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Organization Optimization at Tampa Electric Company

by John Stepanek

Background

Tampa Electric is a provider of electric energy services to over one million people in central Florida. The company has about 2,900 employees and is involved in state-of-the-art technology for electrical generation. Taking a cue from the engineering side of the house, Tampa Electric's Productivity and Quality Improvement Department decided to apply state-of-the-art methods to the design of its organizational structures, and to the firm's most valuable asset. . . its people

In this regard, one of our more important design efforts, has been the work we did to optimize a significant new operating unit Tampa Electric opened in the fall of 1996. In this context, the Productivity and Quality Improvement Department worked with Professional Communications Inc. (PCI) of Ann Arbor, Michigan, a consulting firm specializing in organizational engineering. It was our view that PCI's theory, method and procedures-all of which were new-had developed to an extent that they could be successfully applied to the optimization of our new power station.

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The subject of this optimization was the Polk Power Station. This station is advancing state-of-the-art theories by employing coal gasification technology to electrical generation. After the plant was constructed and its support departments had been setup and staffed, 50 people were selected and trained to form the operating base of the station. Management had decided that, because the technology was new, and potential problems uncertain, a team based organization structure was most appropriate at the operating level. The immediate organization design question to be answered was ***how do we decide which people will work on which team, and why?***

Dr. Gary Salton, the CEO of PCI agreed to assist us in the design stages of Polk's start-up. Through this collaboration we developed a methodology which allowed Tampa Electric Company to rationally distribute employees in a way that optimized the structure of our new plant. Specifically, the methodology we developed offered us an ideal opportunity to "see" the results without the need to adjust for history or past practices. The process of optimization we used for this plant also allowed us to identify design "trade-offs" and to present them to management in a way that they could make rational decisions on their advisability. Presently, the results of this work are proceeding as predicted by the models we used, and we expect that the new organization technology developed will be extended to other facilities of Tampa Electric Company

The Optimization Principle

In any optimization strategy, the first question which must be answered is ***"what are we trying to optimize?"*** In Polk's case, the physical operation dictated that we have four operating teams to cover the 24 hours, 7 days a week that the plant must run. In addition, there had to be one relief team to cover potential absences from the operating teams, as well as activities like training, vacations and the like. In considering the structure given by the physical and operational parameters of the station, it was apparent that each of the operating teams would be "turning over" the plant to each other as one shift ended and the other commenced. In this circumstance, it was important that each team believe that the others would make the same kind of decisions as they would, had they been running that particular shift.

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It is important to note that this does not mean that every team would make the same decisions. Rather, each team needed to feel that the other had taken into account the right variables and had acted in a way that seemed responsible and reasonable. In other words, the possibility that the teams would come to view each other as competitors along the dimension of "doing things the right way" had to be minimized. The worst of all worlds would be to have one team setting up situations for another in which the first team could "prove" that their way was "better" than the second team's way. In this scenario, Tampa Electric would "lose" regardless of which team "won."

The relief team offered different optimization opportunities. This group had no "turf" to defend. Its design could be dictated by its prime function, quickly moving into and out of an area. A greater difference in both personal and team characteristics could be tolerated here since their responsibilities clearly signaled a different role.

We decided to construct our four operating teams in such a manner that they would tend to view each other as sharing the same basic decision preferences and tendencies. This strategy would optimize the 24 hour performance of the plant. The relief team, on the other hand, would be designed to be able to optimally move into or out of any of the four operating teams.

The Framework

As mentioned, Tampa Electric decided to work with PCI and Dr Salton. This meant we would use their DecideXâ instrument as our principal intervention tool. DecideXâ is a very short, easily administered survey which measures people's information processing characteristics. The framework within which these measurements were developed and applied is outlined in Dr. Salton's book, Organizational Engineering. We had access to this material, and tested his theories, concepts and instruments as they were being developed. Given our research, we were confident that DecideXâ could be successfully applied to the optimization of Polk teams.

Salton's concepts are built around the idea that the information available for, and relevant to, any decision far exceeds the capacity of the human mind. Therefore, everybody must develop a cognitive strategy which they can use to guide their ongoing decision making. The character and quantity of the information that they select determines the nature of their decisions as well as the kind of actions they use while executing that decision. The linkage between the input and output is provided by a characteristic processing pattern or strategic style. ***Since the output of one person is input to another, these styles dictate how well or poorly people will be able to***

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> ***The organizational engineering model is sensitive to the differences and consequences of the various patterns Salton has identified and seeks to create relationships which are supportive to the overall unit of which all are a part***
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use each other in synergistic team relationships.

For example, Salton identifies a **Reactive Stimulator** processing style, which is a pattern characterized by a focus on the principal aspects of the information available. A person using this style typically ignores detail. Since their information needs are low, the complexity of processing is minimized and speed of response is high. This kind of processing pattern is ideal in crisis situations where the speed of response is more valuable than the optimality of outcome.

A second processing style identified by Salton is the **Hypothetical Analyzer**. Here the individual takes into account as many variables as seem relevant. Interrelationships are considered so as to identify all potential outcomes and options. The desired output is a comprehensive plan which, if executed, has a high probability of success. This kind of proc-essing style is ideal if time is available (this kind of analysis is inherently slow) and if the certainty gained is worth the analytical investment.

These two styles are enough to illustrate how we applied Salton's information processing principals to Polk's organizational design. We recognized that if our organizational design were to place a Reactive Stimulator in a position as input to a Hypothetical Analyzer, tension between them could be reasonably expected. The Analyzer needs detailed information to use its preferred strategy. However, a Stimulator would not collect as much information, and consequently wouldn't provide it to the satisfaction of the Analyzer. In this situation there is a high probability that attribution processes will begin. The Analyzer is likely to judge the Stimulator as being "sloppy" or inattentive. The Stimulator is likely to judge the Analyzer to be "slow" and unconcerned with the time value of action. If these attributions occur, a downward spiral between the two can be reasonably expected. The organizational engineering model is sensitive to the differences and consequences of the various patterns Salton has identified seeks to create relationships which are supportive to the overall unit of which all are a part.

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> ***Salton's theory states that the degree to which people share a common pattern will be indicative of the likelihood that they will view each other's approach to decision making as "right".***
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The DecideXâ instru-ment is not a simplistic tool which attempts to classify people into one or another group. Rather, it looks at people as having a capacity in all of the information processing strategies. However, in probabilistic terms, it sees people as favoring one style or another. In other words, while I can respond with any of the strategic styles, I am more inclined to react using the Hypothetical Analyzer style than any other. When another person comes to know me, he or she will probably describe me as a pattern of behaviors best typified by that particular processing pattern.

Dr. Salton identifies four dominant styles- **Reactive Stimulator, Logical Processor, Hypothetical Analyzer and Relational Innovator**- and specifies the interaction compatibilities of each. In the foregoing example, using the Stimulator as input to the Analyzer was seen as problematic. The reverse, however, is not necessarily bad. The Stimulator could use the Analyzer's output as an effective guide to action. The Analyzer would have already considered and prioritized the information. Using this type of strategic thinking, human systems can be "designed" to optimally address any particular issue. Also, because each of us has some element of each style within our repertoire, joint probability can be used to assess the likely degree of integration between the people in any size of group.

Salton's theory states that the degree to which people share a common pattern will be indicative of the likelihood that they will view each other's approach to decision making as "right". If one person is highly dominant in the Analyzer style and another is mildly dominant, it is reasonable to judge that they will be able to find some degree common ground along this dimension. The size of this "common ground" would be given by the joint probability that each would choose the Analyzer style as the appropriate way to address a particular issue. The higher the joint probability, the higher the compatibility inherent in the relationship.

The short length of this article prevents a full explanation of all of the considerations which go into "engineering" an organization's optimization. The above, however, outlines some of the basic considerations. At Polk, we wanted to construct teams where the combined processing patterns of the individuals were targeted to achieve the task to which they were assigned. Secondly, we wanted the four shift teams to resemble each other in overall structure so that between-team compatibility would be high. And, finally, we wanted the within-team compatibility to be such that the members would be able to function together in a synergistic fashion.

Design Application

The first step in designing Polk's operational structure was to obtain a completed DecideXâ Survey from each member of the pool of operating personnel. This allowed us to identify the profiles of each of our people.

As expected, most members displayed a structured processing style. In other words, they tended to use logic and discipline in the conduct of their affairs. In an activity which provides an essential resource to the community like electrical energy, this is a highly desirable overall profile. On a global basis, we knew we had the right concentrations of individual styles with which

to work.

The completed surveys were then sent to Dr. Salton who used a computer program to balance groups. Dr. Salton was given direction on the particular skills needed on each team (e.g., electrician, machinist, instrument and control, etc.) and the size of each group. He then ran his computer program and consulted with us on the trade-offs which would be required to achieve the objectives we specified.

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The optimum we sought was not within a particular team; rather it was between teams. One of the first things which became obvious was that to optimize the station as a whole, we would have to sacrifice the optimality of any particular team. Had we wanted to optimize internal team cohesion, the best strategy would have been to group together people with similar processing patterns. They then would have "intuitively" understood each other and would have been able to coordinate their actions with minimal effort. However, by grouping like styles we would have made the teams themselves too distinct from each other. For example, one team might favor Hypothetical Analyzer while another might have chosen the disciplined action-orientation of the Logical Processor strategic style. Within the individual team, people would have felt good about each other, however, between-team tensions could be expected. We chose to trade-off some within-team compatibility in the interest of between-team cohesiveness.

It is important to realize that because the teams were similar in their information processing approach, they were not clones of each other. The people on each team brought with them individual skills, education, life experiences and a host of environmental exposures which allowed them to make differential contributions. What it did mean was that the groups tended to share a common judgement on the "right" way to approach an issue. This common method of judgement is highly compatible with the high level and kind of responsibilities each group will undertake at this critical facility. These are not the kinds of groups you might choose to staff an R&D function. They are the kind of groups you can entrust with the responsibility for providing constant, high quality electricity.

The decision to suboptimize within-group cohesion in pursuit of between-group compatibility also allowed us to make effective use of all of the talent available. While

the overall character of the human resource pool was toward "structure", there was a distribution of people who were relatively more inclined toward "spontaneous action", and still others who valued new ideas and creativity. People with these strengths were spread across the teams to insure that each team would have access to options which are typically generated by people with greater degrees of this orientation.

Given these instructions, Dr. Salton once again used his computer program to distribute people across the four teams so that the teams bore a high resemblance to each other in terms of their basic information processing tendencies. This was done so that each of the teams had access to all of the strategic styles but was dominantly structured toward one orientation.

However, the relief team was designed differently than the rest. While still remaining structured in overall orientation, it was designed to have a much higher level of spontaneous, action-oriented people and a greater amount of people inclined toward the generation of novel and unusual ideas. This was done because the relief groups would be moving in and out of other team's "turf" and needed the capacity to more rapidly adjust. The spontaneious qualities of the team in terms of action and ideas gave it greater capacity in this dimension. On balance, the team had less of a need for stability than the shift groups. The price of this capacity was that it had less of a capability for long-term, highly consistent performance. Nonetheless, since this team was designed to operate in a short-term relief capacity, this was a trade-off well worth making.

In summary, we were able to make specific, person-by-person recommendations for each team, tell management why each decision was made, and describe the implications of any changes which might be contemplated.

Structural Adjustments

Since we had designed the teams to be between-team compatible, we were left with teams which had an opportunity for improvement within-team coordination. To address this issue we asked Dr. Salton to run a TeamAnalysisä on each proposed grouping. TeamAnalysisä methodology is a detailed assessment of the structural characteristics of each team. Dr. Salton's results showed us that the internal compatibility of each group was well within the normal levels seen in other teams of comparable size, however, specific recommendations were made for the groups to consider in designing their own team processes. For example, groups characterized by relatively higher Hypothetical Analyzer tendencies were asked to consider adopting processes which caused them to "price out" the cost of analysis against the return they were likely to enjoy. Teams with relatively higher Logical Processor tendencies were advised to consider rules which required them to assess options before acting using the more "tried and true" methods they were likely to prefer.

It is not expected that the groups will adopt the specific recommendations as they were given. Rather, the teams are being encouraged to assess their internal vulnerability on the points raised, and asked to use the recommendations as a starting point for designing their own ground rules for internal processes. Using these tools, the teams are expected to get a head start on tuning their internal processes to a point of peak efficiency.

To address these recommendations and the natural internal cohesion which we sacrificed in pursuit of between-team compatibility, each person was given a copy of their seven page individual DecideXâ report and a copy of the 31-page TeamAnalysisä. Individual teams were then gathered together to discuss the information processing assets available.

Conclusion

Salton's information processing paradigm has the advantage of being non-invasive in terms of personal privacy, as well as being easily understood by all involved. It has a very high face validity which means that little time is wasted in trying to convince someone that they are properly described by the instrument. Finally, it showed us that each and every information processing style is valuable, and the only question we're left with is how the group is to make maximum use of the assets available.

To date, we have found that people readily share information on their strategic processing preferences. To the degree that they are different than other people, they readily understand that natural tensions may arise. When the process is over, however, people do understand that different styles are valuable to the group and deserve respect. It is unlikely that we will realize the level of natural group cohesion which might have been achieved if we had targeted that for optimization. We are confident, however, that the mutual respect and tolerance created by an understanding of why other people act as they do will give us more flexible teams and the ability to handle a broad range of issues present in today's workplace.

As a result of the success we enjoyed creating teams at the operating level, we are planning to extend our intervention to all of the human systems at the Polk Power Station. A specification of the results of this work is beyond the scope of this article. However, many of the same techniques will be applied to groups like Engineering, Warehouse, Laboratory, Administration and the Executive Team. The interrelationships of these groups and the operating teams will be assessed, taking into account the hierarchical relationships involved. The results of this additional analysis will surely reveal other structural issues which we will address. Using PCI's tools, we fully expect to be able to structurally optimize not only the operating teams but the entire Polk Power Station as an entity in and of itself.

References:

Salton, Gary J., Organizational Engineering, a New Method of Creating High Performance Human Structures, ISBN 0-9649369-3-3. Professional Communications Inc., Ann Arbor, MI, 277 pp., 1996.

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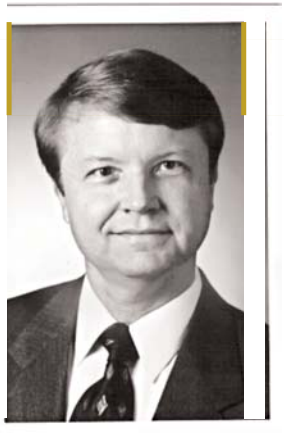

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John Stepanek has acted as an internal consultant and change agent at TECO Energy for the past 15 years. He has been a part of several start-up teams for green field self-directed team sties, as well as brown field conversions. He currently is facilitating the organization's reengineering efforts, large group change initiatives and experiential learning workshops. Mr. Stepanek has an MBA, a BA in Psychology, and has had leadership roles in AQP national conferences and the local chapter. He is also involved in an area school district's quality change initiatives.

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—From the Editor—

by Dave Nicoll, Ph.D.

In this issue . . .

. . . you'll enjoy the straightforward quality of John Stepanek's article, "Organization Engineering at Tampa Electric Co. . . He, I think, is sharing a new intervention that may have **"breakthrough"** capabilities, especially for those of us who are looking to help our clients optimize their productive potential.