealty is transferred as seamlessly as stock shares. These assumptions ignore the social, temporal, and processual dimensions so critical for explaining acquisition success and failure.

Our assertion of the significance of the social and temporal dimensions does not diminish either the importance of strategic intent and planning or economic considerations. Rather it suggests that economic actions do not occur in a vacuum. Every aspect of the acquisition process has organizational considerations that cannot be separated from strategy and economics. In fast-changing, high-technology fields, very often the capabilities of the employees of the acquired firm are a significant, if not preponderant, component of a firm's value, thus their retention is vital for the preservation of the acquisition's value. Put differently, if these employees leave or their practice is significantly disrupted, then the acquisition is almost certain to fail. To complicate matters, the most valuable personnel are those that are the most mobile.

To bring the organizational and processual aspects of the acquisition process back in, Cisco is an ideal case, because it has been widely hailed by executives at other firms such as Craig Barrett (2001) of Intel and journalists (Byrne 1998) as having developed a successful process for using acquisitions as a central component in its overall competitive strategy. Cisco's success is especially remarkable as acquisitions in the information technology industries have a long history of failure. For example, Inkpen et al. (2000) found that European firms had difficulties integrating Silicon Valley computing and telecommunications acquisitions. In

contrast, Cisco Systems has survived and prospered through a strategy that has been termed “acquisition and development (A&D).” though, it should be noted Cisco is in a research-intensive industry and in fiscal year 2001 internal R&D was 17.6 percent of sales. When with a firm with a product line has been acquired, it is still necessary to continue R&D for the later generations. So A&D does not replace R&D.

To understand how remarkable this success has been, it is only necessary to examine Cisco’s competitors such as Nortel, Ericsson, and Lucent. They also were aggressive acquirers, but today they teeter on the brink of bankruptcy. Moreover, start-up competitors such as Ciena, Juniper Networks, and Extreme Networks are in extreme difficulties. Within this market maelstrom, Cisco stands out as the only firm with solid finances continuing to make acquisitions. Cisco’s story suggests that an important question is not simply what to acquire, but also how to acquire. It also demonstrates that variables such as price alone cannot explain success, as the prices paid for its acquisitions were comparable to the market.

More than any other high-technology firm in history, Cisco has built its dominant market position by acquisition. It has made many more acquisitions than its competitors, has had fewer failures (though, as we will show, it has experienced a number of failures), and had many successes. As of January 2001, it had acquired 71 firms for over \$34.5 billion (it has made four more since then), and effectively leveraged these acquisitions to become an industry leader. Without these acquisitions it could not have maintained a compounded annual growth in revenues and profits of over 30 percent from 1987 through 2000, and likely would have been out-flanked by start-ups.

This paper begins with a short review of the massive literature on mergers and acquisitions. This is followed by a description of our research methods. The third section describes the aggregate characteristics of the A&D strategy. This is followed by an evaluation of its record of success and failure. In this section, we compare, not only, Cisco’s relative performance versus its competitors, but also its success in employee retention and market share growth. The fifth section examines how the acquisition strategy evolved and how the early successes created a virtuous circle encouraging the firm to undertake yet further acquisitions. The sixth section describes the scale and dimensions of Cisco’s ecosystem involvement as a method for ensuring access to information about changes in technology and the marketplace. This section also outlines and

describes the mechanics of the acquisition process and demonstrates the importance of the acquisition process for ensuring the integration of the acquired firm and the retention of its employees. The discussion section generates testable hypotheses for future research. Finally, the conclusion reflects upon Cisco's management of the acquisition process.

### **Research regarding Acquisition Success**

Research on acquisition success has yielded contradictory results. On one hand, there is ample evidence that acquirers frequently experienced insignificant or even negative returns (e.g., Anand and Singh 1997; Hayward and Hambrick 1997; Ravenscraft and Scherer 1989). But others found positive returns (Jensen 1984). In drawing up the balance, Larsson and Finkelstein (1999: 3) concluded there has been no consensus on the effect on firm performance. The lack of consensus prompted the examination of a wide range of variables that might distinguish successes and failures, though unfortunately even the measures of success have been dubious, often based on immediate stock market reactions – an ephemeral variable at best.

Acquisition studies can be divided into two perspectives: The first perspective examines the pre-acquisition attributes of the two firms such as strategic fit, market structure, and even methods of payment for the acquisition. Pre-acquisition characteristics can be structural and include production and/or market-related economies of either scale (Bain 1959) or scope (Seth 1990), and the synergies that come from a broader product line, or from vertical economies (Williamson 1975). Benefits may also be derived from market power due to reduced competition (Scherer 1980). Finally, some research has concluded that larger acquisitions have a greater likelihood of success than smaller ones, because there is greater top management commitment, i.e., there is more at stake so there is greater management involvement (Shelton 1988; Hambrick and Cannella 1993).

Acquisitions have less frequently attracted the attention of organizational researchers. One line of research examines how social networks contribute to target identification (e.g., Haunschild et al. 1998; Palmer

et al 1995).<sup>1</sup> Their strength is that they highlight the role of social networks in target identification, but acquisition process variables are outside their scope of study, though it could be inferred that, if the firms share social affiliations, integration might be eased thereby increasing the probability of success. More explicitly, some studies have found that mergers between firms with similar cultures have higher success rates (Datta 1991: Larsson and Finkelstein 1999), however the measures used for culture such as bureaucratic or non-bureaucratic management-style are broad.

The second perspective focuses upon the post-transaction aspects of an acquisition. The argument here is that acquisition success is not simply the result of excellent target selection; effective integration is also critical. Post-acquisition processes have received little attention from finance and economics, and are largely the domain of organization theory and strategy. The post-acquisition studies are roughly divisible between those emphasizing socio-cultural features and those focussing on integration process variables. Acquisition failure has been associated with culture clashes (Nahavandi and Malekzadeh 1988), lack of communication, and acquired firm employee resistance (Larsson and Finkelstein 1999). These findings suggest human relations' issues are a dimension upon which an acquisition may flounder. Other studies have found that acquisition should be understood from a process perspective (Jemison and Sitkin 1986) in which methodologies used to conduct the acquisition and then undertake the integration affect its ultimate success (Hapeslagh and Jemison 1991). Contributing to this perspective, Cannella and Hambrick (1993) found that acquisition performance was negatively related to managerial and especially senior management turnover. They have also found that the greater the level of integration of the firms, the better the performance (see also Hambrick and Cannella 1993). Zollo and Singh (2002), employing concepts derived from Kogut and Zander's (1992) knowledge-based model of the firm, found that the tacit accumulation of acquisition experience did not impact the performance of acquirers, but that process codification positively influenced performance.

The lack of agreement about which variables are important and how to measure success is striking. Through our intensive study of one firm, we reconnect the dissociation of the strategic aspects of target

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<sup>1</sup> This could be inferred from works such as Fligstein (1990) or even earlier Domhoff (1967) where the uniformity of social backgrounds is demonstrated.

identification with the processual aspects of firm integration. In the process, we demonstrate that Cisco's acquisition practices are contingent upon its ecosystem involvement and utilization of the social networks and environment in which it is embedded (Granovetter 1985). Our results extend the findings of the social network perspective, but link it with the findings of those studying more process-oriented integration studies.

## **Methods**

This study is of a single firm, however Cisco's success and the desire of other firms to emulate it qualify it as a critical case study from which it is possible to inductively develop conclusions (Miles and Huberman 1994; Yin 1989; Eisenhardt 1989a). Data was gathered using two methodologies. First, we reviewed all the available written materials. These included articles from the popular press, books and various filings with U.S. Securities and Exchange Commission. Charles O'Reilly (1998, 2000) undertook a case study of Cisco's acquisition process, though he did not focus upon its ecosystem strategy and how it actively participated in its ecosystem. The popular books Cisco Unauthorized (Young 2001) and Making the Cisco Connection (Bunnell 2000) were another source of information. Second, we conducted two rounds of interviews with top-level Cisco and data communications equipment industry personnel. The first round conducted from 1995 to 1997 consisted of 49 interviews that were part of a more general project on the data communications equipment industry.<sup>2</sup> A number of these interviews focused on acquisition strategies and benefit from being conducted just as Cisco's acquisition strategy was coalescing. A second round of 15 interviews conducted in 2001 specifically focused on the acquisition process. All interviews were semi-structured, tape-recorded, and later transcribed. The individuals interviewed were identified through various industry contacts. All interviewees could choose to remain anonymous, and three chose this option. Also, we received access to certain internal documents and data on retention rates. Paul Johnson of Robertson Stevens provided information on product categories, market share, and category growth projections.<sup>3</sup>

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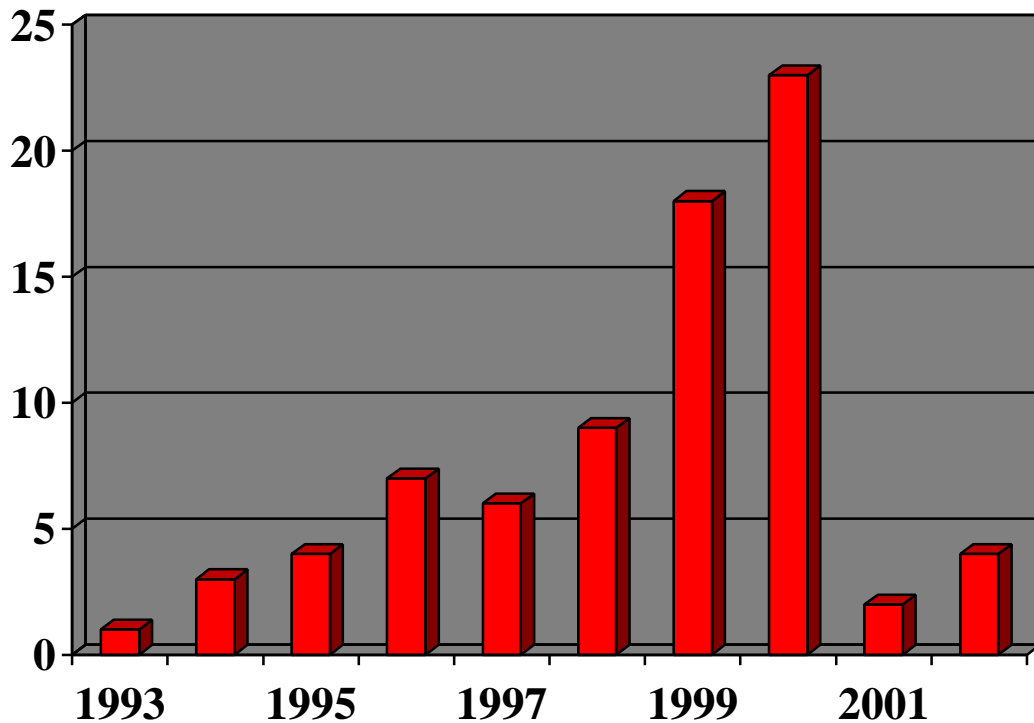
<sup>2</sup> This research is reported in von Burg (2001).

<sup>3</sup> All titles and positions in this paper refer to Cisco prior to its reorganization in September 2001.

### Acquisition Characteristics

As of January 1, 2001, Cisco had made 71 acquisitions (See Figure 1). The majority (68 percent) had one hundred or fewer employees and 34 percent had fewer than 50 employees. In terms of ownership, 61 (86 percent) were private firms and most of these were closely held. The other 10 (14 percent) were public firms or divisions of public firms. Of the 66 firms for which we were able to identify the status of their product, 43 (65 percent) were shipping prior to being acquired, the other 23 were still in development.

Figure 1: The Number of Cisco Acquisitions by Year



As Chambers indicated spatial proximity was an important determinant of the acquisition strategy. **Table 1** indicates, it has largely followed this dictum, as 44 percent of all acquired firms were located in Northern California. Moreover, the percentage of Northern California acquisitions was highest in the early

years when it might be hypothesized that it was learning how to acquire (69 percent from 1993 to 1996 and only 37 percent for 1999 and 2000). The second largest concentration (14%) was in the Boston area, which has the second largest concentration of venture capital-financed, high technology startups in the U.S. and has an entrepreneurial environment that most closely resembles that of Silicon Valley (Kenney and von Burg 1999). The final significant concentration was Israel, which also has a start-up culture resembling that of Silicon Valley (Autler 2000).

Table 1: The Location of Cisco's Acquisitions by Year\*

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Northern California <sup>1</sup>	1	1	4	4	3	3	5	9	2
Boston	0	1	0	2	0	1	3	3	0
Texas <sup>2</sup>	0	0	0	0	0	3	1	2	0
Israel	0	0	0	0	0	1	0	3	0
Other U.S. <sup>3</sup>	0	1	0	0	2	1	3	4	0
Non-U.S. <sup>4</sup>	0	1	0	1	0	0	3	3	0

\* There are 71 total acquisitions listed, because two acquisitions did not provide locations.  
<sup>1</sup> This includes the seven counties clustered in the San Francisco Bay Area.  
<sup>2</sup> This includes all of Texas and includes Dallas-Fort Worth, Austin and San Antonio.  
<sup>3</sup> These are scattered throughout the other states and only Virginia is home too more than one. Also, includes one in Southern California  
<sup>4</sup> These are scattered throughout Europe and Canada and no nation is home to more than one.

**Acquisition Success and Failure**

It is difficult to link an acquisition to corporate performance, not only because of measurement and access problems, but also because the goals may vary. For example, some acquisitions are undertaken to provide an end-to-end solution, even if the acquisition, in itself, was not profitable. Prior to examining two indicators that Cisco managers believe are highly correlated with acquisition success, retention and market share, we overview some more general indicators of success. Then in the final section, we examine acquisition failures.



## General Indicators

Since its inception the firm has faced two sets of rivals: start-up firms such as 3Com, Wellfleet, Synoptics etc. and established telecommunications equipment makers such as Lucent, Nortel, and Alcatel. Of the four major data communications rivals established in the 1980s, 3Com, Wellfleet, Ascend, and Synoptics, only 3Com remains independent, but had a market capitalization of \$2.5 billion in January 2002 compared to \$150 billion for Cisco. Among the originally larger telecommunications rivals, Lucent also followed the Cisco strategy of acquiring firms to enter new data communications equipment areas. For example, Lucent purchased Ascend Communications for \$20 billion. In 2001, Lucent recognized multibillion-dollar losses from failed acquisitions including Ascend Communications, and its total market capitalization had fallen to less than \$25 billion, and there were concerns about its survival. Another important competitor Nortel also joined the acquisition spree and purchased many firms. In the 3<sup>rd</sup> quarter 2001 Nortel recognized a special charge of over \$12 billion, a significant portion of which was due to the devaluation of three acquisitions, Alteon Websystems, Xros, and Qtera. In early 2002, Nortel's value had fallen to less than \$15 billion in 2002. Thus by 2002 it had overtaken what had been much larger established rivals and its fellow start-up rivals were no longer significant. These are strong aggregate indicators of success, and since acquisition was a significant component of its total corporate strategy, they indirectly provide confirmation of the strategy's success.

## Retention

Cisco believes retention is closely linked to success. The direction of causality is not fully specified. For example, Craig Griffin (2001), the Director of Corporate Development, explained: "If a deal is not succeeding then generally people leave. If a deal is very successful then people stick around. Generally [turnover] is strongly correlated [to success]." Since the assets of small high-technology start-ups are intellectual property and product familiarity, i.e., assets directly embodied in people turnover can directly devalue the acquisition. The success of this strategy is shown by the fact that in 2001 over 90 percent of the entire Crescendo

workforce were still with Cisco.<sup>4</sup> In fast moving, high technology industry retention is critical, but by no means certain. During the late 1990s Silicon Valley, employee turnover averaged 30 percent per annum (O'Reilly 2000: 50) and according to a 2000 Best Practices survey in the first year post-acquisition turnover is approximately 33 percent per annum (Thurm 2000). By these standards, retention rates were excellent.

Because of the high costs of an acquisition, the revenue from the existing product generation cannot provide a sufficiently large return to justify the acquisition, so the success of follow-on product generations is vital. For this reason retention of the engineers that developed the current generation is the key to the future generations. It is for this reason that top management monitors retention so carefully. John Chambers stated: "When we acquire a company, we aren't simply acquiring its current products, we're acquiring the next generation of products through its people. In the average acquisition, 40 to 80 percent of the top management and key engineers are gone in two years. By those metrics, most acquisitions fail (O'Reilly 2000: 58)." Mimi Gigoux (2001) described the interest, "The VP's and John Chambers ask for [retention figures] all the time, weekly, monthly, quarterly." Retention is particularly difficult because executives that have successfully sold a firm are recruitment targets for venture capitalists seeking entrepreneurs and managerial talent to staff their portfolio firms.

Using data Cisco provided, we calculated the total annual turnover for 44 acquisitions and the engineering turnover for 38 acquisitions.<sup>5</sup> On an annualized basis as of 2001, 100 percent of the acquisitions had an overall annual turnover rate under 10 percent (n = 44) and 95 percent had an annual turnover rate among engineers of under 10 percent. In terms of turnover, we examined all the acquisitions with a greater than 5 percent annualized turnover for either total employees or engineers to see if there were any commonalities (**Table 2**). The first commonality was that, with the exception of one firm, all high-turnover firms were acquired in 1998 or later. There are a number of possible explanations for this. The first explanation is that turnover is highest during the first year of acquisition. The second explanation does not exclude the first, but adds that during

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<sup>4</sup> One measure of the cost of an acquisition is the cost per acquired employee, which increased dramatically from roughly \$1.8 million per person prior to 1996 to an average of \$5.6 million in 2000.

<sup>5</sup> There were missing data points, most of which were firms that had been acquired for less than one year.

1999 and most of 2000 the labor market for experienced employees in the data communication equipment industry was torrid making job-hopping pervasive. Though our evidence is anecdotal and speculative, it is possible that many of these firms were, in the terminology of the period, “built to flip,” and the entrepreneurs upon selling their firms, resigned and took as many of their team as possible to start another firm. These explanations are only partial, but likely explain a portion of the turnover story.

Table 2: Characteristics of Firms with Highest Turnover Levels (Greater Than 5% for either Engineers or Total)

	Annual Total T/O	Annual Eng T/O	Category	Year Founded	Location	Price per Employee
Compatible Systems	6.71	2.11	R	2000	Boulder, CO	3.2
Geotel Communications	8.12	2.71	NGV	1999	Lowell, MA	6.2
Amteva Technologies	7.28	3.15	NGV	1999	Glenn Allen, VA	1.2
Cocom A/S	5.51	3.8	C	1999	Copenhagen, Denmark	1
Fibex Systems	5.46	4.13	DSL	1999	Petaluma, CA	
WheelGroup	6.41	6.06	SW	1998	San Antonio, TX	1.6
Sentient Networks	9.83	6.42	ATM	1999	Milpitas, CA	
Weblin Communications	9.4	7.55	SW	1999	Burlington, MA	2.7
Precept Software	8	8.7	R	1998	Palo Alto, CA	1.7
Altiga Networks	8.38	13.33	R	2000	Franklin, MA	7.5
Netsys Technologies	7.78	13.33	S	1996	Palo Alto, CA	1.6

(R = Routing, NGV = Next Generation Voice, C = Cable, DSL = DSL, ATM = Asynchronous Transfer Mode, SW = Software, S = Switching).

Source: Authors

Less executives were retained than were other employees, but from anecdotal information about other firms in the data communications field, Cisco performed very well. As of January 2001, 67 percent of CEO’s of Cisco acquisitions were still with the company (Cisco 2001: 18). Former CEOs led two of Cisco’s three lines of business. Charles Giancarlo, the founder and former CEO of Kalpana, managed Cisco’s Commercial Line of Business. Mario Mazzola, formerly of Crescendo, managed Enterprise Line of Business. Howard

Charney, the former founder and CEO of Grand Junction, was a Senior Vice President. Andreas Bechtolsheim, a founder of Sun Microsystems and then Granite Systems, continued as an executive after the purchase of Granite Systems. As of May 2001, eight Crescendo alumni were vice presidents or higher at Cisco. Four Senior Vice Presidents and 14 Vice Presidents came from the first 8 acquisitions.<sup>6</sup> We identified 35 vice presidents or higher recruited through acquisition.<sup>7</sup> Establishing the recruitment source of managers below the vice-president level was not possible, but acquisitions were very significant.

The retention record has been significantly better than the average in Silicon Valley; in terms of both total and engineering turnover. The retention of key personnel, exactly those individuals with the greatest number of other opportunities, was remarkable, though in 1998 and 1999 turnover increased especially from acquisitions that were not located in Silicon Valley.

### Market Share Growth

Market share growth is an important indicator of success, and in communications and computing industries it can be critical.<sup>8</sup> Moreover, given its approximately 60 percent profit margins, rapid market share growth especially when the market is also growing explosively results in enormous returns and justifies high acquisition prices. John Chambers defined Cisco's overall objectives, "to be No. 1, No. 2 or (not) compete; to have a 50 percent share in every market, as an objective; and never to enter a market where we can't get at least a 20 percent share right off the bat (Rifkin 1997)." So, the market share resulting from each deal is another success measure, though, it is difficult to be sure how much to attribute to internal development and the acquisition's contribution.

Cisco has twelve general product categories: Switching, Routing/IP/VPN, Network Management/Internet, Security Components, ATM, Token Ring, DSL/ISDN, Optical Platforms, Next Generation Voice, Cable CMTS, Wireless, and Content Delivery Devices. Next Generation Voice (11), Routing/IP/VPN (8) and

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<sup>6</sup> Author's compilation based on data provided by Cisco.

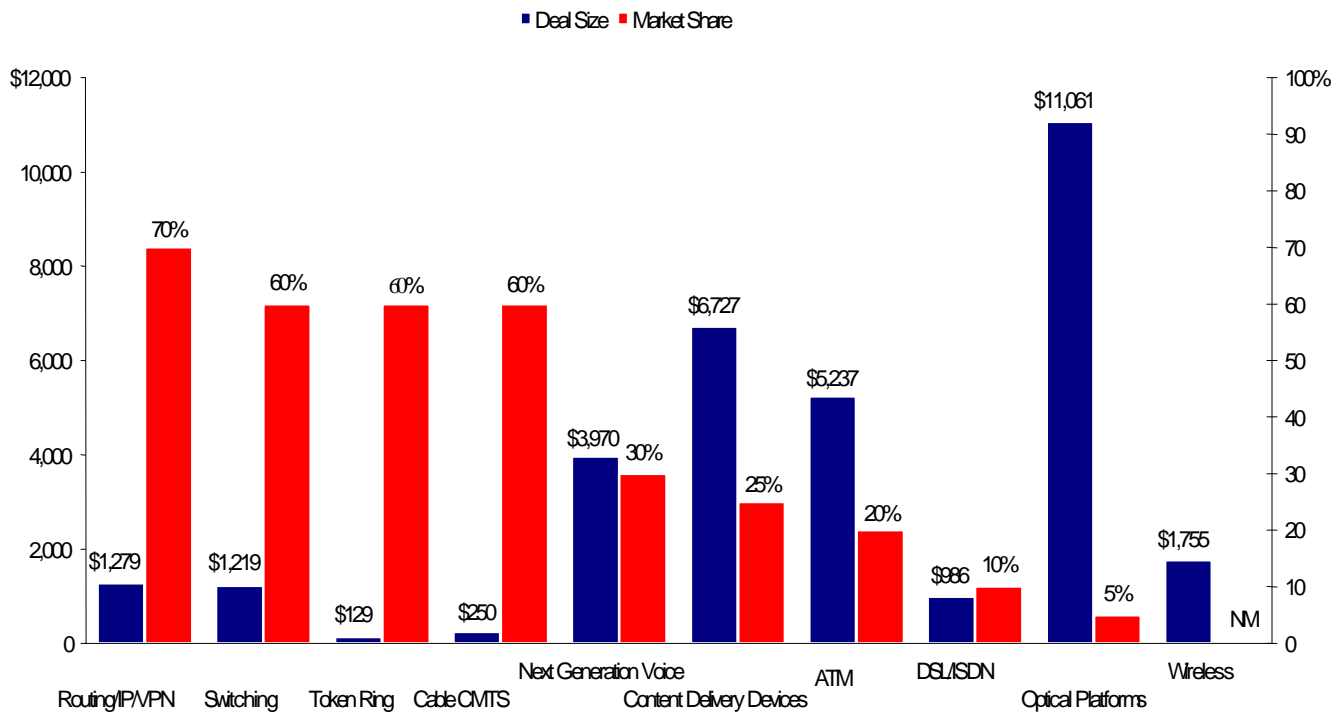
<sup>7</sup> This differs remarkably from many competitors. For example, among the 20 top executives at Lucent, not one had start-up experience (www.lucent.com 2002).

<sup>8</sup> See, the literature in economics on network externalities (e.g., Katz and Shapiro 1986).

DSL/ISDN (8) are the three areas in which it has been the most acquisitive. In general, the greater the aggregate deal count and the aggregate deal size, the more valuable the market can be assumed to be. From this perspective, the Optical Platforms category dwarfed the others accounting for 32.2 percent of total acquisition expenditures, and this is despite having made only seven acquisitions. Here, price was a direct function of the telecommunications bubble of the late 1990s. Optical Platforms, contains Cisco's most expensive and fourth most expensive acquisitions, Cerent (\$6.9 billion) and Pirelli Optical Systems (\$2.15 billion). Content Delivery Devices (\$6.7 billion) and ATM (\$5.2 billion) rate second and third in deal size rankings.

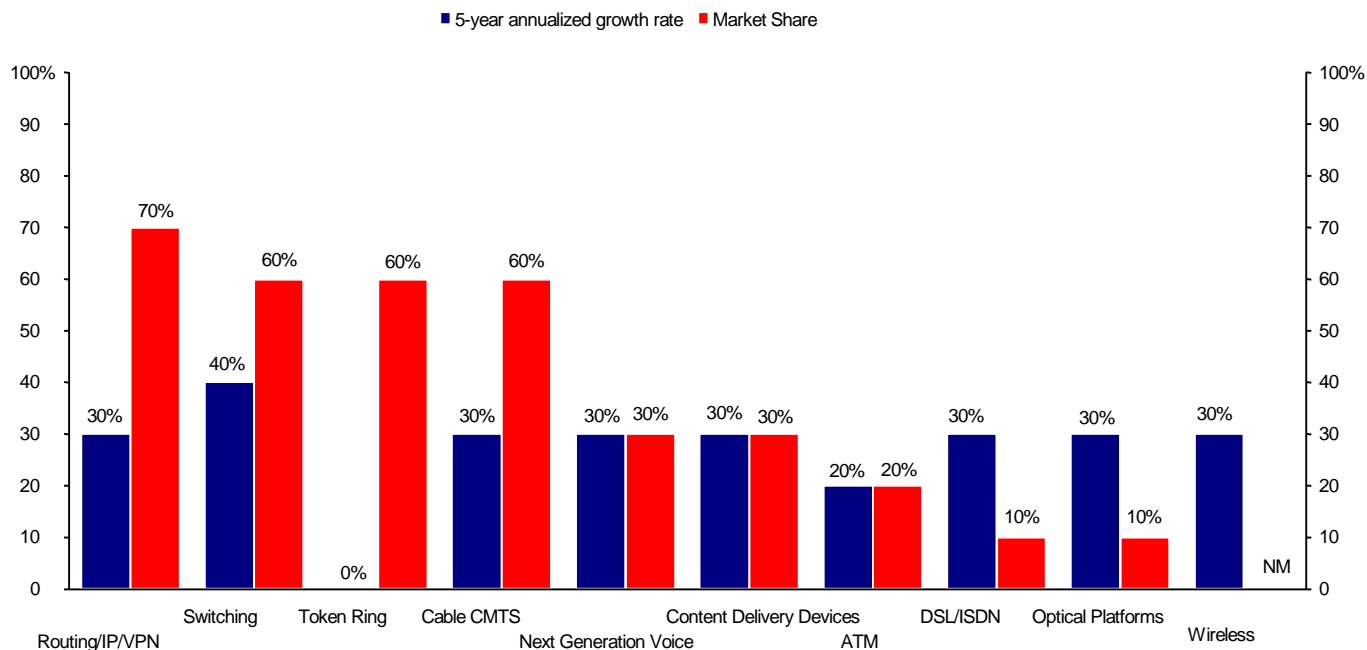
The amount invested and market share in each market category is shown in Figure 2. Security Components and Network Management/Internet categories are omitted, because it does not sell stand alone security and network management products. Cisco gained dominant market positions in the Routing/IP/VPN (this was Cisco's birthright), Switching, Token Ring, Cable CMTS, Next Generation Voice, Content Delivery, and ATM sectors. In three categories, DSL/ISDN, Optical Platforms and Wireless -- all industries with entrenched competitors -- Cisco has failed to capture 20 percent of the market. This is to say that 21 acquisitions, with an aggregate deal size of \$13.8 billion have not met their self-stated criteria of success. Despite significant investment in acquisitions in the Optical Platforms market, it has yet to gain meaningful market share. Though there is one important exception, namely in the metropolitan optical networks market, where the acquisition of Cerent, though expensive, has made it a market share leader (Business Week 2002). Not surprisingly, the greatest difficulties were experienced in segments boasting entrenched competitors.

Figure 2: The Value of Investments versus Market Share



Acquisitions as a methodology for purchasing R&D and market share growth assumes being able to identify areas of fast growth, select the correct target, and then gain market share quickly. **Figure 3** illustrates the growth rates in the markets and market share (these growth rates were prior to the 2001 telecom meltdown). According to Paul Johnson (2001), Robertson Stephens data communications equipment analyst, the DSL/ISDN, Optical Platforms, and Wireless markets were projected to grow 30 percent per year for the next five years. These three were the next fastest growing markets, behind switching, which was projected to grow at 40 percent per annum. What **Figures 2 and 3** indicate is that despite the acquisitions, it failed to develop significant market share in some of the fastest growing markets. On the other hand, significant market share was captured in two other high priority emerging markets, Next Generation Voice and Content Delivery Devices, both of which were areas without entrenched competition.

Figure 3 Networking Markets Growth Rates vs. Market Share



### Acquisition Failure

The definition of failure is always somewhat subjective, because even a failure can yield benefits even if it is no more than learning from a mistake. Despite the remarkable success of the A&D strategy, there have been a number of failures. This is not surprising given the difficulty any acquisition poses. In terms of research, identifying the failures was difficult, because we could not identify them. Therefore the main source of information was the press and SEC filings, but they rarely provide reasons for the failures. Thus this section is tentative, but is important because it illustrates the difficulties that even a successful acquirer can experience.

In the cases of Stratacom and Pirelli, Cisco violated its policy of buying small firms. Stratacom was purchased in 1996 for \$4.8 billion. It was a public firm and had approximately 1,400 employees. The

Stratacom purchase was the only way to rapidly enter the ATM switching market. The deal did facilitate entry, however there were difficulties. One of the most salient difficulties was the differing sales compensation schemes. This prompted a number of members of the Stratacom's sales team and the CEO Richard Mobley to leave. Mimi Gigoux (2001) acknowledged these difficulties, but believed, "It wasn't the size of the deal, it was the timing that threw us off." Despite these problems, in 2001, Cisco had 20 percent market share in the ATM area and turnover was well below 10 percent (3.07 percent for engineers and 2.62 percent total). In this case Cisco violated its strategy of purchasing small firms, but the deal provided an ATM offering and substantial market share.

The December 1999 purchase of Pirelli Optical Systems for \$2.15 billion was the greatest deviation from Chambers' principles. This fiber optics division of the Italian Pirelli industrial conglomerate, though it had U.S. operations, was headquartered in Italy, far from Cisco's headquarters not only in geographic terms, but also in cultural terms. Organizationally, Pirelli proved to be very hierarchical and decision-making was far slower than at Cisco. Pirelli did have customers, but it was not a market leader, and so significant market share was not acquired. Though Cisco would not confirm the success or failure of the acquisition, in mid 2001 the press reported that the Pirelli acquisition had been unsuccessful (Hardy 2001; Mehta 2001).

There have been problems with other acquisitions. By May 2001, Cisco had written off five acquisitions: the Richardson, Texas optics firm Monterey Networks, Silicon Valley wireless firm Clarity Networks, the Israeli ATM firm HyNEX, the DSL firm Maxcomm Technologies, and the unified messaging services firm Amteva. In the case of Monterey Networks, the product was late and not competitive, and in April 2000 the entire operation was shuttered. The Clarity and HyNEX product lines were discontinued in 2001 (ITworld.com 2001). The reasons were not turnover, but rather problems with either the products or markets. It is also possible that the dramatic acceleration in pace of acquisitions from 1998 to 2000 overloaded the ability to undertake adequate due diligence.

Despite the belief that retention is highly correlated with success, in optics, wireless, and DSL, even with good retention, in these fields Cisco has yet to become a leader. This failure can be attributed to three factors: The first factor is that prior to 1997 nearly all acquisitions were made in markets that were just emerging.



Therefore there were no entrenched competitors to be dislodged, so Cisco could leverage its complementary assets to occupy the market niche. As it entered markets with established competitors, this advantage was mitigated due to the strength of the incumbents. The second factor is that the new fields such as optics and wireless technologies differed from Cisco's competency in electronics and software. Also, these markets may differ in terms of product cycles, evaluation standards, and business cultures. So, even a sophisticated integration process can be stymied by market-specific differences.<sup>9</sup> The third explanation suggested by Chambers in a 2002 Business Week article is that during the telecommunications bubble, because stock values were increasing so quickly, there was a perceived need to acquire firms that had not yet shipped a product, thus it had to gamble that the product would actually come to fruition – and a number did not. We were able to establish the product status for 66 of the acquisitions and we found that 44 (67 percent) of its acquisitions were shipping their product when purchased. From 1993 to 1996, of the 13 acquisitions, 12 (92 percent) were shipping their product and only one (8 percent) was not. However, from 1997 through 2000, of the 53 acquisitions, only 32 (60 percent) were shipping their product. Whereas until about 1998, Cisco could wait until a start-up exhibited signs of market success thereby reducing risk, during the froth of the Internet Bubble it felt compelled to purchase firms earlier in their life cycle.

Not every acquisition has been successful, and during the later stages of the Internet Bubble there was a higher failure rate. There may also have been a larger percentage of failures in sectors further from its core competency in electronic data communications. Success was also lower in fields with entrenched competitors as was the case in the Pirelli acquisition. As in the case of all R&D strategies, A&D also had failures.

### **The Genesis of the Acquisition Strategy**

Cisco was established in 1984 to build and sell routers and, by any measure, it was hugely successful (Young 2001; Bunnell 2000; Valentine 1995). Its industry, data communications equipment, experienced remarkably rapid technical change even while the market exploded in size. The router, a computer used for directing data on a network, was a comparatively expensive device, and there was continuing experimentation

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<sup>9</sup> This can be explained by the communities of practice perspective, which suggests that knowledge and capability will be concentrated in specific communities an outsider may not be able to function as well in such

to develop less expensive, easier to use, and/or faster solutions. In the early 1990s, the device that attracted the greatest attention was the switch (another type of computer for directing data on a network), which, though less functional than a router, was faster and generally less expensive.. It soon became clear that switching would be a significant new market and might prove to be a disruptive technology (Christensen 1997). This was only one example as, throughout the 1990s, due to the market opportunities and the willingness of venture capitalists to fund start-ups, managers and executives resigned from existing firms to establish startups exploring cheaper and more effective networking products.

As is often the case, the established data communications equipment firms were slow to develop switches. The dilemma was how to enter the switching segment. Given that the length of time between product generations were only six to eighteen months, management decided that it could not be late to the market. John Morgridge (1995), ex-CEO and current chairman of the board, described the reason for the switching acquisitions, “we realized that there was demand, but we were late with the product. [Our products] did not come to fruition the way that we had hoped during the time that we had hoped, therefore Crescendo [Cisco's first acquisition] represented a critical acquisition for us.” Ronald Schmidt (1995), a founder and the chief technical officer of one of Cisco's competitors at that time described the situation, "Cisco basically neglected switching and found themselves out on a limb. So they went out and bought switching companies. 3Com had no switching products so they went out and bought a bunch of companies. We [Synoptics] have done a bad job on executing our switching strategy, so we went out and bought Centillion. The major companies [were] filling holes in their technological and product portfolio."<sup>10</sup>

When Cisco first began making acquisitions it appeared to place greater emphasis on the product acquired than on the employees absorbed. At the time, retention was thought to be desirable, but does not appear to have been a salient concern. In reality, the first acquisition, Crescendo Communications, was part of a larger process of reorienting Cisco toward switching (Valentine 1995). Crescendo Communications was located in Sunnyvale, California with 60 employees, and had no manufacturing facilities and little overhead. It had just

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communities. See Brown and Duguid (2000).

begun shipping a switch that could immediately be integrated into Cisco's product line. The late 1993 Crescendo acquisition cost \$97 million, and by fiscal 2000 the switching business unit, though the beneficiary of further acquisitions, generated more than \$7.4 billion in annual revenues (Wachovia Securities 2000). Interestingly, this critical first transaction was not arm's length, but rather was embedded in a social network. Donald Valentine of Sequoia Capital, which was Cisco's first investor, was a lead investor in Crescendo. Moreover, one of Cisco's largest customers, Boeing Corporation, was considering buying Crescendo switches (Bunnell 2000).<sup>11</sup> This initial acquisition set many of the initial conditions. Notice how the ecosystem provided information on the product and the management team.

The current acquisition and integration strategy did not spring forth fully formed, rather it evolved in a path dependent manner and the early acquisitions were critical for creating the future path (David 1985; Garud and Karnoe 2001). When initially proposed, the idea of acquiring firms faced internal opposition. Cisco's board was hesitant, and there was resistance from the internal engineering team. Don Valentine (2001) explained: "Employees as a generalization do not like acquisitions because [the] engineers say 'hey we can do that, there is nothing special about that,' [but] we are doing [the acquisitions] not because we don't think [they] can, we are doing it because we do not think [they] have the time."

Given that all of the major data communications equipment firms acquired switching expertise, market success would be based upon the quality of the firm purchased, successful integration, and rapid next generation product introduction. John Morgridge (1995) described the situation, "at the time, we made our first acquisition we had a wonderful asset in the form of a channel to sell, install, and service products for the global market. As a result, there was tremendous leverage in acquiring a product that met the market requirement and to put it through our channels. We can take [a new product] and leverage it very dramatically. To a large degree, that has been our strategy with most acquisitions." In other words, complementary assets in sales and support could be leveraged to make the acquisition a success.

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<sup>10</sup> Synoptics merged with WellFleet in 1993 in a stock transaction worth \$2.7 billion to form Bay Networks. Bay Networks was purchased by Nortel in 1998 for \$9.1 billion.

<sup>11</sup> Of the 71 acquisitions, Sequoia had investments in 12 (Venture Economics 2001). My thanks to Vibha Gaba for providing this information.

The strength of the sales and support functions affects an acquisition candidate in two ways. To the engineers in a start-up these strengths are an incentive, because they can speed the adoption of the product they have created. This is not only gratifying, but also because the target firms' personnel receive significant amounts of Cisco stock options, they will benefit from the sales growth. There is also an implicit threat. Should a firm refuse to be acquired at a fair price, Cisco will almost certainly acquire a rival whose product will then benefit from Cisco sales and service strength. In other words, Cisco will become a competitor.

The actual metamorphosis from a decision to purchase a couple of switching firms to "follow" the market into a conscious strategy of using acquisitions to expand the company into new areas and, in effect, as an R&D strategy is murky. Knowing the long record of failed acquisitions in Silicon Valley, Donald Valentine (2001), who was then chairman of the board, described their belief that acquisitions would be more manageable if they purchased small start-ups predominantly made up of engineers, rather than firms of nearly equal size. In other words, they would buy small start-ups that they believed would be amenable, indeed expecting major changes to occur when the firm went public or was acquired.

Cisco's methodology was not fully formed at the time of the 1993 Crescendo acquisition. The success of the Crescendo deal prompted Chambers (1996) to make acquisitions an integral part of Cisco's strategy. In 1994 a manager was hired to focus exclusively upon acquisitions as a business process. Quite naturally, the hiring of an executive to focus on acquisitions reinforced it as a business strategy. However, in October 1994 when Mimi Gigoux joined the human resources team through the Kalpana acquisition, there was still no formal integration process. It was only in 1997 as the pace increased to six acquisitions per year that the HR vice president appointed a full-time acquisition manager. In late 1998, a business integration unit was established to assist in directing the integration process, and by 2001 the HR team devoted to acquisitions had grown to 21 persons.

In 1997 John Chambers, the Cisco CEO, articulated five guidelines by which to judge the desirability of potential acquisitions (Rifkin 1997):

1. Both firms must share similar visions “about where the industry is going [and] what role each company wants to play in the industry. So you have to look at the visions of both companies and if they are dramatically different, you should back away.”
2. The acquisition must “produce quick wins for [the] shareholders.”
3. There must be “long-term wins for all four constituencies -- shareholders, employees, customers, and business partners.”
4. “The chemistry (between the companies) has to be right.” He thought that this was difficult to define, but involved both parties being comfortable with their counterparts.
5. Geographic proximity is important. If the newly acquired firm is located close to Cisco, then interaction will be easier.

Examining these strategic principles regarding when and what to acquire, what is striking is not that the “economics” need to be right, but rather that three principles relate to social and cultural issues. The vice president of BD Ammar Hanafi described it this way, “Our model is that every company that we acquire becomes part of Cisco. We really focus on doing a good job in assessing the cultural fit early on, because we don’t get a second chance (Hanafi 2000).” Not only is there remarkable attention to the social, organizational, and human resource aspects of acquisitions, but also a recognition that each acquisition has a path dependent trajectory. Thus, the key issue was not pricing, because the value inherent in the acquired firm cannot be realized without explicitly considering the social and cultural issues.

The historical record suggests that Cisco only gradually became aware of the fact that acquisition was a form of recruitment. This occurred after the first acquisitions when it became clear that acquisitions were bringing in managers and executives that were corporate leaders. Most important, Cisco’s management saw these individuals not as potential rivals, but as contributors who could help build the firm. These leaders were charged with ensuring the development of later product generations. Moreover, by retaining the leaders it was able to retain the other personnel.

There was another benefit; the retained executives illustrated to the management teams at later target firms that there were opportunities for newly integrated managers. They could be assured that they would not

necessarily be subordinated to current employees. Also, those that had experienced a prior acquisition could counsel those considering being acquired. In fact, it has established a “buddy” system to help with the transition. In this system, a current employee is paired with an equivalent manager in the newly acquired firm. For these reasons, effective retention became a cornerstone of the A&D model.

Acquisitions came to be understood as a business process, not an event. There was an element of path dependence involved, in the sense that the early successes encouraged further acquisitions and internal resistance dissipated. A virtuous circle ensued, as the acquisition strategy succeeded, Cisco became more committed to acquisition, and it also sought to perfect the process. For example, an in-house acquisition team was established to rationalize the process. This team saw the process as social and organizational, since one critical measure of success was the ability to retain the human resources. What emerged was that effective management of the process became a core competency and competitive weapon (Teece et al. 1997).

### **The Acquisition Process -- Inside the Black Box**

As acquisition became the core expansion strategy, not surprisingly, the process was routinized. In fact, the appearance of organization, routine, and “professionalism” reassures the target firm, thereby contributing to a smooth process.<sup>12</sup> So while confirming Zollo and Singh’s (2002) findings that having explicit written acquisition policies and processes contributed significantly to success, we extend them by highlighting the planned, but “softer” and more socio-processual, aspects that affect retention. Of course, explicit documentation is important and Cisco even has an integration website, but these materials are only important when they are understood as expressions of socio-process – the finest websites and explicit documentation is of little real importance when not backed up by practice.

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<sup>12</sup> This is not a trivial consideration. If the individuals in the firm being acquired have no respect for the acquiring organization, they are more likely to leave.

## Ecosystem Involvement

The decision to eschew the traditional R&D laboratory approach favored by its established competitors meant that it had to develop another mechanism for providing it with the future products. It decided that these could be found in the start-up ecosystem from which it had emerged less than a decade earlier. Cisco evolved a portfolio of tactics, formal and informal, to tap the knowledge and capabilities that are constantly emerging in its ecosystem. Some of these were clearly conscious organizational decisions such as creating a Business Development Group to monitor the environment. But, as important, are the informal mechanisms that Cisco evolved. These informal mechanisms are based on the past histories and qualities of its managers that enable them to participate in their environment in a very deep way. These then become part of the multiplex linkages embedding Cisco in its ecosystem. This can be thought of as a “high surface area” strategy, which operates to garner as much information as possible about relevant emerging technologies.<sup>13</sup>

A unique measure for participation was to permit its executives and managers, many of whom had entrepreneurial histories, to remain actively embedded in their previous networks. In other words, to not succumb to the myopia that often afflicts large, very successful firms. As former entrepreneurs and Cisco executives, they have great credibility and are often contacted as references, advisors, and even investors in start-ups.<sup>14</sup> Numerous Cisco executives serve on the firms’ boards of directors or advisory boards of start-up and venture capital. As an example, Peter Solvik a senior vice president serves in some capacity at six start-ups and a venture capital fund.<sup>15</sup> Such service embeds these executives in a rich flow of information about new firms and technologies that might become future acquisitions.<sup>16</sup> Not only is explicit information gathered, but even more important is the tacit knowledge about the individuals making up a management team.

The sales force is another vital source of information about new developments. One reason for this is that Cisco has always been strong among sophisticated users such as universities, national laboratories, and

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<sup>13</sup> We thank Andrew Hargadon for this formulation.

<sup>14</sup> Moreover, their presence at Cisco validates to the ecosystem the viability of selling a start-up to Cisco.

<sup>15</sup> This was confirmed by entering Peter Solvik into the Google search function and counting the results.

<sup>16</sup> This strategy can create problems. For example, in July 2002, a high-level manager, Robert Gordon, was convicted of fraud for convincing Cisco to invest in a Cisco-affiliated start-up, which netted him a \$10 million profit (Reuters.com 2002).

engineering-intensive firms that often explore new applications and technologies. These lead users help identify not only innovative technologies, but also the firms pioneering them. When a customer exhibits interest in a product that Cisco cannot supply, the firm producing it is investigated. For example, in 1998 Cisco acquired the firm Netspeed, because US West wanted to install its DSL technology (Stauffer 2000). Lead users' purchasing patterns provide early indicators of possible future market directions. This strategy permutates von Hippel's (1988) user-led innovation to user-led identification of existing innovations elsewhere.

At the organizational level, each Business Unit (BU) is charged with tracking and assessing new technologies that may affect their market. These efforts are formalized in the annual business plan each BU must prepare, which, among other things, must identify any emerging technologies that may affect their business and suggest a preliminary make-or-buy recommendation (Gigoux 2001). This ensures that BU personnel are constantly the environment for future competitors.

At the corporate staff level, there is a Business Development Group (BDG) that has responsibility for ecosystem involvement, including venture capital investing, strategic alliances, and acquisitions. It operates as the central repository for information about the ecosystem. Through its relationships with venture capitalists, Wall Street analysts, industry insiders, and its own venture investments, the BD team keeps track of private firms and emerging markets. The BDG's investments in startups are important because 25 percent of all acquisitions have been portfolio firms.<sup>17</sup> Curiously, despite the number and seeming advantages of being an investor prior to acquisition there are pitfalls. Craig Griffin (2001) the Director of BD asserts qualms about investing in areas that Cisco may enter, because "there are multiple choices [of companies in an area]. We want to get lots of access to them when we do acquisition due diligence. If we invest in one we increase our information about them and decrease the information about everyone else, because everyone else thinks we are aligned with one player. Therefore they are less willing to work with us. We actually hurt our investment

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<sup>17</sup> Authors' calculations based on VentureSource database. [www.venturesource.com](http://www.venturesource.com). An investment does not necessarily presage acquisition. For example, in 1993 Cisco made a \$2.7 million early round investment in Cascade Communications. In 1997 Ascend Communications, a competitor, purchased Cascade for \$3.7 billion.



decision net-net if we do an investment in one party.” To mitigate this problem, in firms being considered for possible acquisition, Cisco usually invests in later funding rounds.<sup>18</sup>

In some cases a technology is identified as being important but the BDG is not able to identify suitable acquisition candidates. For these cases, Cisco pioneered a strategy of creating a "sponsored" start-up, or what McJunkin and Reynders (2000) called a "spin-in." An example of this was Ardent, which two Cisco employees and a serial entrepreneur established. Cisco guaranteed it would purchase Ardent if it met a set of functional requirements and milestones. Cisco retained 32 percent of the equity while the founders and their employees owned over 55 percent of the stock. Sequoia Capital also invested, receiving 11 percent of the firm. Ardent met its conditions and it was acquired and the firm was spun-in (McJunkin and Reynders 2000). Having decided upon acquisition as a core strategy, Cisco experimented with organizational methodologies for “independent” product development start-ups that were meant to lead into a spin-in. Target identification in the Ardent case meant assisting in target construction.

The acquisition strategy was not fully formed in 1993 and neither was the involvement methodology. As Cisco grew, it increasingly competed with the large telecommunications equipment suppliers such as Lucent and Nortel that drew upon their high-powered R&D laboratories to provide the seeds for new products.<sup>19</sup> Without such facilities and doubting their cost-effectiveness, Cisco depended upon the ecosystem for innovations. The effectiveness of its involvement was predicated upon the ability of its executives to be accepted as credible, embedded participants in the various ecosystems within which the firm operates. Since it has adopted acquisition as a central strategy and it has become a competency, Cisco now depends upon a vibrant and fruitful ecosystem.

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<sup>18</sup> More frequently, early-stage investments are made in businesses that Cisco wants to understand and monitor, but probably will not enter, e.g., semiconductors and optical components.

## Undertaking the Acquisition

### 1. Target Identification

When a missing product or new market opportunity is identified, a dialogue between the business units to confirm the need for the technology is initiated. Initially, this is informal and considers whether the product should be developed internally or via acquisition. If it is determined that acquisition is the preferable strategy, then target specifications are articulated. Using existing internal information and proactive market study a list of candidate acquisitions are drawn up. In established markets this is not too difficult as Cisco is well acquainted with nearly all of the key firms. It is more difficult when entering areas where the company has less experience and knowledge such as in optics, wireless, and DSL; all of which represented new markets and new technologies that had to be understood to identify appropriate acquisition targets.

Target identification includes considering the proper administrative location for the target firm. For product extensions that will be integrated into a BU this is relatively straightforward. However, in cases in which Cisco is new to the market, a long-term strategic plan must be developed. For example, for the decision to enter the optical switching area, “[the BDG met] with marketing, sales, and engineering across 10 business units and 3 lines of business to get a road map of where they [were], the next generation products...thereby driving the conversation (Ruh 2001).” In these larger strategic initiatives, the BD team facilitates dialogue between each of the different BUs to arrive at a coherent strategy.<sup>20</sup>

Synchronically with target identification, an executive sponsor who will be responsible for assuring that the acquisition and subsequent integration process receives executive-level attention is recruited.<sup>21</sup> Frequently, the executive sponsor is the individual in the BU who identified the particular technology as significant, or a BU executive intending to use the technology or integrate the product into their unit. When an acquisition

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<sup>19</sup> Cisco’s success has dire implications for the large telecommunications R&D laboratories that undergird many nation’s national systems of innovation (Lundvall 1992; Nelson 1993; Rosenbloom and Spencer 1996).

<sup>20</sup> This is obviously a stylized account. The process assuredly was more chaotic with stages overlapping, debates about markets, whether to undertake the effort internally, and even the actual nature of the environment and technological trajectory.

<sup>21</sup> This is a vital role, because, as many studies show, after the deal is completed the acquiring management team shifts attention to other issues leaving the newly acquired firm to flounder and often fail.

represents a part of a new strategic initiative for which there is no clear ownership, the BD team finds the most logical executive to be the sponsor soliciting their buy-in and willingness to house the particular acquisition in their BU. Whereas most of the acquisitions literature treats target identification as a process confined to scanning the external environment, the internal discussions aimed at identifying a sponsor etc. are equally important.

## 2. Due Diligence

The due diligence process is meant to establish the true conditions of the target firm. Very often, acquirers conceive of this as an assessment of the physical and intellectual property, i.e., the economic assets. However, because Cisco is considering the future value of the firm, the process examines the organizational health of the firm, the goals and aspirations of its key employees, and its ability to function as a part of a much larger firm. These are vital considerations because the key assets are not only simply the skilled individuals, but also rather the teams that embody the knowledge capable of introducing next-generation products.

The formal process begins when the executive sponsor and the BD manager decide that a target firm (or couple of firms) could meet Cisco's needs. Often prior to the due diligence process and often through their ecosystem involvement, Cisco executives have had informal contacts with the potential target firms and, in some cases, know the key personnel personally or, at least, professionally. Upon a decision to seriously consider a firm, it is asked to sign a “no shop” agreement guaranteeing that it will not leverage an acquisition offer to solicit a higher offer from a rival. Interestingly, the use of a no-shop agreement had not been used in earliest acquisitions (Charney 2002), and only became standard later as Cisco formalized the acquisition.

The initial discussions consist of informal meetings between senior management from both firms. During this informal dialogue the acquisition team considers the quality and character of its interaction with the target's management, and how well the target's management interact with each other. Mimi Gigoux (2001) described this process, “in our due diligence and assessment [we] set joint initiatives [with the target firm], short-term and long-term goals . . . that is a great way to assess culture, management qualities, leadership styles, and if we like working with each other. Are they excited about the second and third generation product

going the way we are excited about it? Is there one person that speaks over everyone else? Do some people roll their eyes when one person on their team is talking? I think this is the best way [to assess culture]. It pulls out people's true character." Cisco's managers seriously consider these human relations (HR) aspects, because the value of the firm is in the ability to deliver products. If the team fails for whatever reason, in all likelihood the acquisition will fail.

Only after the BD manager is satisfied with the informal dialogue does more formal due diligence begin. HR due diligence is perhaps the most salient effort. Mimi Gigoux (2001) describes the reason for the emphasis on HR, "we don't care about the product that is on the manufacturing floor. The second and third generation product is locked up in their heads." Simultaneously, engineering, financial, and accounting personnel evaluate the company's technology and operations. Also, if applicable, representatives from sales, manufacturing, etc. are dispatched to study the operations.

Since employee retention is critical, it is necessary to thoroughly understand the distribution of a firm's equity and stock options. Also, the equity distribution indicates which individuals management believes are the most important. Cisco's HR group researches the background of these persons to discover whether they would fit in a much larger firm. Important questions include: What has their work experience been? Do they have big company experience? How big are the teams they have led? Have they been acquired before? In many ways, this resembles the due diligence on key personnel that a venture capitalist undertakes prior to investing in a start-up.

HR negotiates directly with the key individuals to understand their post-acquisition intentions. Often their employment terms are included in the purchase agreement. Stock vesting issues are very important. The more rapid the vesting rate or the higher the percentage of options already vested, the more difficult retention can be. Frequently, employment contracts have "trigger vesting" clauses that automatically vest a certain portion of all outstanding options upon a change of ownership. This clause protects employees who fear that they may lose their jobs (and non-vested options) in the event of an acquisition. Since Cisco does not lay off acquired employees and the goal of any acquisition is to retain employees, it insists that the firm employees waive their accelerated vesting rights in return for a more gradual vesting schedule (Cadigan 2001). With gradual vesting,

employees are more likely to continue working for Cisco. In addition to the vesting agreements, employee contracts for key individuals contain non-compete clauses included in the purchase agreement to inhibit their ability to leave (Gigoux 2001).<sup>22</sup> Upon the successful completion of due diligence, a term sheet was drafted including milestones and incentives. This motivates the acquired firm's employees to assist in the integration process by aligning their economic interest with Cisco's goals for integration.

Oddly, valuation, the most publicized aspect of an acquisition, is usually not the most important negotiating point. There is a generally accepted formula used to value private companies (Gigoux 2001). Michael Volpi, the Chief Strategy Officer, was quoted in O'Reilly (1998: 9) as saying, "acquisitions are not financial – we don't do them because we can swing a good deal – they are strategic. We do them to grow [Cisco] in the right direction." Since Cisco paid between \$500,000 and \$20 million per acquired employee, retention was far more important than negotiating the lowest acquisition price.

### 3. Prior to Deal Announcement

When an agreement is imminent, typically 6-8 weeks prior to the announcement, integration preparations commence. This is facilitated by the BDG, which has two dedicated units, Merger and Acquisition and Acquisition Integration consisting of approximately 60 persons whose purpose is to oversee the process.<sup>23</sup> They are responsible for ensuring that Cisco interacts directly and frequently with the target firm to create a shared understanding and trust. The integration manager (from the BD group) forms a team including public relations, sales, BU, HR, and marketing personnel, from both the BU and the target company. The HR team members include a Senior Project Manager and an HR specialist who manages payroll migration, employee file conversion, uploading HR data into Cisco's human resource system software, immigration status,

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<sup>22</sup> Non-compete clauses are difficult to enforce in California, so their function is likely psychological (Gilson 1999). However, we have heard anecdotally that the venture capitalists that funded the firms being acquired by Cisco have warned entrepreneurs that if they violate these agreements they will find access to venture capital difficult. This is understandable, because for the venture capitalist Cisco's enmity would cut-off a significant source of exit opportunities.

<sup>23</sup> The lack of outside assistance did not appear to have resulted in significantly higher (or lower) prices than the market would have set (Jo 2000), and eliminating the investment bankers and consultants probably produced a saving.

recruitment support, benefit plan transfer, documentation, presentation and communications of the acquisition both internally and to the public. Also, the future organizational structure and location of the firm is finalized.

Initially, the BD manager and executive sponsor share equal responsibility, but as the process moves forward the BD manager transfers acquisition responsibilities to the executive sponsor. The integration team's proactive role is an important element of the acquisition formula. Peter Ruh (2001) explains: "You have a level of coordination saying, I'm going to be the center of all the activity and the integration manager plays that role [in terms of] the meetings, the HR, the management, getting the right people engaged so there is a plan out of the gate and a sense of continuity in terms of communication to the acquired company, as well as to the business unit...This adds a sense of calm to a pretty emotional process for both sides."

The integration team holds weekly meetings to discuss progress. The BD unit also maintains a web site cataloguing the progress in ten areas such as human resources, product marketing, finance etc. Next to each aspect of integration, i.e., engineering, IT, manufacturing, a green, yellow or red circle indicates the degree of completion. Cadigan (2001) described the site; "The (web-site) is great to keep a big team focused on the right things. To have a tool that is a central source of information is huge in a dynamic process like acquisition integration." The site also has an event timeline, on-site visit log, fact sheet, and archived minutes from past meetings. Thus prior to announcing the deal, the integration plan has been completed, and all parties have been given concrete plans to, guide and measure the process.

#### 4. The Announcement and Closing Period

With the announcement, employees at both firms and the public are informed about the acquisition. Though senior managers have known about the acquisition, now the other employees are informed about what the deal means to them. Immediately after the announcement, HR conducts communication meetings at the acquired firm until all employees have been provided with information on key issues such as the reasons for the deal, the impact upon them, their role and location in Cisco, how their compensation and benefits will be affected, their new titles etc. Peter Ruh explained, "(the HR contingent of the BD integration team) is heavily involved in the first 35-40 days . . . getting as quickly as possible titles, comp plans, stock plans, benefits, all

the 'me' issues out of the way. So we can get engineers thinking about engineering instead of 'what am I going to be paid and where am I going to work' (Ruh 2001).”

The announcement is a critical moment, because it is at this time that employees experience the maximum uncertainty. The prior discussions, the clear plan, and the professionalism of the acquisition team dampen the apprehension that plagues most acquisitions. This is reinforced by the fact the leaders of the acquired firm already know their positions and responsibilities within Cisco, and thus are able to reassure their employees. Prior planning avoids a prolonged period of uncertainty and chaos that could retard progress and devalue the acquisition.

#### 5. First 90 Days

After the deal closes, the business integration team takes over the majority of post-announcement integration responsibilities. The plans that BD has developed are executed. The HR systems are converted. Integration of the acquired company's network and conversion of voice and data systems is undertaken. The sales, service, and marketing strategies and manufacturing plans are put into effect. For example, if the acquired firm has sales persons they are trained and integrated into the Cisco sales force, even while the Cisco sales force is familiarized with the new product. During these 90 days, the employees of the acquired firm experience a professional and non-disruptive integration. All the while there is a continuing process of communication with the new employees.

#### 6. 90 to 180 Days

The BD integration team continues to operate until all plan parameters are met, including, in most cases, shipment of the acquired company's products under the Cisco name through the Cisco sales channels (O'Reilly 1998). The team also evaluates and refines 6, 12, and 24-month initiatives, and fills out acquisition headcount. Finally, the planned and actual results are measured and the reasons for discrepancies are investigated. At the end of the period, the acquisition should be entirely integrated, often with the same executive team and a somewhat altered culture.

The ability to accept various cultures is unusual. The former CEO of an acquired company described the situation, “with Cisco, because they have these business units each with its own culture, you have to be able to adapt how you do things to the Cisco way in terms of a level of services, but you do not have to change the culture within your own business units for the most part (Anonymous Cisco consultant 2001).” The early and complete due diligence emphasizing a cultural fit and the continuing communication throughout mitigate uncertainty and confusion. The acquisition and integration process was choreographed to retain the employees, and not interrupt the acquired firm’s product development.

## **Discussion**

This section formalizes our results into propositions that can be tested more formally. An important caveat is that Cisco is, in a number of ways, a unique firm. It has made acquisition a core competency and among venture capital-financed start-up firms has undertaken more acquisitions than any other firm. Therefore, its experiences may not apply directly to all firms. And yet, in an economy in which many innovations are realized in start-ups and established firms have found it necessary to acquire access to these innovations, its acquisition practices can provide insights for other firms seeking to grow by acquiring small knowledge-intensive, venture capital-financed firms.

This study suggests some quantitatively researchable propositions:

P1: Firms utilizing a larger number of target information gathering mechanisms will have greater acquisition success.

This would test the general proposition that a high surface area strategy should lead to greater acquisition success.

P2: The more interactions the acquiring firm’s management has with start-up firms in general, the greater the likelihood its acquisitions will be successful.

The concept we developed of ecosystem involvement suggests some empirically testable propositions building upon board of director network studies (Palmer et al 1995), however we direct attention away from the boards and toward the executive team as these are the operational agents. The operationalization of this variable



should be multidimensional and measured by participation as members of the boards of directors, as advisors, or even as operational officers in start-ups. A second dimension might be their personal equity investments in start-ups. A third dimension could be whether the acquirer had prior investment linkages with the target firm.

P3: Socio-cultural similarity between the acquirer and target firm will be positively correlated with acquisition success.

Previous research has usually measured culture on only one dimension such as, for example, the bureaucratic nature of the firm. This is too narrow. More discriminating variables could be used including firm spatial location (Stuart and Sorenson 2002) and whether the firms' formation was funded by venture capital. There is some preliminary evidence for this. For example, Stuart and Sorenson (2002) in a study of spin-outs from biotechnology firms conclude that if the acquirer is in the biotechnology industry then there is a lower propensity for spin-outs than if the acquirer is from outside the industry. "Socio-cultural" similarity should be measured on multiple dimensions.

P4: Acquisition success will be positively associated with an explicit formal acquisition and integration process.

Our study found that Cisco had explicitly formalized and routinized the acquisition process. This confirms Zollo and Singh's (2002) finding that having explicit documentation for operationalizing an acquisition contributed significantly to success, while experience that had not been explicitly formalized and routinized appeared to have no impact. Our study leads us to believe that routinization should be a multidimensional phenomenon.

P5: Acquisition success will be positively associated with the appointment of a high-level executive as personally responsible for integration

A formal acquisition process is important, however recruiting a responsible executive sponsor in the firm may be almost as important.

## **Conclusion**

Acquisition success was predicated upon a process of ecosystem involvement that went far beyond environmental scanning. This is captured in our concept of using a high surface area strategy of participating

in the ecosystem. The BDG's purpose was to be involved in the environment through funding start-ups, participating in industry forums, and interacting with other actors in the environment. However, the involvement with the environment was even more extensive with a number of executives investing in and even participating on the board of directors of start-ups and venture capital firms that formed the ecosystem in which Cisco operated. For firms interested in emulating Cisco's strategy having executives that have experienced the start-up process first-hand and are deeply involved in the start-up culture is vital.

Ecosystem involvement assisted in candidate identification, however it was not a substitute for an intensive "due diligence" evaluation. At most firms these evaluations are confined to the product and the top executives, and little research is done to find out who the most important contributors are. The firm being acquired is not treated as an organization whose evolutionary dynamics must be understood. Therefore little attention is paid to the health of the social dynamics of the target firms, and the integration into the acquiring firm is treated as unproblematic.

The importance of communication in facilitating the acquisition and integration process was noteworthy. This communication process began internally as the sales force was expected to report about new competitors even while the BUs scanned the technological environment for new technologies. In the acquisition process communication there was a remarkable effort to continually dialogue with the target firm. Immediately upon the announcement of the acquisition employees at the target received information regarding their status. The commitment to dialogue as a central activity in the acquisition process surfaced problems early and mitigated the risk of unpleasant surprises that could disrupt the process thereby increasing probability of failure.

No matter how excellent the strategy and due diligence was, ineffective integration will lead to failure. Under any conditions, the melding of two organizations is difficult. The intellectual and managerial assets are the preponderance of the value of the acquisition. Confirming Cannella and Hambrick (1993) we found that when these individuals leave, and there is always a market for their talents, the acquisition will fail. Because of the speed of change in the industry even if they do not leave, but are distracted, the acquisition will fail. So, integration must be rapid and reassuring or, in a word, professional. If there is uncertainty or even worse

resistance, then the probability of a successful acquisition will fall. The building of communication and personal relationships is a vital part of a successful acquisition.

This study has confirmed the centrality of socio-cultural and organizational variables for predicting acquisition success, and we would argue that this is likely true for all fast-moving, high-technology industries where the knowledge is embodied in either individuals or small R&D teams. We extended earlier research by providing evidence that non-economic variables such as location (as a proxy for culture) and the organization of the acquisition and integration processes can help explain acquisition success and generate better acquisition targeting. The results lead us to believe that conducting microlevel ethnographies and detailed histories could lead to further contributions by organizational studies to understanding the dynamics and determinants of the acquisition process.

In terms of overall results, we believe that when the market recovers Cisco will be far better placed than its competitors, both the established firms and the more recent start-ups. Even in these most difficult of times, Cisco continues to acquire small firms with new technologies that provide it with new product lines that will permit it to push into new markets such as the storage area networks business. Despite the difficult current environment, Cisco continues to support and operate in its ecosystem in all likelihood this will make it even more dominant in the future.

## REFERENCES

- Aguilar, Francis J. 1967. Scanning the Business Environment (New York, NY: Macmillan Co).
- Anand, J. and H. Singh. 1997. "Asset Redeployment, Acquisitions and Corporate Strategy in Declining Industries." Strategic Management Journal 18: 99-118.
- Autler, Gerald. 2000. Global Networks in High Technology: The Silicon Valley-Israel Connection Master's Thesis, Department of City and Regional Planning, University of California, Berkeley.
- Bahrami, Homa and Stuart Evans. 2000. "Flexible Re-Cycling and High-Technology Entrepreneurship." In M. Kenney (ed.) Understanding Silicon Valley: The Anatomy of an Innovative Region (Stanford: Stanford University Press): 165-189.
- Bain, J. S. 1959. Industrial Organization (New York: John Wiley & Company).
- Barrett, Craig. 2001. "Clawing for Market Share is Back." (March 13)  
[http://www.businessweek.com/2000/00\\_11/b3672014.htm](http://www.businessweek.com/2000/00_11/b3672014.htm)
- Brown, John Seely and Paul Duguid. 2000. "Mysteries of the Region: Knowledge Dynamics in Silicon Valley." In Chong-Moon Lee, William Miller, Henry Rowen, & Marguerite Hancock, eds. The Silicon Valley: A Habitat for Innovation and Entrepreneurship (Stanford: Stanford University Press) 16-45.
- Bunnell, David. 2000. Making the Cisco Connection (New York: John Wiley & Sons, Inc.).
- Burg, Urs von. 2001. The Triumph of Ethernet (Stanford: Stanford University Press).
- Business Week. 2002. "Cisco: Behind the Hype." (January 21).
- Byrne, John A. 1998. "The Corporation of the Future." Business Week (August 31).
- Cannella, A. and D. Hambrick. 1993. "Effects of Executive Departures on Performance of Acquired Firms." Strategic Management Journal 14: 137-152.
- Chambers, John. 1996. "Interview." Upside (June 30). PGS.
- Charney, Howard (Senior Vice President, Cisco Systems, Inc.). 2002. "Personal email communication." (August 29).
- Christensen, Clayton. 1997. The Innovator's Dilemma (New York: Harper Business).
- Cisco, Inc. 2001. Internal PowerPoint Presentation (no date).
- Datta, D. K. 1991. "Organizational Fit and Acquisition Performance: Effects of Post-Acquisition Integration." Strategic Management Journal 12: 281-297.
- David, Paul. 1985. "Clio and the Economics of QWERTY." American Economic Review 75: 332-337.
- Domhoff, William G. 1967. Who Rules America? (Englewood Cliffs NJ: Prentice-Hall).

- Eisenhardt, Kathleen. 1989a. "Building Theories from Case Study Research." Administrative Science Quarterly 141 (4): 532-550.
- Fligstein, Neil. 1990. The Transformation of Corporate Control (Cambridge, MA: Harvard University Press).
- Garud, Raghu and Peter Karnoe. "Path Creation as a Process of Mindful Deviation." In Garud and Karnoe (eds.) Path Dependence and Creation (New York: Lawrence Erlbaum Associates, Publishers) Pp. 1-40
- Gilson, Ronald. 1999. "The Legal Infrastructure of High-Technology Industrial Districts: Silicon Valley, Route 128, and Covenants Not to Compete." New York University Law Review (June) 74 (3): 575-629.
- Granovetter, Mark. 1985. "Economic Action and Social Structure: The Problem of Embeddedness." American Journal of Sociology 91: 481-510.
- Hambrick, Donald C. 1982. "Environmental Scanning and Organizational Strategy." Strategic Management Journal 3 (2): 159-174.
- Hambrick, D. C. and A. A. Cannella. 1993. "Relative Standing: A Framework for Understanding Departures of Acquired Executives." Academy of Management Journal 36 (4): 733-762.
- Hanafi, Ammar. 2000. "Acquiring Minds: An Interview with Ammar Hanafi." Packet Magazine (Quarter 4). <http://www.cisco.com/warp/public/784/packet/oct00/netizens.html>
- Hardy, Quentin. 2001. "Cisco Kidding?" Forbes.com (May 14).
- Haspelagh, P. and D. Jemison. 1991. Managing Acquisitions (New York: Free Press).
- Haunschild, P. R., A. Henderson, A. Davis-Blake. 1998. "CEO Demographics and Acquisitions: Network and Cognitive Effects of Educational and Functional Background." R. Leenders and S. Gabbay (eds.) Corporate Social Capital (New York: Addison Wesley): 266-283.
- Hayward, Michael and Donald Hambrick. 1997. "Explaining the Premiums Paid for Large Acquisitions: Evidence of CEO Hubris." Administrative Science Quarterly 42: 103-127.
- Hippel, Eric von. 1988. The Sources of Innovation (New York: Oxford University Press)
- ITworld.com. 2001. "Cisco Sells Recent Acquisition to Israeli Firm." (June 18).
- Jemison, D. and S. Sitkin. 1986. "Corporate Acquisitions: A Process Perspective." Academy of Management Review 11 pp. 145-163.
- Jensen, Michael C. 1984. "Takeovers: Folklore and Science." Harvard Business Review 62, (6): 109-122.
- Jo, Hoje. 2000. "Venture Capital Syndication and Firm Value: Entrepreneurial Financing of Grand Junction Networks." Working Paper, Department of Finance, Leavey School of Business and Administration, Santa Clara University (January).
- Katz, Michael and Carl Shapiro. 1986. "Technology Adoption in the Presence of Network Externalities." Journal of Political Economy 94: 822-841.

Kenney, Martin and Urs von Burg. 1999. "Technology and Path Dependence: The Divergence between Silicon Valley and Route 128." Industrial and Corporate Change 8 (1): 67-103.

Kogut, Bruce and Udo Zander. 1992. "Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology." Organization Science 3: 383-397.

Larsson, Rikard and Sydney Finkelstein. 1999. "Integrating, Strategic, Organizational, and Human Resource Perspectives on Mergers and Acquisitions: A Case Stud of Synergy Realization." Organization Science 10 (1): 1-26.

Lucent. 2002. www.lucent.com (January 15).

Lundvall, Bengt Ake. (ed.). 1992. National System of Innovation: Towards a Theory of Innovation and Interactive Learning (Pinter: London).

McJunkin, James and Todd Reynders. 2000. "Cisco Systems: A Novel Approach to Structuring Entrepreneurial Ventures." Graduate School of Business, Stanford University Case Number EC-15 (February).

Mehta, Stephanie. 2001. "Cisco Fractures Its Own Fairy Tale." Business 2.0 (May).

Miles, Matthew B and A. Michael Huberman. 1994. Qualitative Data Analysis (Thousand Oaks: Sage).

Nahavandi, A. and A. R. Malekzadeh, A. R. 1988. "Acculturation in Mergers and Acquisitions." Academy of Management Review 13 (1): 79-90.

Nelson, Richard R. (ed.). 1993. National Innovation Systems: A Comparative Analysis (Oxford: Oxford University Press).

O'Reilly, Charles. 2000. Hidden Value (Cambridge: Harvard Business School Press).

O'Reilly, Charles. 1998. "Cisco Systems: The Acquisition of Technology is the Acquisition of People," Case Study HR-10 (Palo Alto: Graduate School of Business, Stanford University).

Palmer, Donald, Brad Barber, Xueguang Zhou, and Yasemin Soysal. 1995. "The Other Contested Terrain: Friendly and Predatory Acquisition of Large U.S. Corporations in the 1960s." American Sociological Review 60: 469-499.

Ravenscraft, D. J and F. M. Scherer. 1989. "The Profitability of Mergers." International Journal of Industrial Organization 7: 101-116.

Reuters Company News. 2002. "Former Cisco Exec Pleads Guilty to Fraud Charges."

Rifkin, Glenn. 1997. "Growth by Acquisition: The Case of Cisco Systems," Strategy and Business (Booz, Allen and Hamilton).

Rosenbloom, Richard and William J. Spencer (eds). 1996. Engines of Innovation (Cambridge: Harvard University Press).

Scherer, F. M. 1980. Industrial Market Structure and Economic Performance (Chicago: Rand-McNally)

- Seth, A. 1990. "Value Creation in Acquisitions: A Re-examination of Performance Issues." Strategic Management Journal 11: 99-115.
- Shelton, L.M. 1988. "Strategic Business Fits and Corporate Acquisitions: Empirical Evidence." Strategic Management Journal 11: 99-115.
- Stauffer, David. 2000. Nothing But Net (Milford, CT: Capstone Publishing Company).
- Stuart, Toby and Olav Sorenson. 2002. "Liquidity Events, Noncompete Covenants and the Geographic Distribution of Entrepreneurial Activity." Unpublished manuscript (January 4).
- Teece, David, Gary Pisano, and Amy Shuen. 1997. "Dynamic Capabilities and Strategic Management." Strategic Management Journal, 18: 509-533.
- Thurm, Scott. 2000. "Cisco Defies the Odds With Mergers that Work." Wall Street Journal (March 3).
- Uzzi, Brian. 1996. "Social Structure and Competition in Interfirm Networks." Administrative Science Quarterly 42: 35-67.
- Uzzi, Brian. 1995. "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect." American Sociological Review 61 (4): 674-698.
- Venturesource.com. 2001. www.venturesource.com (March 31).
- Venture Economics. 2001. (September 30).
- Wachovia Securities. 2000. George G. Hunt, Robert D. Strauss and Bert D. Barre. IJL Financial Center, 201 North Tryon St., Charlotte, NC, 28202 (November 16).
- Williamson, Oliver. 1975. Markets and Hierarchies: Analysis and Antitrust Implications (New York: Free Press).
- Yin, Robert. 1989. Case Study Research: Design and Methods Rev. ed. (London: Sage).
- Young, Jeffery. 2001. Cisco Unauthorized (Roseville, CA: Prima Publishing).
- Zollo, Maurizio and Harbir Singh. 2002. "Post-acquisition Strategies, Integration Capability, and the Economic Performance of Corporate Acquisition." Strategic Management Review.

### Interviews

- Anonymous Cisco consultant. 2001. Tape-recorded interview by David Mayer. (February 5).
- Cadigan, Steve 2001. Tape-recorded interview by David Mayer (May 14).
- Gigoux, Mimi. 2001. Tape-recorded interview by David Mayer. (March 12).
- Griffin, Craig. 2001. Tape-recorded interview by David Mayer (March 22).
- Johnson. Paul. 2001. Tape-recorded interview by David Mayer. (May 17).

Morgridge, John. 1995. Tape-recorded telephone interview by Urs von Burg and Martin Kenney. (November 8).

Ruh, Peter. 2001. Tape-recorded interview by David Mayer (March 22).

Schmidt, Ronald. 1995. Tape-recorded telephone interview by Urs von Burg and Martin Kenney. (June 5).

Valentine, Donald. 2001. Tape-recorded interview by David Mayer. (March 15).

Valentine, Donald. 1995. Tape-recorded interview by Urs von Burg and Martin Kenney.