CREATING A $40 MILLION COMPANY BASED ON DISPERSION MODELLING

Richard H. Schulze

Founder, Trinity Consultants, Inc., Dallas, Texas, USA

Abstract: Starting in 1974, the author grew Trinity Consultants, Inc. from a one-person firm to one employing over 270 staff in 22 offices scattered across the United States and an added office in the People's Republic of China. Trinity became the leading US firm in the field of air quality consulting and compliance. The foundation of the firm was in the field of dispersion modelling and the author taught a course, which he continually revised, entitled "Fundamentals of Dispersion Modeling" more than 200 times in the United States and in more than a dozen countries on five continents. He also authored a 400-page textbook with D. Bruce Turner on this subject in 2007. This paper describes three selected aspects of this experience that spanned a third of a century until controlling interest of Trinity Consultants was sold to a private equity firm in November 2007. The three areas to be described are: a) an assessment by the author of the human qualities that foster success as an entrepreneur, b) the stages of growth of a professional services firm, and c) the process of ownership transfer and the financial engineering that was involved.

Key words: *Entrepreneur, dispersion modelling, business organization, ownership transition, financial engineering, corporate growth.*

1. INTRODUCTION

Numerous aspects comprise a successful professional services business. Among the issues are: 1) The personal profile of an entrepreneur, 2) Defining what the business is to do and for whom, 3) Funding a start-up, 4) Selecting the optimum form of organization (proprietorship, corporation, partnership, non-profit, etc.) 5) Defining a strategy and long term (20-year) goals, 6) Developing an optimum sales and marketing plan to find clients, 7) Defining an optimum recruiting policy to hire (and fire) the right people, 8) Understanding the importance of accounting and finance, 9) Opening branch offices to get closer to clients, 10) Optimizing the way to organize the indirect cost centres for maximum effectiveness, 11) Optimizing the way to maximize long-term profits and the trade-offs between current profits and investment in growth, and 12) Transferring ownership to others and harvesting the proceeds of one's efforts.

This paper will discuss three of these. The first is my perception of the essential human characteristics of an entrepreneur. The second covers the appropriate method for organizing overhead (indirect cost) centres, and the third covers Trinity's actual experience with the ownership transfer process and its successful conclusion in November 2007.

2. QUALITIES OF AN ENTREPRENEUR

Relatively few people have the personal profiles that will allow them to become successful entrepreneurs. The chair of the Caruth Institute for Entrepreneurial Studies at Southern Methodist University in Dallas offers some of the most popular courses in the MBA program. Hundreds of students take courses on entrepreneurial management, yet, he asserts, that fewer than 10 percent possibly even 5 percent, have the qualities that permit success as an entrepreneur.

A quotation by Ralph Waldo Emerson illustrates a common misconception by many people: "Build a better mousetrap and the world will beat a path to your door." All businesses are built on three legs. First, is a product or service. Second, is a way of marketing that product or service. Third, is accounting for income and expenses. One cannot hope to succeed missing any of these elements. Therefore, the first requirement is to have knowledge, and preferably experience, in these three areas. In reality better mousetraps must be developed with sound cost control and sold to a market that at the outset knows nothing of the superior qualities of the product.

A essential quality of entrepreneurs is resilience, the capability to recover from adverse events. We have all observed team sports in which the opponent scores. Our team now has an opportunity to take over and move the ball or puck, into the opponent's territory. The athletes playing the sport cannot be deterred by what has just happened, instead they must focus on working together to score. Without resilience, the team that scores first would always win. A key quality then is resilience and persistence – the idea of never giving up in the face of adverse conditions while taking prudent risks.

People who grew up low on the social and income ladder and have achieved some initial success in advancing often make good entrepreneurs. Although modestly successful, they are also aware that in their past they had very little and were able to get by. Thus, if they fail, they can always go back to living like they once did and try to succeed a second time. Similarly, people who have relocated tend to be more adaptable since they have had to make new friends and develop new relationships in the workplace and in social settings. The experience in adapting to strange settings often makes it easier to be an entrepreneur. On the other hand, if one has not struggled much, is fearful to risk failure, and lacks confidence in new settings he or she may not be a good candidate to be an entrepreneur. People like this may tend to avoid any unfamiliar endeavour that might set them back career-wise or financially.

It goes without saying that strong communication skills are needed. If you have taught, run for elective office, debated, or been a salesman, you have learned how to communicate a value proposition to an audience. In any enterprise, you will bear the responsibility for selling your product or service, at least initially, so oral skills are exceedingly important.

It is important to have some well developed plans for the future. I like 20-year plans but a solid five-year plan is better than nothing. Do you want to be successful just to live a little better? Do you want to grow a company that can create opportunities for talented people? (Opportunities you never felt you had when you were young?) Do you want to leave a legacy for society, your employees or your children? Do you just want to get rich? Do you want to control everything in your business or do you want to learn how to delegate responsibility? Do you desire to grow a company rapidly so that it stays youthful and energetic? By thinking through your goals, you will most likely decide why you really want to be an entrepreneur. My experience is that the singular pursuit of money is ill-founded. One should have goals that reach far beyond money; goals that one pursues with passion and diligence. If the business succeeds, wealth is one likely by-product.

Independence of thought is another ingredient for success as an entrepreneur. Perhaps you have discovered new approaches to solve problems or maybe you tend to challenge the "conventional wisdom" of your supervisor. Perhaps you feel that you bring fresh insight and imagination to a problem that others don't always appreciate. Think of all the times you have had these independent thoughts. Were you right or were the others correct? Can you perform a self-evaluation honestly? Harboured in every entrepreneur is the confidence that his or her thoughts are an improvement over a past way of thinking; his or her way will produce significant benefits to the buyers of services or the users of products. A tempered maverick often characterizes an entrepreneur.

Infectious enthusiasm and leadership skills will help the entrepreneur build an organization. These skills are generally developed early in life perhaps when going to school. You might have been elected a leader in school or appointed a leader in a social organization. Later you may have honed those skills in the military, a professional society, a labour union, or with a neighbourhood organization. This ability to be comfortable leading and stepping out in front to develop loyal followers is a necessary skill to building a larger organization. Good leaders are confident enough to hire people more technically talented than they are.

Finally, the environment around your life is important. If married, it is important that you have a supportive spouse, one who understands that success is not assured and that for several years you may work not 40 or 60 hours per week but closer to 80 hours and not take any holidays. It is also important to know that there are factors affecting your success over which you have little control, such as new regulations that may end a particular line of business or economic factors that limit client's profitability and ability to hire you. It is also vital that you remain healthy through regular exercise and choosing lifestyle habits that don't have the potential to impair your health or judgment.

In summary, the main attributes of an entrepreneur are: 1) broad knowledge of, and preferably experience with, the product or service, accounting and marketing, 2) resilience, 3) the courage to fail, 4) communication skills, 5) a sound long-range plan, 6) independence of thought, 7) leadership to build a larger organization and 8) a healthy lifestyle and an understanding family. In many countries existing companies, government regulation, and labour laws all serve to restrict entrepreneurs from inventing new businesses or developing new working relationships with employees. A conscious decision has to be made whether the barriers to being an entrepreneur are too great to surmount.

A common mistake made by entrepreneurs is underestimating the amount of money that will be tied up in working capital, and, in particular, accounts receivable. As shown in Figures 1 and 2, you will need money for accounts receivable that will approximate 50% of annual salaries. Moreover, retained earnings are necessary to grow the business, thus inhibiting your ability to extract much money from your venture for a few years.

Another common mistake is to go into business with partners, especially if all partners have similar technical skills, agree to share all work and investments, and make decisions as a group. This is a formula for disaster. One person must lead and he or she should have a disproportionate share of the ownership. Clear written rules must exist for partners to withdraw to insure that their withdrawal does not cripple the present company nor create a competitor. It has been surprising to me that so many very talented people who worked with me did not share my vision. They might have agreed with it when hired but over time came to doubt the direction of the company. Any skilled entrepreneur has to have a way to encourage these people to seek other opportunities where their contributions can be more fully appreciated. Life is too short to spend energy on internal dissention at the expense of serving clients. Unlike law firms and accounting practices that restrict partnership to members of the profession, there is nothing that prevents a technical services firm from having engineers, meteorologists, hydrogeologists, accountants, and sales professionals as partners.

3. ORGANIZING A GROWING COMPANY

When starting a company the founder does everything from selling work, marketing the firm's capability, keeping the books, paying taxes and doing work. It is a lonely experience because one has few distractions during the work day. It also is stressful since there is generally no one to proofread reports and suggest improvements to serve clients better. Discipline is required to keep the business on an even keel and not a "roller coaster." There will be times when you have acquired enough work to stay busy for three or four months full time and when you deliver the last of these projects, you find that you have no future backlog. Since the gestation time for a new order is often three to six months, you may encounter a prolonged period with little or no revenue. No matter how busy I was doing work in the early days of Trinity, I would devote Tuesday of every week to business development to maintain a backlog of activity. I also learned not to over-promise on delivery dates.

A particularly stressful time comes when you hire your first professional. You now increase the capability of the firm by 60 to 80% but for several months you have to train the new employee, keep income coming by doing work yourself, and sell extra hard since you now have two people to feed. It would be slightly less stressful if one could always be successful in hiring experienced staff, but unfortunately, I found that only about one-third of seasoned hires work out well and remain with the company. My success rate with college hires was much better with two-thirds working out quite well.

Building an indirect-cost centre (overhead) is another challenge. Overhead exists because skilled specialists in non-technical areas have lower salaries and are more efficient than core technical staff. Overhead frees engineers and scientists to do what they are trained to do. Perhaps the first to be hired will be a bookkeeper to keep timesheets, prepare invoices, pay bills, handle collections and prepare accounting reports. I can assure you that hiring a bookkeeper costs much less than hiring an engineer and they are far more efficient doing accounting than an engineer. As the firm grows to 30 to 40 people it may be necessary to employ a Chartered Accountant to supervise the bookkeepers. Another key hire will be a recruiter to find talent at universities and on the web. Searching for and screening candidates will free up your time to focus on the interviewing and hiring process. Another key hire will be a marketing person who can maintain your client relationship database, prepare the more routine parts of proposals and regularly follow up with prospects. Since the business is computer intensive you will also find it necessary to internalize the information technology aspects of the business when it can be done cost-effectively.

Any entrepreneur will make many mistakes in building the overhead function. Although I can usually identify people with high quality technical skills, I lack the ability to screen people with accounting, recruiting, marketing or IT backgrounds. I simply don't have the detailed knowledge to appraise the necessary skill sets of candidates. Thus for me, building overhead was a trial and error process fraught with many errors and missteps. The employment-at-will labour markets in the United States and selected other countries provides a real advantage enabling the dismissal of staff that is found to not be fully capable. As overhead functions are slowly assembled, the entrepreneur faces a challenge in learning, first, how to manage technical staff, and, second, how to manage managers of technical staff. Many entrepreneurs can manage, perhaps micro-manage, companies with a dozen or fewer staff. But getting beyond this number of employees takes an ability to train others how to manage while not losing either strict adherence to quality standards or strong focus on client service.

One of the challenges is to develop business. At Trinity this was done through short courses of all types. The first course I developed was "Fundamentals of Dispersion Modeling." I taught this course hundreds of times over 33 years resulting in a 400-page textbook (Turner and Schulze, 2007). Other courses were added such as computer labs dealing with dispersion modelling, environmental regulations, compliance workshops, industry-specific courses, auditing, stack testing, and over 40 state-specific courses. More than 200 courses are being taught each year throughout the United States and over a dozen countries overseas. The fees derived from the courses roughly offset the costs. In addition to one and two-day courses, Trinity offered lunches to update environmental managers on recent changes in regulations. In short, it has been my belief that educated professionals are the best prospects. Teaching courses had several benefits. First, it requires the instructor to be a master of the subject. Second, it improves the instructor's communication skills. Third, it exposes potential clients to the skills embodied in the instructor so they will think of Trinity first when they have a need. Fourth, it acts as a subtle way to identify potential clients – individuals who have, or soon expect to have, a need for the technical information presented.

	% of net revenues	% of costs
Gross revenue	104	
Reimbursibles (travel for clients, outside labor, VAT, etc.)	4	
Net revenue	**100**	
Costs		
Labor costs including an appropriate salary for the owners. (Includes holidays and vacations)	52.8	66
Payroll benefits - taxes, pension, health insurance	8.8	11
Rent	4	5
Marketing - Advertising, sales travel, mailings, trade shows, etc.	2.4	3
Professional fees - Legal, accounting	2.4	3
Depreciation and amortization	1.6	2
Communications - telephone and internet	1.6	2
Administrative travel	1.6	2
All other costs (each item is less than 1% of expenses) - postage, recruiting, dues and subscriptions, local taxes, insurance, office supplies, bad debt allowance, other	4.8	6
Total costs	**80**	**100**
Earnings before taxes and before bonus (EBBIT)	20	
Bonus (20% of earnings to key employees)	4	
Earnings before taxes	**16**	
EBITDA	*17.6*	
Earnings after 40% corporate income tax	**9.6**	

Figure 1. Sample Income Statement

By the time you have about 40 to 50 staff including at least one person in each of the key overhead roles (accounting, recruiting and human relations, marketing and sales, and information technology), a viable stand-alone company now exists. You have progressed from a "life-style" company that generally disappears when the owner retires, to a real company that can function with just strategic direction by the owner. You may even have several offices that enable your technical staff to be in closer proximity to clients and regulatory agencies with whom you interact. At this stage you now have the freedom to choose how best you can add value to your firm whether it is research, selling to major new clients, going to conferences or any other activity that contributes to the growth and well-being of the business. As you approach 100 staff you cross into a realm where your business can be sold to a private equity investor. Once you grow to 500 to 1000 staff, you are a candidate for an initial public offering (IPO).

4. OWNERSHIP TRANSFER

Given human mortality, all entrepreneurs face the prospect of harvesting the value of the companies they have built. Generally, a business is worth more as a going entity than if all the furniture and fixtures were sold at auction and all receivables collected. The business relationships built up over time have value. These relationships cost any competitor time and money to replicate and are shown as "goodwill" on the balance sheet of a company that has been sold. Although starting a business is risky and subject to a very high failure rate, the successful transfer of the business to new owners is almost as risky, far more prolonged, and subject to failure. Many entrepreneurs see their work simply disappear with little or nothing to show for a lifetime of effort and dedication.

The typical balance sheet and income statement, normalized by setting net revenue to 100 for a professional services firm is shown in Figure 1. In any professional services firm - management consulting, a law office, or an accounting practice - the vast bulk of costs are staff. If you can use this staff 60% of the time (bill 101 hours in a 21 day (168 hour) work month), then you can generate revenue of 100 with a multiplier of 3.2 times salaries. (100/(52.8*0.6) = 3.2). The anticipated profit after considering competitive salaries but before bonus is 20% of net revenue. Most businesses aren't this well managed so the general average is between 5% and 10% of net revenue. The bonus to key staff members, numbering only a quarter to a fifth of total staff, as a fraction of before-tax, before-bonus profit is generally in the 30 to 35% range with a little more than half paid in cash and the balance with stock options. Both the cash payment and stock options can be tailored to act as retention devices.

One final item to note is the line labelled EBITDA, standing for earnings before income tax plus depreciation and amortization. From a financial engineering standpoint, it represents the free cash flow. Firms are generally valued as a multiple of EBITDA. The value of a firm is only measured by balance sheet net worth if profits are slender, or the firm lacks goodwill because it is new or it relies on competitive bids. For small consulting firms the valuation is generally 4 to 6 times EBITDA with higher values for firms exceeding $100 million in revenue. For very small firms – one to ten people – the valuation is often based on a multiple of net revenue. The same multiples apply in engineering as they do for medical, dental, accounting and consulting practices. The multiples generally range from 0.35 to as great as 1.5 depending on the desirability of the business to the buyer – location, specialty, skill of staff – as well as the durability of the business. Lower values apply if much of the business consists of one-off projects – such as a surgeon, a divorce lawyer, or an engineering construction firm that wins bids. Higher values apply if there is repeatability to a business – such as a general practitioner, a dentist, tax lawyer, accounting auditor, or an engineering firm that performs a multiplicity of smaller projects for clients.

A typical year-end balance sheet is shown in Figure 2. It is common-sized so that Accounts Receivable is 90 days of Gross Annual Revenue and shows bonuses and taxes payable. Most government authorities collect taxes on activities that concluded three to six months previously. As you can see the net worth in a professional services business is quite small – on the order of 20% of net annual revenue, more if you are starting out since you are likely to buy new equipment and furniture as well as not be able to accumulate all the current liabilities. If a business collects value-added taxes, the amount of these taxes will show up as reimbursibles on the income statement and as increased accounts receivable and taxes payable on the balance sheet. These entries do not change the net income or the net worth.

Current assets		**Current liabilities**	
Cash (one payroll)	3	Accounts payable	5
Accounts receivable (90 days gross revenue)	26	Bonus payable	4
Prepaid insurance and security deposits	3	Taxes payable	9
Total current assets	32	Total current liabilities	18
Fixed assets		**Other liabilities**	
Furniture, fixtures, computers	6	Notes, deferred rent, etc	0
		Total liabilities	18
		Net worth	20
Total assets	38	Total liabilities and net worth	38

Figure 2 - Sample Balance Sheet at year end - % of net annual revenue

If you plan to grow the business, say 30% the next year, you will have to increase your net worth by 30%. The money will allow for expansion of accounts receivables, the purchase of added capital items, larger bonuses and taxes. As an example a 30% growth in net worth would require an investment of 6 (20 * 30%). This is equal to 62% of after-tax income assuming 20% EBBIT. If EBBIT is only 10%, then after-tax profits are but 5.2%, not enough to fuel a 30% growth. Sometimes growth is caused by inflation, yet it must be funded with after-tax profits. Therefore, careful management is necessary so that growth is not hampered by lack of cash.

It is often thought that the ideal form of ownership transfer for a professional services firm is to sell it to the employees. This way the culture is preserved and the people running the business are those most familiar with it. I tried this on three occasions. First, with a great deal of effort between 1988 and 1992, I organized a system whereby employees would receive stock options annually priced at one cent per share while I would receive an annual bonus from the firm. After four years I determined – based on the advice of a public accounting firm – that options must be issued at a fair price determined through an evaluation. If offered at a lesser price, then the difference is considered ordinary income subject to income taxes. Since the options were rather large, the employees lacked enough cash income to pay the income taxes when exercising their options. For tax reasons we terminated this plan. We then instituted an annual appraisal process to establish a value for the firm and for each share of stock. This provided the basis for all future transactions, such as the sale of stock by present and departing employees and for stock options.

The second effort involved hiring a seasoned senior executive, establishing a Board of Directors consisting mostly of outsiders, and attempting to initiate an ESOP (Employee Stock Ownership Plan). The ESOP structure enables a US-owned firm to transfer all its stock to a trust that then issues notes to the sellers. The company earnings are contributed to the trust providing the money to pay off the notes over time. The contributed earnings are credited to each employee's account, except for former major shareholders, generally in proportion to salary. Then over some years – usually about five – these credits "vest" and the employee owns the stock. If an employee leaves prior to vesting, the employee's account balance is distributed to the others. There are a number of tax advantages to an ESOP but the managers did not support the plan. The managers at Trinity generally earn between 2 and 2.5 times the entry level wages for professionals. Yet the managers have ultimate authority on the use of staff, and therefore the profitability of the firm. Because distributions are based on salary, there was no reasonable way to reward managers for their profound influence on profitability. Trinity terminated further discussion because of the managers' opposition.

Starting in mid-2001, Trinity went though about a three-year period of declining revenue, some staff reductions and minimal profits brought about by the U.S. recession in the early part of this decade. Because of the adverse economic conditions it was inappropriate to sell the company during this period. When revenues started to grow and profits returned, a third try at ownership transfer was attempted in early 2005. In this plan, I would sell enough shares at an appraised value to the company so that I would become the second largest shareholder. I would receive cash plus a note for the shares. When the note to me was fully paid, then I would sell the remainder of my shares. The plan had a number of qualifications such as continuity of my salary, an employment agreement, and my ability to get a portion of the proceeds from the sale of the company should the management team decide to sell it. The board rejected this plan feeling that it was unfair to the shareholders. At this point I decided to eliminate the board and pursue a new course of action.

The fourth and successful effort resulted in the sale of Trinity to a private equity firm. In order to do this, I first selected an investment banker, a boutique firm that specializes in brokering the sale or purchase of companies. Had Trinity had a larger capitalization (the product of share price and number of shares), then we could have considered an IPO. In the US one must have a market capitalization of at least $100 million and preferably $250 million for an IPO. Once selected, the investment banker contacted well over 100 possible buyers of Trinity, firms in the environmental industry, in management consulting, and private equity firms. Private equity firms are organized to buy a portfolio of companies. Typically five to 20 companies are acquired within three to five years. Each company is held for 5 ±2 years, its operations hopefully are improved, and then sold to a new buyer. A 35-page book was prepared describing Trinity's history and future with an emphasis on financial metrics. Over half of the original contact list signed a confidentiality agreement and received the book. Of these about half submitted a "preliminary indication of value" that ranged from the highest value down to 38% of the highest value. Full-day presentations were made to a handful of firms, all private equity, whose preliminary offer was within 20% of the highest offer. Some of these offers increased a small amount and others declined a bit. Finally, on May 30, 2007, Trinity signed a "Letter of Intent" with Sentinel Capital Partners, a private equity firm based in New York that specializes in firms with EBITDAs of $5 million to $25 million. They seek to make no more than 12 investments over a five-year period. The Letter of Intent offered Sentinel exclusive rights to negotiate a definitive merger agreement, which took about six months incurring significant legal costs.

The transaction allowed me to receive cash for all of my stock. Most managers sold a portion of their stock while retaining some to co-invest with Sentinel. A few managers provided cash to buy added stock. Post-transaction the company is about 32% owned by employees and 68% by Sentinel. This sale fulfilled my original goal of preserving the culture of the firm while allowing the management team the opportunity to operate the company for the foreseeable future. The primary change instituted by Sentinel is to employ debt to increase their rate of return on investment. Figure 3 shows the balance sheet after the transaction with debt equal to about 70% of capitalization – the sum of debt and equity.

Current assets		**Current liabilities**	
Cash (one payroll)	3	Accounts payable	5
Accounts receivable (90 days gross revenue)	26	Bonus payable	4
Prepaid insurance and security deposits	3	Taxes payable	9
Total current assets	32	Total current liabilities	18
Fixed assets		**Other liabilities**	
Furniture, fixtures, computers	6	Long term debt	80
Goodwill	120	Subordinated debt	20
		Total liabilities	118
		Net worth	40
Total assets	158	Total liabilities and net worth	158

Figure 3 -Post transaction sample balance sheet at year end - % of net annual revenue

The transaction price, determined through a controlled auction, is divided between assets and liabilities (net worth) just prior to the acquisition and goodwill. Goodwill represents the portion of market value of a business not directly tied to its assets and liabilities, intangible things like brand and reputation. Earnings are used to shrink debt, increasing the rate of return to shareholders.

In summary, the 19-year odyssey of ownership transition is complete. The managers were pleased that they could cash out some of their holdings. Employee morale has remained high. I received a suitable reward for spending more than a third of a century building Trinity Consultants. The transaction did not involve an "earn-out" under which I would have received an uncertain added return on my investment based on the success of the firm going forward, a time when I would have no influence on future performance. In return for selling I had to agree to a non-competition agreement extending for five years.

5. SUMMARY

This paper addresses three disparate aspects of being an entrepreneur. The planting of seeds is followed by the cultivation of the organization. Finally, the culmination occurs with a successful harvest. Success is never assured and continual application of sound judgment is essential to adapt to changing circumstances in the business and technical universe. Such adaptation will insure the desired outcome whether it is technical leadership, creation of jobs, serving clients, the accumulation of personal wealth, or a combination of these.

REFERENCES

Turner, D.B. and R.H. Schulze, 2007: Practical Guide to Atmospheric Dispersion Modelling. Air and Waste Management Association, Pittsburgh, Pennsylvania, USA, 408 pp.