

## Integrating Modes of Systems Thinking into Strategic Planning Education and Practice: The Thinking Persons' Institute Approach

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### ABSTRACT

Working periodically between 1995 and 2005, a team of scholar-practitioners involved in related streams of strategic management and systems thinking developed a series of conceptual maps that attempted to integrate ideas from these theoretical and practical fields. Whimsically dubbed the Thinking Persons' Institute Worldview, these maps provided the basis for an integrated approach that has been used over the past five years to improve teaching and practical interventions in both areas. This paper reports on successful efforts to teach the TPI worldview to classes of students at the University at Albany, the University of Minnesota, and the University of Strathclyde, although the main emphasis is on a one-week seminar at the Humphrey Institute at the University of Minnesota. The paper concludes with an evaluation of these experiences.

As the complexity of public problems and the speed with which they arise increase, developing and teaching effective methods for addressing these problems

becomes increasingly important. The challenge is to apply to public problems methods that are inclusive, analytic, and quick (Bryson, 2003). The methods should be inclusive of the content knowledge and skill areas brought to bear on the problem and the variety of stakeholders represented in the process. The methods should be suitably analytic so that the wrong problem is not solved, solutions do not actually create the problem that was to be solved, or worse problems do not result (Mitroff and Featheringham, 1974; Wildavsky, 1979). In practical terms, this means building additional systems thinking tools and techniques into more standard approaches to strategic planning and management (Bryson, 2004a; Eden and Ackermann, 1998; Richmond, 1997; Senge, 1990). Finally, the methods should be quick so that they can involve busy managers and ensure that the problems do not fester or become worse while solutions are being developed.

The challenge is made more difficult because of the fact that, while it is not necessarily hard to cope with any two of these challenges, it is extremely hard to cope effectively with all three simultaneously. In other words, it is fairly easy to engage a relatively large group of people in a quick strategic planning process, but without much exploratory or in-depth analysis (Holman and Devane, 1999). It is also fairly easy to engage a large group of people and to include significant amounts of analysis, but doing so quickly is hard (Eden and Ackermann, 1998; Bryson, 2004a). Finally, it is relatively easy to do quick analysis, but only with small groups. In contrast, it is a far bigger challenge to do all three simultaneously—that is, to be inclusive, analytic, and quick.

This article describes the efforts of six academics from three different disciplines to meet this challenge by developing an approach to integrating modes of systems thinking into public strategic management education and practice. The article covers several topics: an approach to interdisciplinary theory and method development, an approach to teaching the theory and method, and a parallel story of professional development for the developers.

The article is presented in several parts. The first describes how the Thinking Persons' Institute (TPI) Worldview came about. Next, the integrated view is presented in more detail. Then come several sections in which we describe how the approach can be taught. We conclude with observations about the importance of the integrated view, interdisciplinary theory and method development, and professional development for interdisciplinary teams of academics.

#### THE THINKING PERSONS' INSTITUTE<sup>1</sup> STORY IN BRIEF

In 1995 the authors gathered at Mammoth Cave National Park in Kentucky for a week of spelunking, brainstorming, and theory development. We brought with us over a century of experience in the theory and practice of strategic management (from two complementary points of view) and policy making using system dynamics modeling.<sup>2</sup> All participants had considerable experience working with teams of public and private sector managers who were struggling with

complex policy and strategic problems. We also had a number of superficial reasons for believing that time devoted to cross-disciplinary theory building would be useful. For example, all schools of thought present shared a common practice of building different types of word-and-arrow diagrams, often with live-screen, computer-projected support, in front of client groups who were struggling with important strategy and policy problems.<sup>3</sup> We felt that this was more than coincidental and that we might share some deeper theoretical underpinnings.

The suspicion that we had deeper reasons to be talking with one another was well founded. As it turns out, system dynamics modeling has implicit in its core an implied theory of policy and strategy development.<sup>4</sup> And strategic management is in the end focused on the dynamics of changing a system (e.g., Morecroft, 1984; Warren, 2002). In many ways and for many years, we had been looking at opposite sides of the same coin. It was time for each twosome to turn the coin over and explore what was on the flip side, hidden from normal view.

To begin with, we affirmed that all six of us shared a common purpose and focus when we worked directly with client groups—to discover, refine, and then implement strategic and policy change with teams of managers in organizational settings.<sup>5</sup> In addition, we discovered that we shared a deep interest in stakeholders as they contribute to strategic planning outcomes and as their differing points of view create unexpected feedback loops and unintended dynamics within complex systems (Bryson, 2004b; Eden and Ackermann, 1998; Finn, 1996). However, there were different theoretical underpinnings: a feedback systems view of societal problems; cognitive psychology and systems thinking; leadership and public and business management. System dynamics modelers saw system structures as the web of accumulations and feedback loops that ultimately drive the behavior of a complex system over time (Forrester, 1961; Richardson, 1991; Sterman, 2000). On the other hand, system structure could also be seen as a delicately worked out set of negotiated social orders crafted between key policy stakeholders and sustained through social mechanisms within any organization (Eden and Ackermann, 1998). These two views of system structure, we discovered, do not contradict one another (Giddens, 1979, 1984).

All of us were keenly interested in different understandings of mental models. Our training in strategic planning taught us that individual thinking matters and that strategy change efforts should begin with an understanding of people's initial starting points. System dynamics modelers knew that mental models drive stakeholder actions within complex systems and that the key to understanding complexity begins by first understanding individual managers' mental models (e.g., Richardson, Andersen, Stewart, and Maxwell, 1994). Finally, we noted that our respective approaches to working with teams of managers led to quite different methods for using quantitative data from an organization's archives—that is, how we use numbers and measurable quantities in our work. But these differences did not conflict. Rather, we found that we needed to combine the best of the

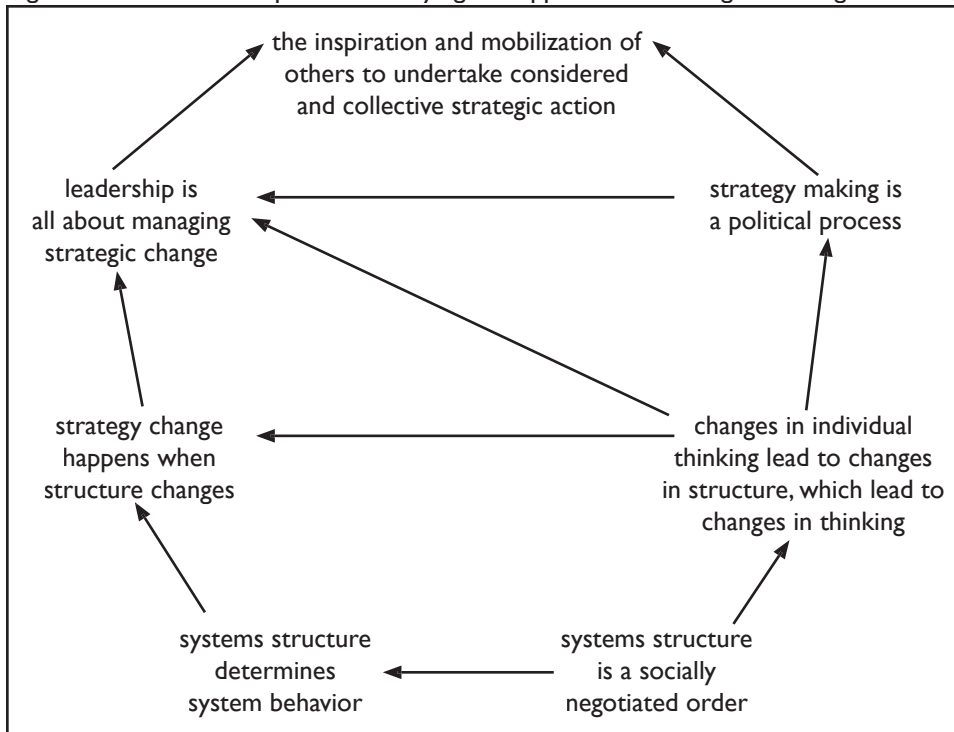
theoretical and empirical approaches from all schools to do the best job of policy design and strategic planning and management for our client groups.

The group continued to meet, talk, think, and sketch for a number of years. We met twice a year for a total of two weeks in which we combined work and play. At the end of this time, we wound up with three densely concentrated conceptual maps that clarified our thinking. These conceptual maps sought to show the interrelationship between both theoretical assertions and their practical implications. These maps are inevitably dense and complex because they synthesize the entirety of several years of dialogue. However, we present here a small portion of the maps, intending to show by example how the concepts and tools behind our collective work weave together to form these concept maps.

#### STRATEGY MAKING IN THE TPI WORLDVIEW

The core of TPI thinking, which took some years to distill, is captured in the map shown in Figure 1. The top of Figure 1 shows the goal that all subscribe to: the inspiration and mobilization of others to undertake considered and collective strategic action. Almost every word of that phrase is crucial. Undertake action implies that the goal is the implementation of change, not merely reflection. That the action is collective reflects our presumption that the process should be inclusive and coalition-based and therefore likely to be politically viable. The

Figure 1. Essential Assumptions Underlying the Approach to Strategic Thinking and Acting



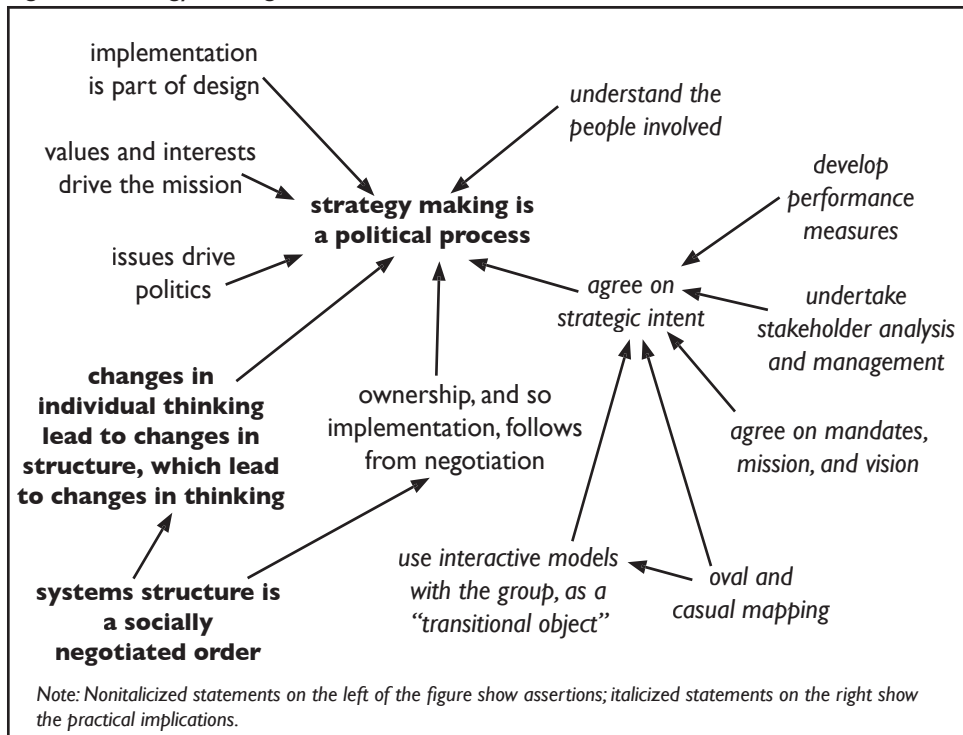
goal of considered strategic action reflects the effort in the approach to go beyond initial predilections, to get to deep thoughts about what changes have a chance of actually producing the desired strategic results.

The map in Figure 1 also reveals elements of the perspectives that inform the TPI approach. Leadership is reflected in managing strategic change and the emphasis on strategy making as a political process. The contribution of systems thinking and simulation is reflected in the assertions that system structure determines system behavior and strategy change can happen when structure changes. Finally, the claim that system structure arises from socially negotiated order traces to a particularly powerful approach to strategic management, which, as the diagram suggests, permeates the entire approach.

The central point of Figure 1 is the simple but powerful insight that, while both system structure changes and political (power) processes contribute to achieving considered and collective strategic action, integrating these two approaches (by recognizing and managing individual thinking and social negotiation processes around structural change) creates an approach more likely to achieve successful outcomes than either approach taken on its own (i.e., focusing on either structural change or on politics) (Bolman and Deal, 2003).

Figure 2 expands on this approach to strategic thinking and management by exploring the political and power processes involved in strategy development.

Figure 2. Strategy Making Is a Political Process

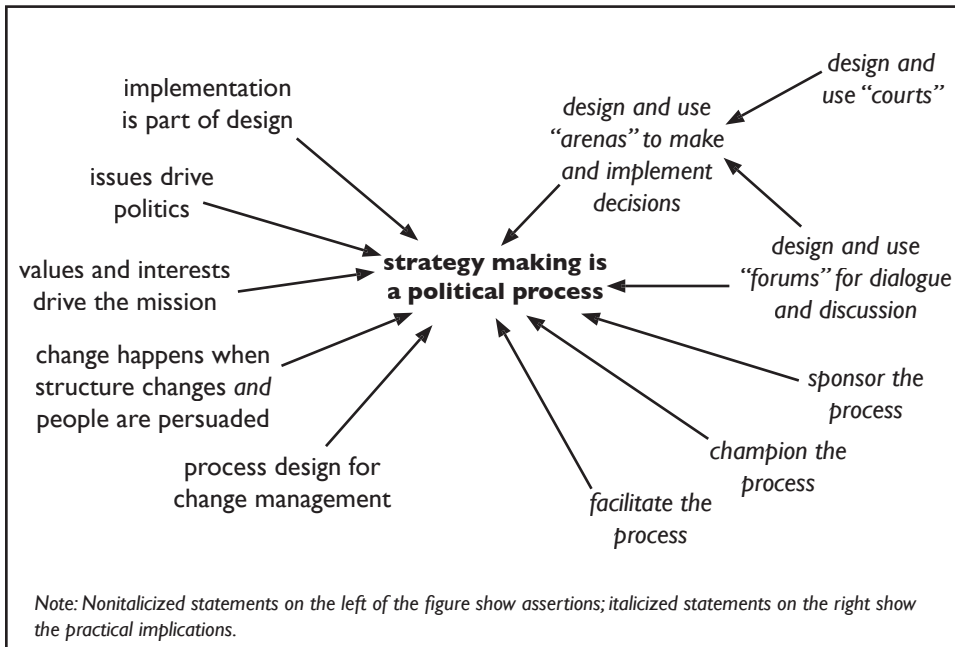


All members of the group recognized the importance of leadership to the success or failure of strategic planning and management processes. Crosby and Bryson's (1992, 2005) work provided an explicit framework for integrating important leadership factors. Figure 3 illustrates how leadership informs the process.

Figure 3 highlights a view of leadership in strategic planning and change that emphasizes different roles of the leaders of change and different settings for strategic conversations. The leaders (and there typically are several) are designers of the process. Leadership involves sponsoring, championing, and facilitating change. Leaders employ forums for discussion, arenas for making and implementing decisions, and formal and informal courts for managing residual disputes and enforcing underlying norms in the system (Bryson, 2004a).

The final component of the process involves systems thinking and, when the stakes and complexity are high enough, computer simulation. Simulation may be necessary to trace out the dynamic implications of the structural assumptions arising out of the strategic planning conversations that emerge from the interactions in the processes in Figures 2 and 3. Figure 4 captures the essential points of view underlying the need for and use of interactive modeling through computer simulation for policy analysis (Richardson and Pugh, 1981; Sterman, 2000). Of course, these systems modeling components are not meant to be taken in isolation. They must be integrated with the political and leadership factors as illustrated in Figures 2 and 3.

Figure 3. Selected Concepts Relating to Leadership



**TOOLS**

The view discussed above brings together concepts and mid-range theoretical statements. However, in working with client groups, each of us used different group intervention tools and techniques. The systems modelers use causal loop diagramming to drive the formulation of dynamic simulation models that can be used for formal experimentation and policy testing. Works by Bryson (2004a), Eden and Ackermann (1998), and Finn (1996) on strategic planning emphasize the use of formal stakeholder analyses and oval mapping tools within the context of well-designed and facilitated workshops to drive change process design. Eden, Ackermann, and Bryson use an analysis of distinctive competences linked to strategic goals to arrive at a sense of strategic intent, often culminating with the development of performance measures (Eden and Ackermann, 1998; Bryson, Ackermann, and Eden, 2006). Figure 5 presents a selection of TPI tools.

Figure 4. Systems Thinking and Simulation for Policy Analysis

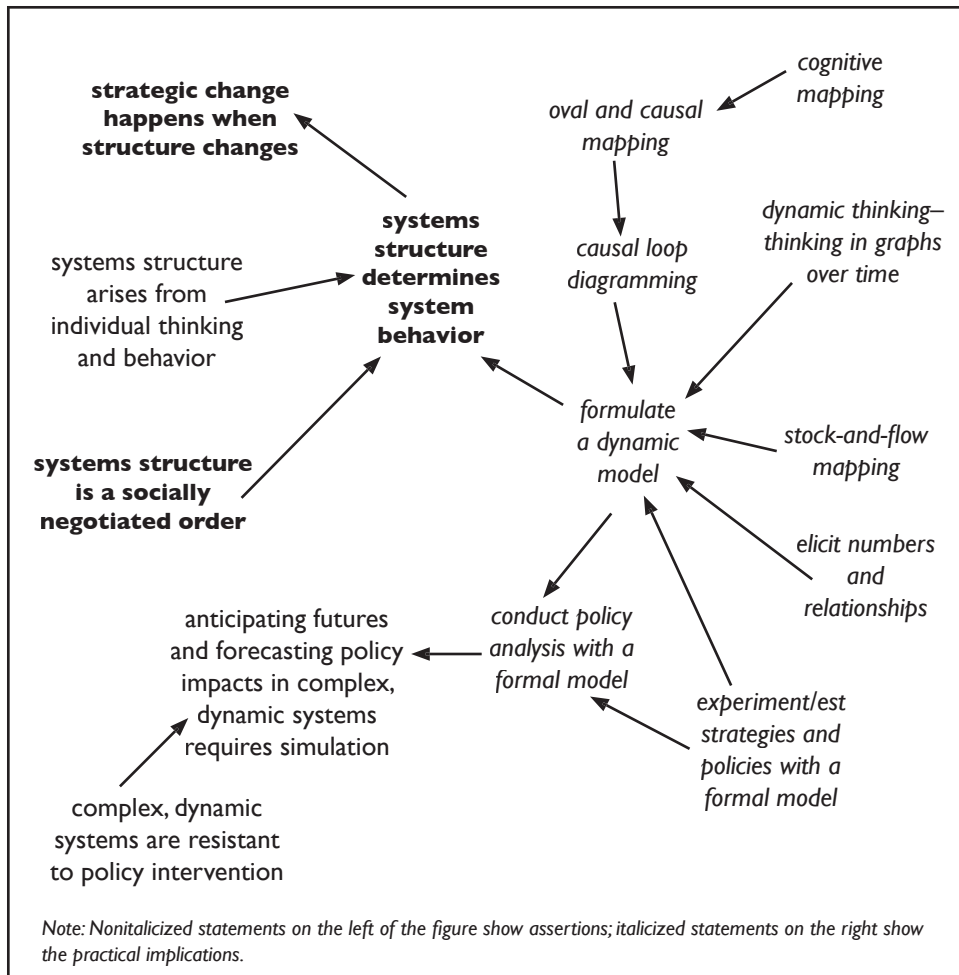
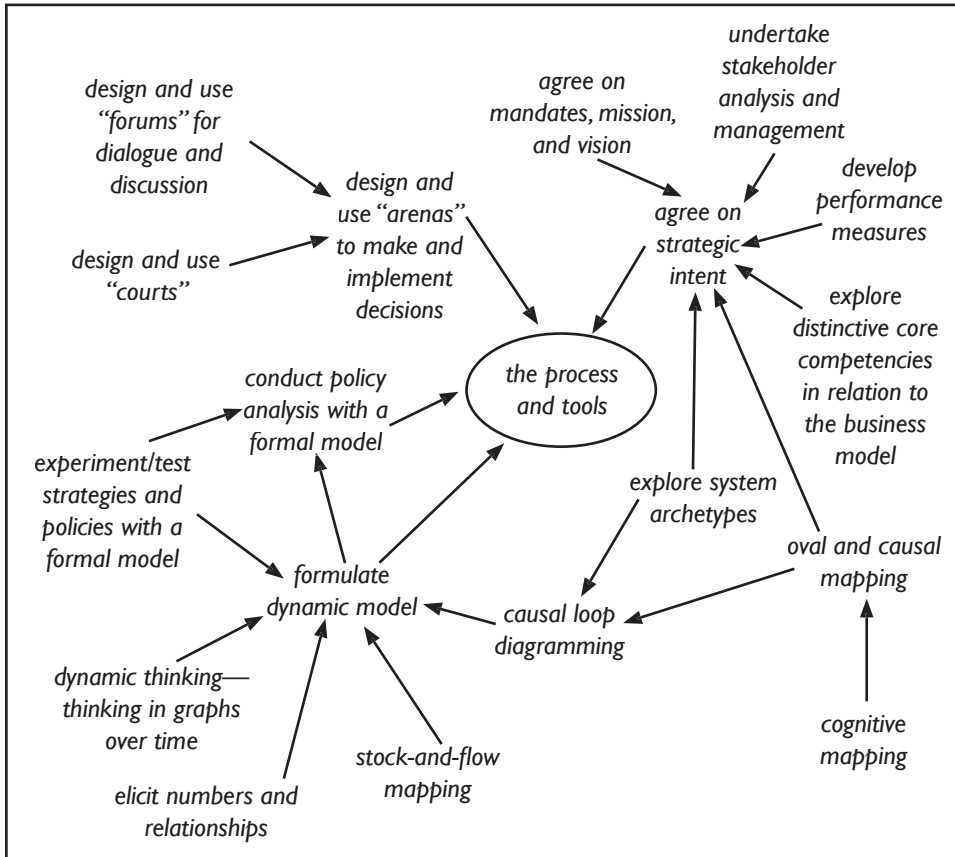


Figure 5. A Selection of TPI Tools



**A DILEMMA: HOW TO TEACH SUCH A COMPLICATED SET OF CONCEPTS AND PROCESS SKILLS?**

We were able to use the integration of these concepts in our own practice. In addition, our recent publications have reflected this integration and are referenced below. We believed that the integrated process would be useful and of interest to others, and so wanted to teach the approach, but realized that doing so presented a number of challenges. The maps were too dense to be taught to a good class of graduate students without a careful buildup and additional instructional aids. To make these maps more concrete, grounded, and easier to grasp, we created the teaching case and linear process map described below.

*The GORA Case Study.* The Governor’s Office of Regulatory Assistance (GORA) case is based loosely on a project involving the New York State Office of Regulatory and Management Assistance (ORMA), originally undertaken by staff of the Center for Technology in Government at the University at Albany. The original project analyzed the consequences of installing a voice-activated customer service system to support an increase in the volume of work coming into the agency.



The GORA case study depicts the dilemma of Eliot Benchman, the newly appointed director of GORA. His mission is to launch a pilot program designed to help citizens cut through government red tape as they attempt to set up small businesses. The governor in Benchman's state intends to replicate and expand a successful pilot project on a statewide basis. Benchman is at the end of a very successful first year in the program and now faces a number of challenges. Statewide expansion will require an infusion of new resources. Employee morale, initially very high, is beginning to flag as the program begins to ramp up to a larger scale. Benchman is worried about how to replicate and expand his initial successes with limited resources, more and more clients, and a workforce that is beginning to lose some of its zeal. His situation is not untypical of a situation faced by many internal entrepreneurs who are launching innovations within the public sector.

In fact, the GORA case is designed to illustrate a generic set of inter-related stocks, flows, and feedback loops that drive and limit the growth of new public programs. Over the years, this teaching case has been used with hundreds of managers at all levels in Europe, North America, and East Asia. Uniformly, teams of experienced managers quickly connect with the issues that drive this compact case.

In addition to a written case that can lead to class discussions, GORA comes equipped with a small model-based learning environment. Students have a chance to get a feel for how such models are built by engaging in a series of concept mapping exercises. In some cases, students working in small teams actually code up parts of the simulation model. Later, working in teams, students get a chance to try out their own policies in a live simulation demonstration. The instructor runs the model to implement policies designed by student teams. Reviewing the simulation runs provides an additional opportunity for structured student discussion. Appendix 1 presents the text version of the GORA case, and Appendix 2 presents several views of the running simulation model that supports the case.

*Applying the TPI Process.* In our consulting practice with client groups, the actual sequence in which tools are used and concepts come into play can vary dramatically from case to case. However, to explain the overall process in a teaching situation, we decided to settle upon a more or less linear way of talking about the process, consisting of the following steps (see Appendix 3 for more detail):

1. Overview of the TPI ways of thinking, processes, and tools
2. Getting started
3. Stakeholder analysis and management
4. Analysis of external environment and dynamics
5. Analysis of internal environment and dynamics
6. System modeling and negotiation
7. Strategy and policy design and testing
8. Implementation
9. Cycling back through these steps.

The first step outlines the entire process. The second step, Getting Started, presents a series of concepts and tasks useful for assembling the right client team (Ackermann and Eden with Brown, 2005), designing a first-cut strategy change process, and clarifying team and client roles. These activities lead naturally to the third step of Stakeholder Analysis and Management, activities and techniques designed to get a client group to focus on who the important stakeholders are, including who holds power and influence. Additional techniques focus on how the interests of key stakeholders can be managed to help the organization reach its strategy change goals (Ackermann and Eden, 2003; Bryson, 2004b).

The fourth and fifth steps focus on tools and techniques designed to facilitate the identification and analysis of dynamics both internal and external to the organization. System modelers have a foreshortened version of these steps that are wrapped around “reference model elicitation” exercises focused on getting clients to draw graphs of key variables against time (Saeed, 1992; Luna et al., 2004). The strategy literature contains a much richer array of tools and techniques, including external environmental analyses focused on external forces and trends, key resource controllers, competitors, mandates, opportunities and threats, and alternative futures. For internal environmental analyses, tools and techniques are used to explore strategic issues in relation to goals and to analyze resources, distinctive competencies, current strategies in use (Ackermann and Eden with Brown, 2005; Bryson, Ackermann, and Eden, 2006), performance measures, strengths, weaknesses, and mission and values (Bryson, 2004a).

The sixth step, System Modeling and Negotiation, combines qualitative techniques for eliciting refined mental models from clients (Eden, 1994; Howick, Ackermann, and Andersen, 2004) with more hard-edged modeling skills, including formulating and running a formal simulation model. Building formal simulation models requires advanced coursework that we did not, and probably could not, cover in our one-week seminar discussed below. However, in practice, only some strategy and policy design exercises require formal simulation, while the numerous tools used to support system modeling and negotiation are uniformly helpful thought support tools for most managers and most problems.

The next two steps, Strategy and Policy Design and Testing and Implementation, bring together all the analytic efforts of the previous steps. These steps include checking political feasibility as well as building and sustaining cognitive and emotional commitment to designing performance measures, control systems, and reward systems. Often, these steps culminate with a vision of success for the organization in the future. The final step, cycling back through the steps, suggests the process should be considered iterative.

#### DELIVERING THE TEACHABLE CHUNKS

Once we had a good teaching case and a simplified step-by-step process, we were able to design a one-week seminar to teach the TPI approach.

Our first such seminar took place at Rockefeller College of the University at Albany. Eighteen students participated. This was the shakedown cruise for a curriculum that was subsequently tuned up and presented to 20 students at the Humphrey Institute at the University of Minnesota. Both of these initial offerings of the curriculum were designed for master of public administration and master of public policy students who were being introduced to the strategic management process. The third offering, at the Graduate School of Business at the University of Strathclyde in Glasgow, Scotland, was aimed at an audience of 24 experienced British business practitioners already steeped in strategic management as defined by the courses and books of Eden and Ackermann. The third offering thus shifted somewhat to accommodate these students' pre-existing knowledge. Below we discuss in further detail the curriculum as it was presented at the Humphrey Institute.

Appendix 4 presents in outline form the curriculum that we used to present the process in a one-week format in Minneapolis. This presentation took advantage of top-down and bottom-up, theoretical and practical, abstract and concrete approaches to the material. Early on in the first morning, we presented the full maps in all their complexity. Our intent was not to convey details of the approach, but to give students a series of icons representing the full scope of the material that we intended to cover. Then a team of three faculty members began to teach individual chunks of the curriculum, with each piece of material organized around the GORA case. Two of these curricular chunks are discussed in more detail below.

Each segment of material included some lecture material followed by hands-on exercises that allowed teams of students to practice the skills in the lecture and to reflect on some of the conceptual issues. Because all of the hands-on exercises were focused on the same case study, students had a chance to link techniques and approaches from previous lectures, examples, and tools to the material at hand. After the exercises, the class turned to a higher-level conceptual reflection on the concepts that guided the exercises. To start these discussions, the lead faculty returned to the conceptual overview, tool, and leadership maps, drawing on a public screen the links that had just been discussed. This map buildup began with a blank map in the first workshop segment and over time grew to the full complexity of the three maps by the end of the workshop. Lecture by lecture and day by day, students watched the conceptual complexity grow on the public maps being displayed. At each stage, the faculty members led question-and-answer sessions to help build student understanding of the full range of concepts and tools being put into play.

The whole experience ended with an assignment designed to pull all of the smaller pieces together. Working in teams, students used the concepts and tools of the class to complete a full "soup-to-nuts" project. Specifically, they had to create a 20-page memorandum with supporting tables, maps, and figures that analyzed the GORA case and presented recommendations.

#### EXAMPLES OF TEACHABLE CHUNKS

In order to give a more grounded feel for how instruction went in each of these modules, we have selected two to discuss in greater detail below.

*Chunk One: Stakeholder Mapping.* We used two stakeholder analysis techniques. The first was what Bryson (2004a, 2000b) calls the basic stakeholder analysis technique. The technique involves having the analysts do three things. The first task was simply to brainstorm a list of stakeholders who have a claim of some sort on GORA's attention, resources, or output, or who are affected by that output. Each stakeholder's name was placed at the top of a separate flipchart sheet. The second task was to determine what criteria each stakeholder uses to assess GORA's performance. This was done by dividing the large group into smaller groups and giving each small group the flipchart sheets for three or four different stakeholders. The group was then asked to list for each stakeholder (on the relevant sheet) what it imagined the stakeholder's assessment criteria are. And the third task is to make a judgment about how well the stakeholder thinks GORA is doing against the stakeholder's criteria. This task was accomplished using the same small groups that developed the criteria. The results were discussed in a large group setting and the resulting strategic issues, candidate strategic goals, and policy and managerial implications for GORA were noted. After the exercise was over, the results were typed up and reproduced for distribution to the instructors and class participants.

Next, a power-versus-interest grid was constructed based on the work of Eden and Ackermann (1998, 121-125, 344-346) and Ackermann and Eden (2003). The grid arrays stakeholders along two dimensions: their presumed interest in the achievement of GORA's goals (whether or not they support GORA itself) and their presumed power to help or hinder production of those outcomes (by helping GORA or otherwise). The result is a matrix of players (those with high interest and power), context setters (those with high power but low interest), subjects (those having high interest but low power), and the crowd (that is, those with low interest and power). The grid was constructed on a large flipchart-covered surface in front of the whole group. The stakeholder names identified in the previous exercise were transcribed onto large Post-It® notes that were placed on the grid where the large group agreed they belonged. Considerable discussion sometimes occurred before the group agreed on where a stakeholder belonged on the grid. Once the grid was completed, the results were discussed, and resulting strategic issues, candidate strategic goals, and policy and managerial implications for GORA were noted. Again, after the exercise was over, the results were typed up and reproduced for distribution to the instructors and class participants.

*Chunk Two: Interacting with a Simulation Model for the GORA Case.* After working with the GORA case from a stakeholder point of view, analyzing the case in small groups, and making initial recommendations for what Benchman should do, the participants in the workshop then used some of the systems thinking tools to dig deeper into the case. To get a dynamic perspective, they were asked

to draw graphs over time of the variables they thought were important (Appendix 2a). Using those graphs as a focus, they worked to sketch the causal feedback structure that they guessed was responsible for those dynamics. For example, incoming requests to GORA for help doubled every six months, suggesting some sort of self-reinforcing feedback loop. Most of the participants saw this loop as the one captured in the first view of GORA's structure shown in Appendix 2b. The group reviewed each other's pictures of system structure and then turned their attention to an interactive presentation of a formal model of GORA.

The formal simulation model is simple enough to be accessible to students in the early stages of learning to use systems thinking tools, but rich enough to allow the testing of most policy options that groups suggest. We returned to the list of suggestions the group made earlier for what Benchman should do and tried as many as time permitted. For example, "Use the World Wide Web to increase the number of packets GORA can handle" became recast as "Increase the parameter representing 'normal productivity' of a GORA staff member." The result of a 200 percent increase in productivity was a set of graphs in which more was getting done, but the future of the organization was essentially unchanged: in other words, workload still rose, the quality of work declined dramatically, and the system stabilized with a large portion of potential demand for GORA's services still unmet.

The group tried other policy options, each time using the structure of the model to understand why the policy options produced the observed dynamics. Each time, the group talked about the reasonableness of the results and used the model structure and simulations to reflect on the real system.

One policy option goes beyond the typical options available to public sector organizations whose budgets come from state legislatures: charge money for GORA services and return the revenues to GORA to use to hire more staff to handle rising demand. The simulation model is formulated to allow such a test. Simulations runs show that it is possible to raise price sufficiently to build adequate staff without shutting down demand. Charging for GORA services can work. But such a policy strikes at the heart of the nature of GORA as a public service organization and takes the discussion to a new level by focusing on the mission of, mandates facing, and overall design of GORA. The discussion turns away from simulating GORA to talking about outsourcing some of GORA services to companies that can charge for their services and keep their revenues. The focus shifts, rightly, from a conversation about policy simulations to a focus on GORA's distinctive competencies and the potential for leadership in GORA to manage a transition to a new agency role. These are topics covered by the next parts of the approach and must be addressed by student teams in their final projects.

#### RESULTS OF EARLY EFFORTS TO TEACH THE INTEGRATED APPROACH

Presenting the approach in five full days of instruction was a challenge. The material to be covered varied greatly in a number of ways. First, concepts ranged

from very abstract to quite concrete. Second, the approach includes ways of thinking about and making use of both content and process. Third, qualitative and quantitative data must be considered. And fourth, the approach is meant to be both theoretically challenging and practically useful. In order to accommodate these dimensions, we believed that learning had to be both individual and team-based. Verbal, written, and analytic skills had to be emphasized. A variety of learning styles had to be accommodated. We concluded, therefore, that pedagogical approaches had to include lectures and small- and large-group discussions, learning-by-doing, individual coaching by the instructors when needed, and continuous assessments throughout the week to make sure we were covering the material effectively and making any necessary and useful mid-course corrections.

We think that for the most part we succeeded. The course evaluations for the Humphrey Institute offering were excellent. University of Minnesota standard teaching evaluation forms were used to collect anonymous quantitative and qualitative course assessments from the students; all 20 of the students in the class completed the form. Students answered the following questions using a 7-point scale (1=very poor, 7=exceptional; mean responses and standard deviations are noted):

- How would you rate the instructors' overall teaching ability?  
Mean, 6.8; s.d., 0.4
- How would you rate the instructors' knowledge of the subject matter?  
Mean, 6.9; s.d., 0.2
- How would you rate the instructors' respect and concern for students?  
Mean, 6.8; s.d., 0.4
- How much would you say you learned in this course?  
Mean, 6.4; s.d., 0.6

In response to open-ended questions, students were almost uniformly enthusiastic about the course, although several students also indicated that the sheer volume of material, pace of instruction, and intensity of the course were at the limits of what they could absorb. Frankly, we expected more comments like that than we got. We conclude that we pushed as hard as we could and for the most part succeeded quite well in introducing students to the approach.

While we were successful in introducing the approach, we cannot say that students who succeeded in the course were actually well equipped to put the approach into practice. Only very skilled management consultants are likely to have the kind of experience base and the craft knowledge that would allow them to make immediate use of the approach in practice. The five-day course therefore would need to be linked to additional coursework, practical experience, and coaching before participants could make the approach as a whole an effective part of their practice. On the other hand, later feedback from many of the class participants indicates that they have made effective use of various parts of the approach in their own practice.

Several serious limitations to offering the course must be mentioned. First, this was expensive instruction. The Humphrey course for 20 students was team-taught by three faculty members for several reasons, including our desire to have at least one faculty member from each of the original pairs of participants, make sure that we had adequate expertise in the room to cover all aspects of the approach, and ensure that each student and project team could receive coaching on an as-needed basis. Second, the instruction was intensive and involved “total immersion” for five days. The faculty and some students had difficulty fitting the course into their schedules. Third, because of its shortness and intensity, there was not much time for student reflection, although it is also not clear whether spreading the course out in time would have enhanced learning. And finally, there are few academics or practitioners who could have taught the course. There is a supply problem on the instruction side. A “teaching the teachers” program would no doubt be necessary in order to enhance teaching capacity.

#### SUMMARY

In this paper, we described the TPI approach to integrating modes of systems thinking into strategic management education and practice. The approach is designed to address three challenges of current strategic management practice; specifically, the need to be inclusive, analytic, and quick. To what extent have we succeeded in meeting these three objectives?

*Inclusive.* The use of group-generated word-and-arrow diagrams and computer-supported group modeling enables substantial inclusion of participants and viewpoints, and so ownership on the part of each member of the group. In addition, bringing stakeholder analysis into the overall approach helps improve upon the typical single-perspective approach to system modeling; specifically, suggested policies tested analytically through the simulation model can also be tested for political feasibility.

*Analytic.* No serious theoretical conflicts arose from using analytic approaches drawn from differing traditions. On the contrary, the interactions between the approaches in the classroom created a practical and powerful dialectic force between participants. Individual thinking about the case interacted with the perspectives of different stakeholders, as well as the results of possible policy initiatives as explored by the system dynamics simulation. Testing possible strategies through the analytical precision of simulation modeling forced participants to revisit their own assumptions. Cycling between different aspects of the approach forced more integrated thinking about the issues being addressed in the case.

*Quick.* In some ways, the approach was quick. The total immersion of the five-day course allowed for more inclusion and analysis than might typically occur in a consulting intervention that likely would have had to be spread out in time. But it is more likely that the integration of the different approaches has extended the amount of time needed with a group. Class participants had to spend more

time dealing with the dilemmas and paradoxes that can arise from multiple perspectives, raising puzzling issues that in the extreme might have created a form of debilitating complexity that precluded reaching agreement expeditiously (Eden, Jones, Sims, and Smithin, 1981). But the need to deal with the dilemmas and paradoxes in the GORA case may also be seen as a real strength of the process, one that participants clearly seemed to appreciate. The TPI approach thus does not eliminate the challenge of needing to be inclusive, analytic, and quick, but it does provide a conceptual frame, process, and tools to cope effectively with the challenge in some circumstances.

We also described in some detail a successful attempt to teach the TPI approach in an intensive five-day format at the Humphrey Institute. An earlier, shorter offering at Rockefeller College informed the Humphrey offering, and the Humphrey offering informed a subsequent offering in Scotland aimed at skilled practitioners. We believe there is merit to the integrated approach, we invite others to adopt all or parts of it in order to address the three challenges in their teaching and practice, and we are happy to advise others on how this might be done. But whether or not the approach is adopted, the broader challenge remains: how to have methods of addressing public problems that are inclusive, analytic, and quick.

*Lessons for Multi-Methodology Work.* An important lesson of this story is how much time it takes to develop interdisciplinary conceptualizations and ways of teaching them. There is some literature that addresses the inherent difficulties in “multi-methodology” work (e.g., Mingers and Brocklesby, 1997). In light of this literature, it is unsurprising that we misunderstood several of the words we each used. For example, the words “strategy” and “structure” were used by each author, but turned out to have more variety of meaning than we initially anticipated. We actually expected greater problems arising from three rather different theoretical views of organizations, group decision making, systems thinking, and appropriate ways of helping groups agree on strategic direction and policies. However, the theories were less in conflict than expected, perhaps because we shared a significant commitment to developing better ways of supporting groups—although this also might mean that we explored the different theoretical perspectives in less depth than we should have.

The group met for a total of 25 or more very full days to develop the approach and the basic way to teach it. Additional time was spent on preparing for the Albany, Minnesota, and Glasgow course offerings. The vast majority of that time was spent trying to understand how each other and each other’s fields approached the challenges we were trying to address. Considerable dialogue was necessary to bridge the gaps and to develop a common conceptualization we could all understand and support. The result, we believe, is a conceptualization that is quite powerful and is strong where our individually held conceptualizations were weak.

We think the process we followed offers some interesting lessons for others interested in interdisciplinary theory, method, and course development. One of



the most important lessons is that interdisciplinary theory, method, and course development involves almost necessarily the simultaneous professional development of the developers. The two go hand in hand. In our case, the two worked well for several reasons. First, it made a difference that we all knew one another (although not necessarily well) when the effort began. We started the effort as three pairs: George and David, John and Chuck, and Fran and Colin were close colleagues, while each twosome had at least some close connections with the other twosomes. Second, we each committed to spending significant amounts of time with the group. Third, we had a project in mind, although the nature of the project changed over time. Initially, we just sought mutual understanding. Then we decided to develop a shared conceptualization and process. Finally, we wanted to figure out how to teach the process, realizing that in doing so we would have a vehicle for solving questions or problems with the conceptualization that at the time we did not know how to resolve. Fourth, we included various kinds of relationship building and enjoyment into our process. We met in interesting places; we always included daily exercise; we allowed for individual free time; and in general were appreciative and solicitous of one another. Friendship and simply having a good time together were very important goals in their own right. As a result, we became an “invisible college” (Crane, 1972) that mirrored the practices of other successful interdisciplinary teams (Bozeman and Corley, 2004).

In the end, we have a useful conceptualization that addresses some aspects of the challenges of inclusion, analysis, and speed. We also have a way of teaching it. But the influence of the conceptualization on our other teaching and practice engagements is also strong. Aspects of the approach have been included in other courses that each of us teaches, and our ways of thinking and professional practice have been permanently altered as a result of our joint professional development efforts.

#### NOTES

1. Actually, Thinking Persons' Institute is a cleaned-up version of an inadvertent spoonerism that popped up very early on in our work together. While struggling over the basic notion of what it was that bound all of us together, one of our members blurted out with some excitement that we shared a common interest in “helping thinkles peep.” We immediately became the Thinkle Peepers' Institute, but for obvious reasons hesitate to use that term in more decorous academic settings.
2. Andersen and Richardson are system dynamicists. Bryson and Finn are strategic planners coming out of a public and nonprofit management background. Ackermann and Eden are strategic planners coming out of management science, and both had prior experience with system dynamics. Several books by the various members of the TPI laid out much of our basic points of view before beginning this work. See especially Bryson (1995), Bryson and Crosby (1992), Eden and Ackerman (1998), Richardson (1991), Richardson and Pugh (1981), and Roberts et al. (1981), and Finn (1996).
3. For example, the Oval Mapping Technique (OMT) described by Eden and Ackerman (1998) is a word-and-arrow diagramming method supported by the interactive computer modeling software known as Decision Explorer ([www.banxia.com](http://www.banxia.com)). In the Resources section at the end of his book, Bryson (1995, 2004) described how to use OMT to derive issues and strategies in the context of his approach to strategic planning. Richardson and Andersen routinely worked with graphically

- oriented interactive simulation software such as Vensim ([www.vensim.com](http://www.vensim.com)), which also created word-and-arrow diagrams as an early stage in model conceptualization and formulation.
4. Building on the work of others (e.g., Milling, 1989; Morecroft, 1984, Zahn and Greschner, 1993), Warren (2002) makes this notion explicit with his own approach to linking system dynamics to a resource-based view of strategy.
  5. All members work with client groups in facilitated face-to-face meetings to develop strategy for an organization. See especially Ackermann and Eden with Brown (2005), Andersen and Richardson (1997), Bryson (2004a), Eden and Ackermann (1998), Richardson and Andersen (1995), and Zagonel et al. (2004).

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Appendix I  
The Governor's Office of Regulatory Assistance Case Study

*Managing Rapid Growth in the Governor's Office of Regulatory Assistance (GORA)*

Madeleine Talbot was elected governor of the State of Goodwill on a platform that stressed economic development and new job creation. An important plank of her electoral platform emphasized fostering small business development by "cutting the red tape" of government regulation. To follow through on her campaign promises, Talbot has established the Governor's Office of Regulatory Assistance (GORA). GORA's mission is to assist entrepreneurs starting new business ventures in the state by giving them full and complete information on government regulations and assisting them in dealing with state, local, and federal regulatory bodies. For example, GORA gives out information on how to incorporate, file employee taxes, get local building permits and zoning approvals, fill out and comply with federal corporate tax requirements, and so on. To a large degree, GORA's mission is to be a one-stop shopping place where information about government regulations can be gathered quickly and easily. Occasionally, GORA staff will become involved in technical assistance, helping entrepreneurs work out a local siting arrangement or helping a larger industry deal with complex environmental regulations.

GORA launched its programs with a small staff (initially only seven technical support staff) on a pilot basis in the mid-state region. GORA's creation was a high-visibility event accompanied by considerable press coverage and followed up by public service news spots on local radio and television announcing the new "red tape busters" services being offered by the new administration. A toll-free phone line was established to handle initial contacts with citizens. Early on, GORA's staff experienced a number of high visibility success stories that were reported on in the press. The agency quickly developed a reputation in the mid-state region of being highly competent and of getting its job done well.

*Rapid Growth in Program is Causing Internal Management Problems*

GORA's administrator, Eliot Benchman, is now considering expanding the pilot program from its limited scope in the mid-state region to a statewide program. However, Benchman is concerned about what will be entailed in a program of statewide scale. Statistics available from the Secretary of State indicate that up to 400,000 new business enterprises of one sort or another are started each year in the State of Goodwill. Most of these center around the metropolitan hub of Gotham City and its suburbs, an area not covered by the small initial pilot.

In addition, while the launch of GORA has been an unmitigated success to the external world, the public success of the program has not looked so effortless from within the new agency. Indeed, the first year has been nothing short of chaotic, and key staff have felt lucky that major mistakes have not yet been made to tarnish the agency's very strong external reputation. When the agency opened its doors one year ago after an initial burst of publicity, it was handling about 250 citizen transactions per month. Six months into its operations, GORA was handling 500 transactions per month. At the end of its first year, this number has jumped to 1,000 transactions per month—all of this growth being the product of the agency's terrific public success.

However, the burgeoning expansion in workload has caused severe growth pains within the organization. After only several months of operation, workload became intense enough that Benchman sought and received authorization for overtime for the seven staff who were involved in direct service to the public. The staff seemed to ap-

precipitate the overtime pay, and, with their pride in their work, things seemed to be under control for a while.

However, as workload continued to grow, it became clear that, even with extensive overtime, the existing staff could not handle the volume of work. Six months into GORA's existence, Benchman got special authorization to expand the initial staff serving the public from 7 to 10 positions. Even with the best of cooperation from budget and civil service, it has taken Benchman nearly four months to get these new people on board—delays in the system seem unavoidable. In addition, once the new staff members were hired, Benchman lacked the capacity to train them and bring them up to speed. He was caught in a tough bind: the new staff lacked the necessary skills and training to be truly effective in their jobs, and the experienced staff were simply too swamped with work to spend enough time to adequately train the new staff. In fact, it seemed as if the chaos associated with adding new staff was actually decreasing rather than increasing overall productivity in the office.

In addition, trained, skilled staff members were still working long hours with little time to take a break, often with mandatory overtime. The most experienced staff members were beginning to experience a form of worker burnout; two of the best had already resigned because of the prolonged period of pressure within the agency. Benchman knew that he could not afford to have his most experienced staff quit while it was so hard to bring new staff on board and train them. He feared getting into a cycle of low morale and high staff turnover characteristic of so many other state agencies that he had known in the past. This would be especially problematic if the program were to continue to grow at its present rate as it expanded to a statewide scope.

*Benchman's Preliminary Analysis and Next Year's Budget Request*

The budget for GORA's second year of operations is due soon, and Benchman is undertaking an analysis of his operations to understand better how to address some of his internal program management concerns. Table I below contains Benchman's preliminary analysis of how workload breaks down within GORA. The figures in Table I are based on an annual workload of 12,000 transactions per year, or an annualization of the 1,000 transactions per month that the agency is experiencing at the end of its first year.

Table I. Analysis of Annual Staff Hours and Full-Time Equivalent Employees Necessary to Handle 12,000 Citizen Transactions Per Year Within GORA

Type of Transaction	Staff Hours Per Transaction	Percent of All Contact	Annual Volume	Annual Staff Hours	Full-Time Equivalent Staff
Standard Information Packet	0.5	60%	7,200	3,600	1.9
Tailored Information Packet	1	20%	2,400	2,400	1.3
Limited Technical Assistance	8	19%	2,280	18,240	9.7
Extended Technical Assistance	24	1%	120	2,880	1.5
TOTAL	NA	100%	12,000	27,120	14.4

Assumed Annual Transaction Volume: 12,000

Staff Needed per 1,000 Annual Transactions: 1.21

As shown in Table 1, GORA undertakes four distinct types of customer-oriented transactions. The bulk of its business (60%) consists of sending out standard and pre-packaged packets of information to citizens who are starting a new business. For example, the new business start kit would contain information on incorporating or forming a partnership, how to get a tax ID number, how to file income taxes for employees, and so on. To determine which packet a citizen needs and to get it out in the mail takes about a half hour of staff time. Benchman estimates that it would take the agency about 3,600 hours of staff time per year, or about 1.9 full-time equivalent (FTE) staff, to perform this function at a base rate of 12,000 transactions per year.

Tailored information packets are the second type of business, making up about 20% of GORA's business. These are similar to the first, except that the staff will pull together a special package of information to meet the particular needs of a given caller (for example, a citizen who wants to start a barber shop that also sells potted plants might not have all the necessary information in a single pre-packaged packet). Each tailored information packet takes about 1 hour of staff time. As shown in Table 1, putting together 2,400 tailored information packets per year would take 2,400 hours of staff time or about 1.3 FTE staff, assuming 7.5 work hours per day and 250 working days per year. In addition to providing information packets, GORA provides some technical assistance to citizens who intend to start businesses in the State of Goodwill. This constitutes about 20 percent of the total volume of transactions. The majority of the technical assistance projects involve limited staff involvement taking on average 8 hours of staff time. About 1 percent of the total transactions consist of extended technical assistance and take about three full days of staff time. As shown in Table 1, for a base annual volume of 12,000 transactions, there are about 120 extended technical assistance transactions using staff hours at a rate of 2,880 hours per year, or the efforts of approximately 1.5 FTE staff. In sum, Benchman estimates that adequately handling a transaction volume of 12,000 per year would require 14.5 FTE staff. Using this ratio to form a rule of thumb, he estimates that each additional 1,000 transactions would require an additional 1.21 FTE staff. Benchman is willing to assume that the ratio of types of projects will remain fairly constant as volume expands (unless he does something to change the agency's mission).

This analysis clearly demonstrates to Benchman the nature of the management problems he has been facing and will be facing in the future. During the early months of GORA's existence, he was facing 250 transactions per month, or an annual rate of 3,000 transactions per year. At this volume, his analysis showed that he needed 3.6 FTE staff, well within the 7 staff he started with. By mid-year, volume had doubled to 500 transactions per month (6,000 annualized transactions per year) requiring roughly 7.3 FTE staff. By midyear, he was already starting to strain at his staff capacity. As shown in Table 1, by the end of the year, he would need a FTE staff of 14.5 to handle the annualized transaction volume, and even if he didn't have the burnout and staff turnover problems, his new authorization of 10 staff was already inadequate.

Benchman realized that he had to carefully think through this problem before he made his budget request for the new year. If done right, the new budget could provide him with a long-run solution to his internal management problems. If not done right, he believed that his agency could remain swamped and even get worse in the upcoming year. The bright beginning that GORA had enjoyed could quickly become tarnished. Benchman has set aside two full days in order to more clearly think through his options.

*Study Questions*

1. How should Benchman formulate his budget request for next year? He has strong support for his program, so this year he could probably ask for a large increase in funding. But how should he plan to maintain the necessary balance between staffing levels and transaction volume? How can he possibly forecast transaction volume and hence the needed staffing level? This is an important issue for Benchman, because a failure to get it right this year would in all likelihood lead him into a position from which he could not support another budget increase next year. Can systems thinking tools help Benchman with his dilemma? If so, how?

2. Regardless of the outcome of the budget request, Benchman has to figure out the internal turmoil that is starting to beset his workforce. What suggestions can you make to Benchman for dealing with the burnout, excessive turnover, and low productivity that he is beginning to experience in new staff? Again, can systems thinking tools help Benchman with this issue as well? If so, how?

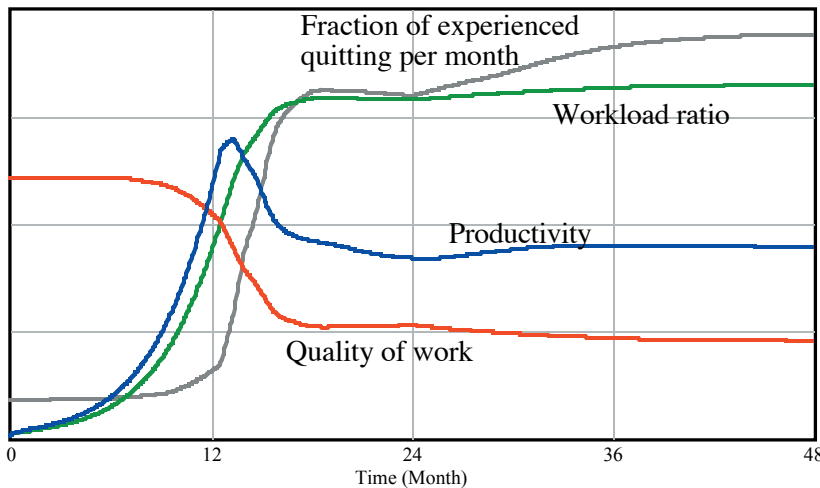
### Appendix 2a. Base Run Behavior of the GORA Model

The base run (matching the case description) shows a dramatically rising workload and backlog, saturation in the number of staff, a decline in the fraction of experienced workers (from quits), and very low productivity.

The average completions per year in this base simulation run is about 41,000, just a little over 10 percent of the potential market of 400,000 per year. GORA is throttling its own demand.

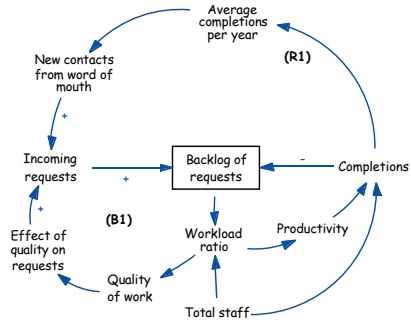
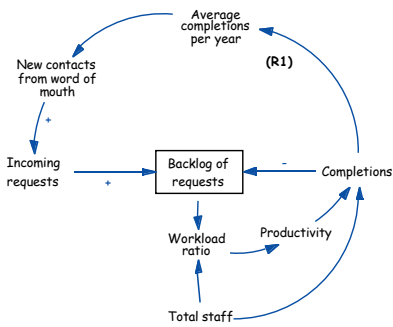
The dynamics in the first graph are partially explained by the second graph, which shows the workload dramatically rising, productivity trying to keep up but finally collapsing, quality of work plummeting, and more and more experienced personnel quitting.

GORA is clearly an organization with a potentially very unhappy future unless something is done to help it succeed.

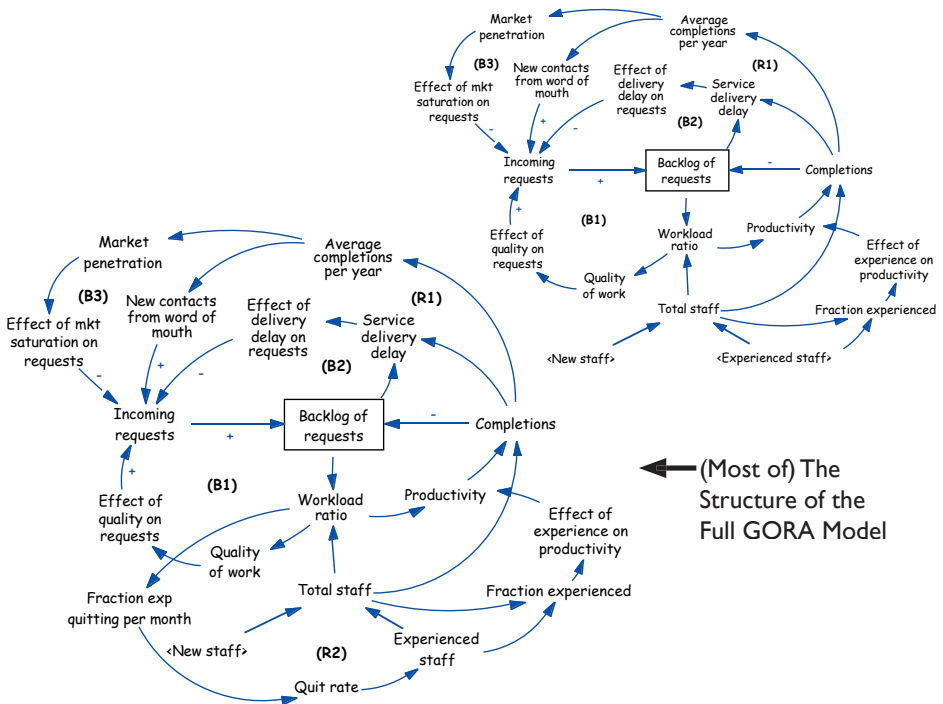
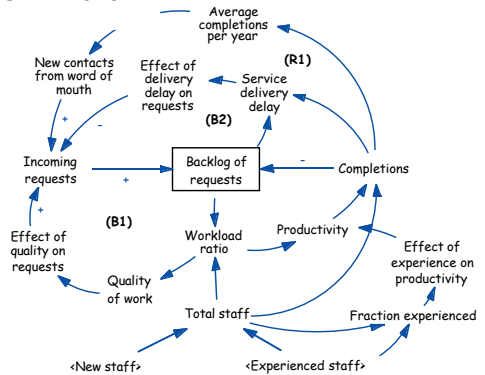
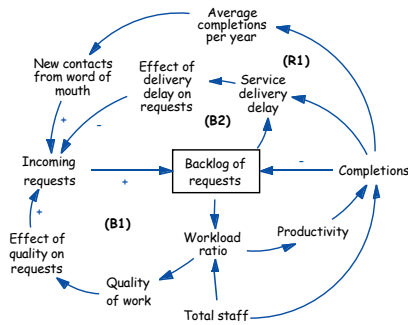




Appendix 2b  
Systems Model for the GORA Case



Building Up the GORA Model



← (Most of The Structure of the Full GORA Model

Appendix 3  
The Full TPI Process

1. Provide an overview of the TPI ways of thinking, processes, and tools
  - a. Show worldview elements
  - b. Present tools
  - c. Discuss approach to leadership
2. Get started on the TPI process itself
  - a. Identify client
  - b. Designate project sponsor
  - c. Enlist project champion
  - d. Identify key players
  - e. Create initial planning group work (e.g., a top management team)
  - f. Craft initial agreement on purpose, logistics, issues, and scope
  - g. Assemble full initial work group
  - h. Have group articulate hopes and fears for the project
  - i. Briefly discuss possible alternative futures
  - j. Elicit policy options
  - k. Design overall process
  - l. Do the work in chunks
  - m. Include renegotiation points
  - n. Take a quick mental run-through of the whole process
  - o. Take a first crack at identifying key issues
3. Analyze and manage stakeholders
  - a. Name the stakeholders
  - b. Begin analyzing the stakeholders
    - i. Articulate the expectations stakeholders have
    - ii. Speculate on stakeholder views of existing organization/programs/strategies
    - iii. Create a power-versus-interest grid for all stakeholders
    - iv. Clarify influence relationships between stakeholders
    - v. Identify individual stakeholders' bases of power and interests
    - vi. Consider stakeholders' stakes in alternative futures
  - c. Develop a stakeholder management strategy
  - d. Revisit the question of whether the "right" stakeholders are involved in the work group
4. Assess external environment and dynamics; look at:
  - a. External forces/trends
  - b. Key resource controllers
  - c. Competitors
  - d. Mandates
  - e. Opportunities and threats
  - f. Alternative futures
5. Assess internal environment and dynamics; look at:
  - a. Resources
  - b. Current strategies in use

- c. Performance
  - d. Mission and values
  - e. Internal trends
  - f. Strengths and weaknesses
6. Enlist key stakeholders in negotiating development of a system model
    - a. Further identify issues
    - b. Make use of oval mapping in a group setting and/or development of individual cognitive maps through an interview process
    - c. Identify what appear to be the policy levers for influencing system performance
    - d. Draft a statement of strategic intent, i.e., a statement that captures goals and key strategies
      - i. Negotiate and agree on an aspiration or goal system
      - ii. Identify distinctive competencies
      - iii. Examine goals and distinctive competencies together to build business model or livelihood scheme
      - iv. Develop a mission statement
      - v. Prepare a statement of strategic intent that includes mission, aspirations, and key strategies
    - e. Take initial steps in developing a dynamic system conceptualization
      - i. Elicit client stocks and flows
      - ii. Elicit and aggregate policy resources
    - f. Create the full model
    - g. Test and refine the model
  7. Design and test policies and strategies testing, including
    - a. Checking political feasibility
    - b. Building and sustaining cognitive and emotional commitment
  8. Develop an implementation plan and process
    - a. Develop a clear description of what success would look like if the changes are fully implemented and the world changes as predicted
    - b. Disaggregate policy resources from the model to the organization
    - c. Allocate resources
    - d. Have a contingent pool of resources available for problem-solving and mid-course corrections
    - e. Create a performance measurement system
    - f. Design a performance management system, including attention to IT, HRM, and reward systems
    - g. Provide a process for regular reviews and modifications of policies and strategies based on feedback from the field
  9. Cycle back through these steps
    - a. Revisit entire process and conclusions
    - b. Review and reflect on the approach

Appendix 4  
One-Week Syllabus for Teaching the TPI Approach  
at the University of Minnesota's Humphrey Institute

Day 1 *Monday Morning*

- Overview of the Course
- Overview of the TPI Approach
- Hopes and Fears for the Course
- The GORA Case
- Leadership and Strategic Planning Power Point
- The Student Team Product to be Created by Course End

Day 1 *Monday Afternoon*

- Stakeholder Analysis Power Point
- Oval Mapping Technique Power Point Slides
- Getting Started with Mapping Software (Decision Explorer) Power Point
- Using Decision Explorer in Brief

Day 2 *Tuesday Morning*

- Analysis of Decision Explorer Models Power Point

Day 2 *Tuesday Afternoon*

- System Dynamics and the Approach

Day 3 *Wednesday Morning*

- System Structure, Behavior, and Learning
- The GORA case

Day 3 *Wednesday Afternoon*

- Managing Strategic Change
- Developing a Statement of Strategic Intent
- Identifying Aspirations/Goals and Distinctive Competencies
- Mandate, Mission, Vision, and Values

Day 4 *Thursday Morning*

- Students Report Out on Mandate, Mission, Vision, and Values Worksheet
- GORA's Implicit Not-Goal Structure
- Developing Alternative Futures

Day 4 *Thursday Afternoon*

- Report Out on Scenario Development
- Stakeholder Management
- Stakeholder Management Exercise

Day 4 *Thursday Evening*

- Leadership Exercise

Day 5 *Friday Morning*

- Implementation and Performance Measurement and Management

Day 5 *Friday Afternoon*

- Student Teams Work on Team Papers
- Faculty Work with Teams on an As-Needed Basis

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