THE HARD FACTS OF SOFT SOCIAL SYSTEMS: BOULDING'S TYPOLOGY AND THE ROUNDTABLE FOR NEW THEORY AND PRACTICE

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ABSTRACT

This paper outlines a new theory and a new practice with the goal of improved descriptions of and prescription for schools and social systems. The theory, gleaned out of Boulding's nine-level typology of system complexity, is named TPO for the three key domains of schools (*technical, personal* and *organizational)*. Informative for instructional designers and school and organization change efforts, it is also a theory for non-specialists (*things, people, and outcomes*). The need for such a theory is great, given the variety of decision-makers, and the failure of well-intentioned reform efforts. Things, people, and outcomes, the key parts of a social system, have very different properties. First, *things* (technical) in a social system are of three kinds--Level 1: frameworks (e.g., buildings, books and equipment); Level 2: clockworks (e.g., school routines, schedules and calendars); and Level 3: thermostat-like systems (e.g., school goals which people--students and educators--self-regulate to attain.) The skillful design of Level 3 systems results is adjustment capacities. Level 1, 2, and 3 *things* are predictable and designable. Second, *people* (personal) in a social system are not designable. While things like thermostats self-regulate to *externally* prescribed criteria, living systems self-regulate to *internally* prescribed criteria (Level 4: open; e.g., cell). Living systems (Levels 4-7) act to meet their own basic needs first, then, in people, higher needs—generally predictable by Maslow's hierarchy of human needs: survival, safety, belonging, achievement, self-actualization and transcendence. People's behavior decreases in predictability due to inherent individual differences (Level 5: blueprint; e.g., plant); differing immediate perceptions from among competing stimuli (Level 6: image-aware; e.g., animal), and their own long term reflections, prior knowledge, choices, and abilities (Level 7: symbol processing; e.g., human). The third part of a social system is labeled *outcomes* (organizational). Outcomes depend on people's behavior. If things (T) of the systems are designed and arranged to allow people (P) to easily meet their basic needs, outcomes (O) will be desirable. This principle is not a question of ethics, but a question of physics. It is natural, biological, and scientific law that people will behave to meet their individual and personal needs (Level 7: human) before their social system or organization's needs (Levels 8 and 9). Level 8 systems (social) are optional. Level 7 functioning is mandatory. A person can transfer schools (Level 8), but cannot transfer bodies (Level 7). The new practice, observed in the ISSS Morning RoundTable over the last ten years, corresponds to the goals of systemic renewal and the TPO theory. The ISSS RoundTable is a version of the GEMS RoundTable, which has been formally studied in 4th Grade classrooms. Two of these teachers continue with it today. The RoundTable is an excellent example of a TPO practice because of its effective design, arrangement and use of *things* (T), to maximize opportunities for learning for the participants or *people* (P). Furthermore, the result is a system with the excellent adjustment capacities needed for best outcomes (O).
Keywords: General systems theory; social system theory; systemic school renewal, instructional design

A SYSTEMS VIEW OF PUBLIC EDUCATION TODAY

Over the course of my career teaching in large urban schools in Los Angeles, I have encountered many training and educational programs. While many provided useful insights and tools, a great many more were unintentionally diversionary or even harmful, which impeded or slowed development, rather than fostering it. My colleagues described similar problems in their managerial experience in workplaces, in public and private organizations. We came to understand that in spite of advancing technology and equity in today's schools and workplaces, well intentioned but ill-conceived mandates were resulting in social systems decline.

I came to understand that school decision makers were frequently working from assumptions that were faulty. Dewey's words are well known and assumed, if not perfectly applied, "students are not empty vessels to fill, they are active participants in their learning" (Dewey, 1938). However, these words have not been expanded to include all people as learners. The truth is that teachers, principals, all people in schools, as well as parents, workers, managers, and CEOs are also not empty vessels to fill. They are active participants in their learning processes. Each human learns and develops at his or her own pace. Thus, it is also true that decision makers come from very different perspectives, especially in large social systems where there are many different roles. In schools, decision-makers include teachers, students, parents, school-site administrators, principals, district office administrators, superintendents, educational publishers, and lawmakers.

Simplifying and Illustrating Two Key Problems in Public Education

To summarize, one problem is that typical current reform efforts in schools are ineffective and even harmful. My own experience as a secondary school teacher is illustrated in Figure 1 below. Never ending pressures on teachers (center in Figure 1) result in educator depression, burnout, anger, withdrawal, denial, and inauthentic or survival behavior. For some teachers, (myself) this results in teachers' lowered ability to relate in the classroom, and/or lower expectations, inauthentic relationship (the bottom clockwise cycle in Figure 1). Thus poor classroom and school quality leads to increased external reform efforts, in the form of new federal and state mandates. For other teachers, this leads to escape from the classroom to other fields of work, or to administrative, non teaching positions whose increased numbers lead to increased internal reform efforts, and new internally mandated programs and paperwork for the classroom teacher (the top counter-clockwise cycle in Figure 1).

The internal and external pressures on the smaller units, schools, teachers, and students, keep increasing. The gray arrows in Figure 1 represent that that the pressures from the original cycle increase every year, and will continue to multiply as the cycle continues.

My simplest understandings of this cycle of increasing negative outcomes are also illustrated in Figure 1. Bottom left, it is intended in traditional reform efforts that students, teachers, and all school decision-makers will follow instructions and mandates

as expected, as if they were mechanical hard systems. It is assumed that school quality will improve when a new reform effort or mandate is implemented. I illustrate this as 19 + 1 = 20. Bottom right, it is observed in traditional reform efforts that students, teachers, and all school decision-makers have decreasing ability to implement new reform efforts or mandates.

I illustrate this as 19 + 1 = 18, or school quality plus new mandate equals reduced school quality. There are clearly some new laws at work. This is well known. In fact, Sarason (1991) entitled his book: "The Predictable Failure of School Reform." However, no feasible solutions have surfaced.
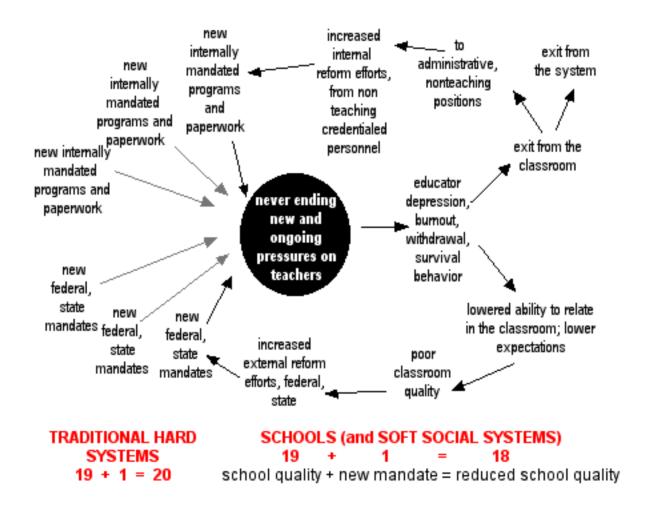

Figure 1. Cycle of Increasing Negative Outcomes

To clarify my search, I lay out some old paradigms and new paradigms in Table 1. The first two examples, in bold type, are hard laws or scientific new paradigms. The second four, in regular type, are soft principles, or pre-scientific.

Table 1. Examples of Old and New Paradigms

OLD PARADIGMS	NEW PARADIGMS
The world is flat	**The world is round**
The sun revolves around the earth	**The earth revolves around the sun**
Some races are superior to others	No race is superior; diversity is valuable
Men are superior to women	No gender is superior; diversity is valuable
Children should be seen and not heard (home)	Children should be seen and listened to (home)
Children are empty vessels to fill (school)	Children are active participants in their learning

I illustrate the old and new paradigms for education and management in Figure 2. Left Figure 2A, is the old paradigm. In classrooms, the teacher (T) "installs" knowledge (K) in students (SS) because teachers have more expertise than students. In schools, the principal (T) has more expertise than the teachers (SS). In the workplace, the CEO (T) has more expertise than the managers or workers (SS).

Right Figure 2B, is the emerging new paradigm. In classrooms, students (SS) direct their own learning. The role of the teacher (T) is unclear. In schools, instead of the principal, teachers are the experts in their subject matter and subject matter delivery. In workplaces, instead of the CEO, workers have expertise in their front line roles. The new role of the principal or CEO is not fully specified in the new paradigm.
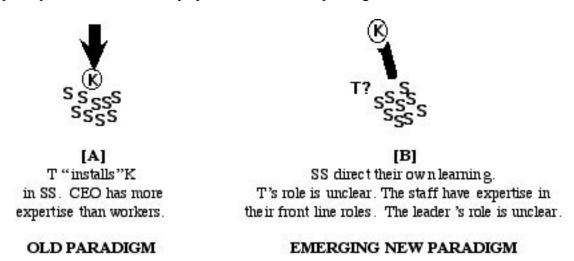

[A]
T "installs" K
in SS. CEO has more
expertise than workers.

OLD PARADIGM

[B]
SS direct their own learning.
T's role is unclear. The staff have expertise in
their front line roles. The leader's role is unclear.

EMERGING NEW PARADIGM

Figure 2. Illustration of the Old and New Paradigms in Education and Management

The second of the two key problems in public education today is the failure of communication among school decision-makers. On one hand, people in the K-12 school--students, parents, teachers and administrators--are too busy, with too many roles and responsibilites. Teachers especially have no down time, no time for collaboration. On the other hand, students, parents, teachers and administrators all have different learning rates

and viewpoints as well. This is true of the variety of decision-makers and roles at schools, district offices, teacher training institutes, textbook publishers, governments, communities, and so forth. Moreover, people at these different sites may use different language or the same language differently. This results in difficulty or breakdown in communication.

A good example of this difficult language in communication is the meaning of *top down* and *bottom up* in management theory and in reading theory. In reading theory, bottom up approaches mean that the teacher, textbooks, or programs start with phonics--*letters* and *sounds*--when teaching reading. For example, teachers and children might begin with the practice of sounds and syllables, such as *cat, bat, hat sat, fat*, often with the help of charts or cards. Also, children hear and are offered stories selected for word difficulty, usually readers or textbooks that are called *basal readers*. In bottom up approaches, the meaning of the story is considered less important than reading level and word difficulty. This is the old paradigm. This is illustrated in Table 2, left and middle columns.

On the other hand, top down approaches in reading theory have a key goal of engaging learners meaningfully and authentically. The teacher, textbooks, or programs start with *meaning* when teaching reading. That is, children hear and are offered stories that are meaningful to them, stories that have been written by people who wanted to say something, rather than by people hired to write a third grade reader. If there are difficult words, this is not considered as important as the meaning of the stories and whether the stories are interesting and engaging to the children. In other words, teachers offer children *whole language* rather than words or sounds. Teachers use real literature, *core literature*, rather than textbooks written for word and sentence difficulty. This is the new paradigm, illustrated in Table 2, left and middle column.

The exact opposite is true in management theory. Top down management is the old paradigm. Bottom Up approaches are the new paradigm (Table 2, right column).

Table 2. Opposite Meanings of Top Down and Bottom Up

PARADIGM	INSTRUCTIONAL THEORY: READING	MANAGEMENT THEORY
Old Paradigm (out of favor)	**bottom up**- children (SS) learn letters and sounds (K) first, then words, sentences, paragraphs.	**top down**- the CEO (T) makes key decisons
New Paradigm? (in favor)	**top down**- children learn reading (K) by listening to and reading engaging stories first.	**bottom up**- the front line workers (SS) make key decisons

The different roles, viewpoints and language of school decision-makers are illustrated in Figure 3. The lesson of the Tower of Babel, where everyone is speaking a different language, helps me understand some of my experience in schools and findings in the educational literature, from inner city classrooms to sprawling campuses at universities and post-graduate seminars. Considering only the K-12 school, there are viewpoints including four categories of decision maker: teachers, students, administrators, parents--and an infinite variety of viewpoints within each group.
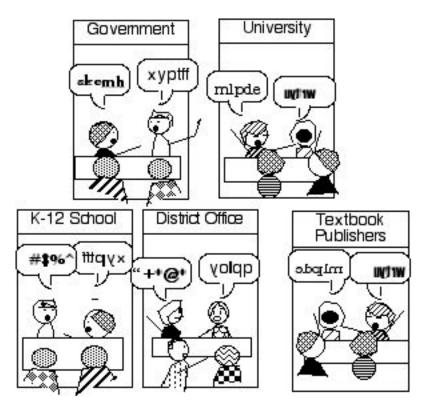

Figure 3. School Decision-Makers Climbing the Tower of Babel

Summary of the Problem and the Proposed Solution

In short, there is a need for a repeatable, verifiable, scientific paradigm to explain behavior in social systems in order to better understand and improve classrooms and meetings in schools, workplaces, communities, and so forth. Such a paradigm should be comprehensible and make sense to all school and social system decision makers: teachers, principals, superintendents, parents, students, theoreticians, researchers, lawmakers; CEOs, managers, employees; presidents, kings, citizens, and so forth.

NEW THEORY: BOULDING'S TYPOLOGY ELABORATED

Boulding's nine level typology outlines a powerful explanatory theory for social system behavior, especially for schools (Gabriele 1997). His nine levels are usefully clustered

into three key parts of a social system: ***Things, People,*** and ***Outcomes*** for all school decision-makers. TPO also suggests ***Technical, Personal*** and ***Social***, the three domains suggested for educators, theorists and researchers (Cordell and Waters, 1993).

Boulding's nine system types and levels, their traits and the resulting three key parts of schools are illustrated in Figure 4. In the right column, *Things, People,* and *Outcomes* are the key parts of a social system, as they have very different properties and behavioral laws. First, *things* (technical) in a social system are of three kinds--Level 1: frameworks (e.g., buildings, books, and equipment); Level 2: clockworks (e.g., school routines, schedules and calendars); and Level 3: thermostat-like systems (e.g., school goals which people--students and educators--self-regulate to attain.) Things are predictable and designable.
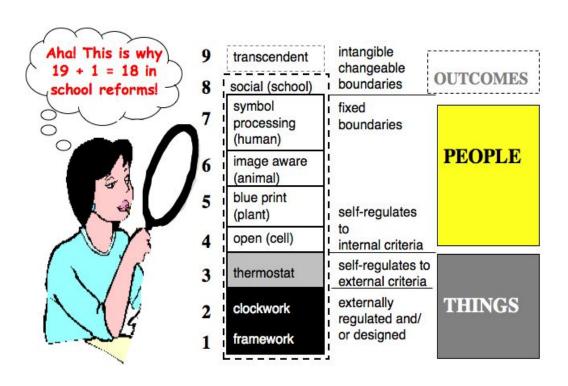

Figure 4. Boulding's Nine System Levels and the Three Key Parts of Schools

Second, *people* (personal) in a social system are not designable. While *things* like thermostats self-regulate to *externally* prescribed criteria, living systems self-regulate to *internally* prescribed criteria (Level 4: open; e.g., cell). Living systems (Levels 4-7) act to meet their own basic needs first, then, in people, higher needs—generally predictable by Maslow's hierarchy of human needs: survival, safety, belonging, achievement, self-actualization and transcendence (Maslow, in Valle & Halling, 1989). People's behavior decreases in predictability due to inherent individual differences (Level 5: blueprint; e.g., plant); differing immediate perceptions from among competing stimuli (Level 6: image-aware; e.g., animal), and their own long term reflections, prior knowledge, choices, and

abilities (Level 7: symbol processing; e.g., human). Level 7 systems, people, are generally predictable. They are also composed of system Levels 1-3, structures/frameworks; clockwork processes, and control systems and they have fixed boundaries (the solid line around Level 7 systems in Figure 4). However, there is infinite variability in the learning and behavior of individual people.

The third part of a social system is labeled *outcomes* (organizational). Outcomes depend on people's behavior. If people easily meet their basic needs, they will act to meet the organization's needs. This principle is not a question of ethics, but a question of physics. In other words, it is natural, biological, and scientific law that people will behave to meet their individual and personal needs (Level 7: human) before their social system or organization's needs (Levels 8 and 9). Level 8 systems (social) are optional. Level 7 functioning is mandatory. A person can transfer schools (Level 8), but cannot transfer bodies (Level 7). Thus Level 8 and 9 systems have broken line boundaries to reflect the fragile and temporary nature of their boundaries.

In overview, old paradigm bureaucratic models assume **all** parts of a social system are designable. New paradigm laissez-faire models assume **no** parts are designable. Boulding's nine-level social system clarifies that **specific parts** of a social system are designable and others are not. Boulding's social system elaborated in this way illustrates the use of human energy in these three social system models (Figure 5).
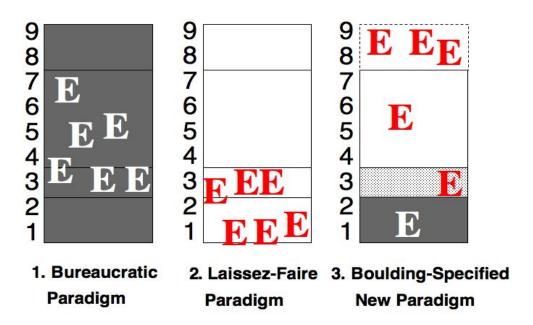

Figure 5. Use of Human Energy in Three Social System Models

Left, in the bureaucratic model, people have to use too much energy to make up for the lack of flexibility (Levels 4-7) and adjustment capacities (Level 3). Center, in the laissez-faire model, people have to use too much energy to make up for the lack of stability

(Levels 1-3) and adjustment capacities (Level 3). Right, in Boulding's model, the correct design of the social system allows people energy left over for social and transcendent function (Levels 8 and 9). Figure 5 explains the observed formula 19 + 1 = 18 for the outcomes of reform efforts in schools. Currently, most reform efforts are ill designed. Outcomes are increasingly negative.

TPO Theory

TPO Theory explains current decline in schools, workplaces, and other human social systems in this way:

Hypothesis # 1. When ***Things*** (T) are selected and arranged without consideration of ***People's*** (P) self-perceived needs, wants, and abilities, ***Outcomes*** (O) in learning, performance and behavior will be increasingly negative.

Hypothesis # 2. When ***Things*** (T) are selected and distributed to allow ***People*** (P) to meet their basic needs (Levels 1-3), goals (Level 4), abilities (Level 5), perceptions (Level 6) according to their own interests and choices (Level 7), each at their own pace, ***Outcomes*** (O) will be increasingly positive.

NEW PRACTICE: THE GEMS ROUNDTABLE

Over the last ten years, the International Society of the Systems Sciences (ISSS.org) has held a daily RoundTable every morning during its annual conference. This RoundTable is a version of the GEMS RoundTable (www.gemslearning.com), which was conceptualized in 1992 to be a powerful tool for systemic renewal. It was adapted for a pilot study in the Asilomar Conversation Community in 1997, and then studied in four 4th Grade classrooms in 2000 (Gabriele, 2002). Two of these classrooms are still using weekly RoundTables today. In K-12 schools, RoundTables are designed to last 30 minutes, five minutes for reading the RoundTable Guidelines or Basic Readings, and 25 minutes for learning reports, time distributed equally among all present.

In ISSS, the RoundTable is designed to be sixty minutes. The three key components of the ISSS RoundTable session are as follows:
- **Ten minutes of scripted readings**: the Facilitator Guide and RoundTable Guidelines (Basic Readings),
- **Fifty minutes of participant comments** or spontaneous oral reports, time distributed equally among all present.
- This design allows **rotating the facilitator role** from session to session.

Scope of the GEMS RoundTable

The RoundTable is valuable, and even emancipatory, for workplaces and conferences, such as ISSS. However, our primary interest is K-12 schools and their equivalent internationally. Our focus is K-12 students so that, theoretically, everyone in the world

can be reached. Within the school, we want to offer it in classrooms, faculty meetings and Parent-Teacher-Association (PTA) meetings to include all school participants within one of their existing groups, and to accelerate its spread throughout the school and school district. In other words, as teachers become familiar with it in faculty meetings, they will become more quickly ready to use it in their classrooms.

Benefits of the GEMS RoundTable

Benefits have been noted at both sites (ISSS and the two 4th grade classrooms) from a variety of perspectives. Users views are the most compelling evidence, but are the least measurable or quantifiable. (Testimonials are at www.gemslearning.com). Users report multiple and varied benefits. These benefits group loosely into two main categories: accelerated satisfying learning; and increased community spirit. On that note, one of our ISSS Basic Readings states:

> In one short hour, we hear twenty-plus points of view around topics of interest. We believe that just as we break the sound barrier when we travel faster than the speed of sound, we break the communication barrier when we hear 20 authentic viewpoints in 60 minutes (and 5 different facilitators over the week).

There are some very simple quantifiable measures of the RoundTable benefits. From my point of view as a high school teacher, the weekly 30-Minute RoundTable provides more than 1296 more learning opportunities, and covers twice as much subject matter

1296 More Learning Opportunities
In other words, when compared to other whole group activities, the RoundTable offers 6^4 or 6 x 6 x 6 x 6 more learning opportunities. Below is the math and explanation.

1. **Instead of one ten-minute review, a RoundTable covers 6 reviews.** In other words, as a high school teacher, the first ten minutes of my class were usually devoted to quiet seatwork. Students would cover one basic review which I assigned and which they could do without my help. I would then be free to sign absence slips and provide some one-on-one assistance as necessary. In the RoundTable session, there are six basic reviews: one Leader's Guide plus five Basic Readings.

2. **About 6 times as many participants have time to present their ideas.** In a traditional thirty-minute whole group activity, I would present new information in lecture style and give examples, answer questions, etc. Typically that meant that about six views would be heard: mine and those of five other students. In the RoundTable, all thirty students have the opportunity to give their view on a topic.

3. **Listeners hear more than 6 times as many viewpoints.** In this same traditional 30-minute lecture whole group activity, students would hear my views, my words, and perhaps views of five other students. In the RoundTable, students hear the views of all the other 30 students in the class.

4. **Instead of 1 teacher/leader, 6 people act as leaders in just one session.** In this same traditional 30-minute lecture whole group activity, I was the sole facilitator. In the RoundTable, students take turns being RoundTable leaders. At each session there is one main leader and five other leaders (readers of the basic readings).

Twice As Much Subject Matter
Regular use of the RoundTable increases students' knowledge and skills in two subject matters: [1] a subject matter of the teacher's or users' choice; and [2] the "new basics," leadership skills, shared and rotating peer leadership, thoughtful listening and speaking, values clarification, appreciating differences, authenticity (participants' real thoughts), and equity (equal time and turns for all). I call these the new basics not because they are new or more important, but to add them to the very important traditional "good old basics"-- the 3 R's (Reading, 'Riting, and 'Rithmetic).

THE ROUNDTABLE'S LINKS TO TPO THEORY AND PRACTICE

The New Practice

A 30-Minute RoundTable in schools is used weekly in classrooms and monthly in Faculty-, PTA-, and other regularly meeting groups. It consists of five minutes of scripted readings: the Facilitator Guide and five Basic Readings, and 25 minutes of participant comments or spontaneous oral reports, time distributed equally among all in attendance. This design allows rotating the facilitator role from session to session.

The New Theory

The TPO hypothesis is: When ***Things*** (T) are selected and distributed to allow ***People*** (P) to meet their own self-perceived needs and goals, according to their own interests and abilities, each at their own pace, ***Outcomes*** (O) will be increasingly positive.

Close Up on Things (T) in TPO.

Recall that, Things, as illuminated by Boulding's first three systems levels, are:

1. *Frameworks/Structures (Level 1):* For example: ***rooms, equipment, materials, books, written goals, etc.*** Looking at the RoundTable through TPO clarifies another category of Level 1 things: ***words*** and ***sounds*** that are received through people's ears.

2. *Clockworks (Level 2):* For example: High school is from 8-3, September through June. Faculty meetings are Tuesdays at 3pm. Classes are 55 minutes. Tests are on Friday. Lunch is from 12-12:30, etc. In class, the first ten minutes are review; the second thirty minutes are for a new lesson, lecture style; and the last 15 minutes are for pair and individual work.

3. *Control systems/Thermostat-like Systems.* Students, teachers, all people in schools, self-regulate to work towards the goals of the school, the class, or their personal goals. If people are comfortable with the school or class goals, they will work to achieve these goals. If the school or class goals are in conflict with people's individual goals, or if people (students, teachers) are on input overload, they will work to achieve survival or safety goals. Input overload is due to poor adjustment capacities of the system. The excellent design and functioning of Level 3 control systems leads to excellent adjustment capacities.

The more we can design, control, and distribute ***Things*** that help, rather than hinder, goal achievement and learning, the better. The better the adjustment capacities of the system (the school) and subsystems (the people and classes), the better the outcomes.

Close Up on People (P): Entry Points for Pick Up and Learning

More details about how people learn and behave are suggested in Figure 6. People learn or pick up information at specific entry points, their five senses: sight, hearing, taste, smell, touch (Figure 6, tiny gray graspers all over the body).
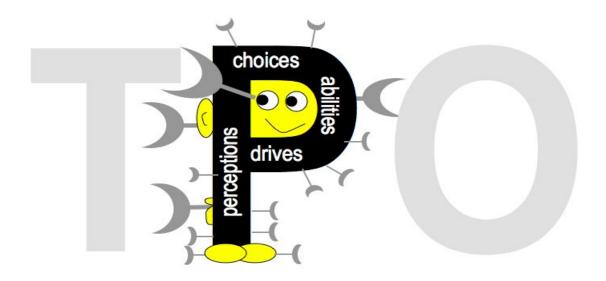

Figure 6. Entry Points for Pick Up and Learning

Of course, what people pick up is selected from competing stimuli from the outside five senses, their inside temporary conditions (e.g., hunger), and determined by interiorly prescribed criteria: the individual's cognitive, psychomotor and affective traits and development, his or her interests (whether inherited or acquired) and needs (Maslow's hierarchy). These interior criteria are illustrated as: drives, abilities, perceptions and

choices inside the P in Figure 6. To increase this complexity, humans can reflect on and contemplate what they have picked up or learned, or they can deny, ignore or discount it.

In schools, people pick up information mainly from three entry points: *eyes, ears,* and *hands* (the larger gray graspers on the left of the P, pointing to where THINGS are in the process. This tells us that designed and selected THINGS should be, as feasible, visible, audible and touchable. Actually, the more senses that people use to experience THINGS, the greater the potential for pick up and learning. From another perspective, THINGS should be designed to engage the three domains of learning: cognitive, affective, and psychomotor (Bott, 1995). Otherwise stated, THINGS should be attractive, interesting and engaging (affective), easily seen, heard, handled, and understood (cognitive), and provide opportunities for touching, handling, practicing and developing gross and fine motor skills (psychomotor). The fourth large grasper in Figure 6, reaching towards Outcomes, is a reminder that people also learn from and reflect on outcomes.

Close Up on People (P): Exit Points for Behavior and Performance

Human behavior can be located at specific exit points (Figure 7). People act or perform with their bodies, their limbs, facial expressions, and more.   They can stare, smile, or wink with their eyes and faces. They can dance or do sports with their bodies. They can point, hit, caress with their hands. They can make and manipulate tools with their hands to sew, draw, and write. They can use their feet to run, or walk away.
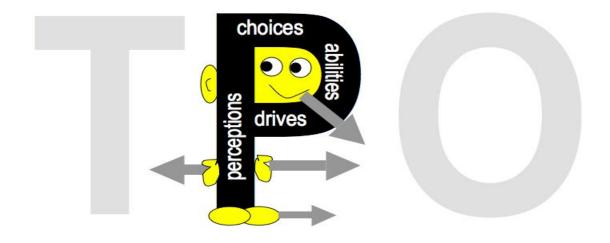

Figure 7. Exit points for Outputs, Behavior, Performance

Of course, how people behave or perform is influenced by competing stimuli, self-perceived needs, and other interiorly prescribed criteria: their cognitive, psychomotor and affective traits and development, their intentions (whether inherited or acquired) and goals (Maslow's hierarchy). Moreover, humans can reflect on, contemplate, and practice their behavior: their speech, dance, writing, sewing, and so forth.

In schools, people act or perform to show what they have learned mainly at two exit points: **the mouth (speaking)** and **the hand (writing** and **typing).** This is illustrated in Figure 7 as two thick gray arrows pointing right toward OUTCOMES. This tells us that OUTPUTS are spoken, written, or performed (a third arrow pointing right at the feet). Of course, if OUTPUTS are spoken, written, **and** performed there is a greater chance of robust learning. Thus, in Figure 7, there are feet, hands, a face, and a mouth. A fourth thick arrow in Figure 7, pointing to THINGS, is a reminder that people also select, design, arrange and distribute THINGS. Moreover, as people learn from and reflect on OUTCOMES, they can re-select, redesign, rearrange and redistribute THINGS whenever they have time, energy, money, and new insights/solutions.

The Things of the RoundTable

Structures. The RoundTable adds amazing new structures:
- **A whole group learning activity for 30 some people** which is democratically participatory. The only other whole group model in use, for groups as large as thirty, is the lecture model, which is old paradigm.
- **A one-page script to guide the process**. The value is that a person (P)--the teacher, or an outcome (O)—the spoken words of the teacher's lecture (Level 8, transient and fleeting) is transformed into a designable thing (T)—the one page script (replicable and modifiable).

Clockworks. The RoundTable adds amazing new clockwork processes:
- **Regular visual display.** Either on the bulletin board or in the leader's guide.
- **Regular auditory display.** Participants hear basic reviews and organizing principles regularly.
- **Regular practice in authentic listening.** Participants hear others' real thoughts at every session.
- **Regular practice in authentic speaking.** Participants speak at every session.
- **Regular practice in observing and participating in rotating peer leadership.**

Control Systems→ Adjustment Capacities. The RoundTable has amazing new adjustment capacities:
- **Focus on time (T), rather than topic (O).** During a traditional classroom discussion, a teacher often tries to keep students on topic, which is subjective. In the RoundTable, the Leader's Guide and teacher keeps students on time, which is measurable and objective. The shift from controlling the amount of time a person speaks (which is objective) rather than the content of what a person says (which is subjective), is a valuable new addition to TPO Theory and practice. TPO Theory explains that leaders control things (time) not people (their thoughts and words).

- **Participants self-regulate.** After the first few sessions, participants self-regulate. There is little need for the teacher to regulate or control.
- **Regular revision.** Every few months or years, the group can revise the Leader's Script to fit the changing needs and goals of the group. Moreover, the revisions go right into the Leader's Guide, a designable thing, which participants see and hear regularly. Thus conscious guided evolution can be a reality. In traditional business meetings, the minutes may go into a desk drawer and may not be seen by everyone, and may be seen more than once.

The RoundTable as Generative Rather Than Strategic

The terms generative and strategic have been applied in systems design to apply to two different processes with two different purposes. Generative dialogue is akin to brainstorming ideas without evaluation. Strategic dialogue is evaluating and deciding on actions. Banathy discussed the value of generative dialogue for the building of a shared worldview before proceeding to strategic dialogue (1996, p. 219).

Intuitively, I have been very clear that the RoundTable is a generative process, not a strategic one. In other words, the RoundTable session is not, in my view, for making group decisions. That would change the nature of the process, and we would lose the pure democracy. Or at least, that is the function of the RoundTable at present. Some strategic decisions are made in the RoundTable revision session. However, I have frequently been apprehensive when a newcomer to the RoundTable speaks up excitedly and wants the group to make some strategic decisions. I have been uneasy because I know how fragile a new process is, and how easily it can turn into a heated discussion with some people dominating, especially in these times when emotions are high. I have not known how to respond when participants got anxious and wanted us to make important decisions. I have not known how to explain the value of generative dialogue.

I got great clarity much later when speaking to my friend and colleague Sharon Peterson. She has a great deal of experience in corporations, whereas my experience has been primarily in schools. Sharon, reflecting on the RoundTable's function in the workplace, noted that the RoundTable "speeds up the cumulative learning needed for effective action plans." Her words were so valuable to me! I especially find them helpful in talking to sophisticated groups, where members are considering adding a RoundTable to their meetings--such as faculty meetings and educational societies. Sharon's' words were just what I needed to explain the value of the generative dialogue characteristic of the RoundTable.

CONCLUSIONS AND PROPOSED NEXT STEPS

TPO Theory and the RoundTable Practice provide more details of the new paradigm for instructional methods. Figure 8 summarizes some of what has been newly illuminated. Recall illustrations of the old two representations of the old and emerging new paradigm in Figure 2. Three new representations are added for five representations in Figure 8.

Figure 8A represents old paradigm or 19th century assumptions. The teacher, sole agent, installs knowledge (arrow in Figure 8A) in students. Students are empty vessels to fill. The CEO is the expert and the workers are empty vessels to fill.

Figure 8B represents the emerging, but yet unspecified, new paradigm assumptions. Students are active participants and agents of their own learning (pick up mechanisms in Figure 8B). The teacher's role is unclear. In other words, should teachers be directive? Should they use cooperative or discovery methods? When and why should they use the methods they use? These are the same issues in human social systems in general. In Figure 8B, workers are expert in their front lines duties. The supervisor's role is unclear. In other words, should CEOs, managers, and school administrators be directive with their workers or those they supervise? Should they use cooperative or discovery methods? When and why should they use the methods they use?

Figure 8C represents the findings of the classroom as clarified by TPO and the nine-level model, practices where the teacher is not the sole *agent*. Both the teacher and students (supervisor and supervised) are *agents*. The teacher controls the display of subject matter (arrow); students pick up concepts as ready (pick up mechanism).

LEGEND:
T = teacher; leader, supervisor; SS = students, supervised
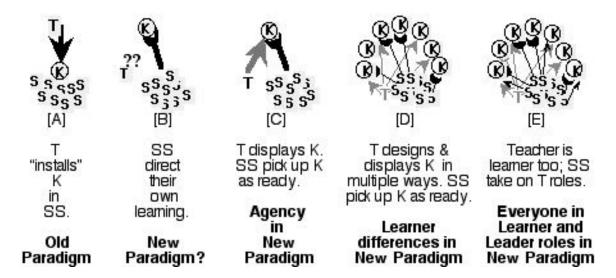K = knowledge, subject matter, opportunities for learning;

[A]	[B]	[C]	[D]	[E]
T "installs" K in SS.	SS direct their own learning.	T displays K. SS pick up K as ready. **Agency in**	T designs & displays K in multiple ways. SS pick up K as ready. **Learner**	Teacher is learner too; SS take on T roles. **Everyone in Learner and**
Old Paradigm	**New Paradigm?**	**New Paradigm**	**differences in New Paradigm**	**Leader roles in New Paradigm**

Figure 8. Five Representations of Instructional Models

Figure 8D illuminates that there are learner differences and many subjects and skills to cover. The teacher introduces and demonstrates the skills (e.g., writing skills, speaking skills, spelling, etc.). He or she demonstrates the skills in a variety of ways. The teacher/learning guide designs and displays subject matter and opportunities for learning

in multiple ways (gray arrows).   Students have many opportunities and sites for learning (black pickup mechanisms). In the RoundTable, participants listen to the varied views of others, and provide their own unique take on the topic.

In Figure 8E, the teacher/learning guide is a learner, too (gray arrows and a pickup mechanism). Moreover, students also become competent and participate in the design and display of subject matter and learning tasks (black pickup mechanisms and arrows). In the RoundTable, students take turns being readers and, more importantly, acting as RoundTable Leader.

Conclusions

The five representations of group instruction paradigms are useful for two purposes. First, they are a historical and evolutionary view of instructional theory and methods. In other words, the lecture model (Figure 8A) is the oldest, most widespread model. The newest is in Figure 8E, a model such as the RoundTable, where everyone has equal opportunity to experience all roles (i.e., leader, reader, speaker, planner, designer).

The second value of the five models is that they correspond loosely to the variety of tools useful for instructional designers. All five of them are needed. Limiting one's tools to only one model would limit the learning and development opportunities. The lecture model (Figure 8A) is especially useful for introducing new material. The RoundTable model (Figure 8E) is especially useful in both learning and planning groups for developing and deepening understanding of agenda or material that has already been covered and building community. In planning groups, the RoundTable "speeds up the cumulative learning needed for effective action plans."

Proposed Next Steps.

Three next steps are proposed. First, scholars and systems scientists are invited to apply TPO theory to their workplaces and communities. Second, educators and managers are invited to adapt the RoundTable for their groups and organizations. We also hope that they all will seek our help in doing so and share their results with us.

Third, we are especially interested in locating K-12 school superintendents to identify twenty or more schools interested in a RoundTable study. Our experimental group would be thirty or more classrooms of selected grade levels (e.g., 3rd and 4th Grade), which we would take from randomly, selected schools (e.g., ten of twenty schools). The remaining ten schools would serve as a control group. We would then offer weekly RoundTables over two or three years. Our expected findings would be that RoundTables are emancipatory. For one marker, we would look at students' STAR tests to determine if weekly RoundTables increased scores.

Rationale for STAR Scores as Evidence for the Emancipatory Condition

One hypothesis of focus in this study is that RoundTables will improve STAR test scores

significantly. To clarify, it is not our view that test scores are the best indicator of an innovation's success. In fact, we are more interested in healthy learning communities, supporting student love of learning and positive identity development. However, we are choosing to use the criteria of STAR test scores for four compelling reasons. First, earlier qualitative RoundTable studies (six cases) were promising and indicated desired outcomes of our primary interest: caring community and confident learners who love learning (Gabriele 2000). Second, these RoundTable desired outcomes are expected to result in higher STAR test scores. Third, STAR data is readily available and abundant for greater potential of significant statistical results, in that there will be at least 30 cases. Fourth, STAR data collection and analysis will not be a burden on busy schools and teachers.

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