

THE IMPLEMENTATION OF STRATEGY IN AN INNOVATIVE INFORMATION SERVICE ORGANIZATION: AN EMPIRICAL COMPARISON OF THEORETICAL FRAMEWORKS

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ABSTRACT

How do organizations charged with delivery of information formulate and implement strategy? Two widely discussed strategic decision models – incremental and rational – are examined through a case sequence analyses study of an innovative, interdisciplinary information organization to find if the data derived empirically supports either theory described in a case study. Implications for both theory and practice are presented.

INTRODUCTION

In the study of literature covering innovations, one frequently encounters descriptive studies of organizations and the processes that either facilitate or hinder the innovative capacity of the organization. One organizational process of particular importance concerns the decision processes that are inherent in the formulation of strategies of organizations pursuing innovations.

Innovative organizations are believed to exist within fairly turbulent environments [3]. The "high velocity" environments described by Bourgeois and Eisenhardt [5] and Eisenhardt [12] are a good example of such turbulence and are characterized by rapid and discontinuous changes in competition, rapid changes and developments in technology, or stringent regulations which result in organizations being confronted with high uncertainty and incomplete or obsolete information. It seems reasonable to posit that most (if not all) innovative organizations find themselves in high velocity environments as a result of the dynamic nature and high levels of uncertainty associated with their respective innovations. The constant threat of information and technological obsolescence, the rapid changes in information technologies, and the high degree of uncertainty, certainly

paint a picture of a high-velocity environment. For example, information service organizations (ISOs), like information service providers that are charged with providing information through the use of leading-edge information technologies, must be innovative as they struggle to exist within a high velocity environment.

Given the existence of innovative ISO's existing within high velocity IS environments, an interesting question concerns the decision processes of these organizations. In particular, how do innovative ISO's formulate strategies or plan for their innovations? Given this question, two models from the strategic management literature—an incremental model and a rational model—are enlisted in an attempt of finding the degree to which the data describing the early stages of strategic planning of the Integrated Information Center (IIC), an innovative ISO, supports either theory. Moreover, which of these two models provides the best results in planning for IS. Successful planning of IS involves defining the future information, application, and computing requirements of the organization [21, 22, 43]. Thus, the objective of this paper is to determine if these two theoretical models are applicable approaches to successful strategic IS planning for an innovative organization in a high velocity environment.

The IIC was the focus of a project that investigated the feasibility of developing a leading edge ISO to promote innovative research and educational practices of university faculty as well as to support both the administrative and public needs of the university. The IIC was a coordinated effort between multiple disciplines and organizations: the library system at the university, the traditional academic computing organizations on campus, and the clients to be served—in this case, the faculty and students of both the university's business school and school of public affairs.

An underlying premise of this paper is that the IIC resides in a high velocity environment. Some practitioners may not consider the academic environment to be a high velocity environment. However, an organization that operates in an environment with time constraints and a limited budget while attempting to plan and implement an information service to a diversified group of customers with a product (i.e., information technology) that will not be obsolete within months, does share similar attributes to other organizations which operate in high velocity environments.

The "data" which describe the development of the IIC consists of a year's worth of transcribed planning meeting minutes as well as one-on-one interviews with key individuals involved with the project. These data provide insight into the expectations these individuals had in relation to their vision of the IIC, as well as how they planned on implementing the IIC within an autonomous academic environment.

This research is significant for several reasons. First, the IIC presents a unique opportunity for potentially rich, longitudinal research — the initial development, the follow-on re-shaping, and ultimate implementation of an information management strategy. Second, if the incremental model explains the observed phenomena rather than the more traditional rational model, certain changes in the usual strategic planning approaches may prove to be beneficial to innovative organizations like ISO's.

This paper is structured with the first section providing a brief review of the two different strategy formulation models. The second section provides background information of the IIC. Next, the research methodology is presented, followed by a discussion of results and conclusions.

TWO MODELS OF STRATEGY FORMULATION

The Incremental Model

The concept of incrementalism, as it pertains to the development and implementation of organizational strategy, has been investigated widely in the strategic management literature [4, 6, 10, 15, 26, 27, 32, 36, 37, 38, 39], as well as

the innovation literature [14]. Briefly, the notion of incrementalism posits that the development and subsequent implementation of strategy occurs as a result of small changes to pre-existing strategy. Should these small changes result in positive outcomes, the incremental changes are retained and additional incremental steps are taken from that point. If the outcomes are negative, the incremental change is abandoned for other alternative incremental changes.

Incrementalism takes many forms. On one end of the continuum, an incremental strategy may appear to lack direction or an appreciation for the broader context in which the incremental changes are made. Lindblom [26] refers to these seemingly random incremental steps as "muddling through". At the other end of the continuum, incremental strategy can be purposeful and proactively placed within a cohesive framework of organizational goals. This approach has been termed, "logical incrementalism" by Quinn [36, 37, 38, 39]. The following discussion explores the rationale behind Quinn's notion of logical incrementalism in more detail.

Planning. One of the major characteristics of logical incrementalism is a planning process that lacks rigid directives. Effective plans are allowed to evolve in response to organizational culture, changing environments, political forces, and the acquisition of new information. As a result, the probability increases that better decisions will result from the additional learning afforded by the incremental planning process.

Goals. Strategic goals under logical incrementalism are typically broad, intentionally vague, and viewed as tentative. These characteristics provide flexibility since broad and vague goals allow for multiple interpretations, while their tentative nature allows for changes to be made in response to dynamic organizational environments. Moreover, specific goals offer clear targets on which opposing political factions can focus; vague goals minimize the potential for opposition. Finally, vague goals increase the potential for consensus and the cohesiveness afforded by such consensus.

Responding to Resistance. Incremental strategy changes allow organizations to ease into strategies that may otherwise face a resistant audience. Small changes may be viewed as inconsequential by potential resistors or they may give resistors additional time to become comfortable with a given strategy.

Sub-Strategies. In organizations it is common for divisions, departments, or other sub-groups to develop their own strategies that ultimately are presented to the larger organization for adoption. In these cases, the incremental model maintains that the organization will treat these sub-strategies as "proposals" for consideration for consolidation into the overall strategy.

Precipitous Events. A key point of the incremental model lies in the proactive nature of incremental strategy development and implementation. In response to crises or other precipitous "opportunities," strategies can be quickly refined through the implementation of incremental changes.

Interestingly, there has been a variety of research in relating the incremental approach to the field of IS [e.g., 8, 11, 33, 40]. However, there has been considerable more IS research using the rational decision making model.

Rational Approaches

Rational decision making is a time-honored model for explaining not only *how* strategies are developed and implemented, but also how they *ought* to be developed [2]. Eisenhardt [12] suggests that better performing organizations consider a more comprehensive set of "real time" information (i.e., rational decision making) when formulating strategy and making decisions than their poorer performing counterparts which tend to rely more heavily on modeling and forecasting. Van de Ven [44] presents the "Program Planning Model" as a rational planning process and discusses the positive benefits reported by organizations that adopted such a process. Moreover, the rational planning model finds its root in classical economic theory in the form of the rational actor. In addition, this planning technique is employed by organizations that operate in environments that are characterized as being highly heterogeneous with many elements and are fairly stable [40].

Most of the strategy and planning literature within the field of IS has its roots in rational decision-making [17, 20, 24, 28, 29]. In this literature, organizations generally follow a phased, top-down approach in formulating strategy or implementing new technologies. The following discussion describes the components of rational planning within an IS context.

Planning. Planning activities in rational organizations typically follow a set methodology for how the plan or strategy is developed, changed over time, and ultimately implemented. The Program Planning Model mentioned above [44], describes a five-phased approach to planning which includes decisions on who should participate, needs exploration, alternative generation, program design, implementation, and follow-on evaluation. Ackoff [1] discusses a planning design driven by feasible goals, the generation of alternative courses of action, resource requirements and allocation, and ends with implementation, evaluation, and plan improvements. McFarlan, et al. [29] describe a phased process in which IS organizations first decide to initiate a project, then proceeds to methodically experiment with the new technology,

control the introduction of the technology, and finally transfer the technology to the rest of the organization. In similar fashion, IBM's Business Systems Planning (BSP) methodology represents a top-down planning process which develops an IS strategy from the mission, goals, and objectives outlined in the overall business strategy [17].

Goals. Within rational models, goals are made explicit, e.g., through mission statements, corporate visions, etc., and serve as the foundation for follow-on planning. King [19] describes a methodical process using the corporate mission and goals (the organizational "strategy set") as the basis on which to link IS system goals and design strategies (the IS "strategy set").

Responses to Resistance, Sub-Strategies, and Precipitous Events. Unlike the theory of logical incrementalism which specifically addresses the issues of resistance, sub-strategies, and other exogenous effects, much of the rational planning literature addresses resistance within the context of managing change. In this literature, change and resistance to change are managed in a rational manner. As Jick [18] discusses, the literature considers the management of change as, "a step-by-step process leading to success," or "a brisk march along a well-marked path" (p. 2). Perhaps because of the ever-changing nature of information technology, IS researchers have spent time considering resistance to change [29]. In most IS rational planning models, the response to resistance is for management to take more control and to call for more careful planning.

These two different planning models provide a basis for a better understanding of how an organization can best assess the needs of their stakeholders and then be able to find the appropriate technological needs to satisfy those needs. The process of forming the IIC demonstrates this process.

BACKGROUND OF THE IIC

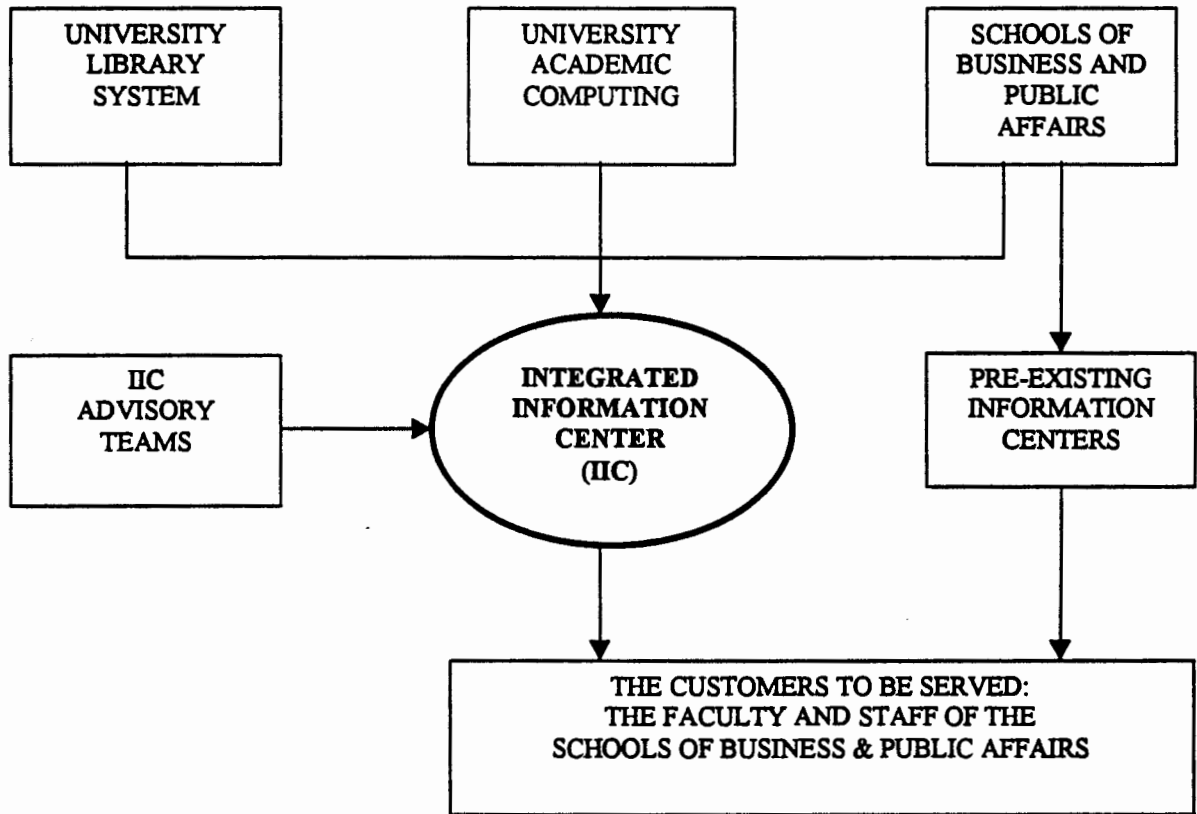
The information needs of university faculty and students have historically been met by two distinct information providers: 1) academic computing organizations, responsible for the housing and dissemination of administrative data and information; and 2) university library organizations, responsible for the housing, management, and cataloguing of scholarly texts, journals, and other academic documents. With the growth in end-user computing, along with the increasing amount of computer-based data (e.g., bibliographic and current awareness databases, the Internet, etc.), many of the consumer information needs can now be satisfied at their desk top. This trend, along with the increased potential for independence from traditional information providers, and

the changing role of university libraries as information providers, served as the impetus for the IIC concept.

Figure 1 graphically portrays the organizational structure of the IIC. By design, the IIC was to be staffed by

personnel from the university libraries, the business school, and the school for public affairs, with the traditional university computing providing consultative support when necessary.

Figure 1



In addition to the IIC staff, the IIC project consisted of several additional faculty and staff members which were organized into advisory teams. The "Planning and Implementation Team" (the PI Team) and the "Management Team" were responsible for determining the initial direction of the IIC prior to the appointment of the IIC staff. An executive-level "Advisory Team" monitored progress and was charged with evaluating the IIC as an information delivery vehicle for the university.

One issue that increased the complexity of the design and implementation of the IIC was the potential for competition for customers between the IIC and the existing information centers supporting the business school and the school for public affairs (refer to Figure 1). It is important to note that the managers of both information centers were members of the IIC advisory teams and as such, were fully aware of the potential for competing services. As will be evident in the data analysis section of the paper, one of the most pressing issues faced by the three information center organizations concerns the determination of boundaries of the organizations as well as delineating the support services to be offered by each group. As in any organization, the customer being competed for represents a scarce resource that could potentially motivate political behavior in the form of "turf battles", which would play a large part in the in the strategy development process [25, 34].

METHODOLOGY

A "multi-method" approach was chosen for this research to minimize the exclusion of potentially important data. Idiographic case research methods were employed [12, 20, 42, 49] to gather and consider the rich nature of data. Other IS researchers [11, 40] have examined the planning relationship, but few have taken a qualitative approach [8, 33], while none have utilized sequence analyses. Sequence analyses [45, 46, 47, 48] was chosen for its ability to provide quantitative rigor, to consider the richness of textual data, and to document longitudinal phenomena.

Following the guidelines outlined by Mason, McKenney, and Copeland [30] for conducting historical MIS case research, the methodology employed in this research begins with a researchable question or cluster of questions. In this case, with the IIC as the unit of analysis and logical incrementalism and rational planning as potentially useful "lenses" to provide clarity of observed phenomena, the following questions may be posed:

Q1: To what degree do incremental planning models explain the activities observed within innovative organizations like the IIC?

Q2: To what degree do rational planning models explain the planning activities observed within innovative organizations like the IIC?

and more generally:

Q3: Why does IS planning in innovative organizations, as analyzed in the IIC project, proceed the way it does?

A key question pertains to whether the strategic planning associated with innovative organizations more closely resembles incrementalism or rational planning. The two models are presented as two poles on a continuum of planned rationality. The rational planning model is decidedly and visibly rational and methodical in its approach, whereas the model of logical incrementalism based upon Quinn's work [36, 37, 38, 39], although rational and purposeful, is much subtler and much less methodical in its approach. Furthermore, by using two models rather than one, it is hoped that the objectivity of the analysis of the IIC planning process can be enhanced by reducing the potential for confirmation bias that would exist if only one model were used. If one model offers significantly more explanatory power than the other model, perhaps implications exist for better understanding the strategic IS planning process specifically, or strategic planning for innovations in general.

Quinn [39] suggests for a researcher to determine an organization's strategy that one must observe patterns, policies, and programs over time. It seems reasonable to assume that a longitudinal perspective will also enhance the probability of observing rational planning behavior. Through sequence analyses, this research will be concerned primarily with an attempt to observe strategic planning and implementation longitudinally.

The research analyses spanned meetings and interviews held over a twelve-month period. The meetings and interviews generated 900 pages of transcript data. The twelve months included the first meetings of the PI Team and concluded with the staffing of the IIC. This time frame was chosen for several reasons. First, it was initially felt that the vast majority of strategic planning would most likely occur at the front end of the project and would thus increase the probability of observing evidence of either model. Second, the interviews, which included discussions of what several key subjects envisioned for the IIC, occurred during this time frame. Finally, it was believed that the period of analysis should be defined by key events. In this case, the period began with the first PI Team meeting and concluded with the hiring of the manager of the IIC.

Sequence Analysis

Observable Model Characteristics. Prior to starting the sequence analysis of the meeting and interview transcripts, it was necessary to define what characteristics of logical incrementalism and rational planning might be observable. Since there were myriad characteristics embodied within either model, an effort was made to delineate the possible characteristics down to a manageable number. Table 1 provides a tabular summary of potentially observable phenomena that would exist in the presence of either paradigm.

Table 1

| Potentially Observable Phenomena | Characteristics of Logical Incrementalism | Characteristics of Rational Planning |
|----------------------------------|---|--|
| Planning | Flexible Plans | Systematic Methods |
| Goals | Broad & Vague | Explicit, Written e.g., Mission Statements |
| Response to Resistance | Incremental Change | Increased Management Control |
| Sub-Strategies | Treated as Proposals | Increased Management Control |
| Precipitous Events | Proactive Conclusions | Increased Management Control |

Equipped with the characteristics of each paradigm outlined in Table 1, a sequence analysis was initially performed on the meeting and interview transcripts by one researcher. Following the first pass through the transcript data, the results were shared with the IIC research subjects studied in the transcripts. For the most part, the subjects were satisfied that the results captured the historical events accurately. Any points of contention were discussed and corrections in interpretation were incorporated into the results as appropriate.

To increase reliability in the findings, a second sequence analysis was conducted with the addition of another researcher. Prior to the second sequence analysis, the two researchers met three times. First, the observable behaviors in Table 1 were presented and discussed in order to ensure agreement as to what constituted and identifiable event. Following this discussion, a random section of transcript data was selected for each researcher to analyze. A second meeting was held to determine the degree of interrater agreement (found to be 55%), and to discuss the points of contention. Interrater agreement was

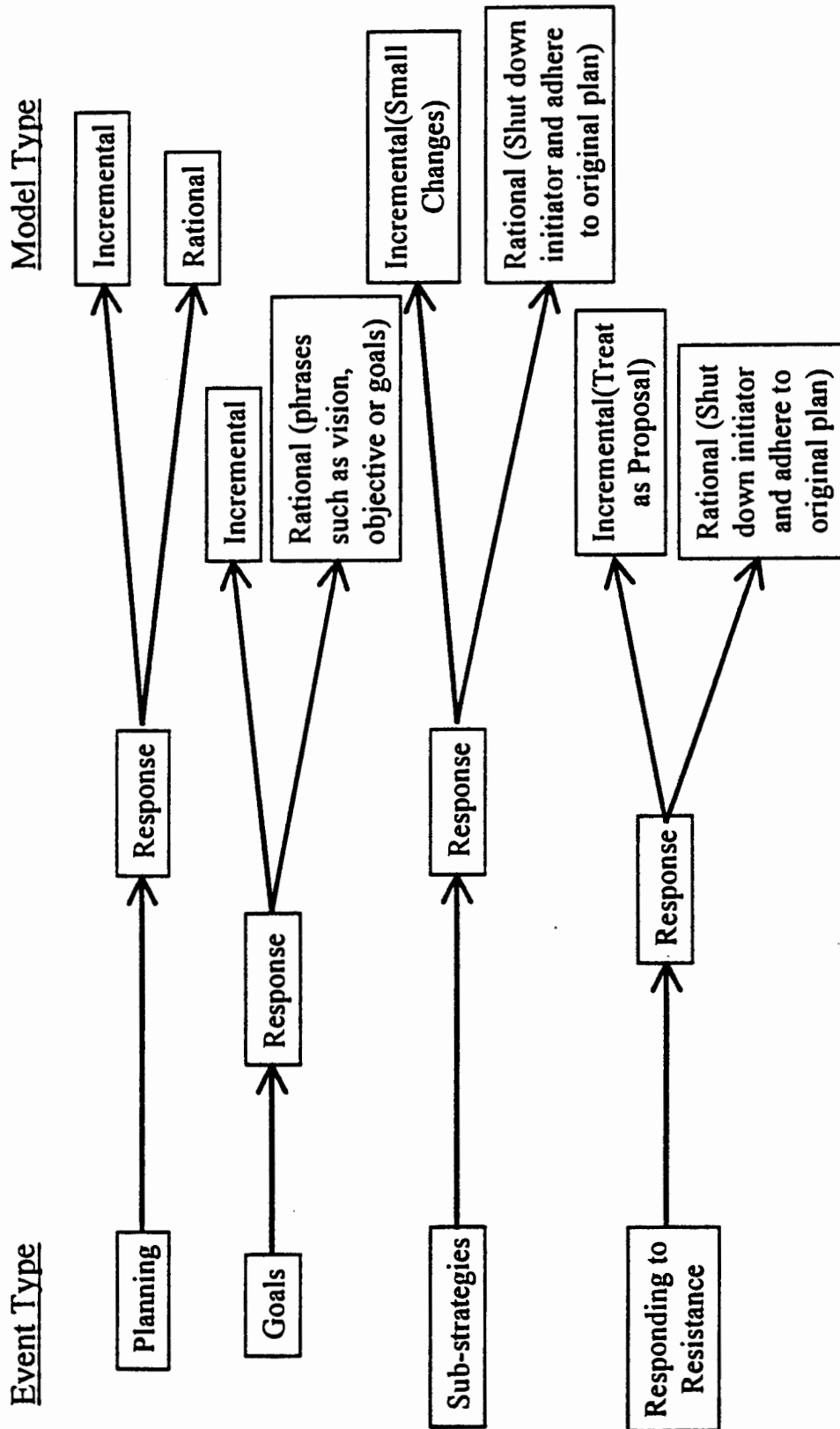
defined as the percentage of events in which one researcher identically classified an event relative to the other researcher. A second random section of transcript data was then selected for sequence analysis. The third meeting was held to discuss interrater agreement (found to be 85%) and to discuss any points of contention. Given the high level of interrater agreement, the researchers decided that the formal analyses could begin.

The final results from the sequence analyses represent a consensus database of events. Figure 2 identifies how the different events were classified as either incremental or rational based upon the different event types and responses to those event types. Thus, the researchers had to make two decisions in the sequence analysis. First, the researcher had to categorize the event type according to the four categories alluded to earlier in the paper. Secondly, the researcher had to classify the response to the event type as either being incremental or rational. Each researcher agreed on event classification. This consensus approach in collecting organizational events has been used with success in past research on innovations [e.g., 45, 46, 47, 48].

Reliability, Validity, and Limitations. The research presented here, as with most streams of research, is not free of shortcomings. From some perspectives, one weakness may be the case study/sequence analysis design. While it is true that the research presented here offers no statistical validity, the primary motivation of the study was to conduct exploratory research—to get a feel for what might be occurring. Under these circumstances, the sequence analysis of a single case serves as an effective vehicle for exploring the rich context presented in this study. Both Yin [49] and Lee [23] would maintain that a case study of this type represents a "single experiment" testing for the existence of a certain behaviors. It has the replicatability and generalizability of any other instance of experimentation.

An effort was made to delineate the characteristic behaviors that one might see (refer to Table 1) if the behaviors were consistent with either model. The development of these observable behaviors was constructed prior to the analysis of data. As Lee [23] points out, by presenting multiple theories [or in this case models] on equal footing, and looking for the match between observed behaviors and the a priori predictions, researchers are in a position to make fairly sound deductions. In order to improve the reliability of the sequence analyses, the transcripts were analyzed separately by two researchers. In order to improve the face validity of the analyses, the events were shared with the research subjects in order to confirm interpretations and record their reactions.

FIGURE 2
Classification Rules



RESULTS

Overall, 248 identifiable events were recorded. 173 events were identified in meeting transcripts and 75 events were identified in the transcripts of the one-on-one interviews. The following sections highlight the frequency of each category of event as well as how strongly each model was supported. However, the precipitous events category is excluded from the Results and Discussion sections due to the relatively small sample size (n = 4). Excerpts from the transcripts have been included as exemplars of identifiable events and also to give the reader a sense of the transcript data. In areas that need clarification, notes in square brackets have been added. Underlined text denotes evidence that the authors wish to emphasize.

Planning

The frequency distribution for planning events is as follows:

| Planning Events | Incremental Model | Rational Model |
|-----------------------|-------------------|----------------|
| # Events in Meetings | 36 | 7 |
| #Events in Interviews | 13 | 0 |
| Total # of Events | 49 | 7 |

Planning events support the incremental model much more strongly than the rational model over time as illustrated in Figure 3. Aside from the broad timetable established for the development of the IIC found in the original project proposal, there is very little evidence that the PI Team was being driven by a rigid, well-structured plan. Evidence does exist that shows attempts by the PI Team leader to use the proposal as a plan, but this is countered by evidence which showed that few people were adhering to this plan as a guiding document. The following quote captures these two perspectives:

"It seems like every other week I remind the group that the first priority for the first six months of operation is that the (IIC) manager and the staff undertake a needs assessment survey of the client group. It's in the proposal folks."

Further evidence supporting a lack of rigid planning could be seen in the majority of discussions held during the first four months of PI Team meetings. The topic of these discussions centered on defining the IIC services to be

offered to clients. In almost all of these discussions, an interesting tension developed. First, the description of services was discussed in broad, generic terms, with the original proposal providing guidance:

"...[services defined] in the original proposal? Intelligence gathering, searching for information, acquiring information, managing information, manipulating information, disseminating information. I think those were the broad categories."

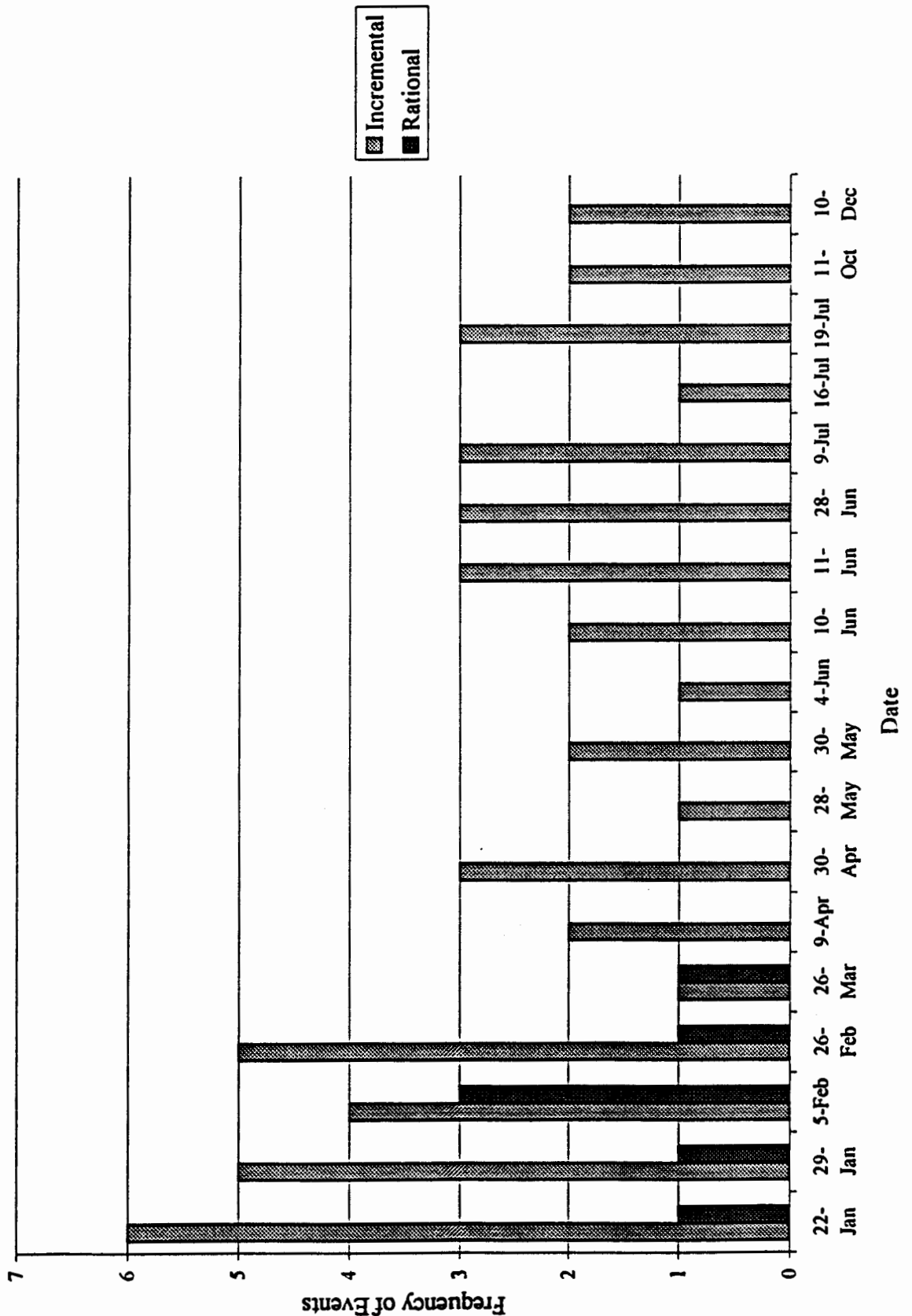
At the same time, there were several attempts by the leader of the PI Team to try to make the definition of these services categories more specific. As soon as these attempts to better specify services were made, the intensity of the debate increased which caused the level of discussion to retreat to a more generic level. This could be seen in the following excerpt:

"We need to be proactive. We want consulting service, we want referral service, and that's fine. But what this group resists is becoming specific. And maybe—I don't know—you resist it because you feel that's a mistake at this early stage..."

The lack of purposeful planning, as well as having a plan stated in vague terms is consistent with logical incrementalism, which would dictate that the definitions of services would be kept broad for at least two reasons. First, the ultimate services desired by clients were initially unknown. By keeping discussions at a broad and generic level, the PI Team in essence "buys time", hopefully allowing the group to acquire additional information which may provide clarity as to the services desired by clients. Second, specific plans (in the form of specific services to be offered) would allow resistive members of the group to focus their resistance on specific targets. By forcing a rigid plan prematurely, or defining specific services, the IIC would risk defining services that overlapped existing information center services thus setting the stage for "turf battles". Although there were members from each information center on the PI Team, most of the members seemed to display a non-confrontational approach in their conduct and seemed to purposely avoid such specificity and the potential resistance it might have engendered.

The attempts by the PI Team leader to suggest that the group become more specific were consistent with the rational planning model. However, since these attempts

FIGURE 3
Planning



were not very forceful, the evidence supporting the incremental model seemed to overshadow the rational model. Apparently the PI Team leader was sensitive to the needs of the group to become comfortable with the role of the IIC and to the fact that he had little formal authority over the other PI Team members.

Goals

The frequency distribution of goal-related events is as follows:

| Goal-Related Events | Incremental Model | Rational Model |
|------------------------|-------------------|----------------|
| # Events in Meetings | 22 | 9 |
| # Events in Interviews | 18 | 35 |
| Total # of Events | 40 | 44 |

The distribution of goal-related events presents an interesting picture. In those cases where key subjects were interviewed in a one-on-one environment, the majority of the references to goals were in specific terms thus supporting the rational model. However, in meeting situations, participants were much more likely to refer to goals in incremental terms. The frequency of goal-related events were evenly distributed between meetings and interviews. Moreover, Figure 4 demonstrates the cumulative total of goal-related events for the incremental and rational planning models from both the meetings and the interviews.

In the interviews, goals following the rational model tended to look like the following:

"The first year laid out a specific plan that in effect we could consider to be somewhat of a contract with the USDE (US Department of Education). This is what they were finding to see if we could implement and pull it off. . . So right now my sense is that given the spirit, and the content of the proposal for year one, we should try our best to implement that . . ."

However, in the meetings, goals-related discussions possessed a low degree of definition. For example, when discussing what would need to happen for the IIC to be viewed as a success, the person who eventually was named as the manager of the IIC remarked:

"...the faculty need to be sort of elevated in their information systems capabilities. That they have access to information they didn't have before. In broad terms, they do better research. They do more

efficient research. That is really a broad level."

One cannot determine if one model is more supported than another in terms of goals. What can be said is that it appears the level of specificity in goal definition is purposeful on the part of the IIC participants depending on the situation they found themselves in. Since the academic environment provides for a high degree of autonomy for most of its members, attempts to push specific goals or specific plans on project participants may be met with a higher degree of resistance than that found in other environments. Thus, as far as how goals are referred to in high velocity environments, the answer is "it depends."

Responses to Resistance

The frequency distribution for responses to resistance is as follows:

| Responses to Resistance | Incremental Model | Rational Model |
|-------------------------|-------------------|----------------|
| # Events in Meetings | 12 | 5 |
| #Events in Interviews | 7 | 3 |
| Total # of Events | 19 | 8 |

In both types of meetings (i.e., group and one-on-one), the incremental model was supported by a margin of over two-to-one as summarized in Figure 5. The incremental model posits that incremental steps will be taken to minimize resistance. If one believes that the plans and goals for the IIC were kept purposely broad as a means to reduce the potential for resistance, the excerpts from the transcripts previously discussed would be consistent with the incremental model.

In addition to these excerpts, other evidence of incremental responses to resistance was observed. For instance, with regards to the numerous discussions on IIC boundaries and services that took place over the first five months of PI Team meetings, the head of the PI Team had this to say:

"...the boundary issue...I keep coming back to it, it's the key issue, the organizational issue...I don't know if it has to be resolved completely for the IIC to be successful. But certainly the tension will be there over the boundaries and the division of the responsibilities ...I think it's important now to try to develop some services, to actually offer--do something concrete, and offer some services, and then begin to see how that works, and what are the issues around offering those services."

FIGURE 4
Goals

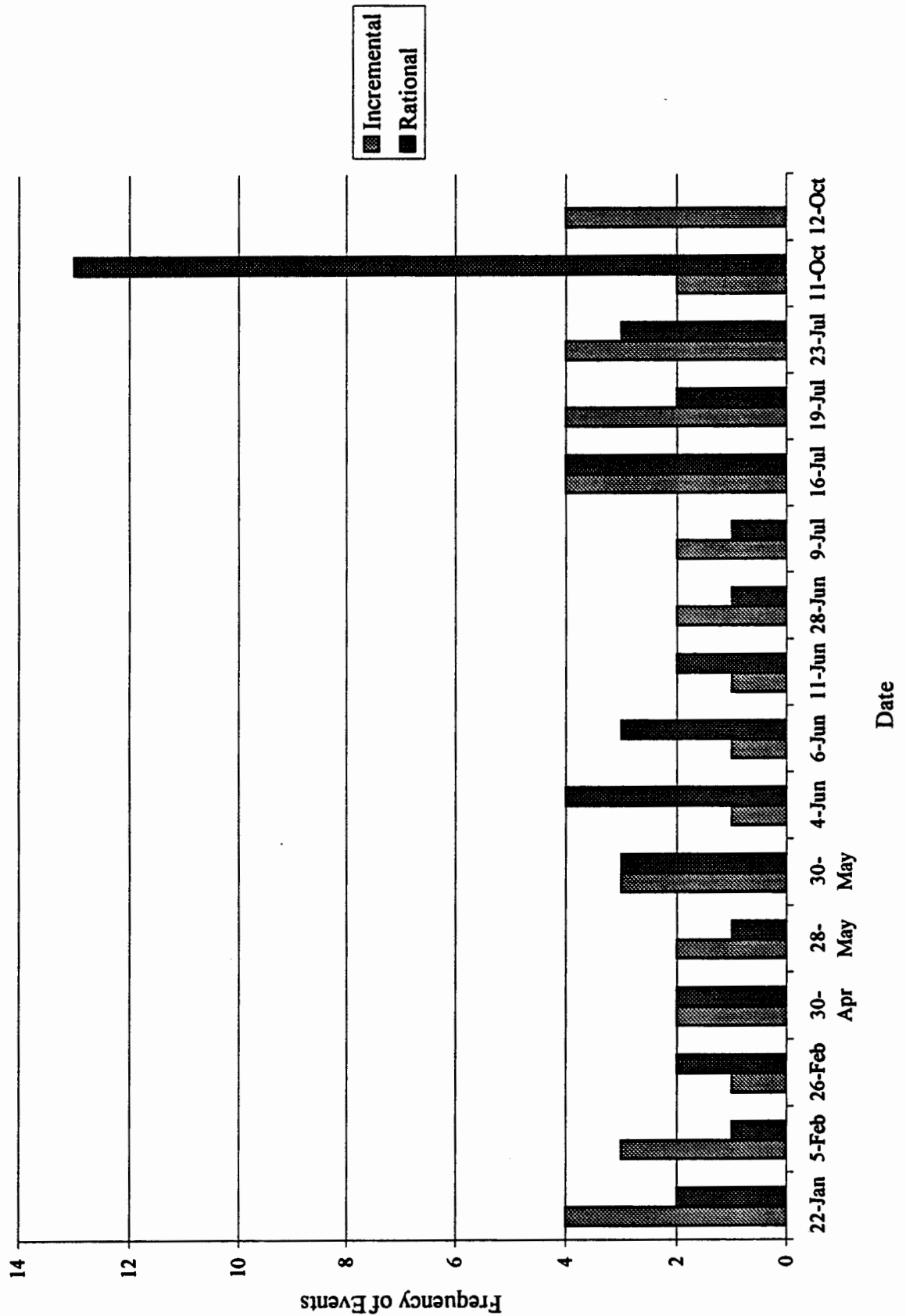
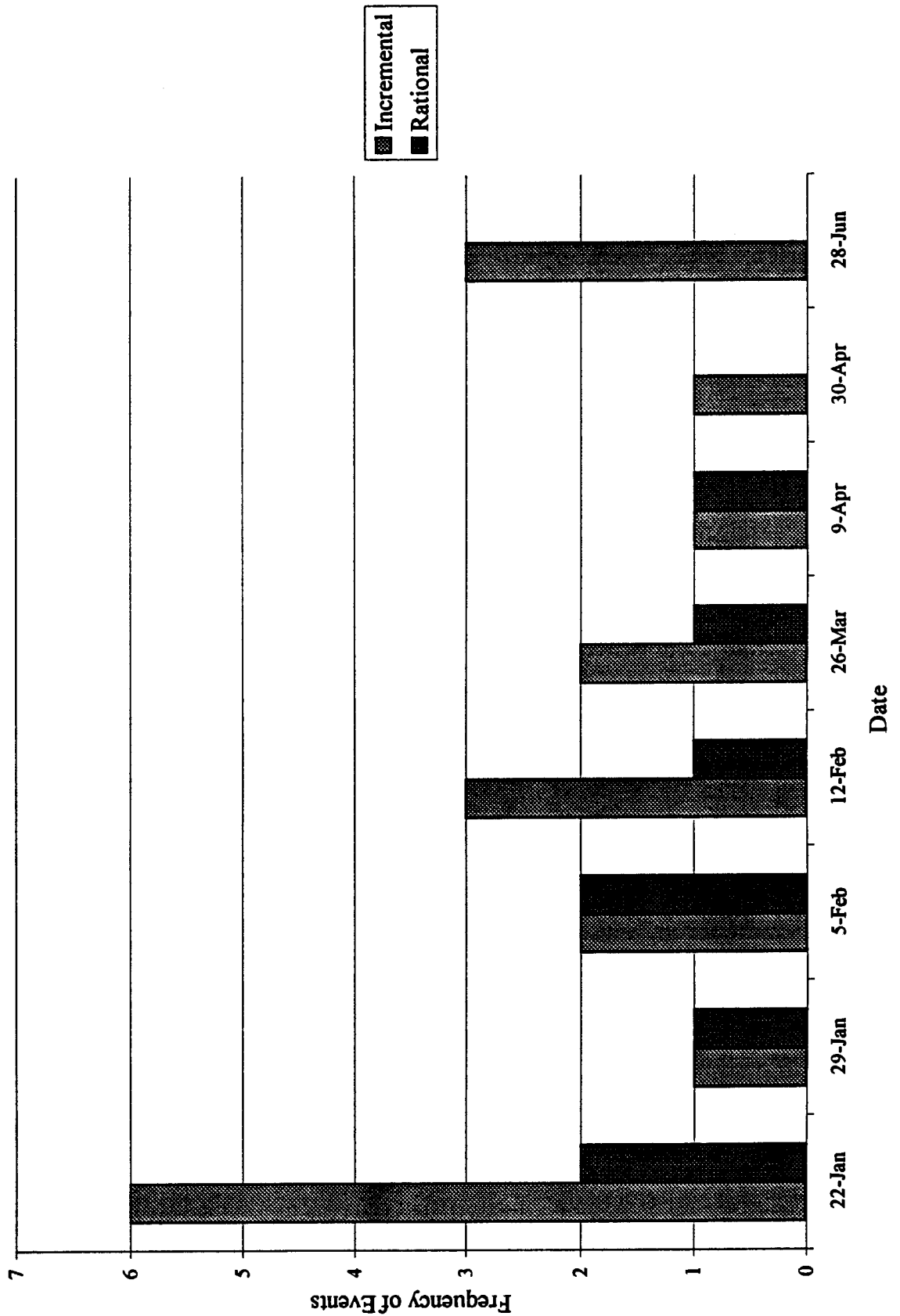


FIGURE 5
Responding to Resistance



It is now evident that he feels offering "some services" incrementally "over time" might be more palatable for members of the team.

Furthermore, as incremental changes are initiated and controlled by management, one might argue that this evidence supports the rational model as well. Indeed, the characteristics of the models along some dimensions are not mutually exclusive. However, as these excerpts suggest, the emphasis appears to be more on making changes incrementally rather than on controlling the nature of the changes.

Sub-strategies as Proposals

The frequency distribution of sub-strategies is as follows:

| Sub-Strategies as Proposals | Incremental Model | Rational Model |
|-----------------------------|-------------------|----------------|
| # Events in Meetings | 65 | 16 |
| # Events in Interviews | 0 | 0 |
| Total # Events | 65 | 16 |

Since proposed sub-strategies would only be voiced in meeting situations, none were recorded in the interviews. However as Figure 6 suggests, of those recorded in meetings, a strong majority supported the incremental model over the rational model.

Due to the absence of any central authority figure within academic settings in general, and the IIC project in particular, the strategies that were brought up by the various groups involved with the project were perhaps more seriously considered as proposals than even the theory of logical incrementalism would anticipate. For example, in the first two PI Team meetings, the head of the PI Team came to the meetings to discuss the list of services that were to be provided by the IIC. In addition to his agenda, several other team members had their own agendas: one team member was most interested in discussing only the network services to be offered; the PI Team member that happened to be the manager of the business school information center wanted to discuss the target audiences for IIC services; and the public affairs information center manager focused on reducing, if not eliminating, the potential for overlapped responsibilities. The following meeting excerpt illustrates how a member pushing the networking priority suggested his request.

"... in that sense IIC shouldn't be 'driving the solution of the networking.' On the other hand, that doesn't say anything about the fact from a service delivery standpoint, the networking issue is the top issue that the service entity is trying to deal with its

customers on. It can be our top priority in terms of getting it understood and resolved and organized for our customer base ..."

These types of topics continued to be the focus of the PI Team meetings for more than five months and the head of the PI Team, aside from his attempts to increase the specificity of services, was unusually patient in considering the various agendas as potential proposals for how the IIC concept should be developed. The PI Team leader's patience may be due to the fact that he had no formal authority over the other team members. This low level of authority also decreases the probability of observing any increases in management control as would be predicted by the rational model suggesting that in such environments, incremental behavior may be more common.

DISCUSSION

Overall, the incremental model was much more strongly supported than the rational model. 173 events (70%) were found to support the incremental model, while 75 events (30%) supported the rational planning model. However, due to the exploratory nature of the event sequence technique in this area, these numbers may actually reflect a "normal" planning process. Nonetheless, the results suggest (as illustrated in Figure 7) that as firms get closer to the deadline that they drop more formal techniques of planning (i.e., rational) and adopt more incremental planning processes. In the last meeting before the deadline, there were approximately eight incremental events and zero rational. More importantly, the incremental events were consistently greater than the rational events except in October. These results support the work of Matthews and Scott [31]. Their findings suggested that as the manager's level of perceived uncertainty increased the greater the propensity for the organization to drop a rational planning approach and to adopt an incremental approach.

The incremental planning process was successful (as Figure 7 suggests). For example, the IIC planners did not rush to make fixed and rigid plans but scanned the environment for the information, application, and computing requirements of their targeted consumers. Also, by treating proposals as sub-strategies and by minimizing resistance due to small changes, the IIC management avoided "turf battles" between potentially conflicting stakeholder groups. This would not have occurred with the rational model.

The planning processes observed during the PI Team meetings were more consistent with the model of logical incrementalism than with rational planning model. The organizational actors were flexible over time, with the

FIGURE 6
Sub-Strategies

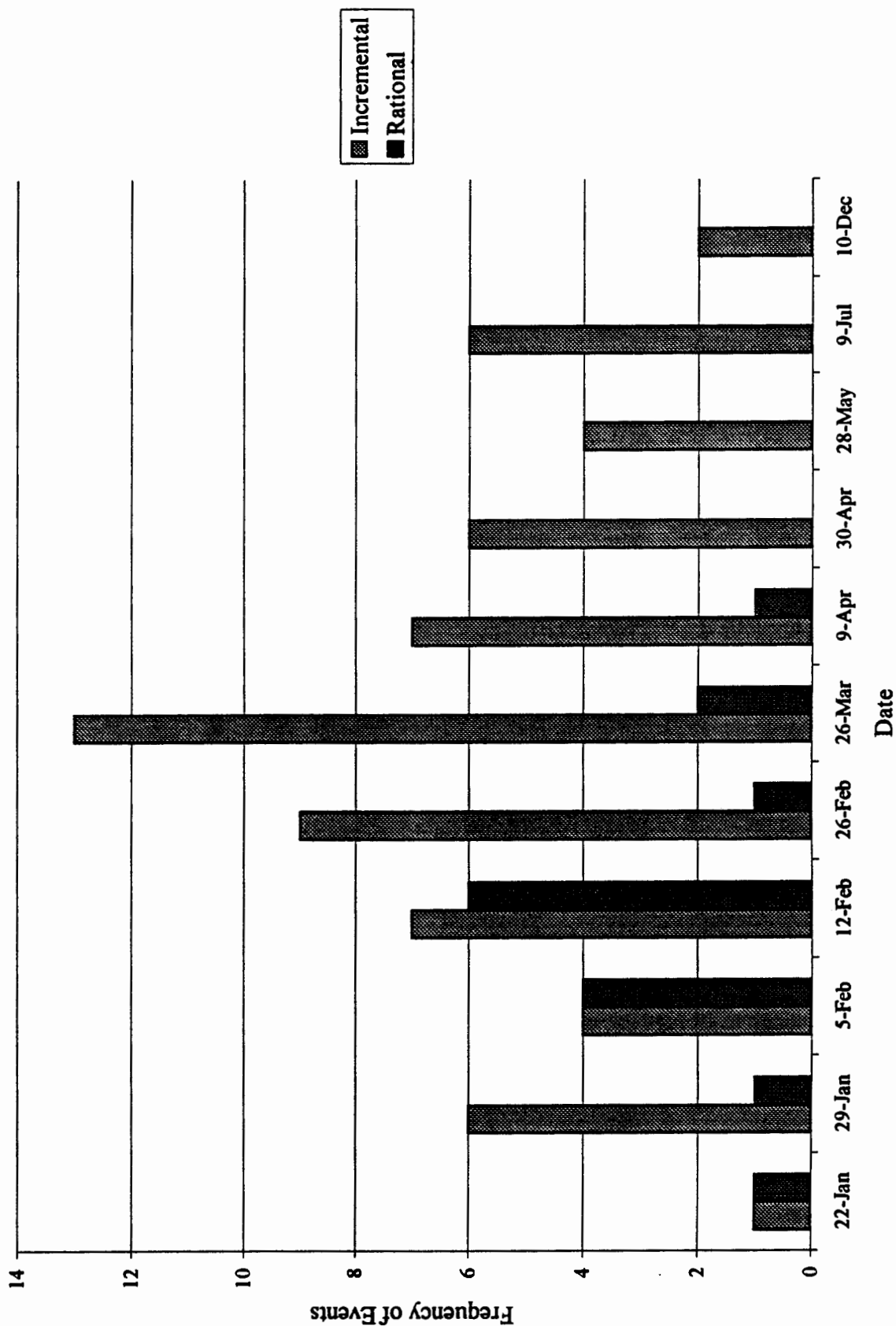
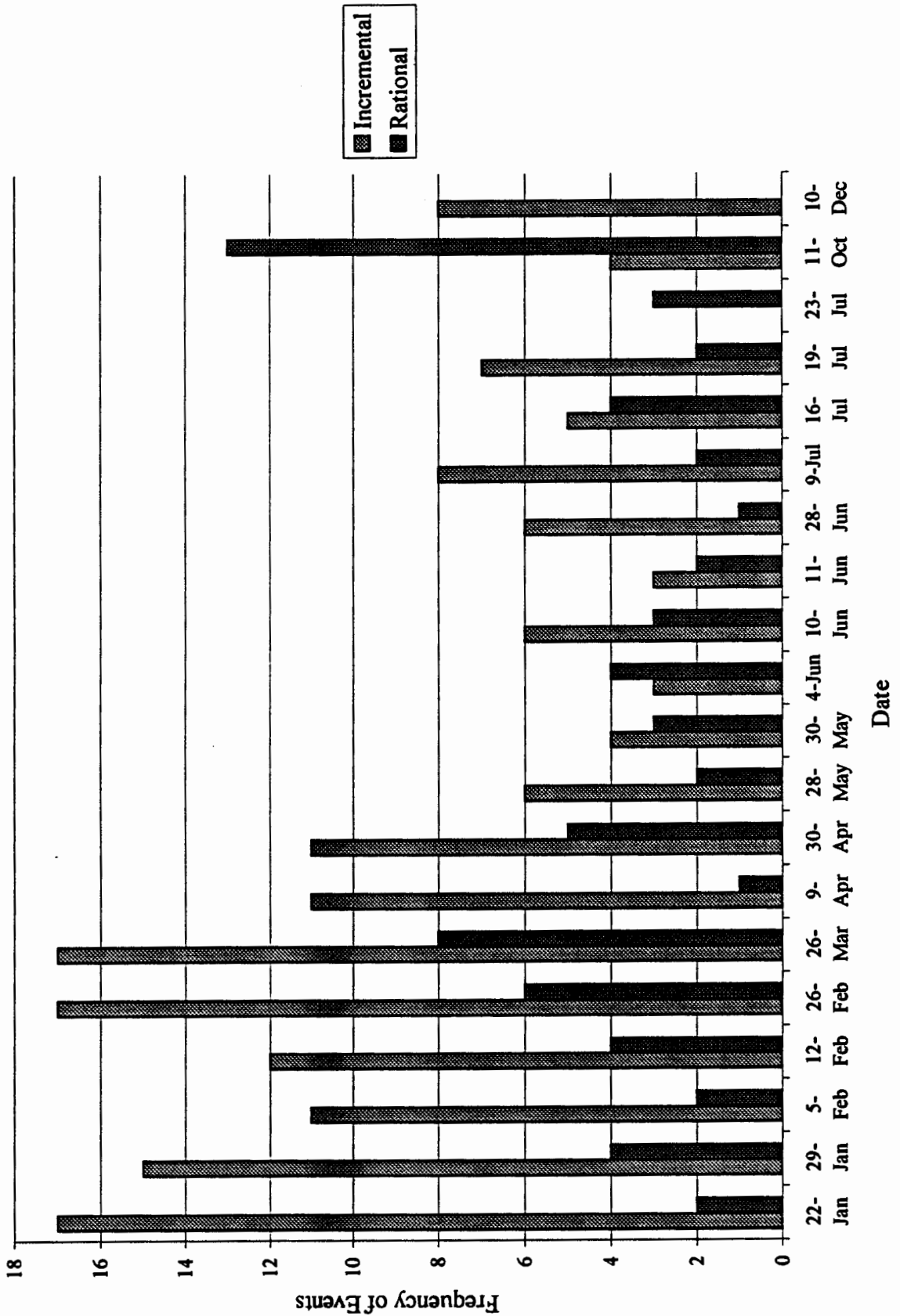


FIGURE 7

Incremental and Rational Cumulatives



mission statement in the project proposal providing effectively little guidance in planning. Aside from regularly scheduled meetings, there was no systematic planning methodology employed during the time span covered by the research. The large number of unknowns at the time, the lack of formal authority, and the high risk of turf battles caused the PI Team members to be very sensitive to the thoughts of the other members. These facts may also have played a large part in explaining why evidence existed that depicted the group as being open to considering the other member's thoughts as proposals to the overall IIC strategy--again completely consistent with the incremental model. Overall, the IIC planners in post-study interviews felt that the incremental planning process was the most appropriate and successful planning model that they could have employed.

There was strong evidence that suggested that the nature of goals as discussed by organizational participants changed depending on the environment. In one-on-one situations, organizational participants displayed very rational goal-directed behavior; in group situations these participants softened their positions and became decidedly more incremental in nature. As mentioned earlier, this may be a result of the academic environment within which the IIC project is being developed; attempts to push specific goals on autonomous project participants may be met with a higher degree of resistance than that which is usually found in other environments. Therefore, of the reasons for non-specificity as pointed out by the model of logical incrementalism (i.e., increased time for learning, minimization of resistance, and high degree of uncertainty), the minimization of resistance may be the dominant causal factor in keeping plans and goals broadly tentative in this academic environment. Similarly, the high level of autonomy reduces the probability that one would observe increased management control. This may help to explain why there was little support for the rational planning model when responses to resistance were observed.

Except for a few instances, there was little evidence that the IIC was viewed as a precipitous opportunity for key members of the IIC's advisory team to further their strategic agendas in areas external to the IIC itself.

Finally, it is important to again reiterate that not all of the dimensions of the models are mutually exclusive of each other. Especially in the dimensions of treating sub-strategies as proposals and being proactive in response to precipitous events, some support for either model could be argued.

CONCLUSION

In essence, this research has been concerned with examining two models of strategic planning: logical incrementalism and rational planning. The objective was to determine if these models were applicable to the strategy development process of a highly autonomous, interdisciplinary organization charged with creating a platform for innovative information delivery, research, and education.

The research results suggest that characteristics of logical incrementalism were more prevalent than characteristics of rational planning within an environment where the task was that of developing and implementing a strategy for an innovative ISO. The question remains whether or not this finding is surprising. Bryson and Roering [7] claim that although not all corporate-styled strategic planning approaches can be effectively utilized in the public sector, many can be, with incremental models being one of the candidates. Although Bryson and Roering do not have empirical evidence to support their claims, they point out that logical incrementalism, due to its inherent capacity to deal with complex and dynamic environments, as well as its realistic realization of the existence of potential political resistance, make it a viable choice for strategic planning for the public sector. For these reasons, logical incrementalism should be considered a viable choice for strategic planning within interdisciplinary organizations undertaking innovative initiatives. It is believed that the research presented here represents empirical evidence supportive of Bryson and Roering's claim.

Interdisciplinary academic environments, with their high degree of autonomy, have the potential to resemble "organized anarchies" [9]. The incremental characteristics identified in the transcript data seem to allow for an evolving implementation of the IIC with minimal political resistance. Therefore, whether or not the incremental behavior of the IIC team members was purposeful, it may have been beneficial to adopt such a posture in order to allow the IIC staff, as well as PI Team members to work in an incrementally productive and cohesive manner.

For managers, these findings have several implications. First, a benefit is to use the incremental model so planners can delay decisions until the technological landscape becomes clearer. Then they can slowly implement their plans within turbulent environments where multiple stakeholder groups exist with multiple agendas. Second, the rational plan may

lead to dysfunctional behavior, as planners attempt to "rationally" push their agenda in the face of potentially resistant stakeholder groups. Third, there may be greater likelihood that innovation will occur under the incremental planning process model, as proposals are encouraged from planning committee members over time. Under the rational model, new proposals would be shut down and thus limit the potential for innovation.

This study has limitations that must be considered. First, the context of the study occurs in a university setting. This setting may not share similar high velocity characteristics that organizations may face in other environments (e.g., software industry). Thus, the generalizability of the findings is limited to organizations which share similar attributes to the IIC. Moreover, there is a possibility that the findings of this study maybe attributable to the culture of the organization. Second, the study is based upon qualitative interviews and transcripts. Qualitative research is highly subjective and thus there may be potential problems with the internal and statistical validity of the study, though precautions were taken in the form of a second researcher analyzing the data.

Future research should include broadening the sample by examining and contrasting other types of innovative organizations in both the private and public sectors. A larger, more diverse sample would provide greater reliability, validity, and generalizability as well as more insight into these complex planning relationships. Lastly, the qualitative research presented here could benefit from a move to more quantitative techniques (i.e., survey data).

A premise of this paper is that the IIC resides in a high velocity environment. Practitioners may be critical of this setting as not reflecting a "true" hypercompetitive environment such as Silicon Valley. However, both settings face similar relative constraints and opportunities from the environment. Both are faced with comparable decisions concerning investments in information technology to satisfy not only the present but future demands of customers. Similarly, if either type of organization does not satisfy the needs of their consumers, then both will face similar fates of decline and extinction. Thus, as far as the applicability of logical incrementalism to ISO's or other innovative organizations, it seems reasonable to believe that the innovation and information technology domains, with their high-velocity characteristics, may benefit from an incremental approach. As a result, prudent innovators should be willing to consider logical incrementalism not only as a plausible strategy development process, but perhaps as a potential strategy implementation process as well.

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