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AN EXPERIENTIAL EXERCISE FOR LEARNING ABOUT THE RELATIONSHIP BETWEEN ORGANIZATIONAL FORM & THE PROJECT MANAGEMENT PROCESS

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ABSTRACT

This experiential exercise involves the participants in a dynamic project management environment which includes planning, communication, decision-making and interpersonal interaction. It will help them to recognize and acknowledge the organizational metamorphosis that should take place as a project proceeds through its cycle, as well as the three basic project tradeoff factor--schedule, resources and performance. The time required is about two hours, this can be divided into three 50-minute class sessions if desired

PART 1 THEORETICAL FRAMEWORK

Organizational Variables

The manner in which a firm is organized with respect to its structure, leadership style, and decision-making process influences How well it will fulfill its strategy and meet its objectives.[1] Effective organizations do not result from generally applied management principles, bit from principles appropriately matched to the specific conditions faced by the organization.

"The basic premise of the contingency model is that the management system must be compatible with the nature of the people, the nature of the task, arid the nature of the environment[2]". Thus, no one management system is best for every situation. If the tasks are routine and involve well-established technology, the people are theory X (work to eat), and the environment is stable arid predictable, then a more bureaucratic (mechanistic) model is appropriate. On the other hand, if the nature of the task is non-routine, creative, and complex and involves state-of-the-art technology, the environment is not stable arid is unpredictable, arid the people are theory I (eat th work) then the appropriate management philosophy should follow a more participative (organic) management model.

Table 1 lists some of the characteristic of the two extremes. Note particularly that when effectiveness is the focus, . a more organic-type organization is appropriate. On the other hand, when efficiency is the focus a more mechanistic-type organization is appropriate. However, neither extreme is good or bad in and of itself, and the vast majority of real life

TABLE 1

CONTINUUM OF POSSIBLE ORGANIZATION FORMS

	Mechanistic	Organic
Examples:	Auto Production Line Fast Food Service	Writing Music Advertising Research
Primary Resource	Facilities, tools, materials, procedures, rules	People who are creative and committed to organ-ization's goals
Focus	Efficiency- "Doing Things Right"	Effectiveness-"Doing the Right Thing"
People	Work to Eat-Theory X Low Skill Required from Workers	Eat to Work-Theory Y High Skill Required Workers
Strategy & Culture	Stable, Closed System, Hierarchy, Resists Change, Management by Detailed Direction, Communication as mostly instrucions & decisions Everything forbidden unless specifically permitted.	Innovation, Dynamic, Open System, Responds to Change, Management Objectives, Communica-tion as mostly informa-tion & advice. Everything permitted unless specifically forbidden.
Motivation	Extrinsic Rewards: Wages, Pension Plan, Status Symbols	Intrinsic Rewards: Satisfying Work, Self Control

Source: Management Forum, Vol 3 [illegible]

organizations will be between the two.

The Project Management Cycle

As we approach the 1990's the general trend is away from the traditional bureaucratic mechanistic functional type of organization, with its many layers of approval excessive inertia and lack of innovation; arid towards small flexible organic entrepreneurial oriented groups, which can provide timely innovative responses. These latter groups are usually organized on a project rather than on a functional basis and use some sort of ad hoc organizational arrangement to achieve a variety of objectives over a range of operational environments.

Project Management offers both opportunities and challenges because it usually requires processes and techniques, which are more advanced than those used in traditional management practice.

[1] MANAGEMENT FORUM, Vol. 3, (Chapter 1 by Dr. *T.* F. Gautschi Photogensis, Derry, NH (1989).

[2] COMPARATIVE MANAGEMENT: a Regional View by Raghu Nata. Ballinger Publishing co., Cambridge, MA (1988)

> Two major factors contribute to this situation: Project activities are often non-repetitive and unique to the situation at hand. They generally start out with a strong organic orientation characterized by flexibility, freedom to experiment, an emphasis on innovation and management by objectives. But as they approach completion, they move to a more mechanistic orientation characterized by resistance to change, experimentation and innovation, and management by detail direction. Projects culminate with an end product-be it documentation for a new product or some sort of report-that is very stable and specific in its detail. The change in orientation from organic to mechanistic requires that the people working on the product also change their orientation or to be replaced as the project proceeds.

Projects are time and resource constrained and focus on specific performance objectives, all three or which often require tradeoff decisions as the project proceeds towards competition. The tradeoff relationships are usually not quantifiable although their direction may be known. For example: to increase performance usually requires some increase in resources and time; and to decrease time usually requires an increase in resources and/or a decrease in performance. But exact numbers are not usually known.

PART 2: OBJECTIVES OF EXPERIENCE

This exercise involves planning, decision-making, and interpersonal interaction and is designed th help participants gain experience and insight regarding two of the main factors that make project management unique. Specifically it will cause them to:

1. Recognize and acknowledge the management system metamorphosis that should take place as a project proceeds through its implementation cycle from research, design and into production.
2. Consider the three basic project trade off factors - schedule, resources and performance.

This exercise has been used with success in a variety of management courses in both college and business environments. It is especially helpful for establishing a common frame of reference for succeeding discussions of project management theory and practice.

In addition to involving planning, communication, decisions-making and interpersonal interaction, this exercise enables the participants to experience being involved in a project management process which proceeds from being more organic to being more mechanistic with outside prompting. This change in perception may not be identified until the post-mortem phase. However it does become a part of the participant' s experience, and will influence thinking and organizational decisions in real world project situations, as verified in subsequent discussions with those that have participated in this exercise.

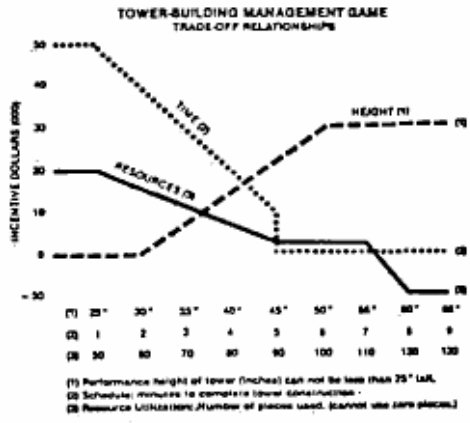
PART 3: PROCEDURES

This exercise should be initiated without any theory discussion. The participants should be assigned to project teams (four people per team seems to work best, but three to five people per team is ok.) The teams should be told that their objective is to earn incentive dollars by planning amid constructing a tower, which will support a small weight for at least 15 seconds.
Each team should be given an identical kit which includes a set of tower building resources,[3] a tape measure, a weight (I use an old flashlight battery), trade-off charts (see Fig. 1)[4] and a proposal sheet (see Fig. 2).

Teams should be told that they can accomplish their objective by organizing any way they wish as long as they submit their incentive dollar proposal (see Fig. 2) 45 minutes after the exercise is started *(T* + 45) and are prepared to start construction of their towers in parallel with the other teams 60 minutes after the exercise is started *(T* + 60).

The teams should be told that the trade off charts (fig. 1) (which are included in the kit) indicate the relationship between incentive dollars and each of these factors:
1. Performance (as measured by the height of the completed tower)
2. Performance (as measured by the number of pieces used to complete the tower)
3. Schedule (as measured by the time to construct the tower after *T* + 60.

Fig 1.



[3] I use "Rig-A--Jig" components (210 W. State St. Geneva, IL. 60134). However, other building resources (such as blocks) would be just as useful, as long as the contents of each KIT are the sane.

[4] These charts may have to be modified to be compatible with the tower building resources used.

Fig. 2

Team = _____

Objective: Design and construct a tower in such a way that your team will earn the most incentive dollars.

You may organize anyway you desire.

1. Pepare and submit your bid by (time) _____ (see trade off charts for Dimension vs. $ Value.)

ACTUAL $_____ (-)
BID $_____ = ▲

Incentive
$ Earned =_____

If ▲ = minus, firm receives zero.
If ▲ = 0 or plus, firm receives bid + ▲/2

2. Final construction will be done concurrently, and it will begin at (time)_____.

	BID		ACTUAL	
DIMENSIONS		$		$
Height (inches)	____in.		_____in.	
Pieces (number)	_____ #		_____ #	
Time to construct (minutes)	_____min.		_____min.	
TOTALS	_____	$	_____	$

AGENDA

T - 10 minutes: Describe the exercise and hand out the kits.

T = 0 minutes: Teams start planning, conduct experiments, make trade-off analysis, etc.

T + 45 minutes: Teams hand in proposals (see fig. 2).

T + 55 minutes: Teams prepare to start the construction phase. All building resources must be disassembled.

T + 60 minutes to T + 70 minutes: All teams concurrently construct their towers. Instructor calls out the time from T + 60 in 15 second intervals.

T + 70 minutes: Teams determine "actual" incentive dollars using actual time required to construct the tower the number of pieces used and the tower height achieved.

T + 75 minutes: Each team, in turn transports its tower to the site designated by the instructor. Where they will "prove" that their towers will support the "weight" and stand for at least 15 seconds.

T + 85 minutes: Post-mortem. Each team, in turn, discusses its results and its group process.

After the tower building and post-mortem are completed the instructor should review the theory discussed in Part I and help the participants relate to, and understand, the changes should take place as a project moves from research to production.

The duration of the post-mortem phase and theory discussion will vary discussion upon the goals of the instructor and the participants.

Time Duration

Ideally this exercise should conducted in a two hour period-including the team activity and the post-mortem. However, it can be divided into parts for use in the typical 50 minute class session. Part I should go through the design phase (P + 55 minutes), Part 2 should cover the construction and post-mortem phase, and depending upon the situation a third part could be used for reviewing underlying theory, its application, and subsequent discussion.

VARIATIONS

1.Transfer one person from each team to another team sometime prior to P + 55 minutes.
2. Prior to *T* + 55 minutes change the tower building site from horizontal to an angle of 10 to 15 (this can be easily done by placing books or blocks under the table legs).
3. Designate an observer for each team to record and to report what took place during the exercise.

PART 4: POST-MORTEM DISCUSSION

1. Record the results on the blackboard by summarizing the "actuals' as recorded by each team on their figure 1 form.
2. The winner is the team with the most total incentive dollars.
3. Ask someone from each team (or the observer) to describe: (1) what different classes the project went through, (2) how the team was organized, (3) their decision process (especially as it related to the trade-off charts), (4) the team's culture, (5) how the team handled their loss of a key person and his/her replacement, and (6)hoe the team handled the change in building surface. Be sure to check with all of the team member's to verify their description given.
4. After all the teams have reported, the instructor should summarize the similarities and the differences of the various team's operations. The following are typical results:
    1. Most teams will be informally organized without being without a designated leader, at least in the beginning.
    2. The various team members will usually agree on a common goal and try to contribute what they as the projects proceeds.

3. Team members easily accept changing roles (moving from organic to mechanistic) as the project proceeds from experimentation, through analysts, design and construction. During experimentation and some design the organization is usually organic with little structure, lots of ideas, and several activities going on in parallel .During the construction each person takes a very structured role as everyone works together to construct the tower to the agreed upon design.
4. Everyone usually wants their team to "win", and there is lots of enthusiasm and some tension when the team transport their towers for the final test-and a letdown when they fail.

5. Some teams do not make rational trade-off decisions because they concentrate on making the "tallest tower",, and on earning the most incentive dollars. Actually, "time to build" is the key variable.
6. Few teams think about their process. Most devote their attention to the techniques of tower building

At this point the instructor may wish th review the underlying theory (see Part I), aid follow with the question, what are the in locations of the tower building activity for real world projects?

Possible responses:

1. As the project progresses from research to production, the basic nature of the operation should gradually change from being more organic to being more mechanistic
   - A. This should result in team in members either changing, or being replaced.
   - B. This explains why sate people (the organic types) are more highly motivated in the project's early stages, ard others (the mechanistic types) are more highly innovated in the project's later stages.
   - C. The project structure arid its control system should be made more mechanistic (less organic) as the project process.
   - D. This explains some of the communication problems-some people think in more organic team (engineers) arid others in more organic terms (e.g.).
   - E. In a sense, a project is like a funnel. It starts out broad, with lots of inputs; but to progress, it must narrow down to one specific output.
   - F. Very little, if any, supervision or control, is required when everyone understands and agrees to a common goal, ard is willing to work together to accomplish it.
   - G. It certainly helps when everyone on the project knows what is going on, ard is involved in the planning and it's execution.

PART 5: SUPPLEMENTAL READING

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