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- (4) And finally, fostering professional development of faculties, by encouraging them to engage in research and submitting papers for presentation to the annual meetings of the Association. Selected refereed papers will be published in the *Pennsylvania Journal of Business and Economics*, which will be a broad-based forum to present scholarly research and views on a variety of business and economic topics.

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We are excited about the progress of APUBEF. There are increasing numbers of people involved in things related to their own success and their university's stature. We are improving our professional standards, and enjoying the collegiality of various disciplines. Our journal is now is listed in Cabells. This achievement enhances the reputation of all involved with APUBEF.

Several of our participating universities are in the accreditation process with AACSB. This organization and its journal offer an additional avenue for meeting the AACSB standards. We are especially appreciative of our deans who have personally supported these efforts and APUBEF.

We invite you to share this opportunity and these proceedings with your colleagues. We hope to have you as a participant in the fall meeting, October 1, and 2nd 1998 at the Ramada Inn, State College, PA.

-PLAN AHEAD-

Louise B. Burky

Vice President

President

DEVELOPING AND REFINING SHOPPING PERSONALITY DIMENSIONS OF RURAL INTERMARKET CONSUMERS: A PILOT EXAMINATION

Kevin J. Roth Clarion University

ABSTRACT

Consumers today have an increasing number of shopping mode options for fulfilling both product a service needs. Outshopping activities due to increased mobility, advances to catalog offerings, television home shopping opportunities, and the emergence of electronic media have added both opportunity and complexity to the consumer marketplace. When viewed together, these various modes of shopping are typically referred to as intermarket behavior. The nature and extent of this intermarket behavior has become an important consideration for retail and service providers, location specialists, as well as community planners. This pilot study presents the results of an examination of shopping personality dimensions of the consumer in relation to intermarket behavior. The findings are based on a survey of 109 graduate or senior level undergraduate students from a small University in rural western Pennsylvania. The results are targeted for use in further examining the impact of shopping personality dimensions on various forms of intermarket behavior.

INTRODUCTION

Previous research in consumer behavior has described a range of shopping personality dimensions exhibited by individual consumers. These descriptions normally take the form of psychographic dimensions (activity, interest, and opinion statements) that represent the shopping personality of a consumer. Identifying the shopping personality characteristics of different shopping groups is potentially useful to (1) marketing specialists for tailoring marketing programs and developing segmentation strategies, (2) location planners in their site selection efforts, and (3) community planners for the coordination of community development programs. In rural environments, the difficulty of implementing the above marketing activities is accented due to the extent of intermarket behavior that is often found to exist. Estimates have reached as high as sixty-five percent revenue loss in smaller communities (Papadopoulos, 1980).

Intermarket behavior encompasses all consumer shopping patterns that are directed at markets outside of the local market area. Historically, it has been defined as "consumer choices between retail trade ares in different geographic locations" (Reynolds and Darden, 1972). In today's changing marketplace, this behavior includes travelling outside of the local market area (outshopping) as well as forms of in-home shopping through catalogs, electronic media, and television shopping. Intermarket behavior has been shown to force market mix modifications to retail and service firms and changes to the planning efforts of entire communities (Anderson and Kamisky 1985, Olfert and Stabler 1993).

Past literature has shown that psychographic dimensions such as consumers who are fashion conscious, self confident, innovative, and optimistic about their financial future vary across shopping groups (Darden and Perreault 1976, Hopper and Lipscomb 1991). Reynolds and Darden (1972) suggest the shopping group referred to as outshoppers differ from other groups in that they possess a lifestyle which is active, on-the-go, urban oriented and they exhibit actions that are neither time conscious nor store loval. An additional study by Darden and Perreault (1976) reveals that outshoppers are fashion conscious, self confident, demonstrate greater patronage innovative behavior, and are

more financially optimistic. Further research provided by Hawes and Lumpkin (1984) suggests that the frequent outshopper is less loyal to local merchants, a shopping innovator, an opinion leader, self confident, credit oriented, fashion conscious, and more oriented to shopping malls. Research by Blakney and Sekely (1993) and Lumpkin and Hawes (1985) provide additional support for many of these assertions for both outshoppers and in-home shoppers.

A review of the literature provides evidence of a wide range of shopping personality dimensions related to shopping behavior. The purpose of this study is to identify and further develop questionnaire items which represent shopping personality dimensions of consumers that are conceptually appealing to the study of intermarket behavior.

PROCEDURES

This study employs factor analysis to identify the relevant dimension's for assessing the shopping personality of an individual. Items are derived from an extensive survey of the shopping personality literature as well as additional items developed specifically for this study. According to Stewart (1981, p. 51), factor analysis is appropriate in "the study of interrelationships among variables in an effort to find a new set of variables, fewer in number, than the original variables, which express that which is common among the original variables." Emphasis in this study is placed on developing measures of shopping personality which have desirable reliability and validity properties. These properties are considered critical in developing strong measures of theoretical constructs. Reliability has been formally defined as "the degree to which a measure is free from error and yields consistent results" (Peter 1979, p. 6). A measure is, therefore, considered reliable when different measures of the same construct show similar results. A measure is generally considered valid when it "measures what it purports to measure" (Reason and Rowan 1981, p. 239). It has been widely suggested that reliability is a necessary but insufficient requirement for validity. Components of "Churchill's Paradigm" for developing a measure will be used to address both reliability and validity issues in the development of the shopping personality dimensions in this study.

According to Churchill (1979), the initial stage of developing "better measures" is to identify the appropriate domain for the construct of interest. Care must be given to ensure the inclusion of relevant dimensions as well as the exclusion of elements not in the domain of interest. The relevant domain is typically based on a thorough review of past literature on the construct. Several related areas on shopping personality have been examined to assist in defining the construct in this study. These have included shopping personality, psychographics, and various lifestyle dimensions of shopping behavior. As previously identified, shopping personality consists of the psychographic dimensions (activity, interests, and opinions) that represent the shopping personality of an individual. In future work, these dimensions can be used to help differentiate the shopping personality of consumers who exhibit a more local orientation from those with an intermarket orientation. In addition, differing modles of shoppping behavior can be assessed.

The second stage in the process of developing a measure involves capturing the appropriate domain of interest. This speaks directly to the issue of content validity. Nunnally (1978) identifies appropriate criteria for assessing content validity in the development of an instrument. These criteria relate to the adequacy in sampling the content and the adequacy in translating the content into scale items. The objective of these primary phases (domain specification and test item generation) of measurement should result in items which capture the construct of interest.

In this study, questions were generated from two sources. An initial interview was conducted with a convenience sample of ten individuals personally known to possess distinctive personalities in relation to their shopping behavior. Examples were given individually to respondents through scenarios (Calder, 1977) concerning dimensions of shopping personality. In addition to the above procedure, an extensive review was conducted of the literature on shopping orientations and shopping personality. From this combined approach, 58 items were

generated representing twelve distinctive dimensions of shopping personality. An attempt was made to capture as many of the relevant dimensions of the shopping personality construct as possible thus addressing the content validity of items represented by the scale (Cronbach and Meehl, 1951).

To assess face validity of the scale, three professionals from the marketing and consumer behavior field reviewed the questions on shopping personality. These individuals represented both academic and applied market research interests. After several item editing modifications to questions, the 58 items were randomly assigned and included in the pilot study questionnaire.

The questionnaire was presented for study in a five point Likert format. Respondents were asked to indicate their level of agreement or disagreement with each item. The questionnaire was administered during the Spring of 1996 to 109 students who were either at the graduate level or in their final undergraduate semester. Demographically, the sample was somewhat younger and better educated than comparative population characteristics. Other demographic comparisons were similar to that of the population.

RESULTS

The initial factor analysis on the 58 items employed a principal component factor extraction method with a varimax rotation. Principal component extraction is a common factor procedure used widely in the marketing literature. Varimax is one of the most common rotation methods and is considered one of the best orthogonal rotation procedures (Dielman et al, 1972). Using these procedures, the initial factor analysis resulted in an eighteen factor solution relying on the widely used eigenvalue greater than 1 procedure. The removal of unrelated items and re-factoring lead to a seven factor solution explaining sixty-nine percent of the item variance. Two additional items were removed due to cross loadings on several factors. This resulted in six factors explaining sixty-eight percent of the item variance. Twenty items remained with high loadings of .60 or more on only one factor and no

significant cross loadings.

Factor one dealt with consumer support of local merchants and shopping areas, e.g., shopping in the community in which you live and loyalty to the local shopping area. This factor initially included six items and was labeled "local market loyalty." Two of the initial items had low item-to-factor correlations and high cross loadings on other factors. These two items were removed from further consideration. The four items remaining are identified with an asterisk in Appendix-A. The retained items each loaded on only one factor with loadings ranging from .72 to .82. Communality estimates ranged from .58 to .71. The coefficient alpha for this factor was .87. A factor analysis was run on the remaining four items resulting in a single factor solution explaining sixty-two percent of the item variance.

Factor two included five items relating to the use of credit in patronage behavior, e.g., possession of charge accounts and a preference for shopping at places where credit can be used. This factor was labeled "credit orientation" with the retained items identified in Apendix-A. One item cross loaded on several factors. A second item had a low item-to-factor correlation. The three remaining items each loaded on only one factor with loadings ranging from .84 to .89. Communality estimates ranged from .72 to .81. The coefficient alpha for this factor was .76. The three items were included in a factor analysis resulting in a single factor explaining seventy-six percent of the item variance.

Factor three involved five questions pertaining to the confidence consumers place in themselves, e.g., I have more self confidence than others and I like to be considered a leader. This factor was labeled "self confidence" as exhibited in Appendix-A. One item loaded on an alternative factor and was subsequently removed. The remaining four items had factor loadings which ranged from .65 to .77. Communality estimates were .43 to .69. This factor had a coefficient alpha of .71. A factor analysis on the four items result go in a single factor explaining fifty-four percent of the item variance.

Factor four pertained to five items concerning the orientation exhibited towards community service, e.g., active membership in more than one social or service organization and worked on a project to better our town. This factor was labeled "community service orientation." Two of the items cross loaded on other factors and were removed. The three remaining items had factor loadings which ranged from .79 to .82 with communality estimates ranging from .71 to .74. Coefficient alpha for this factor was .68. A factor analysis of the three items resulted in a single factor solution capturing sixty-nine percent of the variance of the items.

Factor five pertained to an orientation towards risk taking, e.g., trying new and different shopping experiences and trying new products before others. This factor was labeled "venturesome" and initially included five items. One item had a high cross loading on another factor. A second item had a low item- to-factor correlation. The remaining three items had loadings ranging from .76 to .81. Communality estimates were .69 for each item. Coefficient alpha for this factor was .57. A factor analysis of these three items resulted in a single factor solution explaining sixty-four percent of the item variation.

Factor six pertained to a preference for a shopping mall environment with four initial items. Two of the four items had low communalities and lowered coefficient alpha for the scale. For this reason, this factor was subsequently dropped. In the analysis of the five factors, items were retained with high factor loadings (.65 or above), high communalities (.50 or above with the exception of one item) and items which did not result in increases to alpha when eliminated. Seventeen items were retained at the completion of this analysis. These remaining 17 items were factor analyzed resulting in a five factor solution. No cross loadings above .30 remained in the solution. Sixty-seven percent of the variance was explained by the five factors.

In addition to principal components with a varimax rotation, the data set was subject to principal factor, alpha, and maximum likelihood factor analysis, as well as an oblique rotation (Harris-Kaiser orthoblique method). Results from

each of these methods were generally consistent. The items and factors derived from the study with their corresponding communalities and coefficient alphas are shown in Appendix-B.

Several tests are suggested in the literature for assessing the strength of the factor solution (Stewart 1981, Rencher 1995). To test the strength of the derived five factor solution in the study, three such tests have been applied. The five factor solution is initially supported by the scree tail test (Cattell, 1966). This test is derived by plotting the latent roots against the number of factors in order of extraction. It is then used to identify the optimum number of factors that can be extracted before the amount of unique variance begins to dominate the common variance structure. The point at which the curve begins to straighten out is considered the maximum number of factors to extract. The results of the scree test support the five factor solution derived in this study.

In addition to the scree test, the factor solution was subject to a hypothesis test to examine the probability under the null hypothesis of obtaining a chi square statistic greater than that observed. The hypothesis test is specified as follows:

> HO: no common factors in the factor solution HA: at least one common factor in the factor solution chi square = 626.74 degrees of freedom = 136 probability > chi square = .0001

Based on the above information the null hypothesis of no common factors is rejected suggesting at least one common factor in the factor solution.

An additional test was applied to the solution which examines the appropriateness of the data matrix for factoring. This test is referred to as the measure of sampling adequacy (MSA) offered by Kaiser (1970). The test provides a measure of the extent to which the variables in a matrix belong together and are thus appropriate for factor analysis. The MSA in the study was .67 thus approaching the "middling" rating according to

calibrations of the MSA provided by Kaiser and Rice (1974). Ratings below .50 are considered unacceptable.

CONCLUSIONS

This pilot examination uses factor analysis to identify several dimensions of shoppina personality that are conceptually appealing to the study of intermarket behavior. Results should be verified through further testing on a more diverse and larger sample of consumers. The shopping personality dimensions found to have both valid and reliable characteristics include local market loyalty, community service orientation, credit orientation, venturesome, and self confidence. These characteristics are potentially useful in developing shopping personality profiles of patronage groups as well as for testing shopping personality influence on demographic and attitudinal variables in relation to intermarket behavior. Future research should examine these dimensions in terms of specific hypotheses concerning (1) how they relate to levels of overall intermarket behavior, (2) how they differ between the different modes of intermarket behavior, and (3) how they differ for product categories across different modes.

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APPENDIX A

SHOPPING PERSONALITY SCALE - FACTORS GENERATED FROM FIFTY-EIGHT ITEMS WHEN CONSTRAINED TO SIX FACTORS

Factor 1 - Local Market Loyalty

- You have to give the independent merchant a chance to make a living. I am loval to my local shopping area.
- * I owe it to my community to shop at local stores.
- * I shop locally to support local merchants and business districts.
- * People should shop at stores in the town where they live.
- * It is important to shop in the community in which you live.

Factor 2 - Credit Orientation

- * I buy many things with a credit card or charge card.
- I like to pay cash for everything I buy.
- It is good to have charge accounts.
- * I regularly pay for things with credit.
- * I prefer to shop at places where I can use my credit card.

Factor 3 - Self Confidence

- * I think I have more self confidence than most people.
- * I am more independent than most people.
- I think I have a lot of personal ability.
- * I like to be considered a leader.
- * When I have to make decisions with others, I am usually the one who ultimately decides.

Factor 4 - Community Service Orientation

I am an active member of more than one social or service organization.

* I have personally worked on a project to better our town.

- * I like to work on community projects.
- * I volunteer my time and efforts on a regular basis to improve our town.

People should give of their time and energy to help their community.

Factor 5 - Venturesome

I enjoy trying new products before other people do.

- * I like to go other places for the sake of novelty and variety.
- * I like to try new and different shopping experiences.
- * I like to experiment.

I like to be the first of my friends to try something new.

Factor 6 - Shopping Mall Orientation

I enjoy going to suburban shopping centers. I prefer shopping malls over down town areas. Shopping malls are the best places to shop. When given the opportunity, I always shop at a shopping mall.

* items that are retained for inclusion in final questionnaire

APPENDIX-B

SHOPPING PERSONALITY SCALE - FINAL SEVENTEEN ITEMS REPRESENTING FIVE FACTORS

Factor Names (Alpha)

communality estimates

Local Market Loyalty (.87)

.71 I owe it to my community to shop at local stores.

.67 I shop locally to support local merchants and business districts.

.58 People should shop at stores in the town where they live.

.66 It is important to shop in the community in which you live.

Credit Orientation (.76)

.77 I buy many things with a credit card or charge card.

.81 I regularly pay for things with credit.

.72 I prefer to shop at places where I can use my credit card.

Self Confidence (.71)

.53 I think I have more self confidence than most people.

.58 I am more independent than most people.

.69 I like to be considered a leader.

.44 When I have to make decisions with others, I am usually the one who ultimately decides.

Community Service Orientation (.68)

.71 I have personally worked on a project to better our town.

.74 I like to work on community projects.

.73 I volunteer my time and efforts on a regular basis to improve our town.

Venturesome (.57)

.69 I like to go other places for the sake of novelty and variety.

.69 I like to try new and different shopping experiences.

.69 | like to experiment.

THE PATTERNS OF STRATEGIC DECISION MAKING OF FILIPINO ENTREPRENEURS

Tony Chu Russell Manuel West Chester University

ABSTRACT

Entrepreneurship has been presented in the literature as a desirable alternative to organized employment. Moreover, this role has been found to fulfill many people's dream of becoming independent, provides them with unlimited earning opportunities, and gives them a sense of self satisfaction.

Filipino entrepreneurs, in general, consider small business ownership the only means to survive, and if given a choice, they would take another path to earn their living. A survey conducted among 158 Filipino entrepreneurs in the metropolitan Manila and outlying provinces in the Philippines reveal some interesting findings.

First, small business ownership has been found to be a desirable career choice for many Filipino. It is a means for less educated people to make a living or for many low paid workers to supplement their income. For a majority of the Filipino entrepreneurs, business ownership becomes a necessity for their survival. With an annual income of \$960.00 U.S. per capita, the Filipino prefers to look for a better alternative to earn their living.

In financing their business, a majority of Filipino entrepreneurs consider their family members or their own savings the main source of funding. In the past, a businessman had no chance to get a loan from a bank unless you know someone of influential importance. Presently, the new economic policies being introduced under the Ramos Administration provide aspiring qualified entrepreneurs an opportunity to apply for loans from government as well as private financial institutions. However, most respondents reported to under-utilization of these funding sources opting to rely on informal channels of financial support.

Finally, when making their strategic decision, Filipino entrepreneurs tend to consult their business acquaintances, friends, and family members, not lawyers or financial advisors. In addition, Filipino entrepreneurs try to concentrate their efforts on building their business and passing them ont to their children. This unique behavior tends to be different from that observed in other Asian countries.

Is this a result of economic necessity or a culture affected by fifty years of American occupation? The answer remains to be seen.

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RANDOM WALKS IN THE U.K. POUND/ U.S. DOLLAR EXCHANGE RATES

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ABSTRACT

Since the adoption of flexible exchange rates in the early 1970s, tests of foreign exchange rate efficiency have abounded. The methodology of these tests have become increasingly complex. This paper follows the approach that the exchange rates follow a random walk. Efficiency testing of exchange rates under the null hypothesis of random walk is a natural progression in the research of exchange rate determination.

INTRODUCTION

Since the adoption of flexible exchange rates in the early 1970s, tests of foreign exchange rate efficiency have abounded.1 The methodology of these tests, like the foreign exchange markets themselves, have become increasing more 724 In spite of this increase in the complex. sophistication of efficiency testing, the three main approaches used in the 1970s to test foreign exchange rates have remained relatively unchanged. The first approach is to examine exchange rates in an arbitrage context to determine if they are out of parity with interest rates or other exchanges rates. If a profitable trading scheme can be developed due to exchange rate mispricing, the conclusion is that market inefficiency exists in the currency. The second approach to efficiency testing concerns the ability of forward exchange rates to predict corresponding future spot rates. If the forward rate is found to be a biased predictor, even after considering potential risk premiums, profitable trading schemes may be developed to take advantage of exchange rate mispricing, and therefore, market inefficiency is said to exist. The third approach to exchange rate efficiency testing is to examine exchange rates as a time series to determine whether or not they follow a random walk. If exchange rates do not follow a random walk, this opens up the possibility of profitable trading schemes if the pattern detected is economically significant.

This paper follows the third approach to exchange rate efficiency testing, whether or not exchanges rates follow a random walk. Efficiency testing of exchange rates under the null hypothesis of the random walk is a natural progression in the research of exchange rate determination.

Section one reviews the theory of market efficiency and the efficient markets hypothesis with respect to exchange rates. Section two summarizes recent literature on random walk testing in foreign exchange rates. Section three, performs empirical tests for the random walk in the U.K. pound/U.S. dollar (\pounds /\$) annualized real exchange rate covering the period 1869 to 1994, as well as, the \pounds /\$ monthly nominal exchange rate from January 1973 to March 1995. The emphasize is on times series analysis and its link with the economic theory behind real exchange rates. Section four concludes the paper.

1. Market Efficiency Theory

Market efficiency, as originally defined by Fama (1970) and later updated by Fama (1991), can be

defined as saying that exchange rates² fully and instantaneously reflect all relevant and available information. Given that exchange rates incorporate such information, investors cannot devise any trading rules capable of earning excess profit beyond an exchange rate's meanvariance equilibrium return. A brief review of the types of efficiency tests will be helpful to orient the reader as to the focus of this paper.

Fama (1991) divides tests of efficiency into three categories: 1) tests for return predictability, where traditional weak-form tests using past returns as well as other lagged variables such as dividend yields, volume, or macroeconomic variables are conducted; 2) event studies, where the timing as well as the magnitude of the adjustment of prices to information announcements is measured; 3) tests for private information, where the ability of investors, such as corporate insiders and professional investment managers, to earn excess profits is examined. The focus of this paper is on tests for return predictability of both real and nominal exchange rates based on past returns.

Like many other market efficiency tests, exchange rate efficiency tests run head on into the jointhypothesis problem. The true nature of efficiency cannot be tested directly and therefore cannot be unambiguously proved since any test of market efficiency, as it stands today, must be tested in conjunction with a model of exchange rate equilibrium. Therefore, any rejection of market efficiency leaves open the question as to whether the rejection is due to inefficiency or to a mispecified model of equilibrium.

2. Literature Review

A traditional method of testing exchange rate efficiency, under the time series approach, is devising and evaluating mechanical trading strategies. Such strategies are generally straight forward and have the added advantage of not relying on a model of exchange rate equilibrium. Consequently, joint-hypothesis problems are avoided.

Tests of mechanical trading strategies are performed by Dooley and Shafer (1983) who examine the profitability of filter rules for nine currencies. An investor following a filter rule simply buys a currency after it has risen by *x* percent above it's most recent trough or sells a currency after it has dropped *x* percent after its most recent peak. Dooley and Shafer find that very small filters ranging from 1 to 3 percent systematically generate profits in excess of transactions costs (bid/ask spreads) and cost of carry.

Tests of technical trading strategies like that of Dooley and Shafer (1983) have given way to more sophisticated and insightful testing methodologies in the past 10 years. These testing procedures involve time series analysis that is used in determining whether or not asset prices follow a random walk³. Although there has been an explosive volume of literature employing time series models in testing for random walks in stock prices, significantly less effort has been put into testing real and nominal exchange rates. Nevertheless, some researchers have borrowed the insight gained in examining stock prices and successfully applied them to foreign exchange rates.

In order to gain a better understanding of time series analysis as it is applied to exchange rates it would helpful to digress a bit and briefly review the evolution of time series models used in the testing of stock prices for random walks. A natural place to begin is the revolutionary work of Summers (1986). Summers (1986) is a revolutionary article in time series analysis of stock prices for two reasons. First, Summers attacks the credibility of market efficiency research techniques by claiming that they are of low power. Prior to this article a substantial body of literature had concluded that stock prices follow a random walk, thereby indicating that market efficiency was the rule rather than the exception. Summers analyzed the econometric techniques used to draw these conclusions and argued that most researchers were accepting the null hypothesis of market efficiency because their statistical tests lacked the discriminating power needed to reject it.

The second reason for the notoriety of Summers (1986) is that he brought forward the idea that transitory components (temporary deviations from

"fundamental value") slowly decay and therefore, last much longer than previously thought⁴. Most researchers prior to Summers (1986) assumed that transitory components were very short in duration and, therefore, only examined autocorrelation coefficients at short lags. As a result, Summers concludes that most previous time series analysis of stock prices were misspecified since they were based on autocorrelation coefficients of short horizons rather than long horizons.

Following Summers (1986) the literature on tests for return predictability concentrate on analyzing stock prices as two discernible elements, a transitory component and a permanent component. Fama and French (1988), working from the insight of Summers (1986) and Cochrane (1988), developed a times series model that describes the nature of each of these two stock price components. The permanent component is the nonstationary part of the stock price that follows a random walk, and is often referred to by many researchers as the fundamental value of the stock price.⁵ The transitory component can be thought of as a temporary deviation from fundamental value. Fama and French (1988) contend that the transitory component is a slow mean reverting component of stock prices and may be detected by examining the extent of autocorrelation over both short and long horizons.

In testing for random walks in stock prices, Lo and MacKinlay (1988) develop and use an extremely practical statistical tool designed to discriminate between time series that follow a random walk and those that do not. Lo and MacKinlay call this statistical tool the variance ratio (VR) because it employs a ratio of two variances of stock prices returns based on different intervals:

$$VR(q) = \sigma^2(q)/\sigma^2 \tag{1}$$

The term $\sigma^2(q)$ represents the variance of a time series based on differences of every qth observation, while σ^2 represents the variance of the same time series based on each observation (or smaller differences than q).

The theoretical derivation of the variance ratio is

based on the assumption that the price of an asset follows a lognormal diffusion process. A diffusion process represents one class of continuous time Markov processes where small changes in state occur continually.⁶ Let X_t be a state (ie., a random variable such as a stock price) that is indexed according to time, t. Formally this can be represented as follows:

$$dX_t = udt + \sigma dW_t \tag{2}$$

where dX_t represents an infinitesimal change in the stock price, u represents the mean return on the stock per period or a drift parameter with dtas an infinitesimal period of time, σ represents the volatility of the stock, and dW_t represents a Wiener process. The Wiener process captures the random element, or Brownian motion, of the stock price.

Increments to X are independent over time so that the probability of going from X_0 to X_1 , where X_1 occurs after X_0 , is independent of what state occurred previously. If X is sampled at discrete and equal intervals then the variance of the increments is linear in the observation interval.

The fact that the variance of the increments is linear in the observation interval allows the theory of diffusion processes to be easily transformed into empirical tests. From a practical point of view, the theory behind the variance ratio is that it will approximate 1 if the series (a string of X's over time) follows a random walk since the covariances between returns in the numerator and the denominator [equation (1)] should be zero. For example, using a times series of monthly (M) stock returns (r), the variance of a guarter (3 months) can be represented by var r(M1) + varr(M2) + var r(M3) + 2cov r(M1,M2) + 2cov $r(M2,M3) + 2cov r(M1,M3) \approx 3var r(M1)$. If this time series is a random walk then each covariance should approximate zero implying that the variance of one quarter (a 3 month period) should equal 3 times the monthly variance:

varr(M1) + varr(M2) + varr(M3) = 3 varr(M1) (3)

Empirically this statistical tool has proven to be quite effective. By analyzing the variance ratios

(using different frequencies as noted by "g") of a particular time series one of three scenarios becomes readily apparent for a rejection of the random walk hypothesis. If the trend (based on long frequencies) in the variance ratios is positive and continues to move significantly above 1, this indicates positive autocorrelation in returns and the time series is continuing to grow or decay over time without any apparent bound as shown in figure 1. If the trend in the variance ratios is positive, but approaches zero this indicates mean reversion (stationarity) in the time series as shown in figure 1.7 Lo and MacKinlay (1988) not only develop the variance ratios as described above, but also develop a standardized test statistic, z(q), which, asymptotically, has a standard normal distribution. Two versions of the z(q) statistic are offered by Lo and MacKinlay (1988), one for homoscedastic increments, z*(q), in the times series and one for heteroscedasticity increments, z**(a).

-see Figure 1-

Lo and MacKinlay (1988) perform empirical tests based on variance ratios on the weekly observations for the period 1962 to 1985 for the combined NYSE and AMEX market index returns as well as individual securities. The tests are performed under the null hypothesis of the random walk where in variance ratio terms:

$$H_{\alpha}: VR(q) = \sigma^{2}(q)/\sigma^{2} = 1$$
 (4a)

where $\sigma^2(q)$ represents a variance statistic that incorporates asymptotic properties and overlapping differences as well as unbiasedness and is calculated as follows:

$$\sigma^{2}(q) = \frac{1}{m} \sum_{k=q}^{nq} [X_{k} - X_{k-q} - qu]^{2}$$
(4b)

$$m = q(nq - q + 1)(1 - \frac{q}{nq}) \tag{4c}$$

$$\sigma^{2} = \frac{1}{nq-1} \sum_{k=1}^{nq} (X_{k} - X_{k-1} - u)^{2}$$
(4d)

Lo and MacKinlay (1988) strongly reject the random walk hypothesis for the market indices, however, for reasons other than mean reversion as suggested by Summers (1986) and Fama and French (1988). The variance ratios continue to grow above 1 at larger frequencies implying the market indices are continuously moving higher, as in figure 1. For individual securities, however, the ratios were not significantly different from 1 implying the random walk hypothesis can not be rejected. Lo and MacKinlay offer an economically plausible explanation for this behavior. They reason that individual stocks contain a significant amount of "idiosyncratic" or company specific noise thereby eliminating any predictable components.

The work performed by Summers (1986), Fama and French (1988), and Lo and MacKinlay (1988) can be applied to asset prices, other than stocks, as well. For example, Glen (1992) utilizes variance ratios, as developed by Lo and MacKinlay (1988), on annual real exchange rates for the period 1900 to 1987 for seven currencies against the U.S. dollar, the Canadian dollar, the French franc, the German mark, the Italian lira, the Japanese yen, the Netherlands guilder, and the U.K. pound. The random walk hypothesis (VR(q) = 1) is rejected by Glen in favor of mean reversion. The focus of our study is not only to extend and update the work of Glen (1992) for the \pounds real exchange rate, but also to examine \pounds nominal exchange rate for the period after the collapse of the Bretton Woods system.

Glen (1992) uses real exchange rates because he is primarily concerned with the theory of absolute purchasing power parity (PPP) and the fact that PPP implies mean reversion in real exchange rates. Using the $\pounds/\$$ as an example, the real exchange rate is calculated as follows:

$$e_r = SP_{uk} / P_{us} \tag{5}$$

where e_r is the real exchange rate, S is the spot or nominal exchange rate, and P_{uk} and P_{us} are the

U.K. and U.S. price levels, respectively.

PPP, on the other hand, is calculated in the following manner:

where k is equal to one if PPP holds. Here, p_{us} and p_{uk} represent the costs of an identical basket of goods in U.K. pounds and in U.S. dollars. In the absence of a basket of goods, however, PPP can be estimated using equation (6) if it is assumed that the prices of the baskets of goods, p_{us} and p_{uk} , move in direct proportion to changes in the corresponding price levels of each country, P_{uk} and P_{us} . Therefore, substituting the price levels of each country into equation (7) reveals that the real exchange rate, from equation (5), should equal one if PPP (k = 1.0) holds:

$$1 = kSP_{uk}/P_{us} \tag{7a}$$

$$\Theta_r = 1$$
 (7b)

Its not at all surprising that Glen (1992) found significant mean reversion in real exchange rates (ie., the variance ratios declined significantly below 1.0 as the frequency length increased) since the real exchange, in PPP form, should remain close to 1.0. Any deviations from 1.0 would be a transitory difference which would slowly decay as the adjusted real exchange rate reverts back to its "fundamental" value of 1.0. This conclusion is supported by the significant negative autocorrelation detected in the real exchange rate time series.

It is interesting to note that the data set (see Appendix I) obtained for this study shows adjusted (for PPP) real exchange rates that are fluctuating around 1.0 as seen in figure 2. The data set covers the period 1869 to 1994 and uses the implicit price deflators in net national product of each country with an arbitrary base year of 1929 = 100. As a result, equation (7) will not hold so that in order to graph PPP with a mean reverting real exchange rate around 1.0, we must first establish a base year so that the real exchange rate calculated in equation (5) equals 1.0.

In other words, an adjusted real exchange rate must be established. Since 1929 is the base year for the original data set, 1929 is selected as a base year for PPP, where the real exchange rate is adjusted to set it equal to 1.0. The adjustment factor calculated for 1929 is used on the data set to establish an adjusted real exchange rate.⁸ The results are graphed in figure 2, indicating that PPP implies mean reversion not only in the adjusted real exchange rates, but also in real exchange rates.

-see Figure 2-

3. Tests for Random Walks in Exchange Rates

The purpose of this section is to test the random walk hypothesis for both real and nominal exchange rates. The primary method employs the variance ratio estimators as developed by Lo and MacKinlay (1988) and implemented by Glen (1992) and Liu and He (1991). We compare our results to that of Glen (1992).

3a. Variance Ratio Estimators for Real Exchange Rates

We perform efficiency tests of the $\pounds/\$$ real exchange rate covering the period 1869 to 1994 using the variance ratio methodology. There are two reasons for using real exchange rates over such a long horizon. First, we want to extend and update the work of Glen (1992), who used a data set from 1900 to 1987, and make a reasonable comparison of the results between our two studies. Second, examining real exchange rates over an extended horizon lends itself nicely to a comparison of the results to economic theory.

To gain a better perspective of the data used in this study, real exchange rates and their first differences $(X_k - X_{k-1})$ are graphed in figure 3.

-see Figure 3-

The autocorrelations of the first differences appear in table 1 for our work and for Glen (1992) for up

to 6 lags. Both sets of coefficients are adjusted for the bias introduced in the averaging process of monthly exchange rates in the calculation of average annual rates. According to Working (1960) positive first order serial correlation of the magnitude of +0.25 is introduced into a random variable that is first differenced from an averaged series. Therefore, since the average annual data for both of our studies is based on averages of monthly exchange rates, each coefficient for both studies has been adjusted downward by 0.25^9 .

-see Table 1-

Comparing the autocorrelation coefficients of the first differences of both studies indicates that by extending and updating the series, slightly less negative autocorrelation in real exchange rates is noted especially at the 5th and 6th lags. However, given that our data series is substantially longer, the joint test that all autocorrelation coefficients are zero (implying a random walk), based on the Box and Pierce (1970) Q test, is only slightly stronger for the period 1869 - 1994. The Q statistic is calculated as follows:

(

$$Q = T \sum_{k=1}^{k} \rho_{k}^{2} \qquad (8)$$

T represents the number of observations and ρ_k represents the autocorrelation coefficients with lag k. The Q critical test statistic (based on a Chi square distribution) is 12.59 for 6 degrees of freedom (the # of lags). Therefore, we can be 95% sure that the true autocorrelation coefficients ρ_1 to ρ_6 are not all zero. This implies that each series is not generated from a white noise process and the null hypothesis of a random walk hypothesis is rejected.¹⁰

It is interesting to note that the mean reversion in the $(\$/\pounds)$ real exchange rate is stronger than that described by Poterba and Summers (1988) for stock prices. Poterba and Summers (1988) indicate that stock returns tend to have positive autocorrelation over short horizons with negative autocorrelation detected over longer horizons. For stock returns negative autocorrelation over long horizons would imply persistent, but transitory disparities between stock prices and fundamental value. With real exchange rates the story is slightly different. The strong negative autocorrelation over both the short and long horizons indicate less persistent, but transitory disparities between actual real exchange rates and PPP consistent real exchanges, ie. the fundamental value of real exchange rates.¹¹

Lo and MacKinlay (1988) develop a test of the random walk, the variance ratio test, that is robust with respect to heteroscedasticity and nonnormality. The calculation of the ratio is shown in equation (1) and the results from our study, as well as Glen (1992), are shown in table 2. The zstatistics are provided below the variance ratios in parentheses. Z'(q) is calculated under the assumption of homoscedastic increments and Z''(q) under the assumption of heteroscedastic increments.

-see Table 2-

Assuming homoscedasticity, the asymptotically standard-normal test statistic, $Z^{*}(q)$, is calculated as follows:

$$Z^{*}(q) = VR^{*} \left[\frac{2(2q-1)(q-1)}{3q} \right]^{-1/2} * \sqrt{nq}$$
(9)

The asymptotic variance of the variance ratio, from Lo and MacKinlay (1988), assuming heteroscedasticity in the variance of the first differences is calculated as follows:

$$\phi(q) = \sum_{j=1}^{q-1} \left[\frac{2(q-j)}{q} \right]^2 \delta(j)$$
(10)

$$\delta(j) = \frac{\sum_{k=j+1}^{nq} (X_k - X_{k-1} - u)^2 (X_{k-j} - X_{k-j-1} - u)^2}{[\sum_{k=1}^{nq} (X_k - X_{k-1} - u)^2]^2}$$
(11)

$$Z^{**}(q) = \frac{VR(q) - 1}{[\phi(q)]^{1/2}}$$
(12)

 $Z^{**}(q)$ is the heteroscedasticity-consistent standard normal test-statistic that is evaluated based on critical values obtained from a "z-table." In table 2 it is apparent from both z(q) statistics that the null hypothesis of the random walk is not rejected at the 10% level.¹² This highlights a subtle distinction that must be made: the "acceptance" of the random walk hypothesis seems to suggest that real exchange rates randomly fluctuate around a fundamental value due to the mean reverting tendencies of PPP rather than actual reversion to a fundamental value. The variance ratio test is powerful enough to discriminate between the two types of series.

Our "acceptance" of the random walk for annual real exchange rates contradicts the conclusion of Glen (1992) who rejects the random walk in favor of mean reversion. This contradiction does not appear to be the result of extending and updating the series. For instance, we can easily recalculate the homoscedastic consistent z-statistic for Glen's work on the $\pounds/\$$ using equation (9). With nq = 87 (1987-1900 less 1) and a VR = .32 (for q=20) the z-statistic should equal -1.27 not the -1.39 Glen presents. Regardless of the difference calculated here, -1.39 is not statistically significant at the 10% level.

The use of $z^{(n)}(q)$, as calculated in equations (10) through (12) has several advantages over other random walk test statistics when heteroscedasticity is present in the data. First, the statistic incorporates overlapping differences leading to more desirable finite-sample properties. Second, Poterba and Summers (1988) find that variance ratios are "close" to the most powerful tests of the null hypothesis of market efficiency assuming constant required returns. Finally, since $z^{(n)}(q)$ is heteroscedasticity-robust, rejections of market efficiency cannot be attributed to nonstationarity of the process.

The downward trend in the variance ratios over larger q's (longer periods) in table 2 is similar for the two studies. This downward trend clearly demonstrates mean reversion in real exchange rates, however, it is not sufficient enough to reject the null hypothesis of a random walk. As q increases, the time period in the numerator of equation (4) increases. This implies negative covariances, but not enough to violate the random walk hypothesis of zero covariances. The negative covariances explain the significant negative autocorrelation statistics in table 1.¹³

The evidence of mean reversion presented in this study in the form of variance ratios is consistent with Cochrane (1988), even though his study was in the context of GNP and not real exchange The variance ratios of GNP trends rates. downward so that at a q = 20 years it is 0.36. From this evidence Cochrane concludes that the permanent component, or the random walk component, in GNP is approximately 1/3. This implies that the temporary component (due to shocks) in GNP accounts for 2/3 of the variance in growth rates of GNP. Cochrane contends that a plausible model of GNP within a time series framework, should have some random walk component so that the variance of forecast errors grow in line with the level of GNP over long horizons. However, only a small random walk component is necessary for this to happen.

The intuition behind Cochrane's conclusions needs to be addressed. By relying on the Beveridge and Nelson (1981) time series decomposition, it can be shown that any firststationary process differenced can be decomposed into a system with a stationary process and a random walk.¹⁴ Because the permanent and transitory processes are assumed to be orthogonal, the innovation variance of the random walk component drives the system. Therefore, shocks to the system represent transitory deviations from the permanent or random walk component and are stationary. In other words, the transitory components are mean reverting. Since 2/3's of the variance in the growth of GNP represents a transitory component that decays over time, this form of mean reversion gives GNP predictability.

Although Cochrane examined GNP, many of his conclusions concerning time series properties can be applied to real exchange rates and our study. Based on the variance ratio found in table 2 of 0.49 at (q = 20), the variance in the growth of real exchange rates is approximately 1/2 a random walk. This implies that approximately 1/2 represents transitory deviations that are

stationary. This characterization of real exchange rates for the time period covered (1869-1994) is dangerous, but nevertheless interesting. Nominal exchange rates for the £/\$ over this time period were fixed from 1879 to 1914 and for the most part fixed from 1925 to early 1973. Compounding this problem of restricted nominal exchange rate movement was the fact that England frequently devalued their currency "for whatever reason" [Friedman and Schwartz (1982), pg 292]. Another problem lies in the fact that the United States went off the gold standard in 1933. Consequently, the structural shifts that usually occur over such lengthy intervals as 1869 - 1994, are extraordinary to say the least.

The analogy of the random walk component percentage (49%) in real exchange rates to Cochrane's GNP random walk percentage (35%) is not completely without merit for several reasons.¹⁵ First, numerous structural shifts exist in both sets of data. Second, both exchange rates and GNP are subject to frequent manipulation via policy tools. For example, exchange rates react strongly to changes in monetary policy, tariffs, and devaluations, while GNP reacts strongly to changes in fiscal policy and monetary policy.

Despite all the stochastic violations in nominal exchange rates and their impact on real exchange rates, real exchange rates have strong mean reverting tendencies. An economically plausible explanation for these findings is simple. Shocks to the real exchange rate are temporary since PPP, or the law of one price, eventually forces real exchange rates back to their fundamental value. However, the real exchange rate is subject to numerous shocks that are primarily from nominal exchange rates. These frequent shocks keep real exchange rates from fully reverting to its mean as shown by the middle time series in figure 1.

The detection of negative autocorrelation, the declining trend in the variance ratios to 0.49, and PPP all seem to suggest real exchange rates for the most part are mean reverting. However, even though there is a 51% tendency for real exchange rates to be mean reverting, the z(q) scores suggest a random walk. The power of the

variance ratio test is sufficiently high enough to discriminate against a series that in all other respects appears to be mean reverting in the long-run. Real exchange rates fluctuate around a fundamental value based on PPP.

Despite the "acceptance" of the random walk hypothesis, real exchange rates seem to behave in accordance with economic theory in the longrun, but not in the short-run. Real exchange rates are subject to frequent shocks, devaluations, different regimes, and therefore, often deviate from their "fundamental" value. Economic forces. such as PPP, tend to influence exchange rates to revert back to their "fundamental" value, but it's a long process. Shocks, therefore, make short term forecasts of exchange rates difficult and explain why many structural models, such as the monetary approach and the portfolio balance approach, are unreliable. One half of real exchange rate movements are random.

It's interesting to note that transitory components in real exchange rates is consistent with overshooting models found in international economic discussions. The overshooting real exchange model is couched within a rational expectations framework since only unanticipated disturbances, such as money supply changes, cause real exchange rates to overshoot their long run fundamental value. The overshooting represents a temporary failure of a country's price vector (in the Walrasian sense), especially in the labor market, to adjust instantaneously to shocks such as unanticipated money supply changes between countries.

The overshooting model combines the long-run aspects of PPP with the short-run intuition of the asset approach to exchange rate determination. The asset approach claims that capital flows between countries are the dominant factor in explaining exchange rate movement. Given that capital is fully mobile, investors will adjust their portfolios of currencies so that the expected returns from each currency are equal. Nominal exchange rates, therefore, are likely to be quite volatile.

In other words, real exchange rates are not only a function of the nominal exchange rates, which

can adjust instantaneously, but also the price ratio of two countries [see equation (5)]. If nominal exchange rates are reacting to unanticipated money supply shocks and the price ratio cannot adjust swiftly, real exchange rates are thrown off their long-run equilibrium path. The result is overshooting which is depicted in figure 4. In figure 4, as the real exchange rate travels along its long-run equilibrium path, e,, an unanticipated disturbance occurs at time to causing real exchange rates to temporarily deviate from their long-run equilibrium path. As the price levels in each country adjusts in accordance with PPP, the real exchange rate reverts back to its long-run equilibrium, e,.

-see Figure 4-

The degree of negative autocorrelation in table 1 suggests that the deviations are relatively shorter in duration than that of stock prices. If stock prices do revert faster than real exchange rates, it presents an interesting question as to why this occurs. Since we would suspect it takes longer for a country's price vector to adjust to a disturbance compared to the adjustment process in stock prices, the underlying influences on the decay of the temporary component of both stock exchange rates needs and real further investigation. The answer may lie in the fact that real exchange rates are composed of not just the ratio of two country's price levels, but also nominal exchange rates.

3b. Variance Ratio Estimators for Nominal Exchange Rates

While Glen (1992) examines real exchange rates in the context of PPP (and concludes that PPP holds in the long run), we contend that a more interesting test of the random walk hypothesis lies in nominal exchange rates. The problem with examining real exchange rates for a random walk is that investors can not invest in real exchanges rates, they can only invest in nominal exchange rates. Therefore, any economically significant (tradable) violations of the random walk can not feasibly be exploited with real exchange rates, but can be exploited with nominal exchange rates.

In this section, we examine monthly nominal

exchange rates of $(\$/\pounds)$ for the period January 1973 to March 1994 under a random walk null hypothesis. They are graphed along with their first differences in figure 5. The source of the data is found in appendix I.

-see Figure 5-

The autocorrelation coefficients of the first differences of the logged nominal exchange rates appear in table 3 for 6 lags. No significant trend in the autocorrelations is apparent. The joint test that all autocorrelation coefficients are zero (implying a random walk) is rejected. The rejection of the random walk is based on the Box and Pierce () Q statistic calculated in equation (9), which is significant at the 5%. The critical test statistic (based on the Chi square distribution) is 12.59 for 6 degrees of freedom the (# of lags). Therefore, we can be 95% sure that the true autocorrelation coefficients ρ_1 to ρ_6 are not all zero, and we can reject the random walk null hypothesis. This test, however, is of low power.

-see Table 3-

Table 4 shows the results of applying the variance ratio methodology to nominal exchange rates in a manner consistent with the real exchange rate tests above.

-see Table 4-

The results indicate that none of the z-statistics are significant at the 10% level, thereby not rejecting the null hypothesis of the random walk. The variance ratios for nominal exchange rates, however, rise above 1.0 instead of below 1.0 as in the case of real exchange rates. Since the variance ratios continue to rise above 1.0 at longer lags, attaching a random walk percentage to this time series does not apply. When mean reversion is present in the series and variance ratios fall below 1.0 (a random walk), an acceptable conclusion, according to Cochrane (1988), is that the deviation from 1.0 indicates the amount of deviation from a random walk. When variance ratios rise above 1.0 the analogy does not apply leaving this subject open to further investigation.

The "acceptance" of the random walk is not surprising for nominal exchanges rates. The efficient markets hypothesis holds and potentially profitable trading schemes appear unlikely. These results explain why structural models of nominal exchange rate determination so often fail - most of the variation in exchange rates is a random walk.

The random walk in the $\mathfrak{L}/\$$ nominal exchange rate explains why the $\mathfrak{L}/\$$ real exchange rate follows a random walk: real exchange rates incorporate nominal exchange rates. Even when nominal exchange rates were fixed at times prior to 1973 (the test for a random walk in nominal exchange rates covered the period after 1973), changes in the price ratio of the two countries caused real exchange rates to fluctuate as can be seen in figure 6.

-see Figure 6-

This provides additional support for the random walk found in real exchange rates.

4. Conclusion and Limitations

The random walk hypothesis is not rejected for the £/\$ annual real exchange rate. Although the £/\$ annual real exchange rate has mean reverting tendencies due to PPP, frequent and strong shocks to the nominal exchange rate assures that the series follows a random walk. The random walk hypothesis is also not rejected for the $\mathfrak{L}/\$$ monthly nominal exchange rate making profitable trading schemes in the currency unlikely. Both conclusions are consistent in that a random walk in nominal exchange rates should lead to a random walk in real exchange rates. The detection of random walks in exchange rates explains the failure of structural models of exchange rate determination.

Obviously examining only the \pounds /\$ exchange rate prevents any type of broad conclusion about exchange rates in general. In fact, some studies have found that other currencies do not follow random walks, Liu and He (1991) and Glen (1992). Nevertheless, the \pounds /\$ is one of the most active foreign exchange markets in the world so that not rejecting the random walk hypothesis provides evidence that exchange rate markets can be efficient.

ENDNOTES

¹ See MacDonald and Taylor (1992) for a review of the literature on exchange rate economics.

² Fama's work is in the context of stock prices, however, the definition may be universally applied to other assets markets, including the foreign exchange market.

³ Serious statistical analysis of stock and commodity prices date as far back as Kendall (1953) where he concluded that prices wander without any apparent trend. From 1953 to the mid 1980s almost all statistical research had the same conclusions; no significant pattern or trends in stock prices were noted leading most researchers to accept the random walk hypothesis.

⁴ In other words, the negative autocorrelation caused by the decay in the transitory component is too small to be statistically significant over short horizons and may even be positive, so that longer horizons need to be examined.

⁵ Although many researchers attach the label "fundamental value" to the permanent component and indicate that transitory components are considered to be deviations from fundamental value, a caution is in order. any time series can be broken down a number of different ways into its permanent and transitory components, thereby making any interpretation of these components ambiguous.

⁶ The other class is the Poisson, or jump, process where discontinuous changes in state occur randomly.

⁷ Remember since we are dealing here exclusive with variances, the variance ratio can never be negative.

⁸ These adjusted real exchange rates are used only for figure 2 and are not used in any calculations such as autocorrelations and variance ratios.

⁹ Glen (1992) does not make the adjustments in his table, he merely discusses the impact of the issue. We adjusted his coefficients for comparative purposes. The implications of this serial correlation on the variance ratios calculated in this paper is not yet known, it may cancel out in the variance ratio. This concept requires further investigation.

¹⁰ Glen (1992) did not present a Q statistic in his work, however for comparative reasons we calculated his Q statistic based on T = 88. Also, not that this test is very low in power and is presented here only for completeness.

¹¹ Without the downward adjustment suggested by Working (1960) of 0.25, the autocorrelation coefficients are positive at the first lag and negative at longer lags for our data.

¹² The z(q) statistics for Glen (1992) and their significance according to him is also presented in table 1, however, we do not understand how they were considered significant at the 10% or the 5% level. In order to meet these significant levels his calculated z(q) statistics would have to be larger than [z(q)=1.64] and [z(q)=1.96] respectively. Glen never mentions how he determined the critical levels for his work. Nevertheless, we have presented our z(q) statistics and their significance levels in accordance with Lo and MacKinlay (1988) and Liu and He (1991).

¹³ Since $Cov(\Sigma_t, \Sigma_{t-1}) = \rho_k \sqrt{var}(\Sigma_t) \sqrt{(\Sigma_{t-1})}$, and variances are always positive.

¹⁴ Although the first-differenced process in figure 3 is not truly stationary since there is a small degree of heteroscedasticity in the series, nevertheless, we think the analogy is reasonable.

¹⁵ Cochrane's data covers the period 1869 to 1986 with pre-1939 data also from Friedman and Schwartz (1982).

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Appendix I Data Source

Real Exchange Rate Data:

Nominal exchange rates $(\pounds/\$)$ - 1869-1975 from Friedman and Schwartz (1982), 1976-1988 from OECD (1989), 1989-1994 from the Bridge System.

U.S. Implicit Price Deflator - 1869-1975 from Friedman and Schwartz (1982), 1976-1991 [multiplied by 7.0427 to equate 1929=100] from the Department of Commerce (1992), 1992-1994 [multiplied by 7.9079 to equate 1929=100] from IMF Statistics Department (1995).

U.K. Implicit Price Deflator - 1869-1975 from Friedman and Schwartz (1982), 1976-1992 [multiplied by 26.2192 to equate 1929=100] from Ruffles (1992), 1993 & 1994 [multiplied by 26.89 to equate 1929=100] from IMF Statistics Department (1995).

Nominal Exchange Rate Data:

U.K. pound/U.S. Dollar - January 1973 to December 1988 from OECD (1989), January 1989 - March 1995 from the Bridge System.



Figure 1. Both the positive and negative sloped time series have increasing (and greater than 1) positive variance ratios at greater frequencies and positive autocorrelation coefficients. These two lines violate the random walk because of significant positive covariances. The middle time series represents mean reversion where the variance ratios are decreasing (less than 1.0 and approaching 0.0) with negative autocorrelation coefficients. This violates the random walk because of significant negative covariances.



Figure 2. PPP and adjusted real exchange rates.



Figure 3. Logged average annualized real exchange rates (\pounds /\$) for 1869 to 1994 and the first differences (X_k - X_{k-1}) of the logged real exchange rates.







Figure 5. Log nominal exchange rates from January 1973 to March 1995 and their first differences.



Figure 6. Real vs. nominal exchange rates 1869-1994, £/\$.

Table 1.						
Autocorrelations,	average	annual	real	exchange	rates,	£/\$

Lag	1.0	2.0	3.0	4.0	5.0	6.0	Q(6) [°]
Smoluk, 1869-1994	-0.17 [⊳]	-0.43ª	-0.34 ^a	-0.32 ^a	-0.28 ^ª	-0.29 ^a	74.9
Glen, 1900-1987	-0.12	-0.48 ^a	-0.24 ^b	-0.35 ^a	-0.49 ^a	-0.41 ^a	73.3

^a Significant at the 10% level; ^b significant at the 5% level; Both significance levels are bases on standard errors of $1/\sqrt{T}$ from Bartlett assuming that the series is generated from white noise. Given that the series is not a random walk the use of this statistic is questionable, however it does provide a gauge for significance. ^c Q test statistic is based on equation (8).

Table 2

Variance ratios, Z'(q) assumes homoscedastic increments and Z''(q) heteroscedastic increments

q=	2	4	8	16	20
Smoluk, 1869-1994:					
Variance Ratio	1.05	0.95	0.63	0.52	0.49
Z (q)	0.56	-0.30	-1.40	-1.22	-1.32
Z (q)	0.39	-0.22	-1.02	-0.89	-0.83
Glen, 1900-1987:					
Variance Ratio	1.14	0.90	0.54	0.32	n/a
Z (q)	1.33	-0.50	-1.40 ^b	-1.39 ^b	n/a
Z (q)	1.15 ^a	-0.46	-1.34 ^b	-1.41 ^b	n/a

^a Significant at 10%; ^b significant at 5%.

Table 3 Autocorrelations, monthly nominal exchange rates, £/\$

Lag	1.0	2.0	3.0	4.0	5.0	6.0	Q(6) ^c
1/73 - 3/95	-0.07	0.12ª	-0.09	0.12ª	-0.07	-0.13 ⁵	16.9

* Significant at the 10% level; ^b significant at the 5% level; Both significance levels are bases on standard errors of $1/\sqrt{T}$ from Bartlett assuming that the series is generated from white noise. ^c Q test statistic is based on equation (9).

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Table 4

Variance ratios, Z'(q) assumes homoscedastic increments and Z''(q) heteroscedastic increments

Smoluk, 1/73-3/95:					
q=	2	4	8	16	20
Variance Ratio	1.09	1.19	1.21	1.34	1.36
Z (q)	1.51	1.62	1.15	1.25	1.17
Z (q)	1.23	1.32	0.94	1.02	0.95

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FACTS AND MYTHS ABOUT ELECTRIC UTILITY DEREGULATION

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ABSTRACT

This paper discusses the effects of deregulation of electric utilities. Numerous examples are provided to support the various arguments presented regarding the genering costs and ultimate price to the consumers. The paper also focuses on the impact deregulation will have on the nuclear generating plants within the United States. This paper does not attempt to deal with the issues of stranded costs, renewable power sources for generating electricity, environmental issues, nor who will plan and build the new generating plants needed in the future before there is a shortage.

Starting in the late 1970's this nation started moving toward a free market deregulation mentality. It started with deregulation of long distance telephones, followed by airlines, trucking, natural gas and now deregulation is coming to the electric utility industry. What will be the effects of deregulation of electric utilities? Before going any further, it must be explained that the entire electric utility industry is not being deregulated. The only part of the industry that is being deregulated is the generation of electricity. The transmission and distribution of electricity will still be regulated with the present companies still having a monopoly in their present areas. The rates that these companies can charge and the profit that they can make on the transmission and distribution of electricity will still be set by regulators. The general mode of operation is tending towards having these companies collect the money from their customers for the generation of electricity and than pasting that money on to the companies that generated the electricity. In Pennsylvania, PECO and PP&L wants to give their present customers about a 3 cent per kilowatt hour credit on their customer's bill, that the customer, if they want, can then use to buy electricity from another company or the customer can buy electricity from their present electric utility. The current cost of electricity from PECO is 14.22 cents per kilowatt hour for residential customers. In October 1997, PECO reached agreement with many of its local critics that will require PECO to lower its price of electricity to residential customers to 12.80 cents per kilowatt hour. This price will be broken into the following components: electric generation 3.02 cents, stranded cost recovery 3.46 cents, and transmission and distribution cost 6.33 cents. Many of the other companies claim that they cannot sell electricity for 3 cents per kilowatt hour and they are requesting that the Pennsylvania state public utility commission (PUC) set the credit at least at 4 cents per kilowatt hour. Before the PUC had time to approve the PECO agreement, Enron energy put forward a plan where Enron would sell \$5.461 billion of bonds and use the proceeds to pay PECO for PECO's stranded costs and in return for this Enron would become the default provider of electricity to PECO's present customers. Enron's plan has a price for electricity of 11.38 cents for the present. Enron's price is broken into the following components: electric generation 4.12 cents, stranded cost recovery .93 cents. and transmission and distribution cost 6.33 cents. Under the two plans, while the rates would be guaranteed for a period of time, in the future the rates could change which is causing a debate on which plan will be the best in the long run. The PUC is now considering both plans (Utility Says it Can Double the PECO Savings, The Philadelphia Inquire, October 7, 1997, PA1). New England Electric has decide to leave the electric generating part of the business and has been selling all of their generating plants. They are planning to be in the business of just transmitting and distributing electricity from other companies to New England Electric's present customers.

One statement that has been made is that with deregulation will come competition and competition will lead to lower prices for everybody. This is a half truth. Any regulated industry that has a guaranteed rate of return on investment has not tended to control costs. As the companies cost increases, the company can raise the price for their product. There is no incentive for the company to control costs. With competition a company has to control its costs or their competitors will undersell them and take their customers away. Therefore with deregulation and competition, companies will become cost conscious and cut their costs and this will result in lower average prices. So this part of the statement is true.

One of the main ways of cutting costs is to cut employment. As an example, in 1993, GPU had 12,000 employees. Three years later, GPU had only 9,300 employees, a decrease of 22.5% (GPU, P6). During this same time period, total electric energy sales increased from 42,658 MWH to 44,448 MWH, an increase of 4.2% (GPU, P50). Sales per employee increased from 3.55 MWH to 4.78 MWH, an increase of 25.7%. One of the effects of deregulation will be a decrease in employment in the industry. This could be partly off set if lower prices lead to an increase in the use of electricity.

Another way to cut costs is to merger existing companies. Since discussion of deregulation has started, there have been many proposed mergers in the electric utility industry. Since these companies are still regulated, it takes a very long time for these companies to get regulatory approval to complete a merger. This is the reason why most of the mergers are still only at the proposed stage rather than having been completed as would be the situation in most other industries. The proposed merger between CIPSCO and Union Electric Company is estimated to save the two companies \$759 million over 10 years. Operating revenue for the two companies for 1996 was \$3.2 billion. Savings of \$76 million per year is 2.4% of operating revenue. Of the estimated savings, 35% will come from labor and 31% from corporate and administrative. Only 13% is estimated to come from electric production (CIPSCO, P6).

A merger between Centerior Energy and Ohio Edison to create First Energy is estimated to save \$1 billion over 10 years. With annual revenue of about \$5 billion a year, these savings will be about 2% a year (Centerior Energy, P3). Therefore by deregulation causing mergers, this will lower costs and therefore the price of electricity. While it is expected that the average price of electricity will decrease, the next part of the question is, will it decrease for everybody.

In addition to mergers in the United States, United States electric utilities are now buying electric utilities in other countries. In 1993, Southern company bought Freeport Power in the Grand Bahama Islands, Hidroelectrica Alicura in Argentina. In 1994, Southern Company bought PowerGen in Trinidad and Tobago, Empreasa Electroca del Norte in Chile. In 1995, Southern Company bought South Western Electricity in England. In 1996, Southern Company bought Consolidated Electric Power Asia in China, Philippines, and Indonesia (Southern, P9). In 1997. Dominion Resources acquired East Midlands Electricity PLC in the United Kingdom which was added to existing companies in Argentina, Belize, Bolivia, and Peru that Dominion Resources had acquired earlier (Dominion Resources, Inside Front Cover). IES has investments in New Zealand and China. IES also owns Whiting Petroleum Corporation, McLeod Inc., The Cedar Rapids and Iowa City Railway Company, and IEI Barge Services, Inc (IES, P4).

In the electric utility industry, there are difference prices for difference customers. In 1996, the average cost per kilowatt hour was 8.72 cents for residential customers, 7.73 cents for commercial and 4.72 cents for industrial customers, customers (Southern Company, P7). One effect of competition, could be that customers, such as industrial companies, that uses a large amount of electricity will have more bargaining power and will be able to obtain even lower rates compared to other customers than they have today. Therefore industrial users could obtain rate expense of residential decreases at the customers.

Today with regulated rates and the pooling of funds, there are programs that assist the poor.
With competition, these programs would be eliminated. Therefore with deregulation, the individuals in these programs will probable pay higher rates.

Today with regulation, in every area of the country, a company has a protected market within which they must sell their output. This has lead to a market where the price of electricity for residential use, ranges from about 5 cents per kilowatt hour to over 12 cents per kilowatt hour. This variation in price is caused by many factors but one of the main factors is the cost of fuel to generate electricity. In the Northwestern part of the United States, a large percent of the electricity is generated by hydropower while in the Northeastern part of the United States, electricity is generated by coal and oil. Since the Northeastern part of the United States does not have coal or oil resources, coal and oil must be shipped into these areas. Since the ratio of value to weight for coal is low, the cost of shipping coal increases the delivered price of coal by a large percentage. This higher price increases the cost of generating electricity in these regions. While the cost of shipping coal is high, the cost of transmitting the final product, electricity, is low. In Tennessee, some of the electric generating plants are located near the coal mines and a conveyer belt moves the coal from the mine to the generator. This gives one region a cost advantage over another.

Deregulation of electric utilities would set up a national market for electricity. Since electricity is a homogeneous product, the difference in cost should be equal to the cost of transmitting electricity, which is low. The claim is that in the Northeast, where costs are high, lower cost utilities will enter the deregulated market and cause the price of electric in these markets to decrease. This should happen. The question is what will happen in the present low cost markets? Today, companies in the Northwest sell electricity at 5 cents per kilowatt hour because the regulators require them to sell electricity at these rates in these markets. With deregulation, where any company could sell in any market, what should happen? Why would a company sell electricity for 5 cents per kilowatt hour in their local market when they could sell the same

electricity for 10 cents per kilowatt hour in the Northeast or other markets. The answer is that they wouldn't. They only do this now because they have been granted a monopoly and as a condition for having the monopoly, the company must sell their electricity in this market. With complete deregulation, the company could sell anywhere and they would sell everywhere. According to economic theory, the market price for electricity should equalize through out the entire market. With complete competition, this should happen. Therefore, the result of deregulation should be that while the average price of electricity in the country should decrease, the price of electricity for those regions of the country that have low prices will increase as the companies in these regions sell their electricity in the higher price markets. This assumes that more generating plants cannot be built to generate electricity at the same low cost. For Hydropower, this assumption is true. For coal generating plants, this might not be true. For those areas of this country that are heavily dependent on hydropower, the price of electricity will increase.

Another statement made about deregulation is that it will lead to the end of nuclear power. Nuclear power is on the decline in the United States while in many countries of the world, nuclear power is the major source for producing electricity. No new nuclear plants have been planned in the United States during the last ten years. This is because of political factors in the United States and has nothing to do with deregulation of electric utilities.

The question is, what will be the effect of deregulation on existing nuclear plants. In the United States, the cost of building a nuclear plant is in the billions of dollars due to safety concerns and the fact that every plant that is built in the United States is unique rather then using a blueprint for a standardized plant. The cost of building a plant is a fixed cost and this cost determines whether the plant will be built. Once the plant is built the fixed cost, does not effect how the plant will be operated. How much the plant is used is determined by the variable costs which for nuclear plants are low. Except for hydropower, nuclear plants have the lowest cost for fuel per kilowatt hour generated. For Southern

Company, the cost for fuel per kilowatt hour generated, in 1996, was 1.65 cents for coal, .52 cents for nuclear, and 5.20 cents for oil and gas. Compared to 1994, this was a decrease from 1.80 cents for coal, a decrease from .56 cents for nuclear, and an increase from 3.99 cents for oil and gas (Southern Company, P25). At GPU, in 1996, the cost of fuel per kilowatt hour generated was 1.45 cents for coal, .61 cents for nuclear, and 4.7 cents for gas and oil. Compared to 1991, this was a decrease from 1.59 cents for coal, a decrease from .70 for nuclear, and an increase from 3.71 cents for oil and gas (GPU, P50). In 1996, for the United Illuminating Company, the fuel and energy cost per kilowatt hour was 2.41 cents for fossil fuels and .46 cents for nuclear (United Illuminating Company, P49). The fuel cost for nuclear power is 30 to 40% of the cost for coal. Since fixed costs are sunk costs, a company making a decision on which method to use in producing a product would produce with the method that has the lowest variables costs. In the electric utility industry, this would be to produce by nuclear power. Therefore deregulation, rather then leading to less electricity being produced by nuclear power, it will lead to more power being produced by the existing nuclear power plants. An example of this would be Entergy company, which has 70% of its generating capacity in gas/oil, 20% in nuclear, and 10% in coal, but on the production side, 42.3% of the electricity that they produce was by gas/oil, 41.0% by nuclear, and 16.7% by coal. Of their total sales of electricity, they purchased 22% of the electricity from other companies (Entergy, P20,22). Entergy company based its production mix on the lowest cost method. Some electric utilities are selling their existing nuclear plants at a price lower than their listed value. The electric utilities that are not selling their nuclear plants are lowering the value of their plants on their books. This effects the fixed costs and has raised the issue of stranded costs. In conclusion, while it seems very certain that in the near future, no new nuclear plants will be built in the United States, the existing nuclear plants will be generating more electricity.

This paper has not attempted to deal with the issues of stranded costs, renewable power sources for generating electricity, environmental issues, and who will plan and build the new generating plants needed in the future before their is a shortage.

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THE VALUE AND BENEFIT OF CONTINUOUS INVOLVEMENT IN INTERNSHIPS BY ALL MEMBERS OF THE PUBLIC ACCOUNTING PROFESSION

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ABSTRACT

This paper proposes that the public accounting profession and public accounting firms need to increase the opportunities for accounting students to intern in the profession. A concerted profession wide commitment to internships benefit the profession, firms, colleges and universities, the student and the faculty.

CPA firms have generally used internships as a screening device to preface the interview process. The CPA firms, as well, have benefitted through this advance screening of the best seniors which provide them an advantage in their recruitment efforts. The student, of course has also benefitted receiving real world experience, resume enhancement and assistance in the career decision process.

However, I would like to suggest that a bigger issue is involved and that CPA firms have an obligation to their profession to develop and maintain an internship program. Despite various promotion efforts by the AICPA and various state societies, the accounting profession does not have the same status it once had in the eyes of college students. Indeed, enrollment in business programs has declined generally more than the downturn in demographics of high school graduates and fields such as education and health are enjoying renewed popularity.

Well-publicized and competitive internship programs sponsored by all CPA firms would help renew interest in the profession by providing this window of opportunity for students to observe the excitement and energy of the profession. Students too often view accountants as having jobs that do not relate and deal with people. The public relations value and recruitment advantages would far outweigh the costs of the program. Further, the profession would be in a position to provide funding to accounting majors now facing a fifth year of schooling as a result of the 150 hour legislation currently law in thirty-two states. In addition, the profession would benefit from the opportunity that internships would provide in the recruitment and funding of minorities.

All five "players" in a college/university internship program with public accounting firms would benefit significantly from such a program. The specific benefits to each of these parties are defined as follows:

- I. Firm:
- 1. Productive support during busy season.
- Opportunity to interact with academic community.
- Opportunity to observe level of accounting education and communication skill development of college students.
- Opportunity to provide input into accounting education at collegiate level primarily in areas of written and oral communication, computer skills and technical accounting and tax education.
- 5. Occasionally, as needed, have ability to evaluate a prospective employee.
- 6. Inexpensive highly motivated temporary member of workforce.
- Excellent and complete look at all aspects of potential employee/recruit: personal, professional and technical.

- 8. Better hires in long run reducing turnover (forced and otherwise)
- 9. Satisfaction of helping fund education (5 year requirement) of accounting majors.
- 10. Keep pulse on changes, direction and technical focus of accounting education.
- 11. Substitute for expensive and time-consuming campus recruitment.
- 12. Insure comfortable fit with new hires and firm.
- Build and solidify campus network thus aiding in identification and internship recruitment of best students.
- Facilitate quick and smooth entry transition of new hires.
- II. College/University
- Professional internship regularly offered during spring semester.
- 2. Create competition and reward for quality professional internship.
- 3. Field test of product which allows continuous feedback for improvement.
- 4. Opportunity to place product into the market building loyalty and name recognition.
- 5. Provide opportunity to evaluate and assess program.
- 6. Public relations benefit.
- 7. Development of network with business community.
- 8. Scholarship and fund development opportunities.

III. Public Accounting Profession

1. Public relations and service opportunity for CPA profession.

- 2. Recruitment opportunity for public accounting profession.
- Provide indirect funding to accounting majors particularly valuable in recognition of five year 150 hour requirement.
- 4. Facilitate recruitment of minorities into profession.
- 5. Observe and monitor pulse and direction of accounting education.
- 6. Opportunity to reach out to students and colleges.
- 7. Better overall entrants into profession.
- 8. Provide input into accounting education.
- IV. Students/Intern
- Opportunity for professional experience in public accounting.
- 2. Chance to gain real world experience and help in career decision process.
- Enhancement of resume, internship and technical skills and professional communication techniques.
- 4. Opportunity for best students to compete in interview process for coveted internship.
- 5. Evaluate public accounting and profession.
- 6. Gain maturity and confidence.
- 7. Hit ground running upon employment.
- Opportunity to become a "fast tracker" including higher starting salary.
- 9. Resume builder.
- 10. Open multitude of job opportunities from firm clients as well as within and outside of public accounting.
- 11. Less job hunting stress.

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- 12. Confidence of career direction.
- 13. Begin development of network early.
- 14. Discover hidden talents and abilities
- 15. Examine differences and importance of firm "cultures".
- 16. Practical application of theory.
- 17. Since many Pennsylvania raised college students come from rural, agricultural and blue collar backgrounds, this professional development experience is even more critical to their elevation to "professional" status.
- V. Faculty
- 1. Valuable interaction with business community.
- 2. Opportunity for faculty networking with business men and women.
- 3. Real world check of faculty interpersonal skills and accounting product.
- 4. Constant supervision and interaction for professional development.
- 5. Travel and off campus opportunity.
- 6. Opportunity to develop Advisory Committee members.
- 7. Consulting opportunities.
- 8. Positive one on one interaction and development of student.
- 9. Supervision of research papers with practical business application and perspective.

In summary, a well developed and managed internship program is beneficial to all four parties involved: the profession, firm, student, and college. The benefits far outweigh the costs particularly when the firm accepts responsibility for the profession's need for public relations development. College faculty have long recognized the benefits to the students but generally refrain from requiring such an experience because of the shortage of public accounting placement opportunities.

If the public accounting profession through individual firms committed to providing sufficient internship slots, the colleges could easily fill the demand with a supply of eager and qualified candidates. It is time the public accounting profession and firms take responsibility to assist in the supply and development of potential entrants into the public accounting field.

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A HOLISTIC FRAMEWORK FOR BUSINESS PROCESS IMPROVEMENT

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> David Paper Utah State University

ABSTRACT

In recent years, business process improvement (BPI) has received considerable attention. (Ballou, R.H., 1995; Caron et. al, 1994; Davenport, 1993; Hammer and Champy, 1993; Kim, C., 1996; Talwar, 1993). Perusal of the BPI literature reveals a variety of frameworks, tools, methodologies, and strategies to assist organizations in their quest to improve (Davenport, 1993; Hammer and Champy, 1993; Talwar, 1993). However, articulation of a holistic framework that can guide process improvement efforts has not appeared in the literature. The author proposes that a holistic framework, that includes a systematic methodology for guiding BPI efforts, a management structure for creating a conducive environment for change, and mechanisms for empowering workers, is needed to garner the maximum benefits of BPI. An in-depth case study of an organization experimenting with a "systematic" BPI methodology was used as an instance to explore the validity of the proposal.

INTRODUCTION

In recent years, business process improvement (BPI) has received considerable attention. (Ballou, R.H., 1995; Caron et. al, 1994; Davenport, 1993; Hammer and Champy, 1993; Kim, C., 1996; Perusal of the BPI literature Talwar, 1993). reveals a variety of frameworks. tools, methodologies, and strategies to assist organizations in their quest to improve (Davenport, 1993; Hammer and Champy, 1993; Talwar, 1993). However, articulation of a holistic framework that can guide process improvement efforts has not appeared in the literature. Kim (1996) proposed a comprehensive methodology for business process reengineering, but it did not include the management structure for supporting improvement efforts nor mechanisms to facilitate empowerment and creativity of the people that do the work. Moreover, the BPI literature tends to emphasize process redesign, ignoring the potential to improve through process correction and simplification (Hammer, 1990; Hammer and Champy, 1993; Kim, C., 1996; Talwar, 1996). Process improvement may require radical redesign to improve performance, but simple changes to correct or streamline processes may add considerable value to an organization.

Consistent with the literature, successful BPI hinges upon top management support, customer satisfaction, cross-functional teamwork, and a systematic means of solving problems. Hence, the author proposes that a holistic framework, that includes a systematic methodology for guiding BPI efforts, a management structure for creating a conducive environment for change, and mechanisms for empowering workers, is needed to garner the maximum benefits of BPI. An inorganization depth case study of an experimenting with "systematic" а BPI methodology was used as an instance to explore the validity of the proposal. The organization chosen was Caterpillar Inc., Mossville Engine Center.

A HOLISTIC FRAMEWORK FOR BPI

Reengineering requires a fundamental change in the industrial model of the organization. In the BPI model, workers make decisions, crossfunctional teams tackle process problems, and organizational structures become flatter; people's roles change from controlled to empowered, managers change from supervisors scorekeepers

to leaders (Hammer and Champy, 1993). In other words, the BPI model calls for a radical change in the way work is done. Although the global business environment is changing at a rapid pace, it does not follow that organizations can easily keep pace. Change is painful, risky, and not very easy to justify with traditional cost/benefit analysis. Imagine how difficult it might be to change from a commander of people to a facilitator of teams. What is needed is a guiding framework that takes into account the existing work environment, organizational structure, job roles, habits, and problem-solving approaches of an organization to provide a holistic approach to solving process problems.

In response to a lack of theory in the area of BPI, the author proposes a holistic framework to maximize the benefits of BPI while minimizing the pain associated with dealing with change. The holistic framework has three interdependent components f a systematic BPI methodology, an environment conducive to change, and empowerment mechanisms for the people who do the work. The author posits that these three components, or pillars, provide the foundation of a holistic blueprint for solving business process problems. Figure 1 depicts a conceptual model of the Three Pillars of BPI. The methodology provides systematic guidance for solving a variety of business problems. The systematic nature of the methodology enables use of a variety of modeling tools and problem-solving techniques during different steps of the project. The methodology works most effectively in a facilitative, empowered, and creative environment. To create and sustain such an environment, the management structure for a BPI project should be changed and the people that actually do the work should be directly involved in the decision making The Three Pillars of BPI offer a process. preliminary conceptual model for effectively dealing with BPI problems in a holistic manner.



Figure 1. Three Pillars of BPI

Environment includes the management and executive structures, employee reward structure, and team structure. An environment conducive to change requires a different kind of manager and a different kind of executive. A structure should exist that defines new job roles -- manager as facilitator and executive as leader. One of the biggest obstacles to BPI success is politics. Teams may not have the power to overcome an obstacle laid out by a manager or executive. The executive team is not only responsible for leading the effort, they are the only ones in the organization that can effectively remove political obstacles. The structure should offer training, counseling and education to guide managers and executives in the desired direction. Employees will not respond to a new way of work without a reward structure that compensates team effort In addition, a team over individual effort. structure should be in place that offers new job definintions, authority to tackle cross-functional process problems, and management support. To increase the chances of success, lower-level employees should be offered extensive training and education in how to be productive in a "team" environment.

Methodology includes a systematic (step-by-step) guide to solving business problems. The literature typically depicts a five step methodology such as envision, definition, diagnosis, design, and implementation (Kim, 1996). The purpose of

the first step, envision, is to identify, evaluate, and priortize critical "problem" processes. The purpose of definition is to map existing processes to enable systematic examination of potential During diagnosis, process problem areas. improvement ideas are generated. In the design step, ideas are evaluated for potential valueadded. In the final step, implemenation, new processes are introduced, tuned, and monitored. Although the steps are presented in a sequential manner, BPI is meant to be an iterative exercise. In other words, moving back and forth between steps is encouraged when deemed necessary by the project team. The systematic nature of the methodology allows team members to use specific modeling tools during different steps. For instance, flowcharting tools are recommended during the envision and definition steps. Whereas, process modeling tools are recommended during definition and diagnosis. The methodology also acts as a rallying point to keep the team focused on the proper tasks and activities required at a specific step of the project.

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People includes direct involvement in critical decisions related to the project, freedom to approach problems in a creative manner, and rewards for team effort. Worker empowerment is a key element of BPI. Team members need to have the authority to make critical process decisions where the work is done. In addition, creativity is crucial to process change. The existing process is not working because it was designed based on what has always been done in the past. The BPI literature stongly recommends that team composition is made up of workers closet to the process being modified. Team members are in the best position to make decisions concerning a process because they are the ones who do the work.

In sum, the foundation of the Three Pillars of BPI is the methodology. The methodology acts as a rallying point for teams, managers, and executives. It provides a systematic approach to solving business process problems. However, an environment conducive to change is needed. The environment shapes what people do in an organization. It can be restrictive or nuturing depending on the management style. BPI flourishes in a nuturing environment. People will not respond to BPI unless they are trained and educated in how to be productive in a new environment. In addition, they need to be empowered to creatively attack process problems at the source.

MEC CATERPILLAR

The case study was undertaken to provide initial support for the conceptual model. The case offers a longitudinal view of Caterpillar Inc., Mossville Engine Center experiences with BPI since 1991 and provides insight into an instance where BPI is approached in a systematic and holistic manner. It describes how Caterpillar Inc. (Peoria, IL) introduced BPI into one business unit, Mossville Engine Center (MEC), six years ago and saved between \$10 and \$20 million. At the request of Caterpillar MEC, detailed financial analysis was not included.

Caterpillar believes that its success with BPI can be directly tied to adoption and implementation of an enterprise-wide system called business process simplification and improvement (BPS/I). BPS/I provides a systematic methodology for analysis, design, and implementation of BPI principles. It also provides the management environment, new job roles, and techniques to enhance creativity and push decisions down to where the work is done. The role of information includes facilitation technology of data transformation, information flow, and communication throughout the stages of BPS/I.

Caterpillar MEC manufactures a variety of small and medium-sized diesel engines. The engine center employs approximately 5000 people with 1200 in management positions. Total revenue for Caterpillar Engine Division is \$3.7 billion.

Historically, the management style at Caterpillar has been hierarchical with top-down decision making and bottom-up reporting. Line workers are assigned specific tasks and must adhere to specifications provided by project leaders and managers. Managers are provided directives from upper management and are allowed some latitude in how they delegate assignments. Top management creates directives from long-term strategic plans. They also decide on priorities for

major projects, develop the corporate vision, and communicate the vision to employees.

By the early 1980's, Caterpillar realized that it would have to make major changes in structure, management style, and job roles to remain competitive. It turned to BPS/I to guide its change efforts.

INCEPTION OF BPI AT CATERPILLAR

Caterpillar embarked on a long-term strategy to grow its businesses and rethink existing business units and divisions. Over a seven-year period, beginning in 1987, Caterpillar invested \$1.8 billion in a plant modernization program. The modernization effort enabled the company to improve quality, reduce waste, and helped the Engine Division grow its diesel engine business. In 1990, Caterpillar began a corporate-wide effort to reorganize its business. Its goal was to replace its centralized organization focused on meeting customer needs and improving the bottom line. Today, Caterpillar has 17 business units.

In 1991, the company began the BPS/I initiative in several Caterpillar businesses. BPS/I utilizes proven correction, simplification, and reengineering techniques to improve both office and factory business processes. Historically, operational processes have always undergone continuous scrutiny. However, office processes had received little attention. Hence, Caterpillar has shifted its focus to improving inefficient and ineffective office processes.

Formerly, small engine production was part of a larger profit center. Hence, its productivity wasn't as closely scrutinized. As an independent business unit, Small Engine Products (SEP) now had to turn a profit. However, the business unit had a lot of competitors and tight profit margins. SEP management believed that business survival dictated an "improve or perish" mentality. Moreover, it appeared that administrative and cultural changes would be needed to prosper in the future. For these reasons, SEP management turned to BPS/I. David McKie came on board as general manager of SEP to oversee implementation of BPS/I objectives. He purposefully challenged managers to look for ways to improve their processes. McKie realized that his business needed to learn how to produce faster, smarter, and simpler with fewer people. As a beginning, he moved 10% of existing managers to a surplus pool for special assignments. The movement affected at least one layer of management, sometimes two. Attrition from these changes was absorbed across all payrolls. Caterpillar wanted to make business processes as competitive as its products. Consequently, customer satisfaction, quality, and costs were set as goals for reengineering. To meet these goals, Mr. McKie set out to develop a broad plan to improve the current situation. His plan consisted of three broad objectives. First, SEP must focus on, understand, and improve business processes. Second, responsibility and accountability must be pushed to the appropriate level. Finally, employee work ethics and understanding of the business must be improved.

Decision Processes International (DPI) was contracted to help SEP with its reengineering efforts. DPI was chosen because it had a strong strategy component as well as a mature process improvement program. DPI helped SEP establish a strategic vision, suggest tactics to help implement the strategic vision, identify specific business processes that support those strategies, and train managers within SEP responsible for BPS/I success.

Organizational transformation continues at Caterpillar. The Small Engine Products business and the Medium Engine Products business have combined to form the Mossville Engine Center. Throughout the remainder of this paper, the business unit being analyzed will be referred to as the MEC.

CASE STUDY METHODOLOGY

Case study analysis of Caterpillar MEC began in the summer of 1992. Since that time, information has been gathered about the many facets of BPS/I, problems specific to Caterpillar, and data concerning over four dozen BPI initiatives. At the request of Caterpillar MEC, detailed information

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on individual projects was not included. Projects both large and small have been completed in all MEC business processes. Processes such as engineering, new product introduction, concurrent production, process design, orders, customer support, information systems, and logistics have been beneficiaries. Each project is large in scope; that is, it spans functional boundaries and management levels.

In addition to site visits, contact has been maintained via telephone, E-mail, and fax. The last site visit was completed in April 1996. The next site visit is tentatively scheduled for April 1997. Data was gathered by in-depth interviews, extensive observation, company notes and documentation, consultant information, and the personal experiences of the researcher. The breadth and depth of data collected is extensive as the main contact is a key champion of Caterpillar BPI initiatives. He is the BPS/I coordinator and contributes over 28 years of inside experience.

Data collection concentrated on identifying the main components of BPS/I and their relationship with the Three Pillars of BPI. Other goals included identifying key factors driving the success of the methodology and common implementation mistakes.

THE BPS/I STRUCTURE (Environment pillar)

The BPS/I structure consists of a team hierarchy for attacking process problems, as

depicted in Figure 2. The BPS/I structure is related to the Environment pillar of BPI. The environment should provide a team structure for solving process problems, new job roles for managers and executives, and The hierarchy includes:

- Management Review Team (MRT)
- Project Review Teams (PRT)
- Macro Process Teams
- Micro Process Teams (when deemed necessary)

Instructor/Facilitators (I/F) train and coach process teams. I/F practitioners assist and support all levels of the structure by teaching and overseeing the reengineering process. The reengineering coordinator works closely with top management and counsels I/F practitioners.



Figure 2. BPS/I Team Structure

The MRT is the governing body. It consists of the General Manager (GM), department heads, BPS/I coordinator, and invited guests depending on the process being considered. The MRT selects and authorizes business processes to be examined that have critical links to Caterpillar business The "results-oriented" mentality of strategies. the company requires that each process meet the twin criteria of potential to reduce costs and a high business strategic value. The MRT also guides projects by interacting with the PRTs and Macro Process Teams. Senior management buyin is sought early on because BPS/I projects do not begin until authorized by the MRT. Since the MRT has top management membership, it can also remove political and cultural roadblocks that may hinder the PRT or Process Team progress.

The PRT consists of mid-level to upper-level managers familiar with the specific process being improved. The PRT sets stretch improvement goals and selects Macro Process Team members. Caterpillar management wants project goals to be stretched to ever higher levels of performance. The PRT also facilitates Macro Process Team activities and communicates the importance of the project to the company. The PRT structure

reduces failure as middle managers are forced to work with people on the floor, thereby they gain a better understanding of the process. In addition, it is charged with communicating top management initiatives to the people on the floor and provides the communication link between top management and process workers. It is also charged with preparing Process Teams for final presentation to top management. Process Team performance is thereby a direct reflection on the Hence, quality is improved because PRT. everyone in the organization understands the importance of the project and plays an important role in its success.

Macro Process Teams are cross-functional with six to eight members. Team composition consists of workers who actually perform the process and a supervisor or mid-level manager. Macro Process Teams recommend detailed process changes. Once the changes are approved, they are the ones who actually do the work. For large processes, a Macro Process Team may form a Micro Process Team to better manage individual issues and details. However, Micro Teams are only formed out of extreme necessity as coordination problems are greatly intensified with the creation of multiple sub-teams. Process Team buy-in is secured by requiring each team member to sign a BPS/I mission statement for each The mission statement serves two project. purposes. It shifts ownership of the project from management to the team and forces team members to make a commitment. The mission statement includes what the team will provide the customer, a time frame for completion, and the level of improvement expected.

Besides Process Team buy-in, MEC management wants team members to better understand the overall MEC engine business and adopt a "continuous improvement" mentality. In order to achieve these results, MEC management has attempted to create an environment that encourages teams to challenge status quo processes. Hence, teams are also very much involved in decision making. MEC's experience with team involvement is that it has dramatically improved each team member's understanding of the business. To avoid miscommunication and promote understanding, each level includes at least one member from the level below. The MRT seats at least one PRT manager, the process owner, as a permanent member. Each PRT seats at least one Macro Process Team member, the team leader. Macro Process Team members lead Micro Process Teams. Hence, the BPS/I structure keeps people at all levels informed as it introduces lines of open communication up and down the organization. Managers understand what teams are doing and teams understand what is important to managers.

The structure sends the message to everyone that it is okay to tinker with existing processes and challenge the process paradigm. An environment conducive to involvement is especially important for politically sensitive processes. For instance, a previous effort to improve a process that has failed in the past requires a clear signal of support from top management to quell political battles. The people involved in BPS/I need to hear that management supports critical examination of the existing process. However, with freedom comes . responsibility. Workers are challenged to think differently than in the past. As worker involvement in process decisions increase, comfort levels decrease and ambiguity levels rise.

Caterpillar is committed to BPS/I. However, the structure is only a mechanism to address process reengineering problems. The company has to continue to function during the transition period required by BPS/I. In the meantime, it must satisfy existing customers, stockholders. employees, and other stakeholders. MEC employs a full-time coordinator to act as liaison. Facilitator coordinators work directly with the General Manager's office and department heads. They also facilitate the effort at all levels of the BPS/I hierarchy. In sum, facilitator coordinators are charged with keeping everyone involved in reengineering aligned with the BPS/I methodology. The next section details the steps involved in BPS/I.

THE BPS/I PROCESS (Methodology pillar)

As depicted in Figure 3, the BPS/I implementation process has five main steps f process

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selection, process mapping, process improvement, process verification, and process implementation. Each of these steps are discussed in this section. Substeps are indicated by the small boxes to the right of each step. The BPS/I process is related to the Methodology pillar. BPS/I provides a systematic method for solving business process problems.



Figure 3. BPS/I Steps

Process Selection

As depicted in Figure 3, the first step for the MRT is to select critical business processes based on its potential to add value to Caterpillar businesses. A critical responsibility of the

MRT, at this stage, is to ensure that project guidelines are aligned with business strategies and objectives. The PRT is formed. The PRT secures people for the teams and establishes local priorities based on the MRT plan. Macro Process Teams are charged with doing the work. After process selection, the processes can then be mapped.

Process Mapping

tation The goal of process mapping is to understand the current process or set of processes and associated problems. Project limitations and the process mission are also established at this stage. Process mapping is the most important stage as it provides a full view of the process in its entirety, both upstream and downstream along the process path.

Under the periodic guidance of the PRT, Macro Process Teams begin developing a crude map of the process. The map portrays the flow of activities along the process path. Teams use flowcharting to map process flows. Flowcharting is a useful tool as it facilitates understanding and communication. It helps teams identify dangerous loops, redundancies, and incomplete instructions in the process. It also helps teams understand what the process looks like and how changes will alter tasks and activities along the process path. The team can then tweak or radically alter process flows by using the flowchart as a guide. In addition, teams can use flowcharts to facilitate communication with management concerning proposed process changes.

The first map is crude by design. Allowing teams to develop the map with their own hands serves two purposes. The team gets more involved in the creative process and the map acts as a rallying point for team members. Project ownership shifts to the team as they feel like they are in charge. The map allows them to begin identifying redundancies to remove. It also acts as a catalyst to begin questioning the process paradigm. Team members start asking why the process is done in a certain way and why it can't be done in a better way. Related training manuals provide appropriate prompts to the team along the way. Having defined problems associated with the current process, team members are now ready to suggest improvements.

Subsequent drafts of the process map are placed in electronic form with the aid of software flowchart packages such as AllClear. Other tools that are used include Pareto Analysis (tracks quality), Affinity Diagrams (for degree of quality), and Fishbone Diagrams (identify where problems occur along the process path).

Process Improvement

After the team maps the process, process improvement begins. Process improvement involves analysis of existing processes and suggestions for change. Caterpillar believes that process improvement need not be radical. A process can be corrected, simplified or reengineered. Figure 4 depicts the three improvement methods.



Figure 4. Three Improvement Methods

Smallest in scope is process correction. Correction involves returning the process back to traditional levels of performance. Simplification involves streamlining the existing process. If analysis of the process calls for removal of one or more steps, simplification is being used. Reengineering involves radical change. Reengineering forces a change in the team's thought processes. They have to rethink the way a job is currently done.

At Caterpillar, process improvement usually begins with simplification. Correction is used only if the current process is performing below traditional levels of expectation. Reengineering techniques are often employed in conjunction with simplification. It is not unusual for all three methods to be used on a single process. The team begins process simplification by asking questions about the activities currently being performed: what are the activities, where are they performed, when are they performed, how are they performed, and who performs them? In the next step, the team questions why process activities are done in a certain way. This is a very important question as it breaks provincial thinking. It forces teams to question the logic of a process. In the third step, the team questions the necessity of each process activity. Finally, the team devises alternative ways to perform the process. Reengineering is very similar to simplification except teams are expected to devise alternatives that provide radical rather than incremental improvements.

A common technique to approach process improvement is to break down the process into smaller parts f modular problem solving. Using this technique, teams attempt to find ways to simplify, correct, or reinvent smaller portions of the whole process. They then decide on the implementation priority of each remedy. After priorities are set, the team verifies that each one will work as expected. Caterpillar is also aware of the potential of technology to facilitate process improvement. Teams have available e-mail to communicate with each other and management, personal computers to analyze data and document/graph activities, and access to mainframe power to handle larger jobs.

The major deliverable out of this stage is generation of alternative process flows. Teams are provided tools to help analysis, facilitative management for encouragement, and technology to communicate. However, they need a mechanism to stimulate idea generation. Caterpillar has found that the most effective mechanism for idea generation is brainstorming. Brainstorming is used extensively at this stage to encourage creative input from team members.

Managers act as facilitators of the brainstorming process by allowing team members to voice their opinions and reserving judgement. Proper management of brainstorming sessions is critical. Hence, a critical component of I/F training is learning how to create an "open" environment for employee ideas, acting as a coach or facilitator rather than a boss, and convincing employees that ideas or comments

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will not lead to future reprisal. The next step in the methodology is to determine the ramifications of the suggested process changes.

Process Verification

Once the team generates alternative process flows, verification of the choices can begin. In the Process Verification stage, the team determines the impact of each alternative on the company as a whole. The team has made its own decisions and has assumed ownership of the project. At this point, the team is like a race horse. They believe that they have the answers and are ready to implement them. The I/F's job is to slow the team down and help them assess the value of each alternative generated in the Process Improvement stage. Caterpillar uses Potential Problem Analysis (PPA) to counteract the tendency of teams to jump to conclusions without proper analysis. PPA involves engaging teams to ask questions about the value of each alternative and its impact on other processes. The time allotted to PPA should be at least 1-1.5 hours for each alternative. Table 1 includes a set of possible questions that might be used for PPA.

-see Table 1-

Team PPA is facilitated by wall posters with questions and places where team members can fill in possible answers to the questions. The main objective of PPA is to identify potential problems associated with an alternative and anticipate the impact of changes required by an alternative on the existing process and other processes along the process path. Deliverables from PPA include a report of potential and anticipated problems associated with the new process. The team completes the PPA analysis keeping in mind what would happen to the existing process, customer satisfaction, and other processes if something went wrong. PPA should help ensure that the alternative chosen by the team will have the least negative impact on the organization and other processes along its process path.

Process Implementation

The final step of BPS/I is to figure out how to

implement the new process. The new process will have a refined process map and a thorough PPA report. The team meets with its PRT to lay out a proposal for presentation to the MRT. The proposal includes a detailed implementation plan, benefits of the new process, and a time table for completion of the project. The PRT acts to facilitate the completion of the proposal and helps the team get ready to present to the MRT. After all, the PRT has a vested interest in the success of the project as they assembled the team.

Although the BPS/I methodology is presented in a sequential manner, practical implementation tends to be iterative. For instance, during Process Verification, teams may find that the alternatives generated during Process Improvement need refinement or are not viable. Hence, they may need to generate a new or revised set of alternatives and re-examine them with PPA during Process Verification.

TRAINING AND REWARDS (People pillar)

Training and rewards are tied to the People pillar of BPI. BPS/I training focuses on cultivating creativity, improving decision making skills, and educating people about the synergistic value of team work. Rewards provide the incentive to change. Rewards also show that top management is serious about empowerment and process improvement.

Candidates undergo intensive training concerning every aspect of BPS/I. Intensive training requires about 120 hours of on-shift time over 4-6 weeks of calendar time. Trainees are required to complete rigorous homework assignments and undergo realistic skills testing during the training period. Once trainees have successfully completed the program and their performance with a real team has been monitored, they go back to their project as I/Fs; that is, they are responsible for training and facilitating all team members involved in the BPS/I project. I/F practitioners are not BPS/I team leaders. They are the keepers of the BPS/I methodology. Their role is to make sure that teams adhere to correct methods and practices. Typically, 30% of I/F time is dedicated to BPS/I.

The biggest impetus driving BPS/I success is the people doing the work. Hence, MEC management has taken a proactive stance on cultivating its greatest resource. Although training and educating employees is a priority, it is not enough to guarantee success. Employees must be rewarded for "process thinking", value-added ideas and work, and solving business process problems. To push a process mentality to all levels of the organization, MEC Caterpillar has adopted the BPS/I empowerment structure. Granted, some managers are resistant to change and can present an obstacle to BPI. In response to this problem, top management is attempting to open continuous communication with all levels of the organization, visibly endorsing BPS/I, and taking an active leadership role in dealing with political resistance to change. Moreover, the reward system has been changed. Team rewards are tied to accomplishment of the team's mission. Examples of this recognition include:

- Caterpillar apparel
- restaurant certificate from the MRT (\$30-\$50 with spouse)
- annual performance review will include detailed information on team accomplishments
- MRT recognition and approval
- corporate-wide visibility

BPS/I anxiety is a concern. Process improvement can significantly change organizational structure and reduce headcount. Employees are very concerned with headcount reduction in that it may mean job reassignment. However, when BPS/I projects identify surplus positions in a process, something must be done. To assuage the situation, MEC tries to redeploy surplus employees to other (sometimes better) jobs within the organization. Nevertheless, employees experience anxiety as they never really know if they will remain in their existing position once BPS/I begins. Therefore, a major strike against reengineering in the minds of many employees is the threat against job security.

APPLICATION OF THE CONCEPTUAL MODEL AT MEC

Data gathered via the case study revealed that the Three Pillars model provides a conceptual foundation for effectively dealing with BPI projects (in at least one instance). Although the generalizability of a case study may be suspect, it has the potential to provide evidence to support or refute a conceptual model, propositions or hypotheses. The evidence supplied by the MEC case provided abundant evidence in support of the Three Pillars model. Probably the major strength of a case study is that it can provide very rich data about a phenomenon. In this section, the author details an actual BPI project through the BPS/I steps into production, the role of technology at MEC, a summary of the outcomes of BPI projects at MEC, the keys to success, and common implementation mistakes.

The Role of IT in BPS/I

Caterpillar relies on a variety of computer platforms (ie., client/server and mainframe) to transform data into information and facilitatē information flow along each step of the BPS/I methodology. Various technology platforms are being considered for future integration. Most team members involved in BPS/I projects use personal computers to facilitate simple data processing and end-user application development. These computers are connected into the Caterpillar telecommunications backbone which also connects to headquarters and the main business sites.

Data is partially integrated across critical business processes via connections with the mainframe platform. Information is made available on a fairly consistent and timely basis for BPS/I teams along the five critical stages of the methodology. However, information is not available at the fingertips. Reports are processed through the mainframe system and sent to the requesting area by internal and electronic mail. The mail system is efficient, but cannot be compared to a networked personal computer. An important integrating tool is electronic calendaring. As meetings are scheduled, the calendaring system automatically checks everyone's schedule for conflicts. Everyone has access to the schedule via personal computers or dumb terminals in proximity of their work space. Employees have a short time frame to question the schedule. If no one requests a change, schedules are set in

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stone. The organization's experience with this system has been very favorable. Electronic calendaring has enabled integrated scheduling on an enterprise-wide basis.

MEC utilizes sophisticated technology and equipment at the process level. AutoCAD, Pro/E, and other IS tools are used to facilitate complex diagraming and blueprinting of engines and components. Diagnostic and measurement equipment is used to test parts specifications and tolerance levels. E-mail is used to communicate across the organization. However, the current focus of BPS/I is not on technology integration and information reengineering.

The Caterpillar stance on technology is that of a facilitative tool for employees to perform tasks and activities more efficiently and effectively. Technology does not solve problems, rather it helps people better understand, analyze, and solve problems. The survival of MEC depended on quick solutions to their business problems. Therefore, they had to make an informed choice. Тор management decided that process improvements should be made to critical business processes as quickly as possible; information reengineering could come later. Now that MEC is achieving dramatic improvements in many of its critical business processes, it is beginning to look at information reengineering.

Example of a BPI Project

An example of a successfully completed BPS/I project is the Customer-Oriented Engine Graphics (COEG) project. The COEG project team was formed to improve turnaround time and internal costs of engine drawings. These drawings are utilized by Caterpillar customers to complete their own interior blueprints. One customer, a manufacturer of cabin cruisers, needed timely delivery of drawings describing the engine's outer shell and connections such as those for air, fuel, and water. BPS/I was adopted to lessen the risk of losing such customers by delivering quality drawings on a timely basis. BPS/I enabled discovery of efficient office and operational methods to replace outmoded work flows. Reengineering the drawings process achieved huge time and cost savings, satisfied customer needs, and increased business.

Process Selection was handled by the MRT. Upper management, department heads, and a full-time reengineering coordinator collectively selected the Drawings Process. The MRT also chose appropriate managers and coordinators for the PRT. The PRT chose Macro Team employee members from departments involved in the Drawings process. Two reengineering facilitators were a part of the Macro Drawings team. They initially provided 40 hours of training in the BPS/I methodology to the eight-member team.

After training, the COEG team began the second step, Process Mapping. Process mapping involved flowcharting, understanding, and evaluating the existing process in relation to customer needs. Information quality of the drawing and how it was produced was determined from the Process Mapping step. For example, the map of the process allowed the team to determine if a drawing level was missing or how work flowed through part of the old Instead of relying on the Marketing process. department to determine customer needs, the COEG team conducted their own survey. The survey, coupled with benchmarks derived from competitor's offerings, helped the team set goals for what the finished process should do.

Inadequacies of the present process and creative rethinking of how the new process should be redesigned enabled the team to set aggressive goals of reducing drawing time by 50% and reducing the cost per drawing by 30%. The survey, benchmarking, and flowcharting showed where the present process was inadequate. The COEG Team used Value Analysis and other analytical tools to find and prioritize bottlenecks and inefficient processes. Value analysis is a method for testing parts of a workflow to see if they are really necessary for the end product.

Value analysis pinpointed a bottleneck in the smaller parts drawing that made up the engine's outer shell drawing. Parts drawings are brought together in layers using Computer Aided Design software called AutoCAD. The smaller parts drawing was in a file format different from the ones the customers used and often lacked

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information. This meant a translation step was required before the files could be imported into the AutoCAD files. Another big bottleneck was the inability to tell customers who was working on which drawing, and what stage it was in. Drawing designers often had to go back to engineering for missing details, and attempts to obtain the correct data ran into authorization problems and other roadblocks.

Caterpillar had in place very sophisticated technologies to aid the drawing process. However, technology cannot solve problems if the business process is not designed effectively. The present process was not designed for quick customer response. Although Caterpillar owns very sophisticated CAD technology, it is utilized within the framework of the present process. The present process was designed based on existing departments, technology structures, organizational structures, and organizational protocols. The power of process thinking lies in its focus on business objectives and customers rather than on the status quo.

The value analysis process map also enabled the team to identify the layers of drawings being imported into the Drawings Department. The ability to inspect each layer independently revealed that the parts files were in a different format than the customer files and had to be translated before being read into AutoCAD files for processing. In addition, customer inquiries were bogged down because the Drawings Department had to interact with the Engineering Department before a customer response could be Moreover, inquiries were slowed by made. requirements authorization between the departments. Hence, customer response was very slow.

In step three, Process Improvement, team members applied problem-solving techniques such as breaking down the overall workflow into more manageable modules. Once the overall workflow was broken down, they were able to more easily generate potential remedies for each module. During step three, the COEG team generated a set of recommendations which included remedies for each module and prioritization of the remedies to implement. In step four, Process Verification, the team analyzed the recommendations for potential problems. Analysis included anticipation of problems caused by process modifications within each module, contingency planning for potential implementation problems, and "what-if" analysis. Each remedy was presented individually to management to gain piecemeal support. As each remedy was approved, it set the stage to move into the final step.

Step five included implementation of the remedies in the workplace and monitoring performance. Continuous monitoring allowed repeated refinements and adjustments of each remedy to enhance quality and bolster support. Monitoring allowed management to assess the value of a change as it was being implemented. One proposed remedy was to change the output file formats of drawings to better match customer formats instead of focusing on improving the translation process. Hence, the team redesigned the drawings process by proposing removal of the translation activity. The COEG team facilitated the change by working and cooperating with the Engineering Department to help them change their output files formats to better align with Another remedy involved customer formats. instituting scheduling software to track drawing The software was intended to information. address customer requests more effectively. Tracking included to whom drawings were assigned, how long they would take to complete, and what stage of completion each drawing was in. These two remedies were just a few of the many recommendations adopted.

The results from the 10-person, 1000-hour COEG reengineering process were quite impressive. Cycle time per drawing was decreased from 5.5 months to 1.5 months (a 73% improvement). Cost per drawing was decreased from \$1,870 to \$522 (a 72% improvement). Both achievements went far beyond the initial goals set by the team.

The COEG project aptly demonstrates the systematic nature of the BPS/I methodology and the impressive results that can be obtained by adhering to it. The remainder of the paper will present what we think are the keys to reengineering success, a summary of the

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outcomes Caterpillar MEC has received from BPS/I to date, and common reengineering implementation mistakes.

Summary of MEC BPS/I Outcomes

Caterpillar invested in BPS/I to get results. To date, its reengineering efforts have paid off quite well. On the average:

- process cycle times have decreased by 50%
- number of process steps in a business process have been cut by 45%
- process resources (people) have been reduced by 8% for those projects where manpower was a mission statement goal
- MEC has added three business process cells and completed over a dozen BPS/I projects (prior to business process cells, groups of employees used to perform a portion of the process; in the cell, the employee now performs the full process)
- cross-divisional interactions have increased (teamwork building)
- employees better understand business processes (better decisions)
- employees have gained experience with an effective reengineering methodology (more effective work habits)

In sum, introduction of BPS/I at Caterpillar MEC has helped to make process improvement a way of life for employees. Employee involvement in decision making has also become more common. However, with additional involvement comes accountability. Therefore, employees are given the freedom to make decisions, but must prove to management the value of those decisions to the organization.

Keys to Success

From the in-depth case study of Caterpillar MEC, we identified what we think are the ten ingredients or keys to reengineering success:

- adoption and implementation of a systematic reengineering methodology
- top management support
- employee involvement in decision making
- a team structure to guide employees in their new roles

- release time for BPS/I team members from regular duties
- a commitment to training
- attack BPI in manageable chunks
- understand the value of people
- a strong advocate (champion)
- adoption of a "process mentality" as part of the corporate culture

The likelihood of achieving long-term reengineering success will be greatly enhanced if these ten keys to success are weaved into the strategic orientation of the organization. In addition, the corporate culture should embrace (and reward) a corporate-wide mentality of continuous improvement and process thinking.

Bps/I Common Implementation Mistakes

Even with a strong commitment to change, organizations may fail to realize benefits from reengineering because of poorly managed implementation. Over five years of experience with BPS/I projects has enabled identification of sixteen common mistakes that can occur.

- 1. BPS/I is regarded as a "program", despite the rhetoric that may be made to the contrary.
- 2. Short-term results are not obtained, causing management to lose interest. There may be no attempt to get short-term results, or management may believe that measurable benefits lie *only* in the distant future (short-term results keep top management interested).
- The process is not driven by a focus on the customer, strategic business issues or senior management.
- Structural elements in the organization block change. These include compensation systems, promotion systems, accounting systems, rigid policies and procedures, specialization and functionalization, and status symbols such as offices and perks.
- 5. Goals are set too low. Management does not shoot for stretch goals or use outside

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- The organizational culture remains one of "command and control" and is driven by fear, budgets, schedules or bureaucracy.
- Training is not properly addressed. There is too little training of the work force. Training may be the wrong kind such as only classroom training or a focus on tools, not problems.
- 8. The focus is mainly on products not processes.
- Little real empowerment is given and not supported by actions.
- The organization is too successful and complacent. It is not receptive to change and learning, and clings to the "not invented here" syndrome.
- 11. The organization fails to address three fundamental questions: Is this just another program? What is in it for me? How can I do this on top of my "regular" job?
- 12. Senior management is not personally and visibly committed and actively participating.
- There is an overemphasis on teams for cross-functional problems to the neglect of individual efforts at local improvements (some problems do not require teams!).
- 14. There is a belief that more data are always desirable, regardless of relevance "paralysis by analysis".
- 15. Management fails to recognize that improvement is a personal responsibility at all levels of the organization.
- The organization does not see itself as a collection of interrelated processes making up an overall system. Both the individual process and the overall system need to be identified and understood.

DISCUSSION

The MEC case provided initial support of the Three Pillars conceptual model as a holistic approach to BPI. MEC employs a systematic methodology to guide teams as they work on critical and complex business process problems. The BPS/I structure provides a conducive environment for change management as it defines new job roles for team members, managers, and executives. The general principals of BPS/I call for increased worker empowerment, crossfunctional teamwork, management by team facilitation, continuous training and education, and rewards for process thinking and creative problem solving. Although MEC is results oriented, the company is pushing BPS/I as a philosophy for dealing with change. It realizes that its people do the work and must therefore be nutured, trained, educated, and cultivated to approach their jobs as problem solvers and business people rather than as working just for pay.

The conceptual model appears to be holistic and comprehensive because it matches what is going on in a company that has been successful with BPI for over five years. An organization is made up of people who do work at different levels. Executives lead, managers facilitate, and people complete projects and related tasks. Executives set the strategy and champion the corporate culture. Managers carry out strategy and make it work in the corporate culture with people and other resources. People are provided tools and (hopefully) support and decision making power to effectively solve business problems. Business strategy and BPI are related in that process problems require long-term solutions to be effective and they must be aligned with business goals and the customers served by the organization. The Three Pillars model addresses each of general issues. The model should evolve as more cases are examined. For instance, MEC has emphasized process improvement from a business perspective rather than an IT perspective. Exploration of an organization with an IT perspective toward BPI would be an interesting variation on this report. It would be interesting to see how IT (and possibly other factors) could be incorporated into the model.

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Being holistic is very conducive to process thinking in that most business processes are cross-functional in scope, involve many different types of people, and requires a "team" approach to solving problems. The model offers three pillars because they appear to be the keys to success as related by the case study. The methodology pillar acts as a rallying point of where to begin, process, and end a project. The environment (structure) shapes what we do each day and it must be congruent with the methodology. Finally, people are the key as they do the work.

The study set out to test a conceptual model of BPI with a case study. The case study revealed that the Three Pillars of BPI are very closely related to what MEC Caterpillar is doing in terms of BPI projects. Although one case study is not enough to provide evidence that the model is generalizable to all organizations, it offers initial validity of the model. Other organization can use the model as a high-level blueprint of the basic ingredients necessary for successful BPI.

In practical terms, Caterpillar management chose BPS/I because of the systematic way the methodology approaches reengineering. Like most successful organizations, Caterpillar is results-oriented. It doesn't want to change for the sake of changing. It wants to change to make more money, to gain market share, and to successfully compete with powerful rivals. Unlike many reengineering methods available on the market, BPS/I offers a system that meets Caterpillar's aggressive goals and training that strengthens its employees through education and BPS/I training focuses on proven guidance. methods to help people better identify root causes of problems rather than symptoms, uncover value, and encourage teamwork. Training also introduces team members to techniques intended to foster creative and innovative problem solving. To foster an conducive to creativity and environment innovation in the workplace, MEC management realizes it must rethink reward and management structures to reflect a commitment to change.

The impact of BPS/I on MEC Caterpillar has been significant in terms of cost savings, more efficient

and effective business processes, and a workforce that better understands the engine business and how to work together as a team. BPS/I has proven to be a versatile process improvement methodology. It has been successfully applied and implemented across engineering, information systems, production, and customer support projects.

The difference between success and failure hinges upon an organization's view of reengineering. Reengineering organizational change requires a strategic orientation rather than a tactical or operational one. Reengineering must be carefully planned, properly financed, and strongly reinforced. Hence, reengineering should be considered in the strategic plan of the organization since it must be endorsed and enforced by top management.

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PPA Question Set

What is it you are attempting to do? What could go wrong? What causes these problems? How can we prevent problems from occurring? If problems do occur, how can we minimize them?

Table 1. Question Set for Potential Problem Analysis (PPA).

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ETHICS, KIDS, AND BUSINESS

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ABSTRACT

Increasingly, businesses have become concerned about whether or not their actions are seen as ethical or unethical by consumers. These concerns may be particularly acute when those actions impact children. In order to understand this issue more fully the authors administered a pilot questionnaire to conference participants.

THE QUESTIONNAIRE

Four different versions of the survey instrument were used. Each form of the questionnaire had a total of six ethical scenarios, half of which involved marketing to children. The other three scenarios revolved around marketing to adults. Respondents were asked to rank on a scale of zero to seven their rating of the ethics of each situation. The rating scale was as follows: 0 =Not Sure; 1 = Ethical; 3 = Somewhat Unethical; 5 = Highly Unethical and 7 = Very Highly Unethical.

The framework for developing the ethical issues revolved around different age groups: Infancy to 6 years (Early Childhood); 6 - 12 years (Later Childhood); 11 - 14 years (Early Adolescence); 13 - 18 (Later Adolescence) and over 18 years (Adults). The researchers included a variety of ethical concerns: Physical Harm (e.g., an unsafe product); Emotional Harm (e.g., a product or an which induces aggressive behavior); ad Intellectual Harm (e.g., preschool educational programs not based on research); Social/Interpersonal Harm (e.g., music which promotes destructive behaviors) and Ethical/Moral/Legal Harm (e.g., breaks laws, breaches norms of socially acceptable behavior).

Next are some sample scenarios:

Version A1:

A company has obtained the rights from 10 leading microbreweries to use flavoring based on their premium brews for a line of beer flavored chewing gum. The sticks of gum come in an oblong package which resembles a thin beer case and consumers can buy larger amounts in a collectible beer barrel with the microbrewery logo on the barrel. While the gum contains the flavor of the microbrew, it does not leave a residual beer odor in the mouth. The gum will be initially promoted through beer distributors as a "give away" item when customers buy an actual case of that brand beer. If this premium gum is successful, the Company plans to launch additional flavors drawn from such popular mainline beers as Budweiser and Coors. The Company is also considering opening a Web site where consumers can buy other items (caps. jackets, coasters, etc.) with the logos of the different microbreweries.

Version A2:

A company has obtained the rights from 10 leading microbreweries to use flavoring based on their premium brews for a line of beer flavored candy which fizzes in the mouth "just like real beer." The candy comes in an oblong package which resembles a thin beer case and consumers can buy larger amounts in a collectible beer barrel with the microbrewery logo on the barrel. While the candy contains the flavor of the microbrew, it does not leave a residual beer odor in the mouth. The candy will be initially promoted

through typical candy outlets as a "give away" item when kids and adults buy one of five popular candies. If this premium candy is successful, the Company plans to launch additional flavors drawn from such popular main-line beers as Budweiser and Coors. The Company is also considering opening a Web site where children and adults can buy other items (caps, jackets, coasters, etc.) with the logos of the different microbreweries.

It should be noted that if the "adult's" version of the ethical situation was on one form of the questionnaire the corresponding "children's" version was on another form of the survey instrument. Since the researchers are interested in determining if the age of the intended target audience affects the ethics rating, this type of separation was deemed critical to the survey design.

After each of the six scenarios participants were asked to use the above-described rating scale to rate: A) The specific action of this Company in this one situation; B) The general level of ethics of this company assuming that this example illustrates how they prefer to operate; C) The general level of ethics of this particular industry. Respondents were also asked, "If you or someone else in your family or a close friend had a need for this specific type of product or service, and found the price reasonable, what is the probability (0 - 100%) that you would buy this product from this company as opposed to buying from a competitor at the same price?" Also, "If this company made other products that you or your family had a need for, and the price was acceptable, what is the probability (0 - 100%) that you would buy another wanted product from this company as opposed to buying from a competitor at the same price?" Since one of the reasons for conducting this pilot study was to determine which scenarios are better at identifying a true ethical concern, participants were also asked to briefly indicate what ethical issue, if any, they saw in the situation described.

The questionnaire concluded by asking some questions about the respondent. Gender, college major and religious affiliation were solicited. The researchers also wanted to know if the individual was an only child, a middle child, or a last born child. Participants were also queried about their perceived level of general business ethics in the US and whether the general level of business ethics in the US has been improving or getting worse. Respondents were also asked how many times a business action which they now perceived to be unethical had a <u>direct impact</u> on them or someone close to them. Lastly, an open ended question was provided to allow for discussion of company actions which had unethical ramifications on either adults or children.

This effort is the first attempt to quantify the possible differential effects of company actions, which primarily impact on either children or adults. Such commonly assumed impacts have not been previously documented in a formal study. It also is the first effort to document the overall effects of such potential intervening variables as gender, birth order, college major, assumptions about business ethics and specific actions by business. AP

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BUSINESS FACULTY PERSPECTIVES ON QUANTITATIVE REASONING: A COMPARATIVE STUDY

Lee Ann Guenther Murray Kirch Andrew Kreutzer Nora C. Palugod Paul Palugod Richard Stockton College of New Jersey

ABSTRACT

The faculty of Richard Stockton College of New Jersey observed that students frequently lack quantitative skills in courses even though the students have previoulsy successfully completed courses designed to develop these skills. To address this problem, a new program, Quantitative Reasoning Across the Disciplines (QUAD) was introduced in 1995 to provide students with various mathematical experiences. This paper presents the results of a survey questionnaire designed to gather information about issues conceerning the transfer of skills among collections of related courses.

INTRODUCTION

The Richard Stockton College of New Jersey initiated its Quantitative Reasoning Across the Disciplines (QUAD) Program in 1995 to provide students with various mathematical experiences. This has resulted in the modification of existing courses and the development of new courses designed to furnish connections between mathematical concepts studied by students with issues that arise in various disciplines.

Stockton faculty frequently observe that students lack quantitative skills in courses even though the students have previously successfully completed courses designed to develop these skills. It is expected that the QUAD initiative will address this problem by enabling students to

> "...develop strong quantitative skills, understand the important role quantitative reasoning plays in a variety of disciplines, and learn mechanisms to overcome mathematics anxiety and avoidance."

During the two-year planning effort that preceded the introduction of the QUAD Program and during the first year of its implementation, information about individual faculty courses was collected and analyzed with respect to QUAD related issues. However, to better understand the issues concerning the transfer of skills among courses, the authors decided to study collections of related courses. We focused our attention at the program level.

Our objectives include the following items:

- Determine current faculty opinion concerning the role of quantitative reasoning within program curricula. Compare business faculty perspectives with those of faculty in other programs. Report on the results of this activity.
- Develop a portable model for assessment and improvement of quantitative reasoning skills which can be implemented in other organizations.

Examples of issues that we hoped to address with these objectives are illustrated by the following questions:

- What quantitative concepts are important at the undergraduate level within a given discipline?
- How well prepared are students entering specific courses in a given discipline?

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- What is the level of the quantitative reasoning skills of students upon completion of the program curriculum?
- Are there quantitative concepts that an instructor feels are relevant to his/her courses that the instructor could develop or reinforce in these courses?

To address these objectives and issues, we designed a questionnaire that we distributed to each faculty member in the Division of Professional Studies. This report contains a description of this process and a summary of the results.

In addition to the above, the project hopes to stimulate the pursuit of the following long term objectives:

- Facilitate the review of curriculum from a quantitative reasoning perspective by the program faculty. Report on the results of resulting from this review.
- After curricula changes are in effect, reexamine faculty opinion concerning quantitative reasoning of students and compare results with the earlier study.

Stockton offers degree programs in 25 areas organized as programs within five academic divisions. The Division of Professional Studies houses the following degree programs:

- Business Studies (with tracks in Accounting [ACCT], Finance [FINA], International Business [INTL], Management [MGMT], and Marketing [MKTG])
- Information and Computer Sciences (with tracks in Information Systems [INFO] and Computer Science [CSCI])
- Nursing [NURS]
- Physical Therapy [PHTH]
- Speech Pathology and Audiology [SPAD]

Public Health [PUBH]

Each of these programs offers a collection of courses related by discipline. For our initial study we elected to examine these collections.

METHODOLOGY

A survey was generated by the research team. It consisted of three specific components. Part I identified quantitative reasoning skills for each course taught since the Fall of 1995. Part II assessed the desirable and actual quantitative skills of graduates of the programs. Part III explored faculty attitudes toward various issues regarding quantitative reasoning. (Appendix 1) The classification of QR skills used in the survey was obtained from the desired QR skills for Stockton College students generated by the faculty during the QUAD Summer Institute.

The survey questionnaire was pilot tested on two faculty members. Minor revisions were made. A brief presentation about the project was made to the Business Faculty at a program retreat. The survey was then distributed to the Business Faculty. Additional changes were made in the survey as a result of the discussion associated with this process.

At a Professional Studies Division meeting, the faculty was briefed about the project. Faculty in the following academic programs were then asked to complete the questionnaire: Information and Computer Science, Nursing, Physical Therapy, Public Health and Speech Pathology and Audiology. The Business Faculty was asked to complete a revised component of the survey.

At a later divisional meeting, the faculty was encouraged to complete the survey and questions were addressed. Analysis of the returned surveys was performed. Questionnaire surveys were distributed to all fifty faculty members in the Professional Studies Division. Twenty-four responses were received.

The actual time frame for this process is provided in Appendix 2.

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RESULTS

The following summarizes the responses to the survey.

Part 1:

A. <u>Course Content Analysis, by Track</u> and/or Program

- ACCT: Mathematical reasoning was strongly required (=80%), while approximately one-half of the courses (for which faculty responded) felt that mathematical perspective, problem solving, and numeracy were helpful or required. Approximately one-half of the courses (for which faculty responded) felt that graphs and statistics were unnecessary or helpful. Half felt that statistics was helpful, while one-quarter felt that it was unnecessary and one-quarter felt that it was required. Three-quarters felt that geometry was unnecessary. Only a small proportion of the courses) formally taught or introduced any skills, while approximately one-half reviewed or built upon the skills.
- FINA: All skills except geometry were strongly required (=88%). Approximately onehalf of the courses (for which faculty responded) formally taught or introduced all skills except geometry. Most reviewed or built upon the skills, again except for geometry.
- MGMT: None of the skills were required. Mathematical perspective, algebra, and geometry were helpful, with the remaining skills unnecessary (=60%). Most skills were not formally taught or reinforced at all, and none were built upon.
- MKTG: Most skills were helpful (=75%), with the exception of algebra and statistics, for which most felt that they were unnecessary or helpful. Almost all (=90%) felt that geometry was unnecessary. Most (=80%) did not

formally teach or introduce skills, while approximately one-half reviewed or built upon all skills except geometry.

- CSCI: All skills were felt to be either helpful or necessary (=75%). Mathematical perspective, reasoning, and problem solving were formally taught (=60%), with the other skills taught somewhat (=20%), with the exception of algebra which was not taught at all. Approximately one-half of the skills were reviewed, with the exception of algebra. All skills were built upon to a fair extent (75%).
- INFO: Most (=65%) felt that mathematical perspective, reasoning, and problem solving were helpful., and all felt that graphs were helpful. Some (=43%) felt that algebra was required, approximately one-half felt that statistics was unnecessary, and most (=70%) felt that geometry was unnecessary. Most skills were formally taught to some extent (=40%), with the exception of geometry, which was not taught at all. Approximately one-half of the skills were reviewed or built upon, especially statistics. Geometry was not reviewed or built upon.
- NURS: Approximately one-half felt that graphs and statistics were either unnecessary or helpful, while all other skills were unnecessary. No skills were formally taught. Approximately one-half reviewed or built upon graphs and statistics, but none of the other skills.
- <u>PHTH</u>: Mathematical reasoning, problem solving, graphs, and statistics were strongly required (=85%), while approximately one-half felt that the other skills were either unnecessary or required. Hardly any formally taught skills. Approximately one-third reviewed skills, while approximately one-half reinforced skills, especially statistics.

B. <u>Comparative Analysis of QR Skills by</u> <u>Track and/or Program</u>

Table 1 highlights the extent to which faculty felt quantitative reasoning skills were necessary on entry into their courses.

-see Table 1-

Among the tracks in the Business Program, the Finance track appears to require the most quantitative reasoning skills, while the Management track requires none (table 1). The Marketing and Accounting tracks require a moderate level of quantitative reasoning skills.

Compared to the other programs, the Finance track has the highest quantitative reasoning skills requirement. The Physical Therapy and ComputerScience/InformationSystemsprograms had moderate requirements, while the Nursing program indicated no requirements in quantitative reasoning skills.

Table 2 highlights the extent to which faculty formally taught quantitative reasoning skills in their courses.

-see Table 2-

In table 2, the faculty in the Business Program reported that quantitative reasoning skills are formally taught in their courses. Among the tracks, Finance faculty indicated the greatest extent which these skills are formally taught in their courses. The Marketing and Management tracks indicated that they teach quantitative reasoning skills less in their courses than Finance faculty. Moreover, the Accounting track indicated least inclination to teach these skills in their courses.

The Computer Science/Information Systems tracks formally taught quantitative reasoning skills more than any program's faculty, while the Nursing faculty did no formal teaching at all. Physical Therapy faculty did only a small amount of formal teaching of quantitative reasoning skills.

Table 3 highlights the extent to which faculty reviewed or reinforced quantitative reasoning skills

in their courses.

-see Table 3-

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Table 3 indicates that Management Track reviewed or reinforced quantitative reasoning skills the most in their courses while Finance Track did the least. Marketing and Accounting tracks moderately reviewed or reinforced quantitative reasoning skills in their courses.

The Computer Science/Information Systems track and Physical Therapy faculty reviewed or reinforced quantitative reasoning skills moderately, while the Nursing faculty reviewed or reinforced very little.

Table 4 highlights the extent to which faculty build upon quantitative reasoning skills in their courses.

-see Table 4-

Table 4 indicates that the Accounting and Finance Tracks build upon quantitative reasoning skills the most in their courses while the Marketing Track did so moderately. The Management track did not build upon quantitative reasoning skills at all.

The Computer Science/Information Systems track and Physical Therapy faculty build upon quantitative reasoning skills moderately, while the Nursing faculty build upon those skills ver little.

Part 2:

Analysis of Desired Vs Achieved QR Skills of Graduates, by Program

BSNS:

Regarding <u>desired</u> skills of graduates, the respondents felt that mathematical reasoning, mathematical problem solving, numeracy, and algebra were highly desirable skills. Graphs and statistics were felt to be essential skills. The faculty felt that the <u>achieved</u> skills were considerably lower than the desired levels.

INFO/CSCI:

Regarding <u>desired</u> skills of graduates, the respondents felt that all skills except geometry were highly desirable. The faculty felt that the

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<u>achieved</u> skills were somewhat lower than the desired levels.

NURS:

Regarding <u>desired</u> skills of graduates, the respondents felt that all skills except algebra and geometry were somewhat desirable. The faculty felt that the <u>achieved</u> skills were very similar to the desired levels.

PHTH:

Regarding desired skills of graduates, the respondents felt that mathematical reasoning, mathematical problem solving, and graphs were highly desirable skills. The faculty felt that the achieved skills were somewhat lower than the desired levels.

PUBH:

Regarding desired skills of graduates, the respondents felt that all were desirable at the intermediate level. The faculty felt that the achieved skills were the same as the desired levels.

Table 5 highlights the faculty perceptions regarding quantitative reasoning skills of graduates.

-see Table 5-

Table 5 indicates that the Business Program faculty felt their students should have strong quantitative reasoning skills, but that the students achieved a quite low level of those skills.

The Computer Science/Information Systems faculty felt their students should have strong quantitative reasoning skills, but that the students achieved a moderate level of those skills. The Nursing faculty felt their students should have moderate quantitative reasoning skills, and that the students achieved a moderate level of those skills. The Physical Therapy faculty felt their students should have very strong quantitative reasoning skills, and that the students achieved a very strong level of those skills.

Part 3:

Analysis of Faculty Attitudes Regarding QR Skills Teaching Responsibilities, by Program or Track

BSNS:

ACCT/FINA:

Four faculty members in the Accounting and Finance tracks completed the survey. All regard computational skills or word problems as important (100%). Seventy-five to 100 percent consider themselves prepared and willing to provide instruction on computational skills, word problems and program-specific QR skills. Various techniques were used by faculty members (frequently or always) to assist students in dealing with QR deficiencies. These include sending students to the Skills Center (25-50%); remediation through in-class instruction (50%), additional readings (50%), taking additional courses (0-25%), and reduction of discipline content (0-25%).

MKTG:

One of two faculty members who completed the survey indicated that computational skills and word problems are important. Both faculty members consider themselves prepared and willing to provide such QR skills. Half of the faculty members send students to the Skills Center for additional instruction. The other techniques were never or occasionally used.

MGMT:

All three management faculty members who responded in Part III indicated that computational skills and word problems are either slightly important or important. They are willing and prepared to teach these QR skills. Most (67%) provide remediation of deficiencies of students by providing in-class instruction. Other techniques were never or occasionally used by the management faculty members.

INFO/CSCI:

Most (80%) of faculty responding felt that computational skills and word problems were important for students, while some (20%) felt that they were somewhat important. All faculty felt prepared to provide instruction in computational

skills and word problems, and all felt prepared (80%) or slightly prepared (20%) to provide instruction in program specific QR skills. All faculty were willing to provide instruction in program specific QR skills., and were willing (80%) or slightly willing (20%) to provide instruction in computational skills and word problems. Approximately half of the faculty sent students to the skills center to remediate deficiencies in QR skills. Most (=82%) of the faculty occasionally provide in class or out of class instruction to remediate deficiencies in QR skills, while most (80%) never or seldom provided additional readings/exercises as a self-study to remediate deficiencies in QR skills. Most (=75%) of the faculty seldom recommended a student withdraw from a course due to deficiencies in QR skills, while some (=25%) did so occasionally. Most (=65%) of the faculty seldom recommended a student take additional QR courses due to deficiencies in QR skills, while some (=20%) did so occasionally. Most (=65%) of the faculty have seldom or never reduced discipline content to cover QR skills, while some (=35%) did so occasionally. The faculty indicated a somewhat greater willingness to reduce discipline content to cover QR skills in the future.

NURSING:

Three nursing faculty members responded to the survey. Most (67%) felt that both computational skills and word problems were important for their students. Again, 67% felt prepared to provide instruction in both computational skills and word However, 67% felt somewhat problems. unprepared to teach program specific QR skills. Only one respondent (33%) was slightly willing to provide instruction in any of the three areas. All of the respondents report that they never or seldom send students to the skill center for a deficiency; and, they never or seldom provide in or out of class instruction to remediate these deficiencies. All of the respondents reported that they never recommend students withdraw due to problems in any of the three areas. All of the respondents report they seldom or never advise students to enroll in additional Q1 courses to remediate deficiencies in any of the three areas. And, they also (100%) seldom or never reduce content to cover deficiencies in any of the three areas. All of the respondents agree that they 60

would never decrease discipline content to cover a deficit in any of the three QR areas.

PHYSICAL THERAPY:

Four of the five faculty in this program responded. All four (100%) felt that computational skills are important to their students; one respondent (25%) felt word problems were only slightly important and three (75%) felt they were important. Three (75%) felt prepared to provide instruction in computational skills and word problems. All four (100%) felt prepared to provide instruction in program specific QR skills. Three (75%) were willing to provide instruction in any of the three. skills: while one was only slightly willing. Two (50%) of the respondents send students to the skill center occasionally for word problem and program specific skill problems. Only one faculty occasionally sends students member for computational problems. Not one of the four respondents reported "always" providing in of out of class remediation for problems in any of the three areas. However, only one respondent indicated "never" providing in class remediation of word problem difficulties. All other responses varied between seldom to frequently with no pattern. Additional readings are recommended for remediation by 75% of the respondents for problems in all three areas. Students are never (100%) to withdraw from a recommended physical therapy course due to QR problems in any of the three areas. Students are also never advised (100%) to take additional Q1 courses for word problem or program specific deficiencies. And, only one (25%) respondent indicated that students are seldom advised to do the same for computational deficiencies; three (75%) never recommend additional courses for computational pro respondents never reduce course content to cover deficiencies in computation or program specific skill. All four (100%) of the faculty never reduce content to remediate work problems. However, there is more willingness to reduce course content. Two (50%) of the faculty are never willing, while one faculty member is seldom or occasionally willing to reduce content in all three QR content areas.

PUBLIC HEALTH:

One faculty member responded to the survey. This respondent reported both computational and A) wo

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word problem skills are important to the students. This individual feels prepared to provide instruction in all of these areas. In addition, this respondent is willing to provide instruction in all three QR skill areas. Students are always sent to the skill center for remediation of difficulties in any This faculty member will occasionally area. provide in and out of class instruction for each of the three areas. However, additional readings are never recommended, and students are never advised to withdraw from a course. Students are occasionally recommended to take additional Q1 courses to remediate problems in any of the three QR skill areas. However, this faculty member has never reduced discipline content and is never willing to do so for a deficiency in any area.

SUMMARY OF FINDINGS

1. There was considerable variation in the skills required on entry in courses. The Finance, Accounting, Information Science, and Physical Therapy programs required the most quantitative reasoning skills prior to entry in their courses.

Management and Nursing programs required the least quantitative reasoning skills upon entry to their courses.

- The quantitative skills required appear to be dependent on the specific programs. There was no set of QR skills which was commonly required on entry to courses by all programs. Geometry was the skill identified to be least required upon entry into courses.
- Most of the faculty respondents indicated that they teach quantitative skills or build upon them in their courses. Nursing and Management indicated they do not teach or build upon quantitative reasoning skills.
- 4. The Nursing and Physical Therapy program faculty felt that the achieved skills of their students were consistent with the desired levels. The Business Studies and Computer/Information Science program faculty felt that the

achieved skills of their students were somewhat lower than the desired levels.

LESSONS LEARNED ABOUT THE PROCESS

A review of the methodology utilized in this descriptive study reveals suggestions for its improvement. Specifically, the authors believe that changes within the actual questionnaire and the process would increase faculty participation and ultimately the project's value for Stockton College and other institutions initiating a similar program.

The questionnaire would benefit from the following changes. First, it needs a more compelling introduction to clarify the benefits of faculty participation. The researchers believe that the benefits of faculty cooperation were not adequately established. It appears that faculty supported their colleagues in their research endeavor out of a sense of collegiality, rather than an understanding of the benefits that might be gained from the QUAD program. Second, the actual length of the survey may have discouraged survey completion; several charts in Part 1 of the survey could be eliminated as they were not utilized during its completion.

However, it is in the area of process that more significant lessons were learned from this project. We pilot tested the survey on a limited number of faculty members. The pilot test did not identify the problems with the questionnaire which were encountered with the initial distribution to the Business Program. Any further utilization of this questionnaire should only occur following a widely tested pilot study that allows time for ample review and revision.

Furthermore, the time frame needs to allow for briefing sessions at the program level prior to questionnaire distribution and ultimate completion. The briefing sessions with program members would have improved appreciation of the project. This was the original plan for this research project. However, the revisions to the survey and the timing within the semester prohibited utilization of this plan. It is felt that adhering to this schedule and initiating the process early in the semester would increase faculty participation.

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Faculty cooperation could also be improved by increasing the involvement of the divisional dean. The researchers believe that the dean's support enhanced faculty participation, but his more active involvement would have promoted the project's success. The dean's support was readily available, but the research team did not adequately utilize it due to time constraints. A subsequent study would request that the dean notify faculty initially in writing and then verbally at a Division meeting regarding the importance of participation in the project.

CONCLUSIONS

We developed an instrument and a process to assess:

- the course, track, and program QR skills requirements
- the desired and achieved QR skills of graduates
- faculty attitudes and perceptions toward QR

The experience obtained during this research project has resulted in a useful survey instrument which can be applied in other organizations, both internal and external to Stockton. We also identified some lessons about the assessment process which may be useful in the implementation of a similar project. The process initiated awareness and appreciation of the QUAD program. The project stimulated dialogue about quantitative reasoning in the division.

The project team will distribute the results of the study for program discussion. This should facilitate program and divisional curriculum reviews from a quantitative reasoning perspective. The project team will then report on the results of these reviews. Once curricula changes are in effect, the project team will reexamine faculty attitudes concerning quantitative reasoning of students and compare results with the earlier study.

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	TABLE 1 NECESSITY (REQUIRED) ON ENTRY									
Qı	uantitative Skills	MGMT	MKTG	(percent) FINA	ACCT	CSCI	INFO	NURS	РНТН	
1.	Mathematical Perspective	0	20	88	40	50	14	0	56	
2.	Mathematical Reasoning	0	20	88	80	50	14	0	80	
3.	Mathematical Problem Solving	0	20	88	40	50	14	0	80	
4.	Numeracy	0	20	75	50	75	29	0	70	
5.	Graphs	0	30	88	0	75	0	0	90	
6.	Algebra	0	0	88	25	75	43	0	40	
7.	Geometry	0	10	0	0	25	0	0	56	
8.	Statistics	0	11	100	25	0	14	0	90	

The figures in each cell represent the percent of responses for all courses in a program. For example, 88% of the finance courses require algebra on entry.

	TABLE 2 FORMALLY TAUGHT IN COURSE									
Quantitative Skills	MGMT	MKTG	FINA	(percent) ACCT	CSCI	INFO	NURS	PHTH		
1. Mathematical Perspective	25	20	33	0	50	57	0	0		
2. Mathematical Reasoning	25	20	50	20	50	57	0	0		
3. Mathematical Problem Solving	25	20	67	20	75	71	0	20		
4. Numeracy	25	20	33	0	25	14	0	10		
5. Graphs	25	20	50	25	25	28	0	10		
6. Algebra	0	0	33	0	0	14	0	10		
7. Geometry	0	0	0	0	25	0	0	0		
8. Statistics	25	20	50	0	25	28	0	10		
9. Other										

The figures in each cell represent the percent of responses for all courses in a program. For example, 33% of the finance courses taught algebra.

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				REVIEWE	TABLE 3]		
Qı	uantitative Skills	MGMT	MKTG	FINA	COURSE ACCT	(percent) CSCI	INFO	NURS	РНТН
1.	Mathematical Perspective	100	50	29	60	50	50	0	10
2.	Mathematical Reasoning	100	50	29	40	50	50	0	20
3.	Mathematical Problem Solving	100	60	14	20	75	67	0	33
4.	Numeracy	75	50	25	100	25	50	0	44
5.	Graphs	75	40	12	75	25	83	57	60
6.	Algebra	100	70	12	75	0	17	0	40
7.	Geometry	100	90	100	75	25	0	0	10
8.	Statistics	100	60	29	50	25	33	57	60 -
9.	Other								-

The figures in each cell represent the percent of responses for all courses in a program. For example, 12 % of the finance courses reviewed or reinforced algebra.

	TABLE 4 BUILD UPON SKILL									
Quantitative Skills	MGMT	MKTG	FINA	(percent) ACCT	CSCI	INFO	NURS	РНТН		
1. Mathematical Perspective	0	50	71	100	75	50	0	50		
2. Mathematical Reasoning	0	50	71	100	75	50	0	60		
3. Mathematical Problem Solving	0	40	85	100	75	50	0	70		
4. Numeracy	0	40	71	75	75	50	0	40		
5. Graphs	0	60	85	50	75	83	57	70		
6. Algebra	0	0	85	75	75	33	0	60		
7. Geometry	0	0	17	50	75	0	0	40		
8. Statistics	0	50	71	75	75	33	57	90		
9. Other										

The figures in each cell represent the percent of responses for all courses in a program. For example, 85 % of the finance courses built upon algebra.

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		TABLE 5 DESIRABLE VS. ACHIEVED SKILLS BY GRADUATES INTERMEDIATE OR ADVANCED (percent)								
Quantitative Skills		BUSINESS		CSCI / INFO		NURSING		PHYSICAL THERAPY		
1.	Mathematical Perspective	60	20	75	34	67	67	100	100	
2.	Mathematical Reasoning	80	20	75	34	67	67	100	100	
3.	Mathematical Problem Solving	80	40	75	50	67	67	100	100	
4.	Numeracy	80	20	75	60	67	67	75	75	
5.	Graphs	100	20	75	67	67	67	100	100	
6.	Algebra	80	20	75	80	33	33	75	75	
7.	Geometry	20	0	50	60	33	33	50	50	
8.	Statistics	100	40	75	60	67	67 [·]	75	75	

9. Other

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The two figures in each cell represent the percent of responses for each program. The first number is the desirable level of skill and the second is the level achieved by graduates. For example, in the Business Studies Program, 80 % of the faculty felt that algebra was a desirable intermediate or advanced skill level, and 20% felt the graduates achieved that level.

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Appendix 1

QUANTITATIVE SXILLS SURVEY

The PROS Research Committee on Quantitative Reasoning, as part of the NSF Grant received by Stockton, requests your assistance. Your individualized response to this survey is essential to the PROS research component of the NSF Grant. Please complete the survey and return it to (NAME) by (DATE). Please indicate your:

Program:

Track:

Part I

Directions: For each course that you have taught from the fall semester of 1995 to the present, complete the following grid. Refer to the attached explanation/definition of the Quantitative Reasoning Skills if you have any confusion/questions.

Course Number and Name:

Quantitative Skills	Necessity on Entry to Course: Unnecessary (U); Helpful (H); Required (R)		Formally Taught or Introduced in Course: Yes (Y) or No (N)		Reviewed or Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Yes (Y) or No (N)		
	U	н	R	Y	N	Y	N	Y	N
1. Mathematical Perspective									
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									
5. Graphs									
6. Algebra									
7. Geometry									
8. Statistics									
9. Other:									

Course Number and Name:

Quantitative Skills	Necessity on Entry to Course: Unnecessary (U); Helpful (H); Required (R)		Formally Taught or Introduced in Course: Yes (Y) or No (N)		Reviewed or Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Yes (Y) or No (N)		
	U	н	R	Y	N	Y	N	Y	N
1. Mathematical Perspective									
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									
5. Graphs									
6. Algebra									
7. Geometry									
8. Statistics	1								
9. Other:									

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Course Number and Name:

Quantitative Skills	Nccess Unno H Re	ccessity on Entry to Course: Introduced in Course: Unnecessary (U); Yes (Y) or No (N) Helpful (H); Required (R)		Taught or in Course: or No (N)	Reviewed or Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Y e s (Y) or No (N)		
	U	н	R	Y	N	Y	N	Y	N
1. Mathematical Perspective									
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									
5. Graphs									
6. Algebra									
7. Geometry									
8. Statistics									
9. Other:									

Course Number and Name:

Quantitative Skills	Unn Unn H R	ity on Er Course: ccessary clpful (11 cquired (1	ntry to (U); (); R)	Formally Taught or Introduced in Course: Yes (Y) or No (N)		aught or n Course: Reviewed or No (N) Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Yes (Y) or No (N)	
	U	н	R	Y	N	Y	N	Y	N
 Mathematical Perspective 					-				
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									-
5. Graphs									
6. Algebra									
7. Geometry									
8. Statistics									
9. Other:	1								

Course Number and Name:

Quantitative Skills	Necessity on Entry to Course: Unnecessary (U) ; Helpful (H); Required (R)		Formally Taught or Introduced in Course: Yes (Y) or No (N)		Reviewed or Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Ycs (Y) or No (N)		
	Ū	Н	R	Y	N	Y	N	Y	N
 Mathematical Perspective 									
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									
5. Graphs									
6. Algebra									
7. Geometry									
8. Statistics									
9. Other:									

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Course Number and Name:

Quantitative Skills	Necess Unne H Re	ity on Er Course: ccessary elpful (H equired (ntry to (U); (); R)	Formally Taught or Introduced in Course: Yes (Y) or No (N)		Reviewed or Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Yes (Y) or No (N)	
	U	н	R	Y	N	Y	N	Y	N
1. Mathematical Perspective									
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									
S. Gmphs									
6. Algebra									
7. Geometry									
8. Statistics									
9. Other:									

Course Number and Name:

.. ...

Quantitative Skills	Necess Unne H Re	ity on Er Course: ccessary elpful (H equired (I	(U); (U); (); R)	Formally Taught of Introduced in Cours Yes (Y) or No (N		Reviewed or Reinforced in Course: Yes (Y) or No (N)		Built Upon Skill: Yes (Y) or No (N)	
	U	н	R	Y	N	Y	N	Y	N
1. Mathematical Perspective									
2. Mathematical Reasoning									
3. Mathematical Problem Solving									
4. Numeracy									
5. Graphs									
6. Algebra									
7. Geometry									
8. Statistics									
9. Other:		0							

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Part II - A

Directions: Please indicate the DESIRABLE level of Quantitative Reasoning Skills for GRADUATES of your program. As in Part I, refer to the attached list of quantitative skills for clarification of the list of skills utilized below.

Quantitative Starts	Desirable QR Skills Competency Level by Graduates				
	None	Basic	Intermediate	Advanced	
1. Mathematical Perspective					
2. Mathematical Reasoning					
3. Mathematical Problem Solving					
4. Numeracy					
5. Graphs					
6. Algebra					
7. Geometry					
8. Statistics					
9. Other:					

Part II - B

Directions: Please indicate your program. As in Part I, refer to the attached list of quantitative skills for clarification of the list of skills utilized below.

Course Number and Name:

Quantitative Shills	Perception of QR Skills Competency Achieved hy Graduates					
	None	Basic	Internediate	Advanced		
 Mathematical Perspective 						
2. Mathematical Reasoning						
3. Mathematical Problem So ving						
4. Numeracy						
5. Graphs						
6. Algebra						
7. Geometry						
8. Statistics						
9. Other:						

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QR skills?

Directions: Please respond to each item for your overall program teaching responsibilities. Please circle your response to each question. How important do you feel computational skills are Unimportant Ncither Slightly Important 1. Somewhat important for your students? important Somewhat Neither Slightly Important 2. How important do you feel word problems are for Unimportant your students? important important 3. How prepared do you feel to provide instruction in Unprepared Somewhat Ncither Slightly Prepared unprepared prepared computational skills? Neither Slightly Prepared 4. How prepared do you feel to provide instruction in Unprepared Somewhat word problems? unprepared prepared Neither Slightly Prepared 5. How prepared do you feel to provide instruction in Unprepared Somewhat program specific QR skills? unprepared prepared How willing are you to provide instruction in Unwilling Somewhat Ncither Slightly Willing 6. computational skills? unwilling willing Slightly Willing Somewhat Neither 7. How willing are you to provide instruction in word Unwilling problems? unwilling willing 8. How willing are you to provide instruction in Unwilling Somewhat Neither Slightly Willing program specific QR skills? unwilling willing 9. Do you send students to the skills center to remediate Never Seldom Occasionally Frequently Always deficiencies in computational skills? 10. Do you send students to the skills center to remediate Nevcr Scldom Occasionally Frequently Always deficiencies in word problems? 11. Do you send students to the skills center to remediate Occasionally Frequently Always Nevcr Scldom deficiencies in program specific QR skills? Seldoin Occasionally Always 12. Do you provide in class instruction to remediate Never Frequently deficiencies in computational skills? 13. Do you provide in class instruction to remediate Never Scidom Occasionally Frequently Always deficiencies in word problems? Do you provide in class instruction to remediate Never Seldom Occasionally Frequently Always 14. deficiencies in program specific QR skills? 15. Do you provide out of class instruction to remediate Seldom Occasionally Frequently Always Never deficiencies in computational skills? Do you provide out of class instruction to remediate Never Scldom Occasionally Frequently Always 16. deficiencies in word problems? 17. Do you provide out of class instruction to remediate Never Seldom Occasionally Frequently Always deficiencies in program specific QR skills? 18. Do you provide additional readings/excreises as a Never Seldom Occasionally Frequently Always self-study to remediate deficiencies in computational skills? 19. Do you provide additional readings/exercises as a Seldom Occasionally Frequently Always Never self-study to remediate deficiencies in word problems? 20. Do you provide additional readings/exercises as a Never Seldom Occasionally Frequently Always self-study to remediate deficiencies in program specific QR skills? 21. How often have you recommended a student Nevcr Seldom Occasionally Frequently Always withdraw from your course due to deficiencies in computational skills? 22. How often have you recommended a student Never Scidom Occasionally Frequently Always withdraw from your course due to deficiencies in word problems? 23. Have you recommended a student withdraw from Never Scidom Occasionally Frequently Always your course due to deficiencies in program specific

Part III

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24.	How often have you recommended a student take additional Q1 courses to remediate deficiencies in computational skills?	Never	Seldom	Occasionally	Frequently	Always
25.	How often have you recommended a student take additional Q1 courses to remediate deficiencies in word problems?	Never	Seldom	Occasionally	Frequently	Always
26.	Have you recommended a student take additional Q1 courses to remediate deficiencies in program specific QR skills?	Never	Seldom	Occasionally	Frequently	Always
2 7 .	How often have you reduced discipline content in your courses to cover computational skills?	Never	Seldom	Occasionally	Frequent'y	Always
28.	How often have you reduced discipline content in your courses to cover word problems?	Never	Seldom	Occasionally	Frequently	Always
29.	How often have you reduced discipline content in your courses to cover program specific QR skills?	Never	Seldom	Occasionally	Frequently	Always
30.	How willing are you to reduce discipline content in the future to cover computational skills?	Never	Seldom	Occasionally	Frequently	Always
31.	How willing are you to reduce discipline content in the future to cover word problems?	Never	Seldom	Occasionally	Frequently	Always
32.	How willing are you to reduce discipline content in the future to cover program specific QR skills?	Never	Seldom	Occasionally	Frequently	Always

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Quantitative Skills and Understanding

A. Mathematical Perspective:

- 1. Having appropriate confidence in one's ability to do and to learn mathematics.
- 2. Recognizing that mathematics is a unified set of ideas and not an arbitrary set of unrelated rules.
- Communicating mathematical ideas clearly.
- 4. Identifying connections among areas of mathematics and between mathematics and its applications.
- 5. Recognizing the long-term, discontinuous nature of problem solving.

B. Mathematical Reasoning:

- 1. Forming and testing hypotheses.
- 2. Judging the validity of arguments (e.g., critiquing commercial advertisements).
- 3. Constructing valid arguments (e.g., using quantitative information effectively in policy decisions).
- 4. Thinking abstractly (e.g., using symbolic notation to represent phenomena).

C. Mathematics Problem Solving:

- 1. Asking clarifying and extending questions.
- 2. Connecting new situations to prior experiences.
- Applying a variety of general problem solving strategies (e.g., trial and error, working backwards).
 Building and translating between various representations of problem situations.

- Developing and carrying out appropriate algorithms.
 Recognizing the significance of the assumptions which underlie mathematical models.
 Possessing a sufficient set of mathematical vocabulary and notations.
- Estimating results and understanding when estimation is appropriate.
 Reducing difficult problems into one or more manageable pieces.
- 10. Finding patterns and regularities.
- 11. Determining the reasonableness of a result.
- 12. Interpreting mathematical solutions in specific problem contexts.
- 13. Determining when and how to use technology.
- 14. Monitoring and documenting one's work own problem solving process and progress.
- D. Numeracy:
 - 1. Making meaningful comparisons of quantities (e.g., unit pricing).
 - 2. Using percents in discount and other consumer applications.
 - 3. Applying basic arithmetic to everyday problems.
 - 4. Reading and using documents concerning household finance (e.g., budgets, credit, etc.).
 - 5. Using common units of measurement, including the customary and metric systems.
 - 6. Analyzing and criticizing the quantitative elements of public arguments.
 - 7. Distinguishing between amounts, rates, and ratios.

E. Graphs:

- 1. Reading and interpreting charts, graphs, and tables that pertain to realistic situations.
- 2. Constructing meaningful graphs and tables to represent numerical data.
- 3. Translating between graphical and verbal descriptions of realistic phenomena.
- 4. Distinguishing between independent and dependent variables.
- 5. Representing real numbers on a number line and extending this connection to two dimensions.

F. Algebra:

- 1. Identifying the meaning and uses of variables.
- 2. Representing real-life situations algebraically.
- 3. Performing basic algebraic manipulations with expressions, equations, and inequalities.
- 4. Graphing basis equations and inequalities.
- 5. Translating among numerical, algebraic, graphical, and verbal representations.

G. Geometry:

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- 1. Using and applying measurements of lengths, angles, areas, and volumes.
- 2. Visualizing and developing geometric models of realistic situations.
- 3. Applying properties of geometric figures.
- Classifying figures according to congruence and similarity and applying these relationships.
- 5. Utilizing basic geometric transformations and their invariance.

H. Statistics:

- 1. Using the basic tools of descriptive statistics to analyze realistic situations.
- 2. Interpreting inferential statistics in specific problem contexts.

- Interpreting interpreting statistics in specific problem contexts.
 Using the basic principles of probability.
 Distinguishing between correlation and causation.
 Identifying common courses of error (e.g., sampling error, misinterpreting averages).
 Recognizing when statistical reasoning is appropriate.

Appendix 2 E Ν Т R **MEMO** E С F F n To: PROS QUAD Paul A.Palugod From: Subject: PROJECT SCHEDULE/PROCESS November 23, 1996 Date: Below is the revised process and schedule based on our discussion on November 11, 1996. December January February March April 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 Memo from the ---- (1st week) Dean to all Faculty Talk with Coordinators -----(end of semester) Questionnaire -- (December 5) Meeting 1 -----(mid-February) Survey Compilation of ----- (mid-March) Survey Meeting 2 ----- (1st week) Quad Consolidation /Synthesis

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CAN FEMALE ENTREPRENEURS GROW A SUCCESSFUL BUSINESS WITHOUT DESTROYING THEIR MARRIAGES?

Minoo Ghoreishi Millersville University of Pennsylvania

Azriela Jaffe The Critical Link Consulting Firm

ABSTRACT

The fastest growth in the development of new small businesses is women-owned businesses. Entrepreneurial women are struggling with the tension they feel between taking care of their spouse and family, and creating a successful business. Marriages are falling apart when husbands of women entrepreneurs are unable to cope with their wife's business success. Husbands are often threatened, or resistant to the changes and sacrifices required of them, in order to accommodate their wife's entrepreneurial commitments.

The purpose of this study is to explore issues related to women in corporate positions and entrepreneur role. This research also investigates the skills necessary to help women to grow their businesses without destroying their marriages and families.

INTRODUCTION

Women-owned businesses are increasing due to their broadened education and experience and their frustration in corporate positions. In addition, women are also inclined to inherit familyowned business than in the past. An estimated one out of three of all small businesses in the Unite States are owned by women. (Mergenhagen, Dec. 1996). In addition, in a study by Dun & Bradstreet Information Services, it was found that the number of women-owned businesses with 100 or more employees increased by 18% between 1991 and 1994 with a 9% growth rate for all women-owned businesses.

Women In Corporate Positions

In 1970, only 15% of all managers were women. By 1989, this figure extended to 40 percent and in 1995, 63 percent of the workforce were women (Certu, 1994). Today women make up about 50% of the workforce.

A number of factors have created obstacles for women in the workplace; job segregation by sex is evident in the overall labor market. Women executives are also concentrated into certain types of jobs such as staff and support jobs that give them little opportunity for advancing to the top. The highest ranking women in most industries are in non-operating areas such as personnel, public relations, or occasionally, finance. Specialties seldom lead to the key top management positions. Even when women can get a line job it is not likely to be a key position to mark them as a leader (Inc., 1995).

Sex discrimination is considered to be a serious obstacle in women's business careers. In a survey by Korn/Ferry International, and The Wall Street Journal, most executive women indicated "being a woman" is the greatest disadvantage in their workplace (Inc., 1995). In a poll of 12,000 workers by the Los Angeles Times, two-thirds reported sex discrimination; 60% saw signs of racism (Inc., 1995).

Sexual harassment remains a serious problem for women in managerial positions. In a 1988 survey of Fortune 500 executives by Working Women magazine, 90% of large corporations reported sexual harassment complaints by women employees (Inc., 1995).

In addition, enforcement of anti-discrimination laws is relaxed. In the decade of the 80's, the courts latest decisions made it harder for women and minorities to prove discrimination.

Men in corporate management tend not to perceive women problems in the organization as a real problem. Therefore it is difficult to implement effective remedies (Inc., 1995).

Women as Entrepreneurs

Rapid growth of female entrepreneurship is a fairly recent phenomenon. Women have made great advancement in the present generation. In a study of Canadian women entrepreneurs, it was found that nearly one-third of Canadian businesses are owned, co-owned or headed by women (Tillson, 1996). These businesses employ 1.7 million people. They range from retail operations to mining and technology firms and are as profitable as other businesses (Tillson, 1996).

The US Census Bureau reported that women own 34.1% of total non-farm businesses in the early 1990's, excluding large female-owned corporations (Mallory, February 19, 1996). According to a survey by the National Foundation for Women Business Owners and Dun & Bradstreet Information Services, women-owned companies in construction, nondurable manufacturing, transportation, and communications are growing faster than the overall average growth rate of each of these industries (Mallory, February 19, 1996).

Contribution of Women Business Owners

The contribution of women business owners extends beyond the economic sector. Women business owners are more sensitive to family matters due to their own frustrating experiences in large corporations. They stress team work, mentoring on the job, and create a flexible, nurturing work environment. As a result, they attract and retain loyal and highly productive employees (Mallory, February 19, 1996).

At a time when large corporations are downsizing and laying off workers, women-owned businesses are aggressively hiring more employees. On average, woman entrepreneurs hire more workers, by a ratio of 2 to 1, in comparison to other employers. Women-owned companies employed 15.5 million people in 1994 and their sales reached 1.4 trillion (Mallory, February 19, 1996).

Women business owners participate in volunteer activities at a significantly higher rate than the average adult and the average business owner in the US About 8 out of 10 female business owners volunteer their time and encourage their employees to volunteer their time. In a study by NFWBO, 78% of women business owners volunteer their time, compared to 48% of all adults in the US, 75% of all women, and 56% of all business owners . 60% of women business owners encourage their employees to volunteer. 12% support their employees' volunteerism financially and support more than one charity (NFWBO, Winter 1994-5).

In addition, women are reported to be more conservative than male entrepreneurs and usually pay their bills on time.

Obstacles to Women Entrepreneurs: In a study in western Canada in 1994, it was found that women business owners face obstacles to success in the following areas (Corbett, 1995): access to capital, education and training, access to information, business networks, contracts and mentors, family responsibilities, discrimination based on gender, lack of confidence and assertiveness.

Finding proper financing has been a major challenge for women business owners. Still a number of women business owners believe they have hard time receive proper financing and venture capital to expand their business. Difficulty in acquiring finances caused women owned business to stay small and service oriented since they are capital intensive and manufacturing business need proper financing. Many women entrepreneurs finance their business through personal savings, family loan and credit cards. According to Federal Reserve Board, some 42 percent of women use their credit card for working capital and pay 18 to 21 percent interest rate. In the same study by Canadian Federation of Independent Business found women business owners are 20 percent more likely than men to be

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refused financing. Sixty-one percent of women are charged at least 1 percent more interest on their loans than men in similar business (Corbett, 1995).

For women entrepreneurs, perhaps the second biggest obstacle to success is family obligations. Women still bear the primary responsibility for child care and other domestic duties. As a result, they often cannot devote as much time as a man to running or expanding a business. This is often a matter of choice; many women want a balance between work and family (Corbett, 1995). Women realize that not all of them can be "supermoms" to run a successful business, take care of family and maintain a healthy marriage. Working women also may assume some responsibility for elderly Some women have both parents or in-laws. young children and elderly parents to care for, in addition to their job.

A third major barrier facing women starting their own companies is business inexperience. Many female entrepreneurs have limited experience, little knowledge of the sector they start, and little education. Women entrepreneurs often effort to overcome their business inexperience by starting very small and learning about the business as they slowly expand (Corbett, 1995).

The final major barrier is the feeling of anxiety. Entrepreneurs come in all forms: premeditated or spontaneous, dynamic or delegate workers, extroverts or introverts. There is only one thing that all entrepreneurs share and that is the capability and willingness to take risks. People who are most harmonious with being entrepreneurs are those who have patience for the unstructured and learn to accept ambiguity. Otherwise, most entrepreneurs feel anxious.

Working As Entrepreneur Couple

In a study of 30 million married couples running small businesses and found that the vast majority of wives took on traditionally female roles, both at home at work and they are not egalitarian. Eighty-three percent of wives indicated that they are solely responsible for general house work, compared with 49% of wives with their own separate careers (Useem, 1997). Wives mostly performed payroll and clerical work while the husbands showcase their talent (Useem, 1997).

Married working women who spend long hours on their business or after getting home from their business trips get into argument with their husband, who may feel neglected or fear abandonment. The National Association for Female Executives Inc. in 1995 warns working woman, "don't expect a happy reunion after a business trip, you'll likely be greeted with stay-athome spouse pout" (Reid, 1995). Woman entrepreneurs experience the syndrome, "reunion. rage" and "low-rate romance" with their husbands. (Reid, 1995).

In a study of female wallstreet analyst, it is reported that 86% reveled their role of mothers conflict with their work. Eighty-eight percent report that their supervisors take that conflict into account in structuring their jobs, at least some of the time. Sixteen percent of female analyst indicate that corporate executives often treat them differently from men. None of the woman say that their clients threat them differently from men a majority of the time, but 44% indicated that it does happen occasionally. (Galant, 1996).

In the 1960's women were just looking for opportunities and the chance to be treated equally. At this time the paradigm has shifted (Galant, 1996). Now that women are established in the workplace, the corporations are finding that they must do more than give women an equal shot in the work place; they must also give woman and men a shot at having a home life too.

Women are also getting help from an altogether source: their husbands. This is due to a change in the culture in the United States. Women coordinate their work schedule with their husband's schedule, and they take turns taking care of the children. Women have to be professional about the business of looking after the home, children, and family just as they must be professional looking after the business of the business. Meanwhile, technology enables many workers to set their operation at home. In a study of wallstreet analysts by Debbie Galant, it was found that nearly one third of the mothers in the survey work from home (1996).

Some ground rules are suggested for a couple working together (Sorgen, 1994):

- make plan
- examine goals
- build mechanism to reach goals
- build mechanism to resolve conflict
- talk about issues before crisis arise
- keep arrangement between the couple
- keep the customer and business out of it
- be a team with regard to the employees
- have buy out agreement for case of divorce
- clear definition of responsibility
- one of the party has to be the boss
- one of the party must have the final decision making power.

METHODOLOGY

To gather information for this study, a primary survey was conducted and an extensive review of the literature was completed. A sample of 145 married, female, business owners were selected and then a structured questionnaire sent to them them through E-Mail and 138 responded. The questionnaire included twenty, five-point Likert scale questions.

Following statistical analysis were utilized:

1) Descriptive statistic to analyze the data and tabulate percentage of responses for all the variables.

2) chi-square test was utilized to find any relationships between the variables.

Results:

Following are the summary of responses to indicate the variables that impact female business owners.

- see Tables 1, 2, 3, 4 & 5-

CONCLUSIONS

Today more women than ever are deciding to launch their own businesses for a number of reasons: To achieve more independence and flexibility, to better balance work and family, or to run around the predominantly male power structure to become CEO of their own firm. The great majority of women-owned businesses are still concentrated in the traditionally female sectors of retail trade and service, which often offer low profit margins. Women business owners are playing the roles of mother, wife, home maker, and full-time business owner. Regardless of all difficulties, the number of career women and women owned companies are growing. Women contributed positively in market place due to their understanding of disadvantages of women in the workplace.

Majority of the women in this survey indicated that they have respect for husband's skill/intelligence, a happy marriage, supportive husbands, and their quality of life have improved by owning their business.

Female entrepreneurs indicated that, number of family factors have impacted the profitability of their business:

Number of children, age of the business have a significant impact on the business.

Husband's attitude toward the business and wife affect on the profitability of the business. For example, husband's complains toward lack of housekeeping effort of the wife, the resentment of the husband towards the wife's time involvement with the business and his feeling of insecurity by financial success of wife or she may fall in love with someone else. It is also indicated that financial success of business causes husband to be less financially responsible for the family not being bread winner.

On the other hand, this study findings indicated that profitability of the business is affected by the husband's adulation for his wife on her achievements, and wife's respect for husband's skill and intelligence.

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TABLE 1

Perceptions of Women Entrepreneur on the Impact of Family Factors On Their Businessed N = 138

Family Related Factors

Impact On the Business

Respect for husband's skill/intelligence.	82.9%
Happy marriage.	80.0%
Quality of life.	79.6%
Supportive husband.	76.2%
Husband is successful in his career.	61.9%
Husband supports wife during hard times of business.	57.7%
Husband shares responsibility for house.	56.6%
Having profitable business.	48.2%
Guilty feelings for the time spent on business not family.	37.1%
Husband not being breadwinner for family.	35.7%
Husband resentful when house is not clean.	20.4%
Husband resents the time wife spends on business.	18.9% -
Financial success of business causes husband to be less	17.0% -
financially responsible for family.	
Husband get threatened by financial success of wife.	13.4%
Business may jeopardize marriage.	11.1%
Husband afraid wife will fall in love through business.	9.9%

TABLE 2

Family Factors Impacting the Profitability of <u>Women-Owned Businesses</u> N=138 Stepwise Procedure

Family Factor	<u>P - Value*</u>
Number of children	.0079
Husband resents lack of housekeeping effort	.0173
Wife's respect for husband's skill and intelligence	.0187
Husband resents wife's time involvement with business	.0293
Financial success of business causes husband to be less	
financially responsible for the family	.0370
Husband get threatened by financial success of wife	.0388
Husband praises his wife for her accomplishments	.0484
Husband resents wife's financial success	.0576
Age of the busines	.0576
Husband afraid of the possibility of his wife falling in	
love with someone else	.0868
Husband not being bread winner	.0919

* Above factors seem to have connection with the profitability of women-owned business at .10 level of significance. Location of business, home base or outside home, did not reported to have significant impact on profitability of the business. 80

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TABLE 3

<u>Correlation of the Family Factors</u> <u>With the Profitability of Women-Owned Businesses</u> N=138 Stepwise Procedure

Family Factor Col	rrelation
Wife's respect for husband's skill and intelligence	61
Husband afraid of the possibility of his wife falling in	
love with someone else	.57
Husband not being bread winner	.55
Husband resents wife's time involvement with business	.54
Number of children	.50
Husband praises his wife for her accomplishments	.43
Age of the business	.39
Husband resents wife's financial success	.35
financial support of the family	.30
Husband resents lack of housekeeping effort	.25

This table indicates that there is a relationship between the profitability of the business and "wife's respect for husband's skill and intelligence," "husband afraid of the possibility of his wife falling in love with someone else," "husband not being bread winner," "husband resents wife's time involvement with business," and "number of children."

TABLE 4

<u>Family Factors Impacting</u> <u>the Quality of Life of Women Business Owners</u> N=138 Stepwise Procedure

Family_Factor	<u>P - Value*</u>
Husband encouragement in reaching goals Happy marriage Husband afraid of the possibility of his wife falling in love with someone else Husband resents wife's time involvement with business	.0138 .0055 .0308 .0124

* Significant at .05 level.

This table indicates that above factors have significant relationships with the "quality of life" of women business owners.

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TABLE 5

<u>Correlation of the Family Factors With the</u> <u>Ouality of Life of Women Business Owners</u> N=138 Stepwise Procedure

Family Factor

Correlation

Husband resents lack of housekeeping effort	.90
Husband's income	.86
Husband not being bread winner	.82
Husband is satisfied in his career	.81
Wife's feeling of guilt for putting priority on business	
rather than family	.72
Husband shares responsibility for house	.60
Husband encouragement in reaching goals	.51
Husband resents wife's time involvement with business	.46
Husband's employment status	.45
Husband afraid of the possibility of his wife falling in	
love with someone else	.40
Нарру marriage	.26

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The PARABLE OF "LOST IN THE WOODS"

Fred Anderson Indiana University

ABSTRACT

As part of a Principles of Management course, students are introduced to the history of management thought. When introducing Contingency Theories of Management, students frequently have difficulty with the concept of Organic organizational form as disucssed in the Burns and Stalker model. To help undergraduate students understand this model, the following parable, "Lost in the Woods", is used.

Somewhere early in my Principles of Management course, I run my undergraduates through several sessions on the history of management thought. I usually conclude that section of the course by introducing them to Contingency Theories of Management. Specifically, I will introduce them to Burns & Stalkers' concepts of Mechanistic and Organic organizational forms.

In general, the students seem to understand the Mechanistic form: The idea that superiors should have the right to give orders and that subordinates are under an obligation to obey these orders is comfortably familiar to them.

But they often seem mystified and some of them seem a little horrified by the implied recommendations of the Organic model.

Hence I have devised the following parable to illustrate the Organic form's superiority in certain situations. I hope those of you who also must teach this material, will find it a useful classroom device.

Imagine that it's ten years ago, and a popular management development exercise is the wilderness survival experience. In one of these adventures, a team of managers is abandoned in the wilderness for a week or so with little more than a hatchet and some matches.

Over the next seven days they will discover remarkable resilience within themselves and personal capabilities they never dreamed they had. It's hoped, too, that the managers will develop much greater trust of their coworkers, much greater comraderie, and much greater teamwork within their group. And their own selfconfidence should soar as they learn that they <u>can</u> survive this experience.

Now imagine, that our university has received grant monies so that they can make such experiences available for undergraduates, as well. And imagine that the twenty of us have just spent such a week in the wilds discovering our own potential.

It's now the seventh morning and I, your Professor, have roused all of you from your night's slumber. We'll wash our faces in the creek, have the rest of the berries we found yesterday, and then I'll instruct you, "Douse the campfires, scatter the ashes, police up our campsite, and follow me; we're going to the campus vans."

"They're about an hour that-away and a little off to the left," and we start hiking. After what seems like about an hour, they're still up that-a-way and still a little off to the left. And after two or three hours we still haven't come to them yet.

Finally, one of the bolder members of the group says out loud what most of the rest of us have begun to suspect: "I think we're lost. I believe we've gone past that particular boulder at least twice this morning, and this view across the valley of that lone dead pine against the skyline looks distressingly familiar." After much consternation and grumbling, even der Professor is forced to admit, "Yeah, I think we're lost."

Now let us split the story.

In scenario #1, believing that I, the Professor, am responsible for this group's welfare and for coaching your performance, and thinking that I'm older than most of you and that I've had more experience doing this than you have, and believing that, by my rights as Professor, I should command the group, I decide to exercise my authority, and demand that you fall into line and follow me. "And let's not have any grumbling; it's not good for group morale. You just keep it to yourself, and do as I tell you, and I'll get us out of here."

But remember, of course, the Professor is lost too!

With some 360 points on a compass, what do you suppose the odds are that he's picked the right one? Pretty small: About one in 360 to be exact. And we're probably going to spend another night up here (this time without dinner). Indeed, we're probably going to <u>stay</u> lost until a search party comes out and finds us.

Now imagine scenario #2.

Either because you've already mutinied, or because in my brilliance I am aware of the advantages of the organic organizational form, or just because I've got enough sense to figure out that I'd better (albeit reluctantly) let you have some say-so about our situation before you <u>do</u> mutiny -- for any of these reasons we decide to sit down and gather everyone's opinions and arguments as to what we should do next.

I want to keep going the way we were headed. Adam thinks the vans are behind us. Brenda wants to follow the sun westward (at least that way we won't go in circles). Chuck has heard you should always go downhill, a.k.a., follow water until it leads somewhere; Diana thought she saw smoke on the horizon (which might mean human habitation) and she wants to follow that; Evan thinks we should go uphill until we get out in the open and can get our bearings; Someone's heard about moss on the north side of trees; and several are sure the vans are left/right/45° from us for no better reason than just pure gut feel. Finally, we decide that, since there's no consensus, we should just let everyone "do their own thing" but with one caveat; since we don't want anyone getting separated from the group, each of us is to walk one hundred paces in the direction he/she's chosen and then yell; "Hallo-o-o-o!" And if you can still hear most of the others, walk another hundred paces and yell again. Keep doing this until either, (a) you find something or (b) you start to lose touch. When you can't hear more than 2 or 3 of the others, and then only faintly, you should turn around and retrace your steps back into the center of the group.

And of course if you do find something, you should yell at the top of your lungs (and others should pass the word) so that quickly all the group knows to come and join you.

For half an hour or more nothing much happens, except that each of us stumbles over rocks and through brambles on our own chosen paths and the woods are full of shouts of "Hallo-o-o-o!" Then suddenly comes the call we've all been waiting for: someone, let's suppose its Chuck, begins yelling, "I found a powerline! I found a powerline! It's gotta go someplace! It'll lead us out of here!" Chuck keeps on yelling excitedly but most of us aren't really listening any more; we're all too busy scrambling across the mountainside to get to this path to civilization.

The rest is anti-climactic. Once we've made sure that we've got all our group back together, its just a simple matter of walking an hour or two under the humming wires until we come to a highway and a friendly trucker and a gas station with a pay phone where we can call someone to come and get us.

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Now let's think about what happened in these two stories.

In the first story, there was a more Mechanistic organization with clear directions given by a forceful leader who commanded obedience. The group was "efficient," at least in the sense that a lot of people marched a lot of miles in the chosen direction with very little effort being wasted on sidetrips and diversions. But they were not

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effective, they never did get out of the woods.

In the second story, with the more organic organization, the group was, in retrospect, terribly inefficient: of the twenty or so people who headed off in their own separate directions, only one found a solution that got used. The other 19 were, in some sense, wasting their time and efforts. (It is also notable that the solutiondiscovered was not something anyone had planned upon: rather it was serendipitous -some fortunate thing stumbled upon while looking for something else.)

But in spite of the group's inefficiency, they did get out of the woods -- they were effective -- and on the same day. By allowing many people to try many things, the second group substantially increased their odds that <u>someone</u> would find <u>something</u> that worked. Indeed, their story illustrates the value of diversity in a group's approaches: If they had all thought alike / If they had all wanted to try the same thing, it wouldn't have been nearly as likely to work.

Additionally, they managed to adapt to the environment's constraints much more quickly than the Mechanistic form -- which might require a mutiny first -- ever could.

Finally, I find it interesting to note that the story highlights the importance of collaborative, lateral communications as a critically necessary element In the in the Organic form's functioning. Mechanistic form, since all meaningful taskrelevant communication comes from above, the of lateral efficacy (or lack thereof) communications is somewhat irrelevant. (Indeed one suspects that managers in Mechanistic organizations often see lateral communications as mostly an undesirable facilitator of mutiny in the ranks.) But note the contrast with the Organic form, where it does little good for one member to find something if the rest of us never hear about it.

Thus end my two stories.

I've found them useful in illustrating for students the contrasting nature of the two forms --

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especially the advantages in some situations of the inefficient Organic structure.

I would appreciate suggestions for improving the fit between the stories and the pure organizational forms described in theory. Particularly, I wish there were some way to incorporate into the story some illustration of the organic form's need for (and its systematic encouragement of) the worker's emotional commitment to the group and its purposes.

And a larger, uglier problem is that many organizations which appear to be more Organic permit greater employee freedom not because they have a (single) "mysterious" problem which calls for wide-ranging exploration in search of a (single) solution -- the situation described in our story; but rather because they face a fragmented environment with simpler / better-understood but highly variegated problems: e.g., each salesperson must have the freedom to deal with their individual customers as seems to them best -- though this means that Quebec City and Jersey City will likely get very different solutions. This sales example still poses the constraint that the leader will not know what orders to give: He/she cannot foresee (and therefor resolve in advance) every possible future client-salesperson interaction. But is seems very different from our lost-in-the-woods singular "how do we get outta here" problem.

This audience's help in correcting this less-thanperfect fit between the parable and organization theory would be very much appreciated. Thank you.

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COMPUTERS IN THE CLASSROOM: SUMMARY OF FOCUS GROUP DISCUSSIONS

Carole Anderson Clarion University

Barbara L. Jones Youngstown State University

ABSTRACT

This paper summarizes the results of a distributed questionnaire and the comments of a focus group discussion conducted at the 1997 Annual Association of Pennsylvania Business and Economic Faculty Conference. The concern of the investigation was to determine the level of computer usage within the classroom. Thirteen individuals broken into smaller groups of two and three participated in this discussion.

INTRODUCTION

Computers are gaining in popularity as a teaching tool because of the many applications and uses for the computer. More traditional applications include maintaining student grades and word processing for assignments. Due to recent upgrades in telecommunications and wiring networks on campuses across the state, faculty are finding that they are able to communicate with their students electronically. Through the use of electronic mail messages faculty and students can exchange a wide variety of information including requests for appointments, quizzes, and assignments. Additionally, students and faculty alike can use the technology to conduct searches for pertinent information through the use of search engines located on the World Wide Web. Specific assignments are easily made which require students to visit specific Internet sites.

One of the more recent applications of the computer in the classroom is the access of specific web sites which the instructor can use to demonstrate pertinent lecture related facts. An example of this would be a finance professor discussing the stock exchange activities and using a web site to demonstrate stock movements. Student and faculty presentations can also incorporate computer technology with the use of software such as PowerPoint Presentation Graphics which enables the presenter to enrich and enhance the visual materials. One of the more advanced applications for computers is the growth of distance education.

The possible applications for incorporating computers and computer technology into the classroom appear to be endless. The question that arises though is why more individuals do not make use of these innovative teaching methods and techniques.

Several possible explanations do occur. One of the most common reasons given relates to lack of availability. Realistically, up-to-date computers and software are expensive to purchase and even more expensive to maintain. It is a given that most institutions of higher learning are on a tight budget which limits the amount of resources which can be dedicated to upgrading existing computer labs and facilities. Thus, the lack of availability may indeed be a reasonable use inhibitor.

A second problem is the fact that often there is a lack of software compatibility across campus and within departments. This discourages many individuals from attempting to use the programs.

Another explanation frequently cited is that as computers, software, and new technologies are purchased and installed, it is assumed that faculty will know how to use it. This may not always be the case and lack of knowledge on how to use the technology or software frustrates even the

most dedicated instructor.

But as faculty we cannot bury our heads and say I'll deal with it sometime in the future. The time to take action is today if we are to successfully prepare our students to face the business world. Knowing that many faculty are attempting to incorporate computers into their classes as best as they can, the authors though it would be helpful to listen as they discuss their successes and failures. In this way, we can learn from others.

METHODOLOGY

A one sheet, front and back, questionnaire was distributed to the thirteen conference attenders during our presentation time period. Following completion of the questionnaire, participants broke into smaller groups of two and three, at which time they discussed three questions: (1) How do you incorporate computers into your classes? Be specific. (2) Do you think your class is better off for using the computers? Why or why not? and (3) What would you like to see done to make it easier to incorporate computers into your classes?

RESULTS

Based on the results of the questionnaire it is quite apparent that the overwhelming majority (12/13) of the faculty do have access to a computer in their office. However only four respondents indicated that they have the necessary capabilities to use a computer in their actual classroom. Nine of the participants indicated that they had attended a workshop or class which provided instruction on using the computer. The same number of individuals indicated that they attended a class which provided instruction on using a particular software package.

The faculty attending the conference have an average of fifteen years of teaching experience. The actual years ranged from five to thirty. The focus of their teaching was economics, international business, management, finance, marketing, accounting, law, tax, leadership, business communication and computer literature. Nine of the thirteen faculty require their students to use the computer to search for relevant information for assignments. Only four used the computers to exchange messages via electronic mail with their students. None of the faculty have made use of electronic mail to post exams or quizzes. Eight of the responding faculty indicated that they do require students to use computers in some fashion to complete their assignments.

Only three of the faculty indicated that they have a personal web page. Of those three individuals, one indicated that he/she requires his/her students to visit the web page for assignments or other information. The comments on the availability of computers for student usage, ranged from good to poor.

- * There are no work stations in the classroom.
- * Assignments for computes are given to students to do outside of the class time. (Spreadsheets, upper-level practice sets, models)
- * Using a simulation game for marketing and business policy classes
- * Case submission is done using a word processing package
- * Instructor uses computers for in-class presentations
- * Instructor requires use of the Internet for portfolio research and stock management.
- * By generating overheads with computers.
- * Using Power Point in the classroom.
- * Using overlays from computers to screen.
- * Instructor uses computers for research in Investment, Financial Management, and in International Business in the class.
- * Students use Lotus123, Excel or any spreadsheet. They submit a hard copy and disk to show their calculations and solutions.
- * Use of computers in class presentations.

 Using Word Processing for their papers in order to facilitate in helping them edit papers.

Responses to the second question -- "Do you think your class is better off for using computers? Why or Why not?" -- elicited the following comments:

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- * At the lower level it hardly matters. At the upper level it definitely matters and the students think so also. The problem is it ends up teaching computers.
- Yes, It makes learning more interesting.
- * Sure, Faster dissemination on information, more contact, and entertainment value.
- * Yes, It is better.

Responses to the third question -- "What would you like to see done to make it easier to incorporate computers into your classes?" -brought the following ideas:

- * Better Hardware, More Supplies, More assistants in the Labs.
- Training for the faculty.
- * Computers need to be available in more classrooms. Also, more training is needed on computers and software packages for the faculty and students.
- More equipment availability in the classrooms.
- Better sophistication of students being taught elsewhere.
- Depends on the classroom and the project matter.
- Give computers for all classes.

DISCUSSION

Those participants who are actively using computers in some aspect of their teaching appear to be enthusiastic about continuing to use the technology. They see the value of exposing their students to computer experiences as both a learning tool as well as an asset to teaching materials within the classroom. However, frustration does surface with students who lack the knowledge and confidence to proceed at their own pace with the new software experiences. Additional frustration is evidenced by statements that as faculty we need better hardware, more software, more computers in the actual classrooms, and more training both for students and faculty.

CONCLUSION

This was a worthwhile experience for those who participated as they had the opportunity to express with their peers their frustrations and joys of using computers in the classroom and as a teaching tool. Several people after the session commented that we need to talk with each other across universities to find out what is and is not working at the different institutions. The success stories can provide a role model for the struggling schools and individuals.

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THE RELATIONSHIP BETWEEN COGNITIVE STYLE AND THE CONSUMER DECISION MAKING PROCESS

Roger D. Hibbs Kutztown University

ABSTRACT

Selling situations are the end result of an entire marketing effort employed to gain sales. Returns and contract cancellations reduce the effectiveness of these marketing efforts. If firms had information as to why customers cancel agreements or return merchandise they could take pro-active steps to minimize cancellations. Therefore, an investigation into why customers cancel sales contracts or return merchandise would be useful so that strategies could be developed to minimize lost sales. This research looks at the relationship between cognitive style and back-out behavior (order cancellation).

The literature review looks at the relationship between cognitive style and the decision-making process, focusing on pre-decision processes. Then, hypothesis are drawn from the literature for further research relative to a relationship between cognitive style and back-out behavior, part of post purchase behavior.

LITERATURE REVIEW

Marketing researchers have recognized that consumers go through a decision-making process when approaching a buying decision. The most prominent models of the consumer decision making process are by Howard & Sheth, Engel, Kollat & Blackwell, and Nicosia. Although each author differs, the common components of this process are: problem recognition, information search, evaluation of alternatives, purchase decision, and post purchase behavior. There are many factors that enter into this process that affect its outcome. Because individual consumers approach the decision-making process differently, individual differences affect the outcome of the buying process (Engel, Blackwell & Miniard 1995). One component of individual differences is personality. An aspect of personality that has clear links to decision style or decision making behavior is cognitive style.

Hunt et al. (1989) investigated the effect of cognitive style on decision making. Operationalization of cognitive style was determined by using the Myers-Briggs Type Indicator (MBTI). Subjects in their study who were analytic on both information gathering and evaluation dimensions were placed in the analytic category. Conversely, subjects who were intuitive on both dimensions were placed in the intuitive category. Subjects who were intuitive on one dimension and analytic on the other were considered to be mixed-in-type. Hunt et al. (1989) found respondents tend to prefer decision strategies or courses of action that correspond to their particular styles, and as a result, expressed or preferred decision strategies will vary as a function of the decision maker's cognitive style. Style showed a strong main effect (p < .001) on decision strategies. This study establishes a link between cognitive style and decision strategies.

In a study that investigated the effects of grouping information on decision making under risk, Behling, Gifford, & Tolliver (1980) used the Myers-Briggs to categorize decision-makers according to cognitive style as either "intuitive," or "sensing" (analytics). Information was given in one of five groupings ranging from exact information (meaning all possibilities were expressed to the nearest full percent and amounts as exact ratios) to a wide grouping (a 40 percent range was given and a five-position spread). Twenty-five subjects were given \$10 each and then asked to bet based on scenarios in which the information given ranged from exact information to a wide grouping, as described above. Although the purpose of the experiment was to look at the relationship

between the five levels of grouping information and decision-making, intuitives were found to be more risk prone than sensors in this betting situation. This study links Jung's sensation functional type (analytic) with being more risk adverse than intuitives. Risk has been previously linked to dissonance arousal by Mitchell & Boustani (1994) and Mitchell (1992). In the Hunt et al. (1989) investigation, operationalization of cognitive style in the information gathering phase of the decision-making process was achieved by labeling the sensing functional types as Analytics.

Henderson & Nutt (1980) used the MBTI to determine how cognitive style influences decision Experienced decision makers from behavior. hospitals and firms were asked to assess several hypothetical capital expansion projects in an experiment. The project summaries were tailored to be compatible or incompatible with each individual's cognitive style. Risk was controlled by using two levels of risk, defined by the spread of the return on investment projections, and by using personal judgements or a computer-based model to provide ROI estimates. The decision makers assessed each project, indicating their likelihood of adopting it and their perception of its risk. The impact of style was related to a decision to adopt and assessments of risk by ANOVA techniques. Decision style was found to be a significant factor in explaining decision behavior, as measured by the likelihood of adoption (p < p0.006) and perception of risk (p < 0.001). The Sensing-Feeling (SF) executives were more likely to adopt and saw the least risk in the decision. The Sensing-Thinking (ST) executives (analytics) were the least likely to adopt and viewed the to adopt as more risky than the other groups. This research establishes a relationship between decision style and decision choices. The interaction between style and risk was found to be significant for adoption (p < .006) and for perceived risk (p < .0008). The SF's were inclined to adopt the high-risk projects which contrasts with the ST (analytics) styles that were inclined to reject the same projects.

SUMMARY AND DISCUSSION

The work of Hunt et al. (1989) generally confirmed that cognitive style is congruent with the decision

process using the Myers-Briggs. Research to date has largely focused on the pre-decisional aspects of the decision process; little research has focused on possible relationships between cognitive style and back-out behavior. Back-out behavior is one consequence of the post decision evaluation process. Research has found intuitives to be more risk prone than sensors (analytic) in a betting situation (Behling et al. 1980). This study links Jung's sensation functional type (analytic) with being risk adverse. The sensation function according to the MBTI affects the way a person gathers information.

Henderson and Nutt (1980) found that decision style was a significant factor in explaining decision behavior using the MBTI. In their study the Sensation-Thinking style was associated with a greater degree of risk adversion than were Sensation-Feeling styles. Sensation-Thinking styles are referred to as "analytics" when tested using the Myers-Briggs. Using the MBTI, the work of Hunt et al. (1989), Behling et al. (1980), and Henderson & Nutt (1980) link cognitive style to decision behavior. Henderson & Nutt, examining a decision to adopt, found Sensing-Thinking (analytics) least likely to adopt, and viewed the "to adopt" as more risky. This stream of research links cognitive style to decision behavior and indicates that analytics are risk-adverse in the predecision and decision processes. No research has extended this investigation to include post decision processes, of which back-out behavior in one possible consequence.

A consumer experiences dissonance after making a consumer durable goods purchase. Returning the goods purchased is an indicator that dissonance has occurred. The returning of the purchase removes that risk associated with the perception that a bad decision has been made. An investigation of the relationship between cognitive style and back-out behavior in the post purchase phase of the consumer decision making process is warranted. In particular, can Henderson & Nutt's findings (1980) of analytics being more risk-adverse in the decision-making process be extended to include the post decision phase of the decision-making process? This can be hypothesized as follows: Analytics will experience dissonance levels that are higher than

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n st g intuitives and those mixed-in-type as measured by the likelihood of returning consumer durable purchases.

Many selling situations are the end result of an entire marketing effort employed to gain a sale. Returns and contract cancellations reduce the effectiveness of these marketing efforts. Bv uncovering a cognitive style that reveals a higher propensity to return goods than other cognitive styles, the marketing practitioner can take proactive steps to (1) identify the cognitive style of the risk group, and (2) take preventive steps to ensure that once the customer is sold, they stay sold. This can take the form of modifying presentations that key into the cognitive style of the buyer for added effectiveness, and by developing post-purchase communications programs that reinforce the purchase decision to minimize the effects of dissonance.

Note: for the complete 50 page literature review of this topic, write to:

Roger Hibbs, Instructor, Management & Marketing Kutztown University, 205 DeFrancesco Building Kutztown, PA 19551

REFERENCE LIST

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U.S. v. OHAGAN, A MAJOR SEC VICTORY

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ABSTRACT

On June 25, 1997 Justice Ginsburg delivered the opinion of the Supreme Court of the United States in <u>U.S.</u> <u>v. O'Hagan</u> concerns the interpretation and enforcement of Sections 10(b) and 14(e) of the Securities Exchange Act of 1934, and rules made by the Securities and Exchange Commission (SEC) pursuant to these provisions, Rules 10b-5 and 14e-3(a).

This case addressed the following issues: (1) Is a person who trades in securities for personal profit, using confidential information misappropriated in breach of a fiduciary duty for the source of the information, guilty of violating Section 10(b) and Rule 10b-5? (2) Did the SEC exceed its rule making authority by adopting Rule 14e-3(a), which prohibits trading on undisclosed information in the tender offer setting, even in the absence of a duty to disclose? In answering yes to the first issue and no to the second, the Supreme Court provided a very interesting and important discussion on insider trading- misappropriation theory, and the SEC's rule making power.

U.S. v. OHAGAN, A MAJOR SEC VICTORY

Following a jury trial in the United States District Court for the District of Minnesota, James Herman O'Hagan was convicted of all counts in a 57count indictment for mail fraud, securities fraud, and money laundering. O'Hagan was sentenced to 41 months' imprisonment, to be followed by three years of supervised release, and was fined \$150,000. On appeal, the United States Court of Appeals for the Eighth Circuit found merit in two particular claims from a whole host of issues raised by O'Hagan, and as a result reversed all of his convictions on August 2, 1996. <u>See, U.S. v.</u> <u>O'Hagan</u> 92 F.3d 612 (CA8 1996).

The Eighth Circuit Court of Appeals refused to apply the "misappropriation theory," the theory which formed the basis for O'Hagan's section 10(b) securities fraud convictions. That court also found the Securities and Exchange Commission (SEC) had exceeded its rule making authority under section 14(e). Because these determinations conflicted with other courts of appeals and deprived the government of important tools with which to combat fraudulent misappropriation and misuse of information in securities trading, the United States submitted a petition for a writ of certiorari to the Supreme Court of the United States.

On June 25, 1997 the Supreme Court delivered its opinion written by Justice Ginsburg, who was joined by Justices Stevens, O'Connor, Kennedy, Souter, and Breyer. (Justice Scalia, as did Justice Thomas with whom Chief Justice Rehnquist joined, wrote separate opinions which concurred in part and dissented in part with the majority). <u>See, U.S. v. O'Hagan</u>, 138 L. Ed. 2d 724 (1997).

Specifically, O'Hagan addressed the following issues: (1) Is a person who trades in securities for personal profit, using confidential information misappropriated in breach of a fiduciary duty to the source of the information, guilty of violating Section 10(b) and Rule 10b-5? (2) Did the SEC exceed its rule making authority by adopting Rule 14e-3(a), which prohibits trading on undisclosed information in the tender offer setting, even in the absence of a duty to disclose? In answering yes to the first issue and no to the second, the Supreme Court provided a very interesting and important discussion on insider trading misappropriation theory, and the SEC's rule making power.

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James Herman O'Hagan was a partner in the Dorsey & Whitney law firm in Minneapolis, Minnesota. In approximately July of 1988, Grand Met PLC (Grand Met), a large diversified company based in London, England, retained Dorsey & Whitney as local counsel because Grand Met was interested in acquiring the Pillsbury Company (Pillsbury), a Minneapolis, Minnesota company. Throughout the remainder of the summer and into the fall of 1988, Grand Met maintained a continued interest in acquiring Pillsbury, but before moving forward with an actual tender offer, it first had to sell a subsidiary company in order to have sufficient capital to finance the purchase of Pillsbury.

On August 18, 1988, O'Hagan began purchasing call options for Pillsbury stock that had a September 17, 1988 expiration date. He subsequently purchased call options that had October 22, 1988 and November 19, 1988 expiration dates. By the end of September, 1988, O'Hagan had amassed 2,500 Pillsbury call option contracts. He also held approximately 5,000 shares of Pillsbury common stock which he had purchased on September 10, 1988.

On October 4, 1988, Grand Met publicly announced its tender offer for Pillsbury stock. Pillsbury stock immediately rose from \$39 per share to almost \$60 per share. Shortly thereafter, O'Hagan exercised his options, purchasing the Pillsbury stock at the lower option price, and then liquidating the stock, along with the previously purchased 5,000 shares of common stock, for the higher market price generated by the tender offer. He realized a profit of over \$4,000,000 from these securities transactions.

The Securities Exchange Commission (SEC) subsequently commenced an investigation of O'Hagan and others who had heavily invested in Pillsbury securities shortly before its takeover by Grand Met. This investigation, which was later joined by other federal law enforcement authorities, culminated with O'Hagan being charged in the 57-count indictment.

The Supreme Court first addressed the Court of Appeals' reversal of O'Hagan's convictions under Section 10(b) and Rule 10b-5 which added to the

conflict in the circuits with regard to the propriety of the "misappropriation theory." <u>See, U.S. v.</u> <u>Chestman</u>, 947 F.2d 551 (CA2 1991) (en banc), cert. denied, 503 U.S. 1004 (1992); <u>SEC v. Cherif</u>, 933 F.2d 403 (CA7 1991), cert. denied, 502 U.S. 1071 (1992); <u>SEC v. Clark</u>, 915 F.2d 439 (CA9 1990); (cases adopting the misappropriation theory): and <u>U.S. v. Bryan</u>, 58 F3d 933 (CA4 1995); <u>U.S. v. O'Hagan</u>, 92 F.3d 612 (CA8 1996) (cases which reject the misappropriation theory).

In pertinent part, Section 10(b) of the Securities Exchange Act of 1934 provides:

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange --

(b) To use or employ, in connection with the purchase or sale of any security . . . any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the [Securities and Exchange] Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.

15 U.S.C. 78j(b)

The statute thus prescribes (1) using any deceptive device (2) in connection with the purchase or sale of securities, in contravention of rules prescribed by the Commission. The Supreme Court emphasized that Section 10(b), as written, does not confine its coverage to deception of a purchaser or seller of securities, rather reaches any deceptive device used "in connection with the purchase or sale of any security." See, U.S. v. Newman, 664 F.2d 12, 17 (CA2 1981).

Acting pursuant to the authority granted to it under §10(b), the SEC promulgated Rule 10b-5 which provides in relevant part:

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of

the mails or of any facility of any national securities exchange, (a) to employ any device, scheme, or artifice to defraud, [or]

(c) to engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.

17 C.F.R. 240.10b-5.

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The Supreme Court opined that liability under Rule 10b-5, precedent indicates, does not extend beyond conduct encompassed by §10(b)'s prohibition. <u>See, Ernst and Ernst v. Hochfelder</u>, <u>425 U.S. 185</u> 214 (1976) (scope of Rule 10b-5 cannot exceed power Congress granted Commission under §10(b); <u>see also Central Bank</u> <u>of Denver, N. A. v. First Interstate Bank of Denver</u>, N.A., <u>511 U.S. 164</u>, 173 (1994) ("We have refused to allow [private] 10b-5 challenges to conduct not prohibited by the text of the statute.").

Under the "traditional" or "classical theory" of insider trading liability, §10(b) and Rule 10b-5 are violated when a corporate insider trades in the securities of his corporation on the basis of material, nonpublic information. Trading on such information qualifies as a "deceptive device" under §10(b), because "a relationship of trust and confidence [exists] between the shareholders of a corporation and those insiders who have obtained confidential information by reason of their position with that corporation." Chiarella v. United States, 445 U.S. 222, 228 (1980). That relationship, "gives rise to a duty to disclose [or to abstain from trading] because of the 'necessity of preventing a corporate insider from ... taking unfair advantage of ... uninformed stockholders." Id., at 228-229. The classical theory applies not only to officers, directors, and other permanent insiders of a corporation, but also to attorneys, accountants, consultants, and others who temporarily become fiduciaries of a corporation. See, Dirks v. SEC, 463 U.S. 646, 655, n. 14 (1983).

The "misappropriation theory" holds that a person commits fraud "in connection with" a

securities transaction, and thereby violates §10(b) and Rule 10b-5, when he misappropriates confidential information for securities trading purposes, in breach of a duty owed to the source of the information. See Brief for United States 14. Under this theory, a fiduciary's undisclosed, self serving use of a principal's information to purchase or sell securities, in breach of a duty of loyalty and confidentiality, defrauds the principal of the exclusive use of that information. In lieu of premising liability on a fiduciary relationship between company insider and purchaser or seller of the company's stock, the misappropriation theory premises liability on a fiduciary turned trader's deception of those who entrusted him with access to confidential information.

The two theories are complementary, each addressing efforts to capitalize on nonpublic information through the purchase or sale of securities. The classical theory targets a corporate insider's breach of duty to shareholders insider transacts; with whom the the misappropriation theory outlaws trading on the basis of nonpublic information by a corporate "outsider" in breach of a duty owed not to a trading party, but to the source of the information. The misappropriation theory is thus designed to "protect the integrity of the securities markets against abuses by 'outsiders' to a corporation who have access to confidential information that will affect the corporation's security price when revealed, but who owe no fiduciary or other duty to that corporation's shareholders." Ibid.

In this case, the indictment alleged that O'Hagan, in breach of a duty of trust and confidence he owed to his law firm, Dorsey & Whitney, and to its client, Grand Met, traded on the basis of nonpublic information regarding Grand Met's planned tender offer for Pillsbury common stock. This conduct, the Government charged, constituted a fraudulent device in connection with the purchase and sale of securities.

The Supreme Court agreed with the Government that misappropriation, as just defined, satisfies Section 10(b)'s requirement that chargeable conduct involve a "deceptive device or contrivance" used "in connection with" the purchase and sale of securities.

The Supreme Court next turned to the Section 10(b) requirement that the misappropriator's deceptive use of information be "in connection with the purchase or sale of any security." The court opined that this element is satisfied because the fiduciary's fraud is consummated, not when the fiduciary gains the confidential information. but when, without disclosure to his principal, he uses the information to purchase or sell securities. The securities transaction and the breach of duty thus coincide. This is so even though the person or entity defrauded is not the other party to the trade, but is, instead, the source of the nonpublic information. See, Aldave, "Misappropriation: A General Theory of Liability for Trading on Nonpublic Information," 13 Hofstra L. Rev. 101, ("A fraud or deceit can be at 120 (1984). practiced on one person, with resultant harm to another person or group of persons"). Α misappropriator who trades on the basis of material, nonpublic information, in short, gains his advantageous market position through deception: he deceives the source of the information and simultaneously harms members of the investing public.

The misappropriation theory targets information of a sort that misappropriators ordinarily capitalize upon to gain no risk profits through the purchase or sale of securities. Should a misappropriator put such information to other use, the statute's prohibition would not be implicated. The theory does not catch all conceivable forms of fraud involving confidential information; rather, it catches fraudulent means of capitalizing on such information through securities transactions.

The misappropriation theory comports with §10(b)'s language, which requires deception "in connection with the purchase or sale of any security," not deception of an identifiable purchaser or seller. The theory is also well tuned to an animating purpose of the Exchange Act: to insure honest securities markets and thereby promote investor confidence. See, 45 Fed. Reg 60412 (1980) (trading on misappropriated information "undermines the integrity of, and investor confidence in, the securities markets"). Although informational disparity is inevitable in the securities markets, investors likely would hesitate to venture their capital in a market where trading

based on misappropriated nonpublic information is unchecked by law. An investor's informational disadvantage vis a vis a misappropriator with material, nonpublic information stems from contrivance, not luck; it is a disadvantage that cannot be overcome with research or skill. <u>See</u>, Brudney, "Insiders, Outsiders, and Informational Advantages Under the Federal Securities Laws," 93 Harv. L. Rev. 322, 356 (1979) ("If the market is thought to be systematically populated with . . . transactors [trading on the basis of misappropriated information] some investors will refrain from dealing altogether, and others will incur costs to avoid dealing with such transactors.

or corruptly to overcome their unerodable informational advantages."); Aldave, 13 Hofstra L. Rev., at 122-123. In sum, considering the inhibiting impact on market participation of trading on misappropriated

market participation of trading on misappropriated information, and the congressional purposes underlying §10(b), it makes scant sense to hold a lawyer like O'Hagan a §10(b) violator if he works for a law firm representing the target of a tender offer, but not if he works for a law firm representing the bidder. The text of the statute requires no such result. The misappropriation at issue here was properly made the subject of a §10(b) charge because it meets the statutory requirement that there be "deceptive" conduct "in connection with" securities transactions.

Thus the misappropriation theory was held to be both consistent with the statute and case precedent.

The Supreme Court then considered the second major issue: Did the SEC, as the Court of Appeals held, exceed its rule making authority under Section 14(e) when it adopted Rule 1.4e-3(a) without requiring a showing that the trading at issue entailed a breach of fiduciary duty? Again the SEC was found not to have exceeded its authority.

<u>Section</u> 14(e) of the Securities Exchange Act of 1934 provides:

It shall be unlawful for any person to engage in any fraudulent, deceptive, or manipulative acts or practices, in connection with any tender

offer . . . The [SEC] shall, for the purpose of this subsection, by the rules and regulations define, and prescribe means reasonably designed to prevent, such acts and practices as are fraudulent, deceptive, or manipulative. 15 U.S.C. 78n(e).

Section 14(e)'s first sentence prohibits fraudulent acts in connection with a tender offer. This self operating proscription was one of several provisions added to the Exchange Act in 1968 by the Williams Act, 82 Stat. 454. The section's second sentence delegates definitional and prophylactic rule making authority to the Commission. Congress added this rule making delegation to §14(e) in 1970 amendments to the Williams Act. <u>See</u>, §5, 84 Stat. 1497.

Congress wanted to ensure that shareholders contacted by tender offers for their stock would not be required to respond without adequate information; and thus designed the Williams Act to make disclosure, the preferred method of market regulation. (Citations omitted).

Relying on Section 14(e)'s rule making authorization, the SEC, in 1980, promulgated Rule 14e-3(a). That rule provides:

If any person has taken a substantial step or steps to commence, or has commenced, a tender offer (the "offering person"), it shall constitute a fraudulent, deceptive, or manipulative act or practice within the meaning of section 14(e) of the [Securities Exchange] Act for any other person who is in possession of material information relating to such tender offer which information he knows or has reason to know is nonpublic and which he knows or has reason to know has been acquired directly or indirectly from:

- (1) The offering person,
- (2) The issuer of the securities sought or to be sought by such tender offer, or
- (3) Any officer, director, partner, or employee or any other person acting on behalf of the offering person or such issuer,

to purchase or sell or cause to be purchased

or sold any such securities or any securities convertible into or exchangeable for any such securities or any option or right to obtain or dispose of any of the foregoing securities, unless within a reasonable time prior to any purchase or sale such information and its sources are publicly disclosed by press release or otherwise.

17 C.F.R. 240.14e-3(a).

As characterized by the Commission, Rule 14e-3(a) is a-"disclose or abstain from trading" requirement. 45 Fed. Reg. 60410 (1980). The Second Circuit concisely described the rule's thrust:

"One violates Rule 14e-3(a) if he trades on the basis of material nonpublic information concerning a pending tender offer that he knows or has reason to know has been acquired 'directly or indirectly' from an insider of the offeror or issuer, or someone working on their behalf. Rule 14e-3(a) is a disclosure provision. It creates a duty in those traders who fall within its ambit to abstain or disclose, without regard to whether the trader owes a pre-existina fiduciarv dutv to respect confidentiality of the information." United States v. Chestman, 947 F2d 551, 557 (1991) (en banc) (emphasis added), cert. denied, 503 U.S. 1004 (1992).

<u>See also, SEC v. Maio</u>, 51 F. 3d 623, 635 (CA7 1995) ("Rule 14e-3 creates a duty to disclose material nonpublic information, or abstain from trading in stocks implicated by an impending tender offer, regardless of whether such information was obtained through a breach of fiduciary duty.") (emphasis added); <u>SEC v.</u> <u>Peters</u>, 978 F. 2d 1162, 1165 (CA10 1992) (as written, Rule 14e-3(a) has no fiduciary duty requirement).

In adopting the "disclose or abstain" rule, the SEC explained:

"The Commission has previously expressed and continues to have serious concerns about trading by persons in possession of material, nonpublic information relating to a tender offer.

This practice results in unfair disparities in market information and market disruption. Security holders who purchase from or sell to such persons are effectively denied the benefits of disclosure and the substantive protections of the Williams Act. If furnished with the information, these security holders would be able to make an informed investment decision, which could involve deferring the purchase or sale of the securities until the material information had been disseminated or until the tender offer has been commenced or terminated." 45 Fed. Reg. 60412 (1980).

The Commission thus justified Rule 14e-3(a) as a means necessary and proper to assure the efficacy of Williams Act protections.

Because Congress has authorized the Commission, in §14(e), to prescribe legislative rules, the court owed the Commission's judgment "more than mere deference or weight." Batterton v. Francis, 432 U.S. 416, 424-426 (1977). Therefore, in determining whether Rule 14e-3(a)'s disclose or abstain from trading" requirement is reasonably designed to prevent fraudulent acts, the court accorded the Commission's assessment "controlling weight unless arbitrary, capricious, or manifestly contrary to the statute." Chevron U.S.A. v. Natural Resources Defense Council, Inc., 467 U.S. 837, 844 (1984). In this case, the court concluded, the Commission's assessment was none of these.

The United States emphasized that Rule 14e-3(a) reaches trading in which "a breach of duty is likely but difficult to prove." Reply Brief 16. "Particularly in the context of a tender offer," as the Tenth Circuit recognized, "there is a fairly people with confidential wide circle of information," Peters, 978 F. 2d at 1167, notably, bankers, the attorneys, investment and accountants involved in structuring the transaction. The availability of that information may lead to abuse, for "even a hint of an upcoming tender offer may send the price of the target company's stock soaring." SEC v. Materia, 745 F. 2d 197, 199 (CA2 1984). Individuals entrusted with nonpublic information, particularly if they have no long term loyalty to the issuer, may find the temptation to trade on that

information hard to resist in view of "the very large short term profits potentially available [to them]." <u>Peters</u>, 978 F.2d, at 1167.

"[I]t may be possible to prove circumstantially that a person [traded on the basis of material, nonpublic information], but almost impossible to prove that the trader obtained such information in breach of a fiduciary duty owed either by the trader or by the ultimate insider source of the information." Ibid. The example of a "tippee" who trades on information received from an insider illustrates the problem. Under Rule 10b-5, "a tippee assumes a fiduciary duty to the shareholders of a corporation not to trade on material nonpublic information only when the insider has breached his fiduciary duty to the shareholders by disclosing the information to the tippee and the tippee knows or should know that there has been a breach." Dirks, 463 U.S., at To show that a tippee who traded on 660. nonpublic information about a tender offer had breached a fiduciary duty would require proof not only that the insider source breached a fiduciary duty, but that the tippee knew or should have known of that breach. "Yet, in most cases, the only parties to the [information transfer] will be the insider and the alleged tippee." Peters, 978 F. 2d, at 1167.

Thus trading on the basis of material, nonpublic information will often involve a breach of a duty of confidentiality to the bidder or target company or their representatives. The SEC, cognizant of the proof problem that could enable sophisticated traders to escape responsibility, placed in Rule 14e-3(a) a "disclose or abstain from trading" command that does not require specific proof of a breach of fiduciary duty. That prescription, the court was satisfied, applied to this case, was a reasonably designed to prevent" *means fraudulent trading on material, nonpublic information in the tender offer context. See, Chestman, 947 F. 2d, at 560 ("While dispensing with the subtle problems of proof associated with demonstrating fiduciary breach in the problematic area of tender offer insider trading, [Rule 14e-3(a)] retains a close nexus between the prohibited conduct and the statutory aims.); accord, Maio, 51 F. 3d, at 635, and n. 14; Peters, 978 F. 2d, at 1167.

Therefore, insofar as it served to prevent the type of misappropriation charged against O'Hagan, Rule 14e-3(a) was found to be a proper exercise of the SEC's prophylactic power under Section 14(e).

Today, then, there is no doubt of the viability of the misappropriation theory under Section10(b) with respect to criminal liability and the viability of Rule 14e-3(a).

O'Hagan's federal litigation goes on with respect to other issues remaining open for consideration on remand to the Eighth Circuit Court of Appeals.

Oh yes, by the way, O'Hagan was convicted of theft in state court, sentenced to 30 months' imprisonment, and fined. <u>See, State v. O'Hagan</u>, 474 N.W. 2d 613 (Minn. App 1991). The Supreme Court of Minnesota disbarred O'Hagan from the practice of law. <u>See, In re O'Hagan</u>, 450 N.W. 2d 571 (Minn. 1990).

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TEACHING IN EUROPE ----SWEDEN, CZECH REPUBLIC, MALTA, AUSTRIA

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ABSTRACT

This paper shares some of the experiences the author has had in teaching abroad over the past five years. It is felt that these experiences might be helpful to members of this conference who may be interested in pursuing similar activities. Although the actual experience base is fairly narrow, the experience may be extensive enough that some meaningful comments might be made on obtaining positions that prove useful to others. The role of relationships in establishing opportunities appears especially important. Some of the observations on positive and negative aspects of these experiences also may be interesting to readers.

INTRODUCTION

The opportunity for U.S. faculty to teach abroad has a long history. For instance, the Fulbright Program has offered faculty, professionals and teachers the opportunity to conduct research, teach, or make major contribution to global understanding for over fifty years. Since its inception in 1946, over 30,000 American scholars have lectured and conducted research in countries around the globe (USIA, 1997). Recent trends may make it even easier for U.S. business professors to teach abroad. Combined with a decrease in the rate of foreign enrollment in U.S. universities, 20 percent of them business students, is the growth of excellent universities abroad (Desruisseaux, 1996). Not surprisingly, a major focus of these international universities has been their business schools. One area of especially high growth has been the former soviet bloc. Since the collapse of one-party Communist rule, an estimated 1000 business schools have opened in Eastern Europe and the former Soviet republics. Since member institutions train their students to compete in the global marketplace, English is generally the language of instruction. Some of these schools have advanced to the state that it has been asserted that, "In the 1950s and '60s, American professors went to European business schools to teach. Now they go to learn" (Bollag, 1997). That may be the case, but there is still demand for U.S. visiting professors in Europe and around the world as any perusal of Chronicle's weekly employment ads would seem to attest.

Naturally, there have been reports of individual's experiences in teaching abroad. These papers have tended to be anecdotal and country specific. This tendency can be appreciated because it is recognized that educational systems tend to be culturally specific (Terpstra and David 1991). Milner (1993) recently has noted that a natural way to obtain cross-cultural experience is to teach abroad. She suggested that such experience is desirable in light of recent AACSB requirements in terms of curriculum globalization, and gaining this experience can be pleasurable as well as professionally rewarding. Other authors similarly have indicated that teaching abroad tends to have its professional rewards (Chao 1992; Fisk 1990). Nevertheless, Wilson and Bålfors (1994) citing their experience in Sweden suggested further that courses should be designed specifically for the Hofstede (1980) earlier had host country. indicated that national culture may play a role in expectations. In fact, educational level was one of the factors discussed in his "low index - high index" tabulations (Wilson 1995).

The purpose of this paper is to share some of the experiences the author has had in teaching abroad over the past five years. It is felt that these experiences might be helpful to members of this association that may be interested in pursuing similar activities. The actual experience base is fairly narrow -- "only" Europe and so anecdotal cultural experiences will be minimized. The

experience may be extensive enough, however, that some meaningful comments might be made on obtaining positions that prove useful to others.

BACKGROUND

The author's experience in teaching abroad derives from teaching in four different situations over the past five years -- Umeå University in Umeå, Sweden; Czech Management Center in Prague, Czech Republic; University of Malta in Msida, Malta, and International Christian University in Vienna, Austria.

Each of these situations was somewhat different in terms of courses taught, educational level of students in courses, and duration of the course. A summary of methods of contact, along with course experiences, are shown in Table 1. By far, the greatest amount of experience came in Umeå, Sweden. There, a number of courses were taught in collaboration with another teacher -- industrial marketing, international marketing and marketing management. The standard length of time for a course was five weeks, although longer courses were generated by combining five week modules. The undergraduate international course, for instance, was a 15 week course. A unique feature of this system was the fact that an instructor had great freedom over when, and for how long, specific lectures might be as long as the total course was completed within the specified time period and contained the mandatory 45 hours "face" time. That is, if an instructor wanted to lecture three hours on Tuesday and six on Thursday one week and something else another, that schedule could be set. Students registered for only one course at a time and instructors were to assume that they had complete access to them forty hours per week. Team teaching was handled by having all instructors involved in the planning. Thereafter, one instructor would be primarily responsible for developing specific lectures. Another instructor might, or might not, be in the classroom for these lectures. In this system, the author's experience was primarily with select group -- either the domestic honors group, the international Erasmus, or the master's level group.

The experience in Prague dealt with an even more select group. There, a two day course on marketing strategy was offered to Coca-Cola managers at the Czech Management Center (CMC). The <u>Chronicle of Higher Education</u> has characterized this institution in the following manner: "The Czech Management Center, outside Prague, is typical of the region's <u>best</u> (emphasis added) business schools. Established in the 1990 as a joint program of the Czech Ministry of Industry and the University of Pittsburgh, the center now awards some 50 MBA degrees a year. It attracts students from across the region, and, lately, North American as well" (Bollag 1997).

Coca-Cola USA conducts its international business through a combination of guasiindependent subsidiaries and affiliates. One such affiliate is Coca-Cola Amatil. It obtained its first franchise to make Coca-Cola beverages in the early '60s in Australia. Today, it furnishes refreshments on three continents (Australia, Asia and Europe) and provides employment for 14,000 individuals. The program that has been developed by Coca-Cola Europe and the Czech Management Center has been called the "The Advanced Management and Business Education Program" (AMBEP) and 1996-97 represents its fourth year of operation. Its purpose is "to provide selected managers with a high level, academically rigorous but practically oriented program dealing with capitalism, market based, profit driven, performance oriented, customer satisfying and consumer related business." The program was set up to provide core concepts. relate these to Coca-Cola's business, so that they can be successfully applied in participants' work. Although distinctly separate from the CMC MBA program, it was possible for an participant to independently apply to both programs and thus get some credit toward his/her MBA from AMBEP courses -- CMC instructions thus indicated that all courses should be taught at the "MBA level." The course taught in this program was marketing strategy, which represented 12 hours in the 42.5 hour marketing module. its intent was to establish the background necessary to manage from a strategic marketing perspective in specific situations faced by the Amatil organization. The approach built on previous concepts and the needs apparent from project assignments.

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The Malta and Vienna experiences were somewhere intermediate between these two extremes. In Malta, a masters level program has evolved that features a number of very specific, one and two credit courses. There a course in organizational buying behavior was taught over a ten day period. In Vienna, both Principles of Marketing and Personal Selling were taught to undergraduate international students over a four week period. The Maltese course was organized around individual readings; the Austrian courses around established undergraduate texts.

The manner in which these positions were obtained tended to involve relationships. In this regard, the invitation to go to Sweden came An associate had been at a unexpectedly. university there for a sabbatical the previous year, which had been the university's initial experience in having a U.S. faculty person in residence for an extended period of time. That being a profitable experience, the university decided to extend the program. Its formal attempts, however, did not produce a satisfactory candidate, so the incumbent was asked to produce a short list of individuals that might accept a position. The author was on the list and contacted; an interview was arranged, and four months later a year was spent in Sweden. The initial year was taken as a leave of absence. Subsequently, a semester has been spent there on a sabbatical.

The Maltese experience came through an university exchange program. A resume was submitted, and interest was expressed in having a specific course taught. Both the Czech and Austrian experiences, on the other hand, came from more casual contacts. E-mail contact was made with a Czech faculty member through a mutual U.S./Swedish associate. A tentative time was set to come and lecture on a pro bono basis. The Coca-Cola opportunity arose when a faculty member in that program canceled, and final arrangements were made in and exchange of E-Mails. That program has also been repeated. The Austrian opportunity arose during some informal exchanges at a conference. An individual happened to mention that he had been asked to teach in a summer program and could not comply. He would, however, serve as a referral if anyone else might be interested. The author expressed interest, and the matter settled through an exchange of several E-Mails.

APPARENT NEEDS OF FOREIGN UNIVERSITIES

In his seminal treatment of the importance of understanding the customer's role in successful business, Levitt (1960) wrote, "The view that ... a customer-satisfying process ... is vital for all ... to understand. An industry begins with the customer and his needs" Understanding the apparent needs of customers (foreign universities) is just as important to interested faculty.

In international education, a primary need is quality. To a certain degree, "quality" in international education, that is in education outside of the U.S. but international in scope, has come to mean courses commensurate with U.S. courses and taught in English. With this in mind, certain needs obviously are met with U.S. faculty on staff. It also might be noted there probably exists a perception that English spoken by a native speaking English person is better than that spoken by individuals with whom English is a second language. Thus, this basis exists for any other needs that are met. There are, however, specific needs that may be identified. These are summarized in Table 2 and include:

<u>Representative of U.S. Educational/Business</u> <u>Community</u> - An easy way for an international university to demonstrate that it is complying with the twin desires to have English speaking faculty familiar with U.S. practice is to have invited faculty on staff. At the same time, these individuals represent a familiarity with a business system that has been doing well in international competition.

It must be admitted that this idea that there was a U.S. style of education and business was one that was difficult for the author to accept. Nevertheless, unsolicited comments have tended to solidify appreciation that there is not only a U.S. style of education, but a U.S. style of doing business:

"U.S. Professors are good lecturers. U.S. Professors are especially good in case studies." (International Dean Explaining Desire to Have U.S. Faculty)

"In the rest of the world, international marketing is industrial marketing in the U.S." (International Professor Recruiting Assistance)

"One problem American businessmen have is they see themselves as missionaries of the U.S. system." (International Professor at Conference)

"Yes, there are other systems out there, but more and more it appears as if the U.S. system may be best." (American Business Person at Conference)

As a consequence of this primary need, there are also more fundamental needs that arise for international universities. These include:

Understanding of Text Materials - Business texts in use tend to be U.S. texts. A second thought to the use of these texts in the U.S. does not arise. In an international setting, however, their content becomes unbelievably culturally biased. For instance, the text used in the core course in marketing tends to be Philip Kotler's, Marketing Management (now in its ninth edition). The buying behavior sections in that text is U.S. buying behavior, which in a world wide sense is quite unique. International students are expected to read and learn (memorize) this material. A challenge thus exists to translate that behavior into the culture in which the course is taught. An even more basic example arose from the author's experience of sorting through a number of international marketing texts to find one that did not refer to the "home" office of the international firm as the "U.S." office.

<u>Pedagogy</u> - The author's experience has been that formal lecturing is the established method of teaching in international universities. Even the use of cases in discussions tends to pose some problems because informal discussions tend not to occur. Thus, there are a range of innovations that may be introduced that may increase the learning experiences of students.

<u>Course Development</u> - An apparent need exists to develop courses, frequently along a line that complies with a U.S. model and material. If one peruses Fulbright project descriptions for lecturers, it will be seen that this requirement tends to be included in the description.

RESPONDING TO NEEDS

It should be evident in reviewing these needs that they are quite general. In truth, they would preclude few practicing educators from filling them. In practice, they become more refined when institutions look for a "marketing" person, or a "consumer marketing" individual, or an "international marketing person with experience and research record." In this regard, international institutions ostensibly appear to be quite like domestic universities in their approaches. Thus, a first order of business is to have one's resume, or curriculum vitae, in order.

<u>The Resume</u> - A university's short list may be developed from resumes. (The author's first opportunity came from this approach.) Thus, it is important to have one as impressive as possible -- as if this observation was something profound. There are, of course, certain aspects of the resume that are "uncontrollable," but may be interpreted as "quality," i.e., education. In the search for experienced individuals, however, the "controllable" portions of the resume may be even more important, i.e., industry interactions, honors, etc., and these items should be clearly indicated.

It has been the author's experience that international experience appears especially desirable. This experience is demonstrated by courses taught, international experience and research. These topics therefore should be clearly discernable on the resume. Also, although there may be some need for a specialty expressed, there frequently are more general opportunities to add to courses once on location. Thus, if it possible to communicate a "generalist/specialist" type of teaching background, that could be useful. Finally,

publications are important. In this regard, pedagogical papers and cases on the author's resume have received favorable international comments, which of course tend not to be so favorably treated in domestic situations.

<u>Availability</u> - An impressive resume is but one approach to gaining international positions. In fact, as is the case for many domestic industrial positions, there are other methods in which positions are acquired. Two of the author's positions, for instance, were obtained without ever showing a resume.

These alternative approaches invariably center around an "availability," or "penetration," strategy. That is, when the opportunity arises, be available to take it. The author recalls being casually asked ten years ago if he might be interested in teaching his specialty in Denmark. The thought seemed overwhelming and the offer dismissed. It is now appreciated that had the offer been pursued, a five year head start would have been obtained on the past five year's experience. With regard to this observation, if one word of advice might be given, it is take that first opportunity. If one is serious about making international teaching part of one's career, take the first opportunity. Do a good job and bear the costs. Growth will undoubtedly occur from there.

Networks and Relationships - Appreciation of networks and relationships tends to be a rather addition to U.S. literature. It has a much longer history in international practice and thus evidently plays an important role in extending international opportunities -- some people really do tend to make friends before doing business. It thus behooves one to place one oneself in a position where is exposed to the opportunity to establish international relationships. The two situations that appear to present the most likely to produce useful relationships are international conferences (especially in international locations) and conferences dedicated to international teaching.

<u>Trial and Repeat</u> - First positions may be truly difficult to obtain; they take a combination of suitable opportunity and availability for any

given individual. Subsequent opportunities at the same institutions may be easier to obtain and will depend primarily upon individual performance.

Most important may be actual inclination to do a good job -- teaching courses well, interacting with students and peers in a constructive manner, and following up in a professional manner. In domestic courses relating to international business, students are taught to be adaptable to local customs and to learn some of the local language. Instructors abroad are well advised to follow those instructions. Above all, there is a need to avoid becoming a boring American. Stories abound of problems tourists and business people cause for themselves: instructors should steer clear of these same problems. Further, although hosts are naturally interested in the U.S., they are not interested in " hearing a steady stream of comments on the subject. One of the ancillary advantages of teaching abroad is the ability to learn of international conditions at a local level. Learn about local issues and discuss them with colleagues. Such discussions tend to pleasant and quite informative.

In personal selling, "follow-up is frequently taught. That is, the last step in the selling process is not purchase, but the idea of keeping the customer sold. This same concept can carry over constructively in international opportunities. Things like joint research and publication and/or opportunities to travel to the U.S. for conferences or to teach can prove quite constructive in cementing relationships.

GETTING POSITIONS

The author is aware of three approaches for getting positions -- personal relationships, exchanges, and formal applications. <u>Personal Relationships</u> - By far the most profitable approach for the author has been through relationships. Three of the four initial opportunities, and each of the repeat opportunities, have come as a consequence of relationships. Apparently, it is as we tell our students -- there are jobs out there that need filled. Most often, however, we are not aware of

them. Thus, the larger the network, the more likely we become aware of them. In my case, one of my benefactors was an individual with whom I happened to serve on a national committee. I cannot say that I knew him well, but evidently a favorable impression was made. He was asked for some names and mine was one of them. Two positions were obtained through him. In another case, I literally did not know the individual. We were in the same meeting when he mentioned that he had been asked to take a position, but could not comply; he would, however, forward names of potential candidates. It may be the position was mine for the asking.

Exchanges - More fruitful opportunities may come from following up on exchanges offered by one's university. It is a rare one that has not built formal relationships in today's academic atmosphere of globalization. Our institution, for instance, has had formal relationships with Australia, Russia, and Malta. In the author's case, the alternative to spending the first year in Sweden was to spend a term in Australia, and the course taught in Malta came as a direct consequence of such an exchange agreement. These opportunities usually come after an exchange of resumes. Host universities then extend an invitation to individuals to come to teach. Actual arrangements are then negotiated by individuals involved and their institutions. In my case, the host university provided housing and my university provided pay (I was on sabbatical) and some contribution toward travel (what I would have received for a national conference). Some colleagues have done better; some worse.

<u>Formal Applications</u> - Of the three, the most difficult may be the process in which formal application for advertised positions. The Chronicle of Higher Education advertises these positions on a weekly basis. Little, in fact zero, success has been attained in responding to these solicitations. Part of this lack of success may be lack of trying. They tend to come at inopportune times and there is also the need to get references -- prevailing upon friends is something that is difficult to do. That is not to mean that someone does not get those positions and the author will not stop trying at times. A Fulbright is now in progress.

ANECDOTAL OBSERVATIONS

Hofstede's (1980) work has suggested that noticeable differences might be observed in student behavior. These observations are presented to suggest that differences were indeed noted. Of course, they are not exhaustive nor may they characterize the situations in which they occurred. They are merely included to illustrate that differences will indeed be noted when one goes abroad to teach -- much as Milner (1993) suggested.

Sweden - Educators in Sweden were particularly interested in having case studies taught, so a number of cases were written for Swedish students. The author's initial experience was especially memorial. After the usual introduction, there was no student response, absolutely none. My co-teacher said it was unusual for students to respond without being called upon. After some discussion between first between him and me and then between him and the students, it was decided that it would be acceptable to go around the room and elicit comments from students. As a contrast to this seemingly strained relationship, was the general response to courses. In the U.S., I usually take my graduate students to dinner after the course. In Sweden, my co-teacher and I were not only taken to dinner by the students, they also gave us both a bouquet of flowers. Evidently this practice was not too unusual. My co-teacher appeared guite comfortable with this arrangement.

Observations are made not only of students, but society as a whole. Hall (1959), in fact, suggested observation was required to understand cultures. In this regard as a group, the Swedish people may be the most honest people that I have ever met. I tend to have problems with change in the many countries that I visit. In Sweden, one could literally hold out change on one's hand and trust clerks to take what was required -- I would not do the same in all countries that I visited. Also, I happened to be in the library one time with my

co-teacher and we found a charge card in one of the copying machines. I thought, "hey, what a lucky day." Kind of found money. My colleague, however, said we should return it to the desk. The owner would probably return for it.

Noticeable differences, of course, extended to other areas. I was once told that it would be impolite if someone came into a room and did not sit at an occupied table. It would be rude to the individual sitting there. It took some time to get comfortable with people who I barely knew, or did not know at all, sitting next to me in restaurants or other public places. Outside, it was different. It was virtually impossible to build a bus shelter large enough to hold the people that might gather there. For some reason, Swedish people tended to line up down the street -- in the order in which they arrived, which was the order in which they entered the bus.

Then there was the matter of social conscience, or something similar. A colleague was concerned because his response to a mail questionnaire was 65 percent. 65 percent! Responses may run in the 90's and industrial co-operation is expected. Sweden may be the best place in the world to do research.

Malta - Whereas Swedes and Swedish students appeared cool in some ways, Maltese students were warm, even hot. The course taught in Malta dealt with organizational buyer behavior. Both relationships and transactional models were taught. It was decided to have a debate in which the relative merits of each model were discussed. The transaction team won, primarily because they were the loudest and rudest. Also contrary to the Swedish experience, keeping order in case discussions in Malta proved to be the larger problem. When I tried to explain the rules of brainstorming, in which ideas were not criticized, the individual whose ideas had been criticized (prematurely and probably unfairly), he said he did not mind, it was the "way we do things." Likewise, students commonly blurted ideas out -- sometimes three or four at once. When asked how I should treat these contributions, I was told not to worry. I could

treat them in any order, or not at all. Again, it was the "way we do things."

"The way we do things" extended to other activities. I happened to be in Malta over New Years. The eve was particularly festive. I would imagine the country must be right up there in terms of fireworks per capita and probably some other things. On new year's day, I got to meet the prime minister and the bishop, which every other person on the island could do if he/she wanted. A very close society. I understand they normally get voter turnout in excess of 95 percent.

As part of the "way of doing things," I do not think that the Maltese queue. I used to go up to my local grocery store before going over to the university to get a supply of the local soft drink, which happened to be very good. I would go to the check out counter to try to pay for my purchase. To my consternation, old women would come and push in front of me. Clearly, one does not win arguments with 70 year old women, so I would just wait until they were done, or until the clerk would take pity on me. I did not think the women were particularly mean. These same women would greet me with smiles outside the store. Inside, however, they were something else.

The stories of what the Japanese may mean when they say "yes" are classics by now. In Malta, however, I learned what "no" might mean. I was told that my bags were overweight when I was about to leave the country. That was kind of surprising because they seemed fine when I came in. Luckily, a colleague had come to the airport with me. On the third clerk we got a favorable "weighing" -- surprising because they couldn't have been six feet from each other. Turns out that weights, and probably a lot of other things, are negotiable on Malta.

<u>Czech Republic</u> - Hall (1959) indicated time, or how it is used, is one of the real distinguishing characteristics of cultures. In Sweden, students were "on time, but always 15 minutes late -- the academic quarter." In Malta, I was introduced to the "Mediterranean 5," the idea that participants could be expected to be five or ten

minutes for any meeting. In Prague I got my first experience with culturally mixed classes. Not only did I have Czechs, but students from other easter countries. There when students went on break, I was never sure when, if ever, they would come back. The Czechs were prompt, the others not. I told them they were like thieves, stealing my time.

It was also in Prague that I experienced my first rebellion in the classroom. One group from an eastern country absolutely refused to participate in class exercises. Some sort of communist aftermath?

Lest it appear that I have nothing but unpleasant memories from the Czech experience, let it be clear that quite to the contrary I had some of my best work done there. In particular, it was rather amazing the degree that adaption of current technology had occurred. Some of my best reports came from the experience there. In particular, the visuals that were generated from some of the Windows options were impressive in there applications.

I had heard that one reason for Volkswagen's interest in Skoda was their interest in getting access to Czech engineering. Supposedly, before the war (WW II, that is), Czech engineers were among the best in Europe, if not the world. If industriousness means anything, I can believe these claims. Each morning before 6:00, I would hear people going to work outside my window. Also, in Prague stones were being replaced and buildings restored in anticipation of what renovation would mean to tourism. It is my personal feeling that the industriousness of the Czech Republic will lead them into "industrialized" Europe at a very early date.

One other item of note would be the differences that exist between Prague and the areas outside the city. First, external to the city lies great expanses of farm land, which gives the area a "bread basket" appearance. Second, the small towns outside the city have a bucolic appearance. I had the good fortune to have had a colleague show me some of these areas. I have to believe that these areas are where the Czechs themselves go for rest and relaxation. I think those people in Prague are primarily foreign tourists.

<u>Austria</u> - Austria in general and Vienna in particular are described as "cross roads." This description appeared particularly appropriate in terms of class composition. Of the students in two courses, only 10 percent were native Austrians. One could not help but wonder if the future for Austria would not be quite positive on the basis that these immigrants would positively contribute to a growing economy.

I happened to come across a rather humorous story about clerking practice in Vienna, or so I thought. Seems they have some reputation for customer expectations, or more properly obedience. In "reaction response" assignments, there appeared enough response to suggest that perhaps the story was not too extreme. Kind of made teaching a "customer satisfaction" approach to marketing a tougher sale.

Vienna may have been the safest large city in which I have ever stayed. After several weeks I was walking places at times that I never would have considered in the U.S. I can only wonder about the behavior basis for this pervasive feeling of safeness that exists there.

I am not a big city, big culture guy, but Vienna was indeed a very pleasant city. In the U.S., I live in a rural area by choice and take most of my pleasure from the outdoors. My fantasy is to locate in a small town in the Rockies. In Vienna, however, I went to concerts and the opera, and visited museums and parks. The place just grows on you. After six weeks, there were still places on my list that I had not gone. I understand that there are two visitors per year for each resident -- easy enough to believe.

THE EXPERIENCE ON BALANCE

It is the author's feeling that teaching abroad is something that one must really want to do. On balance, there are both positive and negative aspects to the experience. Accounts, including my own, tend to emphasize the positive aspects (Wilson and Bålfors 1994, Milner 1993, Chao

1992, Fisk 1990), but naturally there are also negative aspects of the experience.

There are, however, distinctively negative things that can occur. For instance, the experience may be expensive. My estimates of the 1992-93 year in Sweden is that it cost me about \$35 thousand in extra money spent and money not accrued to my retirement. There can also be health concerns, both physical and mental. When I came back from the 1996 semester abroad, I jokingly told my physician that it was easier to tell him what was right with me than what was wrong; both shoulders, one knee and one ankle had been sprained. Escalations in weight, either up or down, can occur depending upon how one adapts to the food. Mental health can be a problem; individuals can suffer from lack of loving interactions with friends and relatives. Further, personal life can suffer. Being away for six months or a year creates some holes in one's life. People die; relationships break up. Absence does not always make the heart grow fonder. Finally, Milner (1993) gets into the fact that the experience does not count. That is, it is no substitute for scholarship. It may not even be a substitute for teaching at the individual's domestic institution. One who gets into international teaching to impress administrators is likely to be disappointed.

Of course there were positive aspects of the experience. In fact, it is the author's judgement that the experiences have been quite positive. I think that I have become a better teacher. More time was spent on preps; my listening skills have been improved, and I have had the opportunity to watch some master lecturers in operation. Additionally, because the courses taught abroad tended to be similar to research projects, each of these courses have fed into domestic courses. Further, scholarship level increased. It is difficult to go into new situations and not get new ideas on present projects on ideas for new projects. It also seemed as if each of the experiences provided energy for additional work. Of course, cultural appreciation was increased. It is one thing to read, or hear, about situations. It is quite another thing to experience them. Finally, my

network of acquaintances has been expanded by four countries directly and at least that many more indirectly.

These items are summarized in Table 3.

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University/ Location	Courses Taught	Level	Time <u>Taught</u>	Method of Contact
Umeå University Umeå, Sweden	Industrial Marketing	B.S. (Erasmus)	5 wks	Short List (Personal)
	International Marketing	B.S. (Erasmus)	5 wks	
	International Marketing	MBA	10 wks	
	Marketing Management	B.S. (Honors)	5 wks	
Czech Management Center, Prague, Czech Republic	Marketing Strategy	Special (Coke Mgrs)	2 days	Personal Relation- ship
University of Malta, Msida, Malta	Organiza- tional Buying Behavior	Masters Program	10 days	: University Exchange
International Christian University Vienna, Austria	Principles of Marketing Personal Selling	B.S. (Int'I)	4 wks	Personal Referral

Table 1 - Digest of Author's International Teaching Experience

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Need

Representative of U.S. Educational/Business Community.

Understanding of Text Material

Course Development

Pedagogy

English Usage

Manifestation

Supposition that there is U.S. Style of Education & Management. "U.S. Professors are good lecturers. U.S. Professors are especially good in case studies." "In the rest of the world, international marketing is industrial marketing in the U.S." "One problem American businessmen have is they see themselves as missionaries of the U.S. system." "Yes, there are other systems out there, but more and more it appears as if the U.S. system may be best."

Texts tend to be U.S. authored and oriented -- unbelievably culturally biased, i.e, buyer behavior in Kotler.

Check Fulbright Publication.

Cases, for instance.

Perception that native is best.

Table 2 - Apparent Needs that May Be Met by U.S. Faculty

Positive Factors	Negative Considerations
Better Teacher.	Expenses.
Better Courses.	Health Considerations.
Culture Appreciation.	Personal Life.
Research Improvement.	Experience Does Not Count.
Network Enlargement.	

Table 3 - Some Pluses and Minuses of International Experience

APPENDIX

APUBEF CONFERENCE AGNEDA				
Thursday, October 2, 1997				
12:00 P.M. to 1:00 P.M.		Registration		
1:00 P.M. Dr. Louise Burky, President APUBEF		Welcome		
1:00 P.M. to	2:00 P.M	Session 1		
Moc	lerator Dr. Willard Robinson, Indiana University of Pennsylvania			
 Dr. Varinder Sharma & Dr. Vincent Taiani, Indiana University of Pennsylvania "Revisiting Industrial Sales Force Roles in an Era of Long Term Relationships." 				
 Dr. Kevin J. Roth, Clarion University of Pennsylvania "Developing Shopping Personality Dimensions of Rural Intermarket Consumers: A Pilot Examination." 				
2:00 P.M. to	3:00 P.M	Session 2		
Moderator Dr. Ronald Tarullo, California University of Pennsylvania				
 Dr. Hung M. Chu & Dr. Russell Manuel, West Chester University of Pennsylvania "The Patterns of Strategic Decision Making of Filipino Entrepreneurs." 				
•	 Dr. Jonathan K. Kramer, Kutztown University of Pennsylvania "Random Walk in the U.K. Pound/U.S. Dollar Exchange Rates." 			
3:00 P.M. to	9 3:30 P.M	Coffee Break		
3:30 P.M. to	9 4:30 P.M	Session 3		
Mod	lerator Dr. Mahmood Omarzai, California University of Pennsylvania			
٠	Dr. Robert Obutelewicz, Bloomsburg University of Pennsylvania "Facts and Myths about Electric Utility Deregulation."			
 Dr. Phillip Kennedy, Slippery Rock University of Pennsylvania "The Value and Benefit of Continual Involvement in Internships by All Members of the Public Accounting Profession." 				
•	Dr. James A. Roger, University of Pittsburgh Johnstown "A Holistic Framework for Business Process Improvement."			

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4:30 P.M. to	5:30 P.M	Session 4
Mod	erator Dr. Robert Obutelewicz, Bloomsburg University of Pennsylvania	
•	Dr. Daniel Stewart & Dr. Karen Stewart, Richard Stockton Colleg "Ethical Actions in Business."	ge of New Jersey
•	Dr. Lee Ann Guenther, Dr. Murray Kirch, Dr. Andrew Kreuter, Dr Paul Palugod, Richard Stockton College of New Jersey "Business Faculty Perspectives on Quantitative Reasoning."	. Nora Palugod, & Dr.
٠	Dr. Nora Palugod & Dr. Paul Palugod, Richard Stockton College "Determinants of Japan's Investment in United States Manufactu	e of New Jersey
6:30 P.M.	Dinner	
8:30 P.M.	Executive Board Meeting	
Friday, Octo	ber 3, 1997	- -
8:00 A.M. to	8:30 A.M	Registration Coffee and Donuts
8:30 A.M. to	9:30 A.M	Session 1
Mod	erator Dr. Timothy Wilson, Clarion University of Pennsylvania	
٠	Dr. Wayne Davis, Indiana University of Pennsylvania "Precis on the Puzzle of Closed End Mutual Funds."	
٠	Dr. Minoo Choreishi & Ms. Azriella Jaffe, Millersville University o "A Study of Married Women Entrepreneurs."	f Pennsylvania
•	Dr. William McPherson, Indian University of Pennsylvania "An Analysis of Criteria Utilized for Evaluations of Student Oral F Communications."	Presentations in Business
9:30 A.M. to	10:30 A.M	Session 2
Mod	erator Dr. Louise Burky, Indiana University of Pennsylvani	
6	Prof. Fred Anderson, Indiana University of Pennsylvania "The Parable of 'Lost in the Woods'."	
٠	Dr. Carole Anderson, Clarion University of Pennsylvania & Dr. B Youngstown State University "Computers in the Classroom."	arbara L. Jones,

APUBEF	PR	DCEEDINGS (Fall 1997)	1.19
	•	Dr. Mohamed Albohali, Indiana University of Pennsylvania "An Easy Approach to Introducing Data Mining and Data Warel Introductory Quantitative Course for Business Majors."	housing Concepts Into an
10:30	A.M. 1	to 11:00 A.M	Business Meeting
	APU Dr.	IBEF Annual Fall Business Meeting Louise Burky, President	
11:00 A	A.M . 1	to 12:00 A.M	Session 3
	Мос	lerator Dr. Daniel Stewart, Richard Stockton College of New Jersey	
	•	Prof. Roger D. Hibbs, Doctoral Candidate, NOVA Southwestern University of Pennsylvania "The Relationship Between Cognitive Style and Back-out Behav	University, Kutztown ior."
	•	Dr. Dennis Ames, Indiana University of Pennsylvania "U.S. v. O'Hagan, A Major SEC Victory."	4
	•	Dr. Timmothy Wilson, Clarion University of Pennsylvania "Teaching in EuropeSweeden, Czech Republic, Malta, Australi	a."
12:30 F	Р.М.	to 2:30 P.M	Lunch
	•	Dean's Panel "The State of Management of SSHE."	
2:30 P	.M		Concluding Remarks

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