A Practitioner's View of the Development of a Networked Company

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Background of the Networked Company

New organization models are emerging in the 21st century workplace. These new virtual or networked companies are unrestrained by traditional boundaries - either geographic location or parent company affiliation (Duarte & Snyder, 2001; Galbraith, Lawler & Associates, 1993). Through use of an exploratory case study, this research examines the concepts that distinguish a networked company from other organization models.

This study breaks with past research in two important ways. Past studies have focused primarily on intra-company high performance or virtual teams formed across geographic boundaries. Even when inter-firm organizations or networked companies are studied, the focus continues to be on geographic diversity and connectivity issues (Duarte & Snyder, 2001; Gibson & Cohen, 2003; Lipnack & Stamps, 2000; Weill & Vitale, 2001). The significance of this case study is the exploration of the factors that had a positive, neutral, or negative impact on the development of a co-located inter-firm organization or networked company. Finally, the study examines the impact of those factors on the business outcomes of the networked company.

The literature suggests that businesses are seeking competitive advantage by crossing organizational boundaries to team more closely with suppliers (Galbraith, 1998). Many have explored the challenges of forming self-directed work teams across geographic boundaries (Duarte & Synder, 2001; Galbraith, 1998; Galbraith, 2000; Galbraith, Lawler & Associates, 1993; Hedberg, Dahlgren, Hansson & Niles-Goran, 1994/2000; Lawler, 2000; Porter, 1985). Many organization design experts including, Drucker, Miles, Naisbitt and Savage, anticipated that networked companies are the phase of the future (as cited in Cohen, 1993).

The concepts of a networked company are deeply rooted in two business phenomena of the 1990s. The first phenomenon was the outsourcing or subcontracting of niche activities that are not part of a core product or service to suppliers (Galbraith, Lawler & Associates, 1993; Porter, 1985). For example in the oil industry, outsourcing and subcontracting facilitated cost reduction through downsizing of vertically integrated operations in the highly competitive commodity fuel and lubricant markets (Lipnack & Stamps, 2000). The second phenomenon was the emergence of the entrepreneurial

Internet based business model. Improved technical connectivity across geographic diversity allowed for more informal organization structures, both intra- and inter-firm (Weill & Vitale, 2001).

Illustrated in Figure 1 is a continuum of owner/supplier relationships as expressed through organization design. Starting on the left, the Traditional Owner/Supplier relationship is based on short-term project work, with a clear owner-defined scope of work. This is basically a contracting relationship characterized by arm's length transactions. The traditional relationship, based on a certain amount of mutual distrust between owner and supplier, requires a strong project controls system to maintain working relationships.

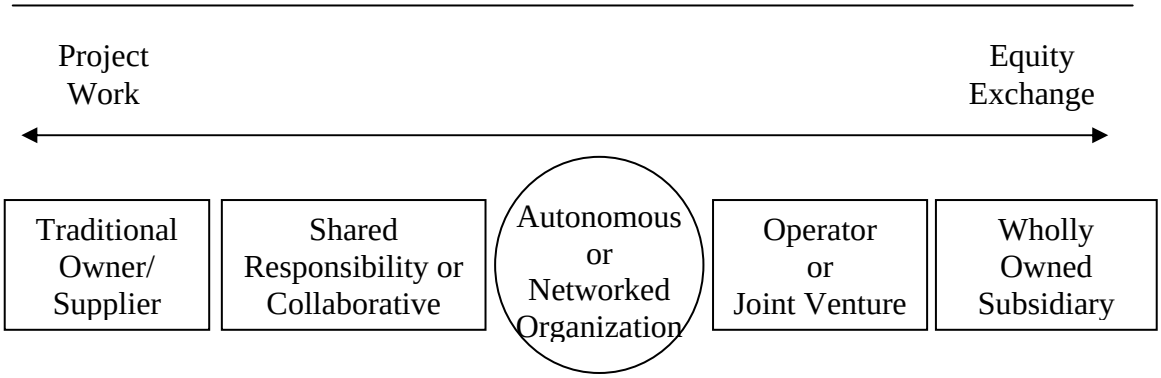

Figure 1. Continuum of Owner/Supplier Relationships. (Source: original)

The Shared Responsibility or Collaborative relationship begins to acknowledge the interdependence of owners and suppliers. Typically long-term plans are shared between partners resulting in basic trust building. There is shared responsibility for work product and customized solutions. Commonly called sourcing agreements, alliances (Galbraith, 1998), and self-directed work teams (Senge, 1990), all are included within the collaborative relationship.

Moving to the right-hand side, the exchange of equity places the responsibility for success or failure on all partners in proportion to their investment in the enterprise. Operator or Joint Venture relationship are most commonly used in the development of

petroleum resources (Lipnack & Stamps, 2000). Equity exchanges are generally harder to dissolve than alliances and usually signal a long-term commitment. (Galbraith, 1998)

It follows that, total equity control is the Wholly Owned Subsidiary relationship. In this relationship, the need for control over proprietary information or processes is so strong that the preferred solution is to buy the supplier. This approach is often applied when inequities between owner and supplier are so great that no other arrangement is suitable (Galbraith, 1998; Galbraith, 2000).

The center point of the continuum in Figure 1, the Autonomous or Networked Organization, defines a new point in the lexicon of owner/supplier relationships. In the networked organization, team members are challenged to behave as if they work for one company. Each employee is charged with "acting as owner," regardless of "where your paycheck comes from." The difficulty comes in sustaining this behavior without the benefit of equity exchange, a joint venture agreement, or the privilege of a wholly owned subsidiary.

The framework for the networked organization is defined by Galbraith as, "A network of independent companies, each one doing what it does best, acts as if it were virtually a single company" (Galbraith, 1998, p. 76). The advantage of a networked organization is having access to the size, competencies, and resources of each network partner to better meet customer needs. The disadvantage is a loss of control over both personnel decisions and proprietary knowledge.

There are basically two roles that a network partner can play in a networked organization (Galbraith, 1998). The first role, of network integrator, coordinates the activities performed by many firms, including self, in order to create value for the ultimate customer. This is the partner that generally initiates the arrangement and takes on tasks where size is an advantage (Galbraith, Lawler & Associates, 1993). Purchasing, banking, project management, and information management are a few examples. The second role, of network specialist, adds technical expertise, execution know-how, and scaleable implementation options to the networked organization. These network specialists perform one or more activities such as product design or manufacturing that provide a relevant service to the networked organization (Lawler, 2000). In a networked organization, the integrator benefits from patents, licenses, or intellectual property that

the specialist brings; the specialist benefits from an opportunity to demonstrate and field-test those same intellectual assets in the marketplace (Galbraith, Lawler & Associates, 1993).

Partnership Models

Galbraith (1998) suggests a basic model for structuring partnerships as seen in Figure 2. Variations of this model are based on experience in partnering, the strength of the relationship, and the need for coordination. In practice, partnerships may start out using the Collaborative relationship and migrate to a Networked Company or Joint Venture with maturity (Galbraith 2000). Descriptions and diagrams of the Operator or Joint Venture Model, the Shared Responsibility or Collaborative Model, and the Autonomous or Networked Organization Model illustrate the subtle differences of each organization structure.

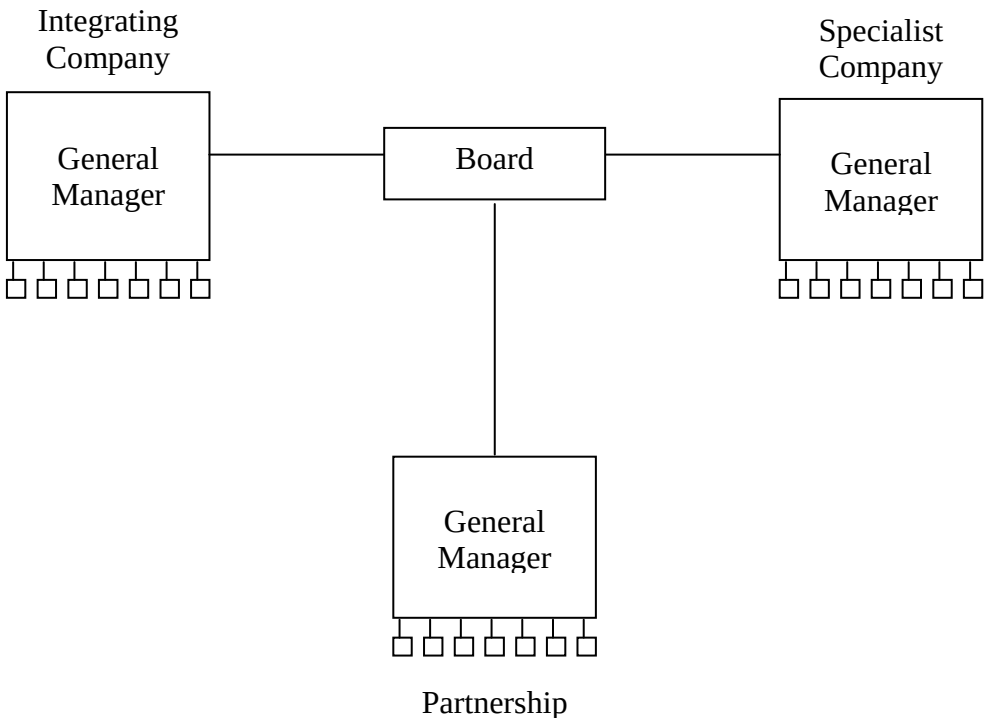

Figure 2. Basic model for structuring a partnership.[2]

The first partnership model is the Operator or Joint Venture Model as seen in Figure 3. This is the preferred model when the strong need for both relationship and

coordination drives both companies agree to an exchange of equity to anchor the arrangement. Typically the integrating company serves as the operator and manages most of the product development. The specialist company provides some manpower and technical expertise and is generally treated as a supplier to the project. The integrating company or operator fills key management positions and has final responsibility for the project outcome. Conflict is minimized, and decisions are made quickly using the Operator or Joint Venture Model.

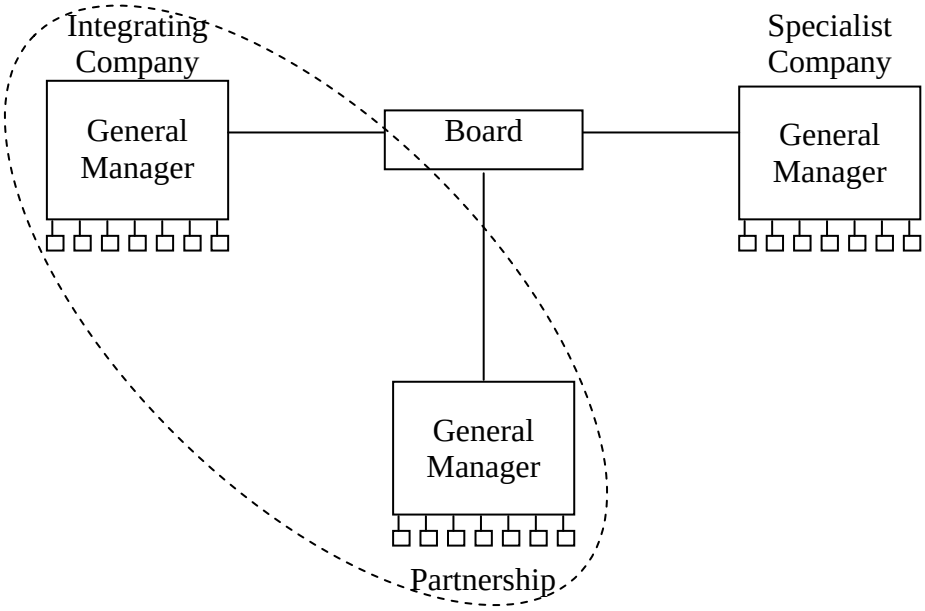

Figure 3. The Operator or Joint Venture Model.[3]

The second model is the Shared Responsibility or Collaborative Model. It is preferred when each partner brings complimentary skills to the business objectives. The need for relationship is still strong, but coordination can be somewhat relaxed. The work is divided on the basis of skill and overall management responsibility is shared. The focal point for decision making can shift between the partnership and the parent company as illustrated by the arrows in Figure 4. The difficulty in using this model is the potential for conflict and indecision among partners. For a Shared Responsibility or Collaborative Model succeed, partners must capitalize on

complimentary skills and resolve conflicts through an active board.

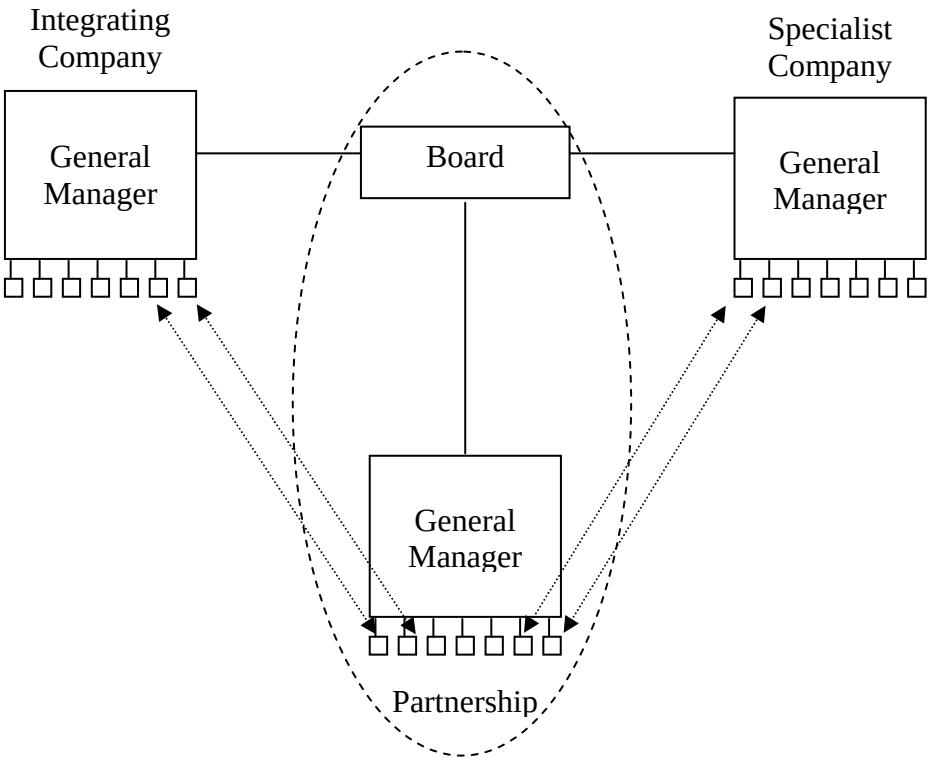

Figure 4. The Shared Responsibility or Collaborative Model.[4]

The third model is the Autonomous or Networked Organization Model, illustrated in Figure 5. In this model decision making is placed within the organization itself, independent of the parent companies. This is the preferred model when both relationship and coordination can be somewhat relaxed. Occasionally a partnership may start as a Shared Responsibility or Collaborative Model and move to an Autonomous or Networked Organization Model as success grows and in-house talent develops (Galbraith 2000). Each partner fills management positions based on skill and leadership. The board then consults only on strategic issues, leaving the operational and tactical decisions to partnership management. Networked designs often lack clear boundaries between the networked company and parent organizations and membership is fluid, depending on the need of the project (Cohen, 1993). This is the structure of a networked organization.

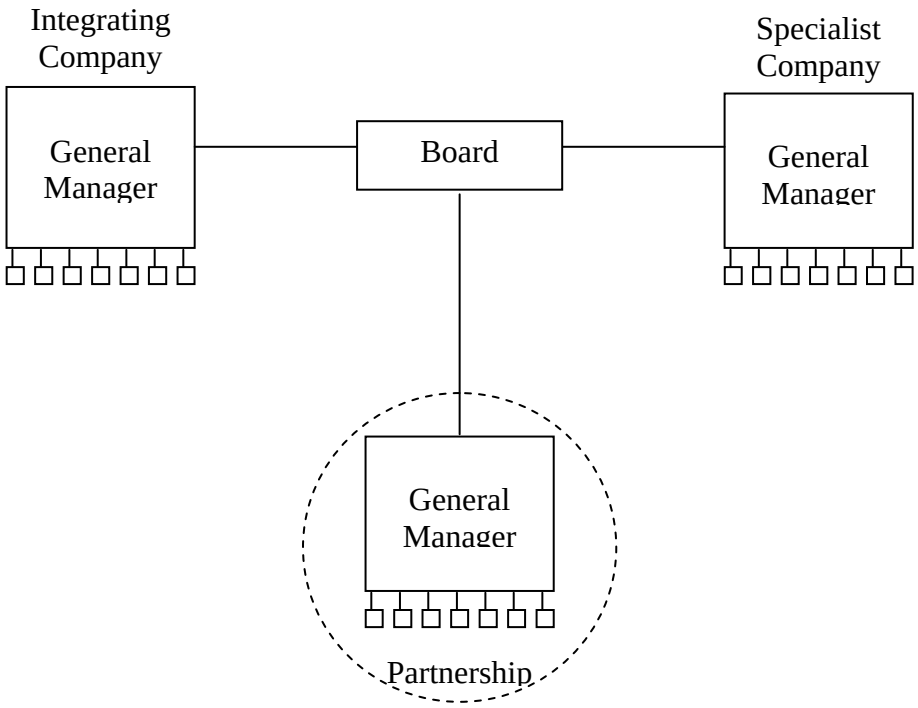

Figure 5. The Autonomous or Networked Organization Model.[5]

In order to meet the project objectives, the network integrator must leverage the technical expertise and execution know-how that the network specialists bring to the organization. This increased need for leverage, combined with greater autonomy can motivate the integrating partner to place decision-making within the networked company (Galbraith, Lawler & Associates, 1993). These are the concepts that distinguish a networked company from other organization models and leads to a network of independent companies, each one doing what it does best, yet acting as if it were virtually a single company.

Development of the Case Study

These concepts are then applied in a field case study to a networked company called the Port Arthur Remediation Team (PART). PART was formed in 1996 by Chevron, an integrated petroleum company; CH2M HILL, an environmental engineering concern; and Zachry Construction Company, a heavy construction firm. The methodology includes alternating qualitative – quantitative – qualitative phases, designed to triangulate findings from multiple sources of evidence.

First Phase - Qualitative Analysis

The first phase of research applies value chain and core business criteria analyses to determine the level of relationship and coordination needed. Then the project characteristics are explored and the organization structure examined. The resulting outcome will answer the first research question:

1. Which characteristics of the Port Arthur project stimulated the development of a networked company?

Applying Networked Organization Tools

Chevron had already strategically decided to exit the southeast Texas refining market by selling the Port Arthur Refinery to Premcor in February 1995. However, the sales agreement called for Chevron to perform any environmental remediation required by the United States Environmental Protection Agency (U.S. EPA) or the Texas Natural Resource Conservation Commission (TNRCC) before the sale was complete. The purpose of the Port Arthur project was to cost effectively manage the environmental liability at the Port Arthur Refinery that Chevron acquired as part of the 1984 merger with Gulf Oil.

Value Chain Analysis

A simplified value chain for Chevron is seen in Figure 6. This is an illustration of Chevron as an integrated oil company in both the upstream and downstream petroleum businesses. The focus of this value chain is the acquisition, refining, and distribution of petroleum based fuels and lubricants to consumer markets. For this analysis, the value chain omits Chevron's role in oil exploration, its vast domestic wholesale and franchise markets, and its important presence as an international company.

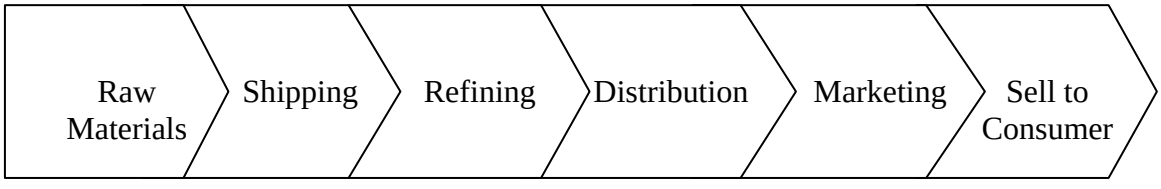

Figure 6. Chevron Value Chain. (Source: original)

The pinpointed activity in this case study is environmental remediation. A generic value chain representing environmental remediation as experienced at Chevron is

provided in Figure 7. It must be acknowledged that substantial effort goes into analyzing both human health and environmental risk, evaluating and designing the corrective action, and building regulatory support and buy in prior to remediation. Again, this is a simplified view of the environmental remediation value chain used for understanding and comparison in the context of this case study.

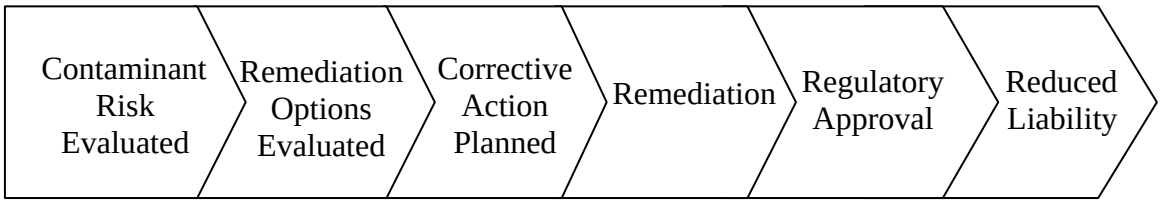

Figure 7. Environmental Remediation Value Chain. (Source: original)

An initial comparison of Figure 6 and Figure 7 shows no apparent overlap between the Chevron and the environmental remediation value chains. Although the final outcome of the environmental remediation value chain does indirectly add value to Chevron by reducing liability, the major activities of the environmental remediation value chain do not appear to add value to the acquisition, refining, or distribution of petroleum based fuels and lubricants to consumer markets.

Core Business Activity Analysis

Applying the core business activity criteria of environmental remediation as outlined in Table 1 is even more revealing. The left-hand side of the table lists questions that must be answered "yes" for the pinpointed activity to be considered core business activity (Galbraith, 1998). The right-hand side of the table lists the answers to each question.

First, although it is possible that petroleum fuel or gasoline customers find environmental remediation important, it is unlikely that they make buying decisions based on this activity. Second, the environmental engineering industry experienced significant consolidation during the 1990's. Although there are many niche environmental service suppliers, there are few firms that can handle the scope of major refinery remediation design, engineering, and construction projects. The concept of *Protecting People and the Environmental* is important to Chevron and is publicly expressed as a corporate value in *The Chevron Way* (Chevron Corporation, 1995),

however product performance is not affected by environmental remediation. Logically, Chevron would rather proactively prevent environmental liabilities than be involved in lengthy remediation efforts. And even if there is an environmental crisis of *Exxon Valdez* proportions, environmental remediation is still peripheral to gasoline customers and does not affect brand value (Miller, March 1999).

Table 1.

Core Business Criteria Analysis of Environmental Remediation

Questions to determine if environmental remediation is core to the Chevron value chain.	
Core Business Activity Criteria	Answer
1. Do gasoline customers find environmental remediation important?	Maybe
2. Are there few outside suppliers of environmental engineering and corrective action implementation?	Yes
3. Will the scope of environmental remediation have an impact on the parent company?	Maybe
4. Does this project impact gasoline (core product) performance?	No
5. Is there a strong need for integration across activities in the value chain?	Yes
6. Does this influence brand value?	Maybe
7. Does this give an opportunity for competitive advantage?	No

Finally consider the potential financial impact an environmental remediation project may have on the parent company. Known liabilities must be quantified and included in the annual report to stockholders (Chevron Corporation, 1996; Chevron Corporation, 1997; Chevron Corporation, 1998; Chevron Corporation, 1999; Chevron Corporation, 2000; Chevron Corporation 2001). If environmental liabilities can be expediently resolved, logically Wall Street will indirectly value environmental remediation activities by the absence of these liabilities on the balance sheet. However, despite possible impact to the parent company, there is no opportunity to develop a competitive advantage (Porter, 1980).

Environmental remediation activities are a cash-flow drain, which require strong integration within the environmental remediation project to minimize the resource drain to the parent company. Through value chain analysis of Figure 6 and Figure 7 and the mixed "yes, no and maybe" answers to the core business criteria in Table 1, it is apparent that environmental remediation is neither entirely inside nor outside of Chevron's core value chain. This enigma points to environmental remediation as being tangent to the Chevron value chain and makes a partnership arrangement the optimal organization structure for environmental remediation projects.

Exploring the Port Arthur Project Characteristics

Qualitative research in phase one included a review of available PART organization design documents and artifacts. A record of PART archives is included in the PART Document Database 1996-2000 and the PART Artifacts Database 1996-2000. This analysis reveals the characteristics of the Port Arthur project that stimulated the development of a networked company.

First, the regulators took a firm stand in holding Chevron responsible for the clean up of the Port Arthur refinery. The facility wide Agreed Order, signed between Chevron, Premcor, and the TNRCC on June 24, 1997, specifying administrative and technical responsibilities of both Chevron and Premcor in characterizing, evaluating, and closing priority action areas within the refinery by 2006. This agreement established investigation and remedial milestones and was hailed as a win-win for both sides. However, less than a month later, the U.S. EPA over-filed on the agreement asserting federal oversight authority with enforcement potential. Since all parties had voluntarily entered to the original Port Arthur Agreed Order, the U.S. EPA may have feared that the TNRCC was getting too friendly with the industry they were charged with supervising. In August 1999, a Supplemental Agreed Order was signed with the TNRCC requiring design, construction, closure, and post closure care of specific sites under the Resource Conservation and Recovery Act (RCRA). A review of PART documents shows that Chevron described the Agreed Order requirements as stringent, demanding a diligent work effort, and a consistent technical approach. By taking a firm stand, the regulators created a sense of urgency around completing the Port Arthur project work.

PART leadership quickly realized that the skills and processes necessary to meet PART's long-term goals were not in place. Clearly, Chevron understood that this project could be a resource drain when standard industry practices were for 40 years and over $500 million to complete the scope of work required by the TNRCC. As typical in the oil industry, Chevron established a reserve from earnings to fund the Port Arthur remediation work. The Chevron Corporation 1994 Annual Report (Chevron Corporation, 1995) details environmental remediation provisions in the amount of $304 million attributable, in part to the sales agreement for the Port Arthur Refinery[6]. This reserve was 3-5 times larger than any environmental remediation provision Chevron has taken either before or since. Based intuitively on basic value chain and core business analyses, this unique perspective of a not-for-profit project within a for-profit parent organization kindled Chevron's interest in an alternate design for organizing this work.

The need to foster strong commitment from environmental specialists partners was paramount to completing the amount of work, in the time frame required by the regulators, while minimizing environmental reserve requirements from the parent company. In 1995, the Chevron leadership in Port Arthur began to search for a business model meet that would meet regulator expectations and parent company conditions given the characteristics of the work.

To answer the first research question, "Which characteristics of the Port Arthur project that stimulated the development of a networked company?" there were three specific characteristics surrounding the environmental work at the Port Arthur Refinery that stimulated the development of a networked company. First, the work was tangential to the value chain, but was not a core business process for Chevron. The funding for the project was seen by Chevron as a cash-flow drain that needed to be minimized. Second, the regulators had demonstrated their intent to hold Chevron accountable for environmental clean up at the Port Arthur Refinery site and expected results in a relatively short amount of time. Finally, in order to marshal the expertise needed to meet the regulatory investigation and remediation milestones, Chevron would have to capture specialist resources and keep them engaged through the duration of the project. This assessment pointed Chevron leadership to the networked organization or, as they called it the virtual company.

In order to develop vertical linkage with suppliers and leverage their environmental and execution experience, Chevron assumed the role of network integrator or initiator of the networked organization at PART. CH2M HILL and Zachry Construction Company filled the network specialists' roles. Each parent company brought a powerful corporate history and values, along with technical and managerial experience in their respective field of expertise.

Figure 8 illustrates the structure of the PART organization from 1997-2002. The organization design of PART generally aligns with the Autonomous or Networked Organization Model seen in Figure 5, with the exception that PART was a triad or three-way business relationship. The relationship began as two separate dyadic relationships, each specialist partner with Chevron independently. It grew into a closed triad as the three partners came together to form a single organization with common goals and accountability. (Madhavan, Gnyawali & He 2004).

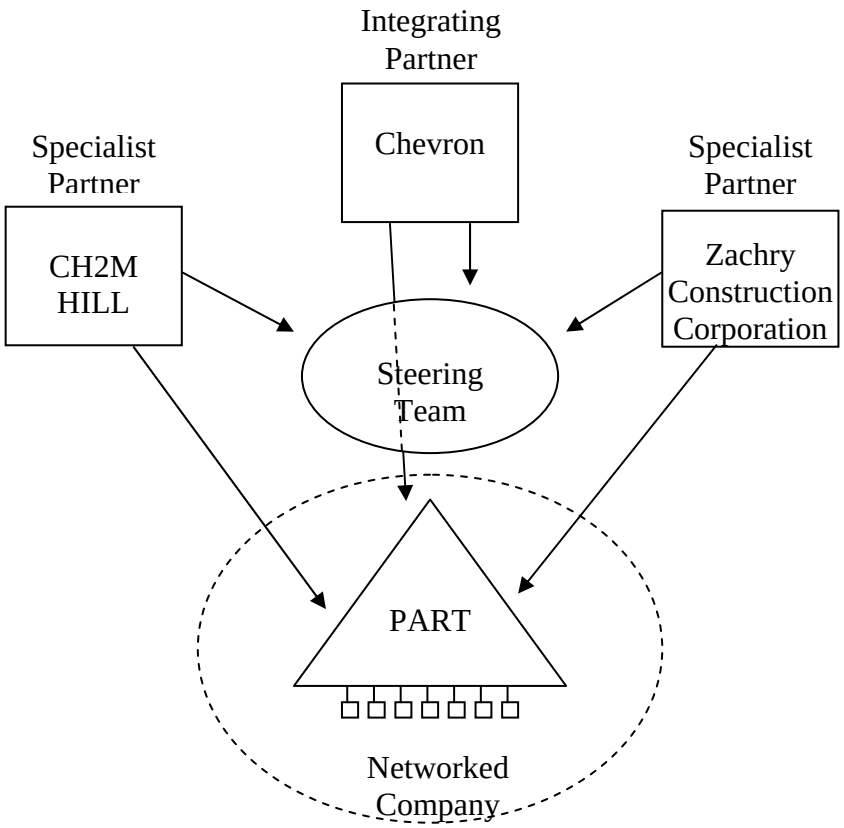

Figure 8. PART Organization Structure. (Source: original)

Second Phase - Quantitative Findings

The second phase of research on PART is quantitative. The research activity is to perform a data mining review of the Organization Diagnostic System (ODS) Survey results for PART from 1996-2000. Trend analysis and variance comparison of the survey results are used to develop theory on the factors that effect the development of a networked company. The intent of this research is to identify the factors of interest in emerging theory for preliminary answers to the research questions:

2. What factors have a positive effect on the development of a networked company?
3. What factors have a neutral effect on the development of a networked company?
4. What factors have a negative effect on the development of a networked company?

The ODS Survey is a field tested body of 136 questions, aligned into nine factors that represent the People Productivity Model (Resnick & Brown, 1989). These factors are described in Table 2.

Table 2 .

Nine Factors of the ODS Survey

Factor	Description
Direction	The clarity of the vision, mission and strategy among employees.
Processes	The measurement of the clarity of work processes and the level of effort put into continuous improvement.
Work Planning	The clarity of roles and responsibilities, action plans, and standards.
Focus	The degree to which the organization is focused on its market and its standard of excellence.
Involvement	The level of commitment and innovation throughout the organization.
Communication	The type and effectiveness of the sharing of information and the communication between managers and others.
Competence	The effectiveness of the hiring, the work assignments and training.
Work Performance	The degree of reward and recognition for work well done.
Work Environment	The level of concern, respect, and security experienced by employees.

The field testing showed that although the nine factors were distinct and different, there was a connection between six of the factors in two major dimensions as outlined in Table 3. Work Performance, Competence, Communication, and Work Environment showed association that the ODS study team called Individual Performance. Work Planning and Processes showed association the ODS study team labeled Support Systems. The other three factors – Direction, Focus, and Involvement did not show a connection as a group or with the other dimensions. This alignment will guide understanding of how factors may be observed as having a positive, neutral, or negative effect on the development of a networked company.

Table 3.

Dimensions of the ODS Model.

Dimension	Aligning Factors
Individual Performance	Work Performance, Competence, Communication, Work Environment
Support Systems	Work Planning, Processes

Applying ODS Survey at PART

The ODS Survey was administered at PART from 1996-2000. Each years an outside consultant conducted the survey with the assistance of an internal consultant and two on-site survey coordinators. Interviews and focus groups were held prior to the survey to gain a general insight into the state of the PART Program. The survey then was completed over a 4-6 week period.

The sampling strategy was both prescriptive and straightforward. The entire team was surveyed each year in group sessions of 10-15 employees. Typically, the survey coordinator assigned each employee a group meeting time to complete the survey. If the employee was absent, the coordinator followed up until the survey was completed.

After the survey results were complete, the outside consultant and the internal consultant reviewed the results and the corresponding action issues linked to the survey

questions. A summary of findings was then presented to the local PART leadership team and prioritized action plans were made based on this feedback.

Finding from the ODS Survey at PART

Following the inductive research method, a five-year trend analysis and three variance comparisons were conducted. Each analysis builds theory on the factors that effect the development of a networked company.

Trend Analysis

The PART ODS Database contains the performance factor mean response for each factors contained in the ODS survey. Those responses are plotted in Figure 9 by Performance Factor on the truncated ODS seven point scale. In this analysis, 1996 PART data acts as the baseline for the trend analysis. For practical field application, 0.5 variation of a single unit on the seven-point scale was established as noteworthy during the ODS Survey validation, two trends become apparent in the pattern of ODS responses over the five year period.

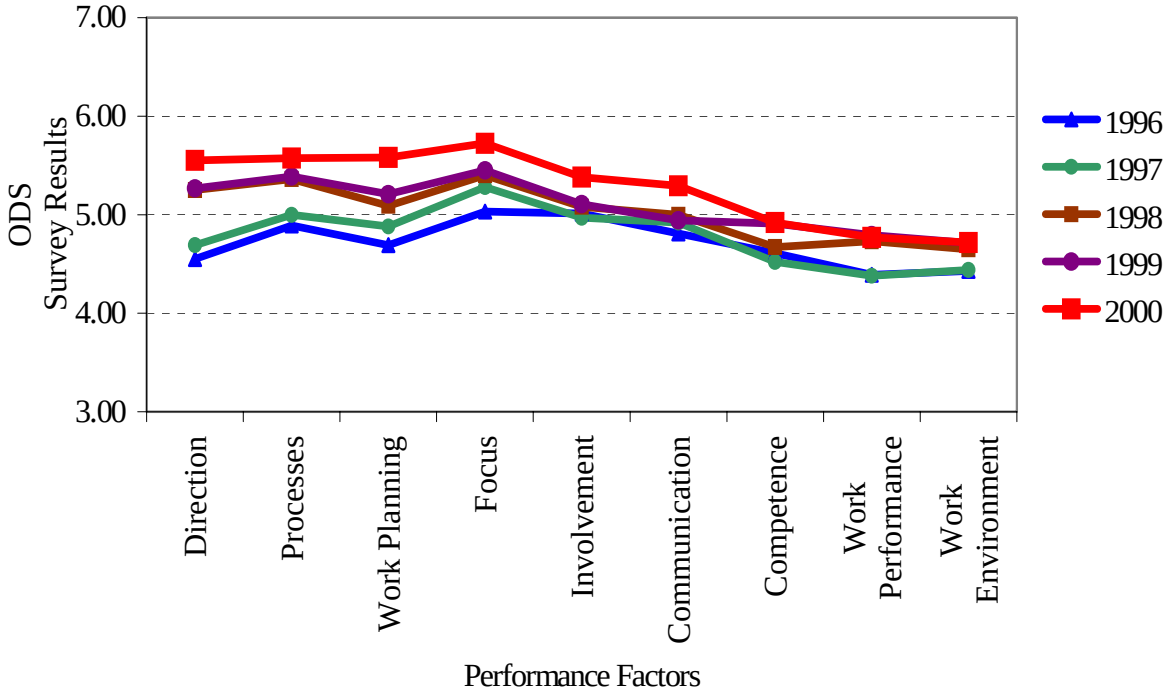

Figure 9. Trend Analysis of PART ODS Survey. (Source: original)

First, although there was statistically significant change of 0.1 or greater from year-to-year, there were few noteworthy changes in responses in any one year. Direction was the only factor to register a 0.56 change in one year from 1997 to 1998. Processes came close to this leap with a 0.36 change in the same year. However, some factors experienced regression as seen in Involvement and Competence from 1996 to 1997. For the most part, the data year-to-year shows small changes that would not be considered organizationally important. This trend shows that people and organizations generally change slowly over time and PART was no exception. Yet, over the five-year interval, there were noteworthy changes of greater than 0.5 in the average response in some factors, even as other factors continued flat or regressed. Direction, Processes, and Work Planning appear to build on a positive foundation year after year. Focus, Involvement, and Communication made some positive gains but then stalled out or regressed over time. Competence, Work Performance, and Work Environment show small changes year-to-year that are statistical significant, but were not organizationally important.

Variance Comparison

The second part of the quantitative research is variance comparison as illustrated in Figure 10. Three comparisons are made including: (a) internal comparison of PART 1996 to PART 2000; (b) external comparison of PART 2000 to the ODS Database; and (c) external comparison of PART 2000 to the ODS Benchmark.

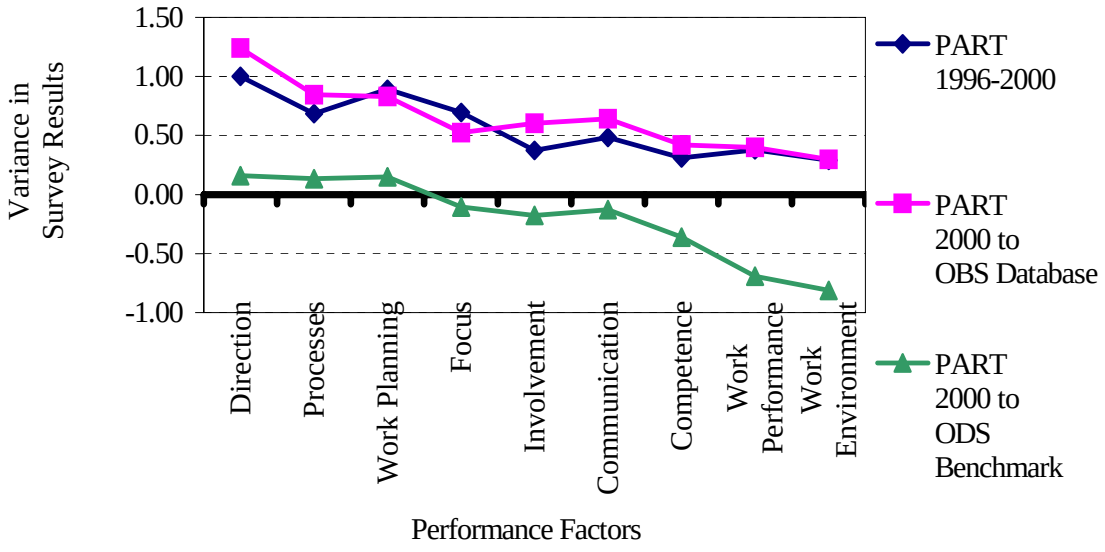

Figure 10. PART Variance Comparisons. (Source: original)

The first analysis is the internal comparison of PART scores from 1996 to 2000. Although all factors showed an overall positive change, some factors improved faster and stronger than others. Direction, Processes, Work Planning, and Focus all showed a greater than 0.5 positive change over the five year period. Communication was close with a 0.48 change. Involvement, Competence, Work Performance, and Work Environment showed a less than 0.5 change over the five-year period.

The second analysis is an external comparison of PART's 2000 scores to the ODS Database. The ODS Database is an aggregate of over 20,000 responses to the ODS Survey across 120 companies that is reviewed and updated each year as the survey continues to be used. Again all of the factors experienced some positive change at PART, but some factors recorded a dramatic improvement over the ODS Database and others did not change substantially. Direction, Processes, Work Planning, Focus, Involvement, and Communication all exceeded the ODS Database by greater than 0.5. Competence, Work Performance, and Work Environment exceeded the ODS Database by less than 0.5 and are organizationally unimportant.

The third analysis is an external comparison of PART's 2000 scores to the ODS Benchmark. The ODS Benchmark is made up of those companies that were statistically determined to be in the top 2 ½ % of all participating firms during the development of the ODS Survey. These benchmark firms were judged to have set the standard for each factor by scoring on average greater than 1.0 from the database average. In this analysis, not all factors had a positive comparison. Only Direction, Processes, and Work Planning exceeded the ODS benchmark and then by less than 0.5. Focus, Involvement, Communication, and Competence missed meeting the benchmark by less than 0.5. And Work Performance and Work Environment fell short of the benchmark by greater than 0.5.

Emerging Theory on Factors Effecting the Development of a Networked Company

The factors of interest for the second research question, "What factors have a positive effect on the development of a networked company?" are Direction, Processes, and Work Planning. These factors showed a consistently positive trend over the five year study, had a variance greater than 0.5 for the internal comparison and the database

comparison, and a positive outcome in the benchmark comparison. The research questions and factors are linked to action issues that the survey data suggests had a positive effect on the development of a networked company. These action issues were the basis of the interview questions in the final qualitative round of research to confirm the quantitative findings.

The factors of interest for the third research question, "What factors have a neutral effect on the development of a networked company?" are Focus, Involvement, and Communication. The trend analysis of these factors for over the five year period is generally positive, however all three factors appear to stand still from 1997 and 1999, without changing substantially from the baseline established in 1996. The data shows an inconsistent pattern in the internal comparison and the database comparison, but had a negative outcome in the benchmark comparison. There appears to be improvement over time, but based on the 0.5 standard for noteworthy change using of the ODS Survey, a variance of less than 0.5 is not organizationally important.

The factors of interest for the fourth research question, "What factors have a negative effect on the development of a networked company?" are Competence, Work Performance, and Work Environment. The trend analysis for these factors does not show any noteworthy changes over the five year period. Additionally, these factors had a variance less than 0.5 for the internal comparison and the database comparison and a negative outcome in the benchmark comparison. To confirm the quantitative findings, the action issues that the survey data suggests had a negative effect on the development of a networked company at PART are included in the final qualitative round of research as the basis for interview questions.

In summary, considering the dimensions of the People Productivity Model seen in Table 2 and the PART ODS survey data from each factor, the emerging theory is that Support Systems in Work Planning and Processes were strong and Direction was clear at PART. However, Focus, Involvement and the Individual Performance factors Work Performance, Competence, Communication and Work Environment were at best neutral and in some cases negative. From the quantitative data it seems that the networked company at PART had systems and processes in place for the team to succeed, but it appears to have been a difficult organization for individual performers to excel. These

factors of interest are carried forward for validation in the final qualitative phase of research.

Third Phase - Qualitative Findings

The third phase of research on PART is qualitative. A sample of members and leaders at PART from 1996-2000 were engaged in active interviews. The interview sample was drawn from senior leaders, managers, and individual contributors from all three parent companies. Two former TNRCC regulators that worked with PART and two facilitator/coaches from an outside consulting firm were also included in the interviews. Each interview was recorded, transcribed, and electronically coded.

The interview protocol with each interviewee included review and discussion of the PART Strategic Objectives and the ODS Survey factors. An analysis of these conversations is intended to answer the fifth research question:

5. How did management of these factors contribute to the business outcomes of the networked company from 1996-2000?

PART Strategic Objectives

The first topic of the interview was around the PART Strategic Objectives. The PART Strategic Objectives are seen in Table 4. When shown a copy of the Strategic Objectives, each respondent recalled seeing them and most made comment on whether they had been met. These five to ten year goals were adopted in 1997 and revised in 1999. The Agree Order with the TNRCC provided a list of the priority areas that needed to be characterized and was the genesis of the Strategic Objectives. Yet the Agreed Order was not an agreement to remediate the Port Arthur Refinery. Rather, it was an agreement to understand the nature and extent of any environmental issues on the 4,000 acre property and to resolve those issues. Using the Agreed Order as the framework, PART developed a tactical work plan and schedule. The Strategic Objectives guided the development of the annual PART business plan. This plan was submitted to the integrating partner, Chevron, for corporate review and funding.

Strategic Objective One

Strategic Objective One was to obtain key stakeholder endorsement (TNRCC and Permcor) of a holistic site management plan by July 1, 2001. Interviewees reported that communication with these stakeholders was a challenge throughout the project.

Although PART was able to work cooperatively with TNRCC, they were not as successful in working with Premcor. After the Sales Agreement for the Port Arthur Refinery was finalize between Chevron and Premcor, the goals of the two companies regarding the facility quickly diverged. Chevron wanted to resolve their liabilities in a cost-effective manner and exit the refining business in southeast Texas. Premcor wanted to operate the refinery, without much additional investment and without assuming responsibility for Chevron's liabilities.

Table 4.

PART Strategic Objectives

As revised in September 1999.

Objective 1	Obtain key stakeholder endorsement (TNRCC and Permcor) of a holistic site management plan by July 1, 2001.
Objective 2	Complete a comprehensive, validated site model by 2001 for less than $35 million.
Objective 3	Complete priority action remedial measures (Pit A/B, West Levee Site, Section 7, Section 9, Tract F Tar Pit, Inactive Separators, Inactive Wastewater Impoundments, No. 2 North Area) for a cost less than $45 million.
Objective 4	Perform all work without incident by achieving zero recordables, no unauthorized releases, and no unplanned disruption of facility operations and meeting agency commitments.
Objective 5	Complete implementation of the holistic site management plan by 2006 for less than $500 million.

In the eyes of the regulators, PART had very clear strategy and end state vision; however, they sometimes questioned the process used to develop that direction. First,

both regulators that were interviewed made it very clear that the TNRCC did not consider themselves a customer of PART or their work. Rather they considered their role to be one of technical oversight and legal enforcement. They bristled at the suggestion that their relationship with PART was driven by a transmuted market transaction. As pointed out during the interview, in more that one instance, TNRCC had the power to heavily fine Chevron, if action that they believed to be appropriate was not taken. The regulators were serious about investigating and resolving environmental issues at the Port Arthur Refinery and did not want to be considered part of the team.

It is difficult to measure progress against an obtuse goal like stakeholder endorsement. However, participants agreed that stakeholder alignment was an issue throughout the project. The relationship with Premcor was the stumbling block on Strategic Objective 1. At best, PART scored only 50% on meeting this goal.

Strategic Objective Two

Strategic Objective Two was the completion of a comprehensive, validated site model by 2001 for less than $35 million. This goal was aligned with the Agreed Order provisions to investigate the refinery and characterize any environmental issues found. The intent was to gather enough information to make informed risk-based decisions. This approach was applied to site investigation and remedial alternative evaluation.

Measuring progress on this goal was easier because it was bounded by schedule and budget constraints. The difficulty lies in the decision analysis of when the point of diminishing returns had been reached on additional investment in field and technical investigation. Overall, respondents felt that PART accomplished the work required for Strategic Objective Two, successfully developing a comprehensive site model on time, within budget.

Strategic Objective Three

Strategic Objective Three was completion of the priority action remedial measures (Pit A/B, West Levee Site, Section 7, Section 9, Tract F Tar Pit, Inactive Separators, Inactive Wastewater Impoundments, No. 2 North Area) for a cost less than $45 million. These were the same priority action areas that the Agreed Order specifically identified. By late 1998, significant parts of the refinery had been investigated and

remedial alternatives evaluated. Early in 1999, PART began moving into the execution stage of many of the priority action areas outlined in this objective.

The core of measuring progress towards completion of Strategic Objective Three was project completion on budget. Remedial measures were completed for all the priority action areas listed in Strategic Objective Three, with the exception of Section 7. This was a great source of pride for many of the Zachry workers interviewed. (Work on Section 7 had begun, when the networked company dissolved in early 2002.) However, from the integrating partner point of view, there was concern over the amount of money required to meet Strategic Objective Three. One executive sponsor from the Steering Team felt that PART's continuous search for a *silver bullet* was a distraction, saying "They seemed hesitate to just do the work better and control costs using the processes they had in place." Overall, respondents felt that PART accomplished the work required for Strategic Objective Three, but did not complete the work on budget.

Strategic Objective Four

Strategic Objective Four was to perform all work without incident by achieving zero recordables, no unauthorized releases, and no unplanned disruption of facility operations and meeting agency commitments. The safety processes at PART were so innovative that they influenced the development of safety cultures at each of the parent companies. Expanding safety to Incident Free Operations or IFO was one of the basic concepts first applied at PART. This means that the safety focus extended beyond injury to workers to include damage to property and unplanned losses in production. This significantly expanded the definition of an incident beyond industry requirements. The second concept was using behavior modification principles to monitor near misses. This idea is based on the prevention of incidents by tracking and reviewing close calls. And finally, the concept of personal responsibility for IFO was assigned to each person on the job. This empowered all PART members stop work if they did not feel the task could be performed without incident. These principles led to the development of a pro-active IFO culture, elements of which later migrated back to each parent company.

There was consensus that Strategic Objective Four was consistently met. Having an incident free work place seemed to be a badge of honor for all participants. And though each parent company had a commitment to safety, the program and results

delivered at PART stood out. PART succeeded on Strategic Objective Four by working for five years, over 2.5 million man-hours, without a recordable incident.

Strategic Objective Five

Strategic Objective Five was complete implementation of the holistic site management plan by 2006 for less than $500 million. As PART moved into field implementation, a high-level eight-year work plan was developed in late 1998. This plan laid out the Gantt chart forecast for simultaneous project milestones to achieve this objective.

In following this plan, PART challenged the typical linear regulatory model and chose to simultaneously submit multiple work plans and investigation summaries to the TNRCC. Although the agency was pleased by this demonstration of commitment and innovation, they did not have the resources or the processes to meet this level of engagement from PART. Eventually, a three to five year backlog of reports developed. The fact that PART continued to implement their work plans, prior to regulatory approval, was described as *at risk implementation* and did not win support from the regulators.

Most interviewees believed PART was on target to complete Strategic Objective 5. However, the approach to the Port Arthur Project changed in 2002, when Chevron, as the integrating partner, no longer supported the networked company. There was some feeling among respondents that Strategic Objective Five was more of a hope than a goal. In 1996, standard industry practices to do the work required by the agency would take approximately 40 years and over $500 million. Many felt that setting a goal of ten years and less than $500 million made the Port Arthur Project tangible and created motivation for those working on it.

ODS Factors at PART

During the interviews each participant was shown a list of the ODS factors from the survey and asked to comment on how the management of those factors contributed to the business outcomes at PART.

Direction

Most respondents felt that PART had a clear strategy and end state vision and that it was well known by all employees. Several employees recounted how a Commitment

Statement was developed at an off-site meeting and the fact that everyone on the project signed a poster sized copy of it. Many described how PART, a distinct organization was created out of the three parent companies. The project's end state vision, a computer enhanced photo of what the remediated areas would look like when the work was complete, was posted in conference rooms and hallways at the PART office.

The unique perspective of a networked company is that each member is asked to subordinate their parent company goals and identity to the new business relationship. Most PART members were able to do this very smoothly, as long as senior leadership supported the networked company.

Processes

Interviewees described Processes as a strength of the networked company. Not only did PART have a passion for developing processes, they also had a systematic approach to process development. When PART was being formed, Technical Processes (TPs) and Operating Processes (OPs) were systematically developed in facilitated sessions attended by all those impacted by that particular process. PART developed a comprehensive Procedures Manual that was posted to an intranet website for broad project manager access. When probed about the level of contribution from each parent company, all respondents seemed to feel that each parent company contributed to process development. There was acknowledgment that Zachry brought the core of most construction and safety processes; HILL brought roots of the investigation, engineering, and design processes; and Chevron brought the basics of project planning and management processes.

In some cases unique processes were developed at PART. Project controls, budgeting, and procurement were three areas that required business solutions that would integrate systems used in all three parent companies. This integrated approach allowed PART to run their business as a networked company, with input from all three parent organizations, but without relying on any one parent for decision support or analysis. The development of processes helped create common understanding. Processes were a factor of success at PART.

Work Planning

Work Planning was considered by most interviewees to be a strength at PART. The discussion of work planning is included in the networked company's efforts to meet Strategic Objectives Two, Three, and Five and need not be repeated here. However, clarity of roles and responsibilities deserves comment.

Although no interviewees called this out as an issue, many described wearing multiple hats and having a variety of roles at PART. Typically a new employee was on-boarded to meet a particular need in the program. After demonstrating their ability to work in the networked company and embrace the safety culture, employees were given opportunities to cross-train on other functions or learn new processes. Many interviewees said they were still using some of the specific skills they had learned at PART. Access to a pool of skilled employees was one of the compelling reasons to set up the networked company. Internal development of that pool attests to PART's independence from parent company influence.

Focus

Most participants felt that PART on-site leadership focused on delivering value and working cooperatively. However, it was difficult to benchmark this project against others because of the size of the site to be investigated and because of the networked company organization. There were no clear standards of excellence for PART leaders to compare themselves to.

Respondents noted that strong Focus allowed the networked company to accomplish a large amount of work in a very short period of time. Yet, the project was of such enormous magnitude, it was almost overwhelming to those that worked on it.

When pressed to describe the forces that drove the project, safety was consistently recognized as the strongest, followed by schedule, and then cost. It was this Focus that enabled PART to have a zero recordable incident rate.

Involvement

The level of Involvement was a factor that influenced success at PART in several major ways. As the networked company replaced hierarchical parent company structures, PART members were empowered to make work process improvements and try innovative processes. This fostered an unusually high level of commitment from the

PART workforce. They were asked for and rewarded for sharing their opinions. For some members, PART provided a fertile ground for their expertise to shine through.

Once the Direction and Focus were set, most folks were committed and had "their hearts and their heads" in the right place. A few hold-outs on commitment were noted in the Chevron and Zachry ranks. These were folks that were more comfortable working in a traditional defined hierarchical organization that required less political astuteness to get work done. PART members from HILL generally described themselves as very committed and involved in innovation at PART.

Communication

There are two aspects to this factor, internal PART member, and external stakeholder communication. External stakeholder, discussed in Strategic Objective One, will not be repeated here.

Internally, communication was adequate. The nature of project based work includes many handoffs between work teams. These transition points were probably handled well 80% of the time. However, more could have been done to keep the field workers in the communication loop.

This is a factor that the PART program worked very hard on. The very fact that all hands were required to complete the ODS survey each year said that PART was seeking input from all employees on how to run the project better. Even so, every respondent rated Communication as neutral or poor.

Competence

The on-site presence of a dedicated team allowed the work to move along faster and safer than if each job was staffed from scratch. Interviewees believed it was PART's vision to maintain access to these human resources, without having to "search the marketplace each time a new discipline was added to the team." This led to a unique situation for the construction field workers - steady work in one location! Rather than encourage seasonal hires in the field, PART took the attitude of keeping trained, reliable workers on and involving them in other aspects of the project. This business practice may have contributed to over-staffing during slow periods, but reaped benefits in IFO performance and Strategic Objective Four.

However, having a dedicated staff is not always optimum. As noted in Work Planning, many respondents reported having more than one job or primary responsibility while on this project. At some point the organization started to turn inward to fill open positions. This management bias towards established or *known quantity* employees happens frequently in firms that value long-term employment or where there are significant barriers to on-boarding newcomers.

This factor was also linked to how the organization handled employee dissatisfaction. The specialist partners were more willing to remove employees that did not fit into the networked company and in fact did so on more than one occasion. The integrating partner, Chevron, was not willing take the same action. Clearly, Competence was not a factor of success in the networked company.

Work Performance

Responses around Work Performance were mixed. The dichotomy seems to be based on the level of reward and recognition internal to PART and the same elements linked back to the parent companies.

Internal to PART, there was a robust recognition program, a pass around peer recognition trophy and quarterly recognition with Steering Team members. Honorees were given a PART logo pin and hand-written note of thanks from the PART Program Director. Most interviewees felt they were recognized by the networked organization for their contribution. Several folks related stories about processes that rewarded participation in the IFO and community programs. Generally, working at PART gave team members a sense of acknowledgment and of being appreciated.

But as strong as the local recognition program was, it was not sustainable outside of PART. The networked company had few opportunities to influence the pay and promotion of individuals back in their respective parent organizations. Although the senior leaders of PART seemed to be recognized for their contribution to the parent company, the managers and individual performers suffered from a lack of networking with others in their parent companies. There were few day-to-day chances to develop parent company mentors that would take the time to nurture and champion a manager's or an individual's accomplishments. Many PART employees found it very difficult to leave the project, and get another job with the parent company.

Through innovation in management and technology, PART was able to reduce the resources required to meet the TNRCC Agreed Order requirements from 40 years and standard industry practices of over $500 million to ten years and less than $500 million. And yet, parent company recognition and reward were not commensurate with the tremendous effort expended to transform this vast liability into an executable project. This reinforces the tangent nature of environmental work to the value chain of the integrating partner as seen in the first phase of qualitative research. Overall, Work Performance was not a factor of success in the networked company.

Work Environment

Internal to PART, team members expressed a high feeling of concern, respect, and security for their fellow workers as illustrated by their success on Strategic Objective Four. Safety meetings were held monthly and all employees were required to attend. Project managers, clerical staff, and machine operators were all required to follow the same safety protocols. Several interviewees said that this experience changed their personal behavior, even away from the job. Many commented on the relationships that grew among the individuals that worked on the project and the genuine caring they had for the well-being of one another.

However, when looking at concern, respect, and security in relation to the parent company affiliation, there was a different story. Employees seconded to this remote project felt isolated and cut off from the mainstream. Although may Zachry employees enjoyed the prospect of steady work in southeast Texas, PART was the only environmental project in their company. For Chevron, environmental issues were not core to the company's value chain. Some interviewees described a strong backlash among Chevron employees that reported to a specialist partner in the PART organization structure. These individuals reported feeling like "second class citizens because they no longer *gave* direction", but were forced to work collaboratively with those they had previously overseen. And although environmental technology is considered a HILL core competency, Port Arthur was far enough off the beaten track to give some employees the feeling of being lost in the Cajun wilderness. Professional life after PART was an issue for every PART member.

Even though the management of Work Environment allowed the project to reach the zero recordables goal in Strategic Objective Four, PART efforts could not pacify employees concerns about job security.

Research Summary

Analysis of the interviews confirms several points from the first two phases of research. Clearly, the PART Strategic Objectives were developed not only to meet the Agreed Order, but also to act as measures of the networked company's success. As participants recounted their experiences, they described the factors that contributed to each of PART's accomplishments and deficiencies.

Taking all aspects of the final qualitative phase of research into consideration, the answer to the fifth research question, "How did management of these factors contribute to the business outcomes of the networked company from 1996-2000?" confirms the preliminary findings from the quantitative phase and the answers to research questions 2, 3, and 4. The management of Direction, Processes, and Work Planning contributed to the business outcomes at PART by setting group expectations, developing common systems, and sequencing the tasks at hand. These were the factors that set the foundation for PART success. It was more difficult to balance individual and group needs when managing Focus and Involvement. A large amount of work was completed safely, but not always on time and not always within budget. Individual behaviors were not always well aligned with PART goals on these factors. In the management of the individual performance factors of Communication, Competence, Work Performance, and Work Environment, PART was ineffective. The networked company lacked the long-term commitment necessary to build employee loyalty and stakeholder support. PART quickly met the marginal return on additional investment to improve these factors. By design, the networked company focused on team success, but lacked the intangible resources for recognizing and rewarding individual performance.

Phase three of qualitative research in the longitudinal case study on the development of a networked company was the most robust. By probing into the PART Strategic Objectives and the ODS Survey factor, the in-depth interviews with leaders, members, and observers of PART revealed intrinsic characteristics of the networked company. Interviewees offered their insights, opinions, feelings, and remembrances to

round out the quantitative data analyzed in phase two around the ODS Survey and the qualitative understanding in phase one from the PART Archives. Any part of the research, by itself would be hollow, missing pockets of meaning that are captured only when the triangulation is complete.

Contributions and Recommendations

Although limited to a single case study, this richly detailed examination of a triad inter-firm relationship over time contributes to the body of knowledge on network relationships, as recently called for by others studying network relationships (Madhavan, Gnyawali, He, December 2004). To build construct validity and a chain of evidence, the research activities were explicitly linked to each research question. To validate accuracy of events and descriptions, nine PART participants, including leaders, individual contributors, and outside consultants from each parent company were asked to review key findings. To ensure reliability, three separate databases were developed – the PART Archives Database, the PART ODS Database, the PART Interview Database. Allowing for the limitations of external validity in case study research, the findings offered here are intended to build emerging networked organization theory, rather than generalize to a larger universe or population.

For future academic research, recommendations include a call for additional longitudinal case studies to test the lasting effects of networks. Of particular interest is the sustainability of inter-firm triad relationships over time. Although case study methodology can be tedious, it is through rigorous study that insight into new organization models is gleaned. The ODS Survey used in this study was not developed for specific application to networked companies. A quantitative survey instrument that has been validated and focuses on the performance factors most affecting networked organizations would be helpful to future network organization research. The study of triad relationships is emerging as a component of networked organization study. Whether these triad relationships are open with the connection focusing only on the integrating partner, or closed with a true three way relationship between all parties, may predict sustainability (Uzzi & Gillespie, 2002). Further research is needed on triad relationships.

The final recommendation is for pragmatic business application of networked organization structure, coupled with active management of both group and individual performance, while monitoring the factors that drive success of a network relationship. As the workplace evolves, adept use of each organization model along the owner/supplier relationship continuum is essential for business success. To attract and sustain the right resources – including financial, human, and technological – business leaders must be able to manage both the individual performer and the integrated team. Other factors that were outside the scope of this research, but may play a role in this balance include leadership, trust, and the ability to adapt to change. These are additional factors for future research into managing the development of a networked company.

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FOOTNOTES

[1]· From “Designing the Networked Organization,” In S. Mohaman, J. Galbraith & E. Lawler (Eds.), *Tomorrow's Organization, Crafting Winning Capabilities in a Dynamic World,* (p. 93) by J. Galbraith, 1998, San Francisco: Jossey-Bass. Copyright 1998 by Jossey-Bass Inc. Adapted with permission.

[2]· From “Designing the Networked Organization,” In S. Mohaman, J. Galbraith & E. Lawler (Eds.), *Tomorrow's Organization, Crafting Winning Capabilities in a Dynamic World,* (p. 88) by J. Galbraith, 1998, San Francisco: Jossey-Bass. Copyright 1998 by Jossey-Bass Inc. Adapted with permission.

[3]· From “Designing the Networked Organization,” In S. Mohaman, J. Galbraith & E. Lawler (Eds.), *Tomorrow's Organization, Crafting Winning Capabilities in a Dynamic World,* (p. 89) by J. Galbraith, 1998, San Francisco: Jossey-Bass. Copyright 1998 by Jossey-Bass Inc. Adapted with permission.

[4]· From “Designing the Networked Organization,” In S. Mohaman, J. Galbraith & E. Lawler (Eds.), *Tomorrow's Organization, Crafting Winning Capabilities in a Dynamic World,* (p. 90) by J. Galbraith, 1998, San Francisco: Jossey-Bass. Copyright 1998 by Jossey-Bass Inc. Adapted with permission.

[5.] From “Designing the Networked Organization,” In S. Mohaman, J. Galbraith & E. Lawler (Eds.), *Tomorrow's Organization, Crafting Winning Capabilities in a Dynamic World,* (p. 91) by J. Galbraith, 1998, San Francisco: Jossey-Bass. Copyright 1998 by Jossey-Bass Inc. Adapted with permission.

[6.] The Philadelphia Refinery was sold in August 1994 to Sun Oil Company. Part of the environmental reserve for 1994 may be attributable to that transaction. However, the Sales Agreement for the Philadelphia facility did not include retention of environmental liabilities.