

Opportunity Initiated Systems Design

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Received July 26, 1998; revised May 24, 1999

This paper proposes a design theory of how opportunities might be used to facilitate change within a system, particularly an educational system. Opportunity Initiated Systems Design (OISD) is a system design model that retains the values and goals of Idealized Systems Design (ISD) yet incorporates other models of systemic change to form a simpler, more practical theory of systems design. Traditional barriers to ISD are discussed, used as the basis for describing suggest an alternative theory of systems design. The paper articulates the values and goals of OISD and outlines a theory of OISD. The six phases of OISD are presented, including specific guidelines for implementing OISD. Limitations of OISD and implications for further research are discussed.

KEY WORDS: systemic change; educational reform; system design; Opportunity Initiated Systems Design.

1. SYSTEMS DESIGN IN EDUCATION

Currently, society is undergoing sweeping, broad-based changes; social, economic, geopolitical, familial, business, and educational institutions are all experiencing deep, drastic changes in their purposes and functions (Reich, 1991; Reigeluth, 1995; Toffler, 1980). Changing society places new demands on educational systems. And as the demands placed on the educational system change, the educational system is forced to change. It needs to serve new purposes and carry out new functions. Reigeluth (1992) provides one model of what these functions might be, and how these new processes might work. Ultimately, however, individual communities will have very unique needs and, quite likely, will have unique educational systems.

Just as inquiry needs to be done on what the product of an educational system should be like, research and theory on the process of systemic educational change or educational systems design needs to be done as well. Banathy's (1991)

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Systems Design of Education is one model of how communities can design educational systems better to meet their needs. Banathy's process of idealized system design is a powerful model which offers systems designers a way to transcend the trappings of piecemeal change efforts and design educational systems that take into account the needs of all stakeholders and integrate the many functions of an educational system.

In this paper, an alternative model of systems design, Opportunity Initiated Systems Design (OISD), is articulated. In this model of systems design, system stakeholders exploit opportunities for systemic change, manipulating them to create deep systemic change. Through developing and nurturing change opportunities, they facilitate systemic change from within the system. This model of systems design is a hybrid between systemic design and evolutionary change; it attempts to capitalize on the natural evolution of social systems, blending the critical elements of systemic design theory with systemic change theory. The following sections outline some strengths and limitations of Banathy's Idealized Systems Design (ISD), the goals and values for OISD, the OISD process, and some potential strengths and limitations of OISD.

2. BARRIERS TO ISD

While Banathy's Idealized Systems Design (ISD) model has made meaningful contributions to contemporary understanding of the educational systems design process, few, if any, examples of anyone using ISD to design an educational system exist. ISD is resource and time intensive; it requires a major commitment to the change process by a significant portion of any educational system. Furthermore, in ISD, the system is required to develop a dual-trek approach to design. The current system creates a parallel, idealized system design, eventually switching over to the idealized system. This process of "jumping" to a new design is very risky for an educational system, which is entrusted with the important task of educating future generations. The notion of barriers impeding the ISD process is not new; an ISI conversation group (1992) developed the following list of barriers to ISD.²

- 2.1. *Clarity and agreement among stakeholders concerning the reasons and the need for a design process.* Design efforts require at least some consensus on the reasons and need for a design process. Otherwise, no design community will come together, and the process cannot begin. However, some system stakeholders may feel that a design process is not worth their limited resources, unnecessary, or even counter to their

²This list was generated by an ISI research Conversation meeting on the island of Crete, 1992. The ISI group's language is in italics. I've elaborated on them using my own language and ideas in order to illuminate their significance in relation to OISD.

interests; therefore, achieving any consensus on the need for change is unlikely. How an open system such as an educational system can initiate a design process that involves all stakeholders, yet is not paralyzed by an initial lack of interest in or energy for the design process is a central concern addressed by OISD.

- 2.2. *The complexity of the design context; the variety of perspectives that must be taken into account during the design process.* Educational systems are open systems; they include a large body of stakeholders with widely varying philosophies and perspectives providing input into the system. Achieving and maintaining consensus within a design process by a wide group of stakeholders can be difficult and drain crucial energy away from a change effort. If systems designers can develop a design process that allows individuals to pursue their own paths to systemic change while still moving toward an idealized system state, perhaps systemic design can be more successful.
- 2.3. *Tolerance for change among system members and stakeholders.* Not all system members and stakeholders are interested in change; in fact, many system stakeholders may actively oppose change. Traditional ISD is nearly impossible in systems where there is much intolerance to change, and unfortunately, many, if not most, systems are not well prepared for systemic change. A design process that recognizes this tendency in systems to resist change and utilizes key leverage points in order to generate change capacity and even shield itself against opponents to change might be valuable. In this way, the change process can begin even if an entire system is not capable of systemic change.
- 2.4. *The system's history of success in achieving its objectives.* If a system has a history of achieving its objectives, it may perceive itself as successful and be less likely to engage in the intensive ISD process. Nevertheless, the process of systemic envisioning and self-design is important, as it affords systems opportunities to envision their ideal states, remain responsive to their environments, and become integrated. A design process that allows relatively successful systems to reap the benefits from such a systemic awareness yet does not necessitate such an intensive commitment to a redesign process might be valuable.
- 2.5. *The availability of resources (time, energy, strength of stakeholder commitment to a change process) and system capacity to engage in and sustain such a design process.* One of the most obvious barriers to ISD is the large amount of time and energy that it demands. Few, if any, ISD processes have succeeded. Those attempting the process often report that the visioning phase of ISD alone can take years to complete. Stakeholders need to devote hours of labor and painstaking reflection in the ISD process. As evidenced by ISD's lack of success,

most systems, even those receptive to change, are overwhelmed by this process. An approach to systems design that retains a commitment to addressing systemic issues while funneling energy for further change back into the system might be useful.

- 2.6. *Tolerance for delay of a solution to perceived problems.* Many problems facing systems are immediate; for example, schools face a lack of funding, drastic socioeconomic inequities, and the need to account for students' learning, especially in the form of improved scores on standardized tests. These systemic problems do not have quick fixes, but often system stakeholders want to see immediate progress toward meeting them. Unfortunately, ISD, with its lengthy envisioning process, demands a large investment of a systems energy and resources dedicated to long-term goals with few immediately realized tangible benefits. A design process that allows for more "small wins" and progress to be made throughout the design process might be more sustainable.
- 2.7. *Receptivity of stakeholders to external knowledge base and design expertise.* To engage in ISD, a system needs to incorporate external ideas and expertise that might be seen as threatening. Stakeholders in many systems regard outsiders suspiciously and fear that external influence might supplant their power in regulating a system. While proponents of ISD typically advocate user-designers (Carr, 1997; Carr *et al.*, 1997), some mistake the role of an external facilitator as that of an "expert designer." A design process that allows change energy to come clearly from within might help diffuse this problem and ensure that a truly user-centered design process is followed.
- 2.8. *Belief by system members that ISD represents a viable approach to accomplishing fundamental change.* As of this writing, no clear examples of systems that have successfully engaged in ISD exist. Many systems are reluctant to devote a great amount of time and energy to a process that has hitherto been unsuccessful. Thus, engaging in ISD is much like taking a leap into the great unknown. A less intimidating design process that might be perceived as more practical, more grounded in familiar or common change ideas, and likely to end in real, perceptible changes might be more attractive to systems prepared for systemic change.

While the values and goals of ISD are sound, research in systemic change efforts suggest that many educational systems lack the time, resources, and energy to engage in such an intensive, potentially risky process (Reigeluth *et al.*, 1992). More often, there are pockets of support for change and opportunities for change in the form of grants, projects, or legislative referendum that

can be demands changes that can be used to spearhead broad systemic change. While systems may not have the energy for such drastic changes, oftentimes they are open to exploring avenues of change and experimenting with systemic changes. The goal of this paper is to present a theory of systemic design that retains the values and goals of ISD yet incorporates other models of systemic change to form a simpler, more practical theory of systems design. First, this paper articulates the values and purpose of OISD.³

3. GOALS, PURPOSES, AND VALUES OF OISD

In articulating a model of OISD, this article loosely follow Reigeluth's (1983) four stages of theory building. Having established the need for a more flexible theory of educational systems design, the goals, purposes, and values of OISD are discussed in the next section. The following section presents the OISD model and its six overlapping phases. Last, some initial attempts at outlining the conditionality to the theory are expressed; that is, initial impressions of what makes this theory valuable, when it might work best, and some apparent weaknesses in the theory, implying cases where it would be less useful. This theory of OISD is only in its infancy; it is my hope that formative research on the theory (see Reigeluth and Frick, 1999) might serve as a useful means for testing and improving the theory. Indeed, it should also be stressed that as an untested theory, OISD ought to be regarded with suspicion, at this point regarded as only a little more than speculation.

3.1. Goals and Knowledge

The goal of this theory is to present an alternative model of systems design that retains the core components of ISD. That is, the theory addresses the question: How may a system engage in the crucial aspects of idealized systems design, while avoiding the barriers associated with the formal ISD process? Furthermore, a theory of systemic design that could be used by researchers, teachers, and practitioners who have visions, opportunities, and projects in their system that they want to use as a springboard for system change could be useful. A practitioner should be able to use this theory to guide the development of a project so that it may have deep, far-reaching systemic effects. Therefore, it needs to be friendly to the practitioner. While this conception of this theory is geared primarily toward educational systems, it may be appropriate within other systems.

³Although many, if not most, of the ideas contained herein were born at that conference, the language, presentation, and articulation of this theory are primarily my own. Members of that design conversation include Dale Avers, Sylvia Brown, Deborah Hammond, Ray Horn, Lynn Jenks, and myself.

3.2. Values

As stated in the previous section, OISD shares many of the values associated with Banathy's (1991) idealized design; a more comprehensive list of values includes the following.

- 3.2.1. The design process should enable people to evolve their mindsets about the nature and purposes of education (Banathy, 1991).
- 3.2.2. The design process should be driven by an envisioning process (Banathy, 1991; Ackoff, 1981).
- 3.2.3. The design of social systems can benefit from being predicated on general systems theory (Ackoff, 1981; Banathy, 1991; Hutchins, 1996; Maccia and Maccia, 1966).
- 3.2.4. Design processes should encourage opportunities to transform broader society (Banathy, 1991; Reigeluth, 1992).
- 3.2.5. User-designers should be at the center of the design process, and learners should have an increased role in the design of their own learning systems (Carr, 1997).
- 3.2.6. Design theory should be friendly and accessible to educational practitioners (i.e., principals, administrators, teachers, and students).
- 3.2.7. A design process should create positive feedback loops and be energy building rather than energy draining (Hutchins, 1996).
- 3.2.8. The design process should promote the understanding and exploiting of key leverage points in a system, such as assessment in the educational system.
- 3.2.9. Rapid prototyping is valuable in a systemic design process.
- 3.2.10. Systems design theory should be grounded in research, the history of previous reform efforts, and practitioners' experiences.
- 3.2.11. Systems design theory ought to have a pragmatic orientation.

Clearly, OISD is based on a particular set of goals and values that may not be shared by many. As a theory of design, OISD is concerned less with providing an encompassing descriptive theory of change and more with providing a prescriptive theory for how designed changes might occur (Reigeluth, 1999). Hopefully, the preceding list of values provides readers some basis for deciding if this theory is consistent with their own values and might be worth examining further.

4. OISD MODEL

In the following section, a theory of Opportunity Initiated Systemic Design (OISD) is articulated. Most of the ideas contained in this section are actually born out of a design conversation that occurred in Asilomar, California, during

the fall of 1997.⁴ However, the interpretation and elaboration of these phases are primarily my own.

In general, OISD is a theory of how opportunities might be exploited to generate systemic change. One might think of an opportunity as a virus working through the host system; change comes from within and self-feeding (positive feedback). This differs from traditional ISD, where change is idealized in an abstract vision and then adopted after an extensive design process. OISD may serve to be a more powerful model of change in that it capitalizes on powerful system concepts such as positive feedback and key leverage points, while still retaining a pragmatic orientation.

The six phases of OISD are described below. The phases are loose and overlapping; they naturally would probably occur in sequential order, although it is quite likely that Phase 3, *identification of opportunity for change*, might precede the other phases. In that case, it is suggested that the system backtrack to Phase 1 and then go through the process sequentially. Evaluation of the opportunity for systemic impact and developing system self-knowledge are located in the center of the graphical depiction (Fig. 1), in order to show that inquiry is the essential focus of the design process. In each section a general description of activities in that phase is included, as well as typical participants and key outcomes that should result from each phase.

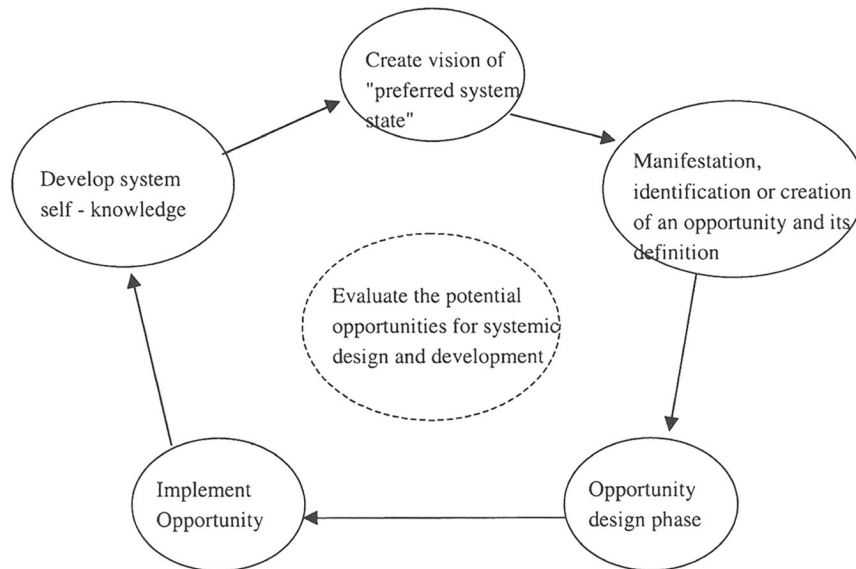


Fig. 1. The six phases of OISD.

4.1. Phase 1: Development of System Self-Knowledge

Participants: A small group (approximately one to five members) integral to opportunity. Should consist of a caretaker(s) of opportunity and, perhaps, two or three other stakeholders closely involved with the opportunity. Obtaining representation from at least one member of a suprasystem in a position seriously to affect the opportunity is desirable.

Before engaging in any design process, knowledge of the system and its environment is essential. The users of the system need to understand the constraints in which the system operates, key stakeholders' needs and concerns, key system processes, and the system's receptivity to change. Strategic planning analysis processes arrive at many of these concerns but, traditionally, are not comprehensive enough to provide the quality of information that is needed to understand all relevant aspects of the system and its environment. Using Banathy's (1992) three models or lenses to view social systems is proposed as a more systemic approach to viewing and understanding system self-knowledge.

Banathy provides three separate, but interrelated models by which systems might be understood. Banathy suggests these models as "lenses," meaning that they are three ways of looking at a system that, when combined, give a fairly thorough picture of a system. The three lenses are as follows.

- 4.1.1. *The System–Environment Model:* The system's relationships, interactions, and interdependence with the larger environment and suprasystems.
- 4.1.2. *The Functions–Structure Model:* The purposes, goals, and functions that are carried out by the system, the components for carrying out these functions, and how these components are organized; in other words, "what the system is like, what it does, with what it does it, and how it is organized" (Banathy, 1992, p. 61).
- 4.1.3. *The Process Lens (the Motion Picture Model):* How the system behaves over time, how it receives, processes, uses energy, transforms energy, assesses itself, performs its purposes, etc. In other words, the third lens is how a system acts through time; *how* it does its functions.

The *outcome* of the first phase should be a statement of the system and its environment. Essential to OISD is the notion that this analysis should eventually include an identification of key leverage points within the system, as well as an understanding of how these leverage points, key stakeholders, and environmental forces relate to the opportunity itself. In an educational system, assessment might be a key leverage point. For example, through formal or informal needs analysis, system stakeholders might identify that the school system is struggling with assessment issues, and any opportunity which provides innovative assess-

ment methods might be successful. Ideally, maintaining a portrait of a system and its environment is something the system does continuously.

4.2. Phase 2: Creation of a Vision of Preferred Systems Design (Visioning)

Participants: A small group (approximately one to five members) integral to opportunity.

In this phase, key stakeholders interested in pursuing an opportunity develop a “preferred picture” of the system. The preferred vision of the system is created with attention to the environment, stakeholder values, and preferences. At this stage, the vision of the system is minimalist and fairly fuzzy; it is not a comprehensive design. This phase is based on Banathy’s (1992) notion that only through envisioning the system in its ideal state can a system change (see also Ackoff, 1981). That is, to undergo a complete paradigm shift toward a more effective and valuable system, stakeholders need to break free of their traditional mindsets and be free to envision an alternative reality.

In the OISD process, the visioning phase should include not only a visioning of the system, but idealized envisioning of potential opportunities, such as a list of potentially powerful opportunities. Thus, the key leverage points that became known during the analysis should be related to ideal opportunities for change. In other words, the participating key stakeholders should have an awareness of how the key leverage points function in the system and a vision of how they may be used to facilitate broader systemic change. Likewise, powerful systems forces that are obstacles to change need to be understood in order to suggest points where opportunities are less likely to be successful. The outcomes of this process should be a fuzzy vision of the system and relevant subsystems, as well as a fuzzy vision of potentially powerful opportunities for change. If at all possible, this phase should include buy-in from top leadership, namely, the building principal and the superintendent. Conversation is one means by which consensus may be gained (Jenlink and Carr, 1996).

While the roots of this phase are firmly planted in Banathy’s work, OISD differs from ISD in that the goal of this phase is not to generate a vision that everyone can agree on; rather the goal is for a smaller subset of stakeholders that is interested in a particular opportunity to develop their vision for a system and possible opportunities that will drive the system toward the desired end state. The rationale behind keeping this initial “seeding period” limited stems from notions expressed in Schlechty’s work (1991). Rarely do innovations come from groups or large committees; rather they tend to come from individuals. Thus, in the OISD model, an individual or, possibly, a small group could “dream up” an idealized system, develop it to the fuzzy image stage, and then begin to approach

key stakeholders for buy in. Schlechty also suggests that all successful programs in school reform involve top leadership. Thus, leadership (key administrators) needs to be brought on board to the vision of what the system might ultimately function like, and what key opportunities might look like. While bringing leadership on board could temporarily be avoided, ultimately the success and life of the opportunity probably depends on it.

Outcome: An idealized image of the system, the components that comprise the system, and potential opportunities for manifesting that ideal image.

4.3. Phase 3: Manifestation, Identification, or Creation of an Opportunity and Its Definition

Participants: A small group (approximately one to five members) integral to opportunity.

In this phase, the opportunity actually arises and is defined by stakeholders within the system. As stated previously an opportunity can actually drive the OISD process. However, if it does, the stakeholders in the opportunity need to return to Phases 1 and 2 in order to achieve a better understanding of the system and its environment as well as potential for change. Otherwise, the opportunity risks being sabotaged by a lack of understanding of the system and its environment (a poor fit with the system and its needs). Furthermore, without idealizing the system, stakeholders risk not fully realizing the possibilities that their system may become; they risk staying within their current mindsets and losing the chance to engage in idealized design.

An opportunity can come about serendipitously or may be created. Proponents and supporters of an opportunity who are members of the social system formally organize and prepare a proposal that provides a comprehensive "opportunity definition." Unlike ISD, this process need not include all major stakeholders but, instead, the proponents of the opportunity, key leadership, and any other key stakeholders that are identified during the first phase.

Ideally, systems should be in an active state of inquiry, poised to recognize opportunities for systemic change. Indeed, a ramification of this theory may be that systems can benefit from establishing groups that seek out, prepare, and evaluate opportunities for change within an organization. This role might be fulfilled by cybernetic agents within the system. In typical school districts, technology coordinators might very well serve this role. An ideal position for this individual might be evaluating and coordinating opportunity proposals to maximize potential change.

Outcome: A thorough outline of the opportunity. Most likely, this outline would take the form of a proposal, similar to that of a grant proposal or business plan.

4.4. Phase 4: Evaluation of the Potential of the Opportunity for Systemic Design and Development

Participants: The initial group, growing to include major stakeholders. At least one member of the suprasystem.

Once the opportunity has been articulated, it needs to be evaluated for its potential to spur systemic design and development. While evaluation and development of system self-knowledge should occur through the life of any design project, they are addressed specifically in this phase. At this point, a wider range of stakeholders are brought into the picture. In the case of an educational program, teachers, students, custodians, support staff, parents, local media, other administrators, community leaders, and any other relevant stakeholders might be brought into the project. Bringing the project to the group is akin to the process of rapid prototyping. It is here that the core design team first introduces its ideas in a formal manner and begins to get feedback from key stakeholders.

If leadership support is a critical element of any change effort (Schlechty, 1991), it is essential that the leaders of the opportunity begin to give up ownership during this phase, allowing the ideas and energy of broader system stakeholders to begin driving the opportunity. This process of allowing the opportunity to become the whole system's could be the least understood, most nebulous, and most important part of this process. Formative research on how this process works might be especially valuable toward the articulation of this theory.

Based on past experiences in change efforts, change theory, and systems theory, the following criteria might serve as a starting point in evaluating the potential of opportunities for systemic change.

- 4.4.1. Compatibility of the proposed project with the vision, values, and purposes of the larger system.
- 4.4.2. Sustainability of the opportunity or project.
- 4.4.3. Potential for involving a range of stakeholders wider than the original supporters (peer systems).
- 4.4.4. Readiness of the system for its implementation.
- 4.4.5. Sufficient level of complexity; Will it have an impact on at least two levels of the larger system?
- 4.4.6. Does it propose either new functions for the larger system or different ways of performing existing functions so that the larger system's vision is reconsidered?
- 4.4.7. Does it have the potential for causing the system to learn about itself?
- 4.4.8. The opportunity should have clear means of assessment, implicate possible changes in assessment within the system, and address assessment issues in related systems, subsystems, and suprasystems.

Understanding the assessment of an opportunity requires an understanding of several key issues, such as What is meaningful learning? What is to be taught and why? and How will a system know if it is successful? These issues also drive at the central issue of change: changing mindsets about the purposes and nature of educational systems.

Outcome: An evaluation of the opportunity (possibly in the form of a report), according to the preceding criteria. The document should also include specific recommendations on how the opportunity might be made more systemic.

4.5. Phase 5: Opportunity Design

Participants: Opportunity design team, including any new stakeholders who are brought in to the core team.

In Phase 5, the original proposal is revisited, modified, and defined to satisfy the system requirements revealed in Phase 4. Redesign of the opportunity refines and improves the potential for success of the opportunity, emphasizes design thinking as the force for change, and involves relevant stakeholders' ideas in the process, satisfying the needs of user-centered design. During this phase, the final proposal is expanded to include updated schedules, system readiness activities, communication needs, an evaluation plan, and governance provisions.

It is important that membership in the core team become open at this point. It is during this phase that the opportunity really begins to stop belonging to the core design team and really becomes owned by the larger system. Interestingly, the OISD process differs from the ISD process in that not all stakeholder groups necessarily need to be involved in, or even in support of, the opportunity and the design process. In fact, system leadership may be the only truly essential membership, although facilitating broad ownership is recommended. Indeed, if there is not at least support for the opportunity, the whole enterprise should probably be reconsidered.

4.6. Phase 6: Implementation

During Phase 6, the opportunity is actually implemented. If Phase 5 activities are adequately conducted, the specific provisions are clearly laid out and ready to be followed. In a case study which examined a school system that used an OISD approach to change, the following key issues emerged during the implementation phase (Squire and Johnson, 1999).

- 4.6.1. How can key members from the suprasystem be brought into the change opportunity?
- 4.6.2. How can the successes of opportunity be communicated with peer members so that the opportunity spreads?

4.6.3. What kinds of supports are needed from the suprasystem to ensure that the opportunity does receive positive feedback from the system?

Although only one case study leaves little room for generalization, Schlechty's (1991) work in school change and Reigeluth and co-workers' (1992) studies of systemic change effort suggest that these issues are common in change efforts and warrant further study. As a theory of systems design, perhaps future case studies on OISD will provide more detailed guidance in addressing these key issues.

As discussed in Section 4.4, evaluation needs to occur throughout the life of the opportunity, particularly between each phase. However, periodically throughout the design cycle, it is essential to evaluate specifically an opportunity for its systemic impact. In most cases, this might occur in the form of an annual report.

Not only must the opportunity be evaluated for potential systemic impact, but a system needs to reflect upon itself in order to generate system self knowledge (Phase 1). In their case study of a systemic change effort, Squire and Johnson (1999) found that system self-knowledge was a major result of the OISD process. They reported that, as a result of the OISD process, system stakeholders valued the opportunity to learn more about their system more than any other aspect of the change experience.

5. DISCUSSION

5.1. Potential Strengths

This OISD theory recognizes that social systems often experience opportunities for improving their system but seldom see or make use of the opportunity in other than isolated and nonsystemic improvement activities or events. What is called for is the capacity of systems to evaluate such opportunities in terms of their potential for influencing the system toward a desired systemic change. OISD could help build system capacity for change by dispersing the responsibility for ideas and change because anyone within a system can initiate an opportunity. Too often, a system stakeholder, such as a teacher or a student, feels too small within a system seriously to affect any change. In OISD, both individual and small-group initiatives are encouraged, and change is given a very grassroots flavor—anyone can initiate a change effort. Furthermore, success within these systems creates renewed energy and enthusiasm, in turn breeding more success. Schlechty (1991) suggests that programs that allow success to build success are one of the core principles for successful change management.

In general, the OISD process is much less complex and much less daunting than the ISD process. If a major ISD effort fails even during the design phase, countless hours invested in planning are essentially lost. And the risk of try-

ing to initiate a whole new educational system is daunting, if not paralyzing, to most. In OISD, integrating the ideal and the real comes much earlier in the process, which, I believe, is a much more pragmatic approach to change. It is my hope that in a design model based on opportunities, risk taking is encouraged because failure of an enterprise is not as critical to the larger system. In OISD, smaller-scale experiments and opportunities for change can be exploited with an orientation toward understanding what works and a vision for changing the whole. Furthermore, OISD might be more resistant than ISD to initial blockers of change. In OISD system members are free to develop and experiment with ideas and opportunities on their own, somewhat isolated from potential resisters to change. In this way, there is a space for change experiments to occur.

Ideally, multiple opportunities could be engaged in simultaneously and coordinated by a cybernetic agent. This notion is a powerful one to me, because it relates to how general systems theorists see change happening in other systems; multiple changes occur simultaneously throughout the system, and eventually the system evolves toward a new state (Hutchins, 1996). Whether initiated inside or out, change is fueled from within the system as a result of naturally occurring self-organizing activity, which is also consistent with how systems theorists conceptualize change in systems.

5.2. Potential Weaknesses or Risks

While opportunities may serve as powerful catalysts to systemic change, there certainly is a risk that opportunities may lack sufficient character or size to be systemic in influence. With little grounded experience with or research on this model, it is difficult to predict just which opportunities are big enough, which move the system enough toward a preferred state. Additionally, the impact of a change may remain narrow, without rippling through the peer subsystems, without affecting any peer systems, and with leaving the suprasystem unchanged. Indeed, if a project becomes isolated, it may perish, as the demands and needs of other systems squeeze it out of existence. Finally, there may be mostly mismatches between opportunities that occur and needs of the system, making any opportunities for OISD essentially unfeasible.

In involving broad stakeholders relatively late in the design process, OISD risks being too local. Broad stakeholder involvement may not materialize. And by not demanding broad stakeholder involvement throughout the process, OISD risks being too local in addressing the needs of the system, advancing a limited perspective of the system's purposes and needs. Small efforts are vulnerable to key people leaving the system, as many change efforts have experienced. Furthermore, small projects without broad support are also more vulnerable to sabotage. Means for balancing the delicate spreading of control, influence, and

participation in a project are essentially unknown, although the demands of the particular situation would probably offer guidance in this area.

A related tension that is sure to exist lies between selecting opportunities that are going to change the system and the system's natural tendency to resist change. Thus, at the least, there should be substantial belief within the system that change is necessary. Even in systems with broad support for change, there is the risk that if a project should become very successful and threaten to impact the system, the larger system may seek stability and subvert the smaller. Likewise, individual stakeholders may become threatened and sabotage it. Of course, most of these considerations threaten any change project. What is needed is more understanding of how they relate to OISD change efforts.

In summary, there is the overriding risk that opportunities may remain too localized, and system integration may never happen. More explicit recommendations grounded in empirical experience are necessary. Case studies and formative evaluations of change efforts may help illuminate this critical tension. Until OISD is grounded in experience and empirical research, these risks should be noted and caution exercised accordingly.

6. IMPLICATIONS

When OISD is the model for change, developing and honing leadership within the system—leadership which can initiate, develop, and implement opportunities—become the catalyst for change. In other words, if change occurs through the realization of successful opportunities, then facilitating change is really a process of supporting and nurturing opportunities. Those interested in facilitating educational change need to be in the business primarily of challenging people's mindsets about education and supporting teachers and students in their efforts to realize their ideal visions of educational systems. Given the focus on leveraging individuals' ideas and visions for change, I believe that this feature of OISD could prove to be very important. And by framing change as a process of cultivating leadership and establishing opportunities for change, systems are leveraging the naturally occurring self-organization processes that are believed to be the very core of systems (Hutchins, 1996).

Not only does OISD build from general systems change concepts, incorporate some pragmatic ideas generated from systemic change efforts, and circumvent many of the traditional barriers to ISD, but also it may serve as a backdoor entry into ISD. Considering the relative value of opportunities includes evaluating opportunities' potential for moving the system closer to its preferred state. Thus, a system should be able to answer the circular question of "Just what is our preferred state?" It is my hope that this model may serve as an easier process to engage resistant system members in systems thinking.

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