THE PROVIDE-PICKUP PARADIGM: CORNERSTONE IN A GENERAL SYSTEMS FRAMEWORK FOR UNDERSTANDING AND SUPPORTING AGENCY AND GOVERNANCE IN SOCIAL SYSTEMS

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ABSTRACT

In spite of significant advances in technology in today's world, our large social systems are marked by increasing social decline. A human systems paradigm can inform and be informed by analysis and clarification of the hard facts of our soft social systems. The aim of this paper is to uncover, understand, unify and clarify the laws of social systems just as we have done with the laws of material and mechanical systems. This paper proceeds to identify flaws in practice and theory underlying our current social systems, and then correct them using a wider knowledge base gathered from general systems theory and relevant disciplines. The updated theory presented here holds that agency of organization behaviour is not in the leader, nor the worker, but in both. Each system member learns and performs according to his/her own willingness and ability, resulting in almost infinite variability. Thus, a new provide-pickup paradigm is proposed. The leader's role is to provide input, resources and tasks; the learner/worker role is pickup of input, each at his/her own rate. In large social systems, important input is beyond the pickup range of individuals. User-designed ideal-based automated social control systems are proposed to allow organizations and system members to flourish.

Keywords: Systemic Renewal, Educational Systems, Organizational Transformation and Social Change, System Methodologies for Social Systems, Agency and Governance in Social Systems

THE NEED FOR A SCIENCE OF SOCIAL SYSTEMS

Science offers useful laws for how *things* behave, or the *hard* sciences, such as chemistry, physics, math and engineering. We know how to make water of two parts hydrogen and one part oxygen. We know about the laws of gravity. We know that 19 + 1 = 20. We know how to design complex mechanical control systems, such as office thermostat systems and guided missiles. On the other hand, science offers few and conflicting models for how *people* behave. Thus, there are the *soft* sciences, such as psychology, management, education, sociology, and economics. And there are the *soft*

social systems such as schools and workplaces (Figure 1).

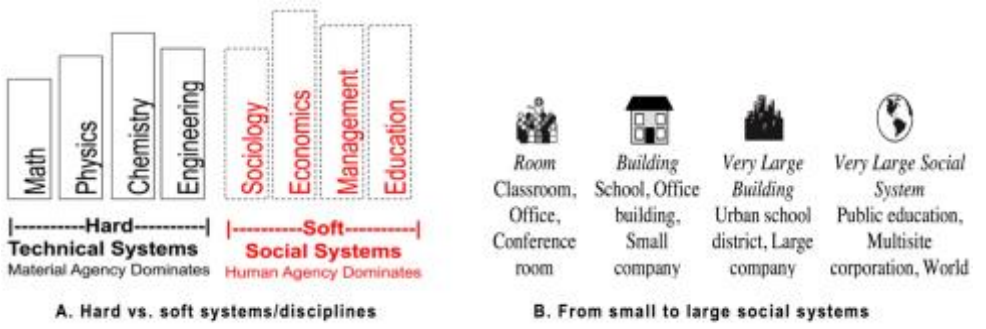


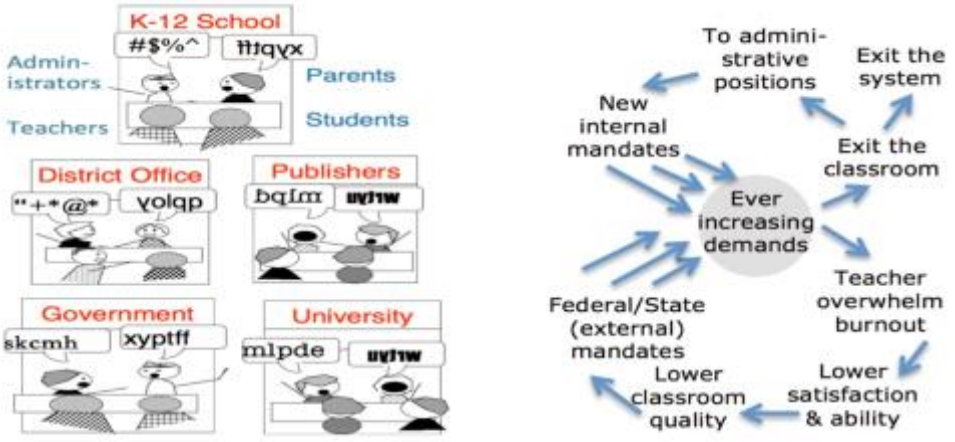
Figure 1. Views of Systems and Social Systems

Over the last half century considerable progress has been made in technology and equity in our large social systems. However, important dimensions have not kept up and our large social systems are in increasing decline. This has resulted in two outcomes captured in two images: the *Tower of Babel Effect* and the *19 + 1 = 18 Effect*, explained next. Examples come from two large institutions: public education and workplaces.

Schools

Public education is currently troubled by these two outcomes. Lack of collaboration time, plus all the differing viewpoints, especially at the various system levels (i.e., classroom, school, school district, state/ federal departments of education) leave school decision makers unable to understand each other, resulting in the *Tower of Babel Effect* (Figure 2A*).*

Ever increasing demands (Figure 2B, shaded circle) leave teachers less able to address their students' needs, so school quality goes down, illustrated in the bottom clockwise cycle. The top counter clockwise cycle shows teachers leaving the classroom to become administrators, or perhaps leaving public education altogether. In both cycles, desperate new policies are mandated too quickly for schools to keep up with. The result is *the 19 + 1 = 18 Effect: 19* (school quality) + *1* (new demand) = 18 (reduced school quality). Over three years, or in three increments, the process looks like 19 + 1 = 18 … 17 … 16, (Gabriele, 2014).



2A. Tower of Babel Effect **2B. 19 + 1 = 18 Effect**

Figure 2. Two Unintended Outcomes

Educational scholars have similar findings. Silverman wrote that

> The reason the reform movement [in the 70's] failed was 'the fact that its prime movers were distinguished university scholars'; …what was assumed to be its greatest strength turned out to be its greatest weakness … well-intentioned intelligent university authorities and 'experts' on education can be dead wrong. The reforms failed because of faulty and overly abstract theories not related or relatable to practice, limited or no contact with an understanding of the school." (Silverman in Fullan, 1991, p. 22)

Sarason authored a book entitled *The Predictable Failure of Educational Reform* (1993). He argued that failure is predictable in current educational reform. Is failure predictable in all large social systems?

Workplaces

Many large workplaces have the same challenges. Bolman and Deal, researching organizations, reported the following incident.

> We were once talking to a group of managers in a company with an extensive MBO [Management by Objective] program, and we asked them how MBO was working. The first answer was:
>
> "We don't have MBO. We have MBT."

> "What is MBT?" we asked.
>
> "Management by terror." (1990, p. 80)

The Space Shuttle Challenger disaster is another example. According to the Rogers Commission, NASA's organizational culture and decision-making processes were key contributing factors to the accident, with the agency violating its own safety rules. NASA managers had failed to correct a potential design flaw, and engineers had failed to adequately report their concerns (Wikipedia).

There is evidence of increasing decline in large social systems worldwide. In fact, human systems engineering is a field that came out of the crisis of the Swiss banking system and the findings that "human risks" are a major problem in organizations (Wikipedia, 2015). Another illuminating perspective is expressed in the "Manifesto for General Systems Transdisciplinarity." Rousseau and colleagues clarify that

> Our world and our society are in trouble. Nature's systems are complex and interconnected, yet our knowledge resides in disciplinary silos. As a result, our human activities tend to originate from within these siloed domains, and as they become increasingly impactful, the risk of unforeseen consequences becomes ever stronger. The interdependent systems we rely on for our survival and our welfare are in danger, sometimes even due to the actions we take to try to protect ourselves and our planet. (Rousseau et al., 2016, p. 8)

If these undesired outcomes, the 19 + 1= 18 and Tower of Babel effects, as well as the silo effect, are indeed reflective of large social systems of many if not all types and disciplines worldwide, then there is hope! It shows that there is predictability, that there are scientific laws at work in social systems. It's just that the underlying laws have not been fully specified.

Aim of This Paper

The aim of this paper is to uncover, understand, unify and clarify the laws of social systems just as we have done with the laws of material and mechanical systems. Otherwise stated, this paper gleans out the hard facts, root causes or agency, of learning and behaviour in organizations. Causes clarified, updated theory, practice, and solutions are proposed for the

design, engineering, and governance of flourishing, evolving social systems to be illustrated in a new three-year mathaphor: 19 + 1 = 20 … 21 … 22. This paper further aims to present the discussion and evidence in everyday language, in ways that can make sense to everyone, and in that way, to reduce the Tower of Babel and silo effects.

METHODOLOGY

The process used to investigate these issues is narrative path analysis. Beginning with large social systems as the unit of focus (top left in Figure 3), the path proceeds down to identify flawed practices, then underlying theory and assumptions landing at the individual human system member as unit of focus. Conflicting theories are unified and updated. The narrative path starts a return up to the very large social system, offering updated practice. The discussion is grounded in general systems theory, and informed by key concepts, literature, and evidence from instruction, management, and especially. Other fields that enrich this discussion include control systems engineering, psychology, adult learning theory, plus examples from large urban schools and workplaces. Clarifying images are offered to allow discussion of details or examples along with the more grand-level principles, with the goals of making sense to a wide diverse audience. Figure 3 presents the path in a nutshell in a U. The following sections develop the path.

Figure 3. Methodology Illustrated in a Nutshell

Flawed Practice

Old paradigm, traditional or hard science thinking, illustrated as 19 + 1 = 20, does not apply to social systems. A new paradigm is needed. However, efforts at detailing a new paradigm are muddled, most typically resulting in

two conflicting paradigms and practices – one is often known as the *top-down directive* old paradigm, the other as the *bottom-up participatory* new paradigm. *Old paradigm* leaders might see the undesired outcomes. They try to improve their organizations by increasing their top-down efforts. *New paradigm* leaders realize that their students or staff all have different learning rates. They might overcorrect, giving too much flexibility to employees or learners, resulting in the laissez-faire approach. The not-fully-specified new paradigm leader is unsure of his/her role.

Flawed Theory

Hidden under the flawed practices are conflicting assumptions and theory. Old paradigm leadership assumes sole agency or cause of organization behaviour is in the leader. New paradigm leadership assumes sole agency or cause of organization behaviour is in the learner or employee. This is the either/or dilemma underlying much current conflicting, confused practice.

Updated Theory and Practice

The first step in the path to the more fully specified new paradigm is the shift in agency--from teacher to learner, from CEO to employee. This shift is as dramatic and far-reaching as the earth/sun rotation paradigm shift in astronomy. Whether behavioural laws and causes relate to gravity or human agency, both paradigm shifts here are proposed as hard science--a result of extensive empirical observation, rather than speculation. A shift at such a grand level requires reconceptualization and recalculation at all levels of system.

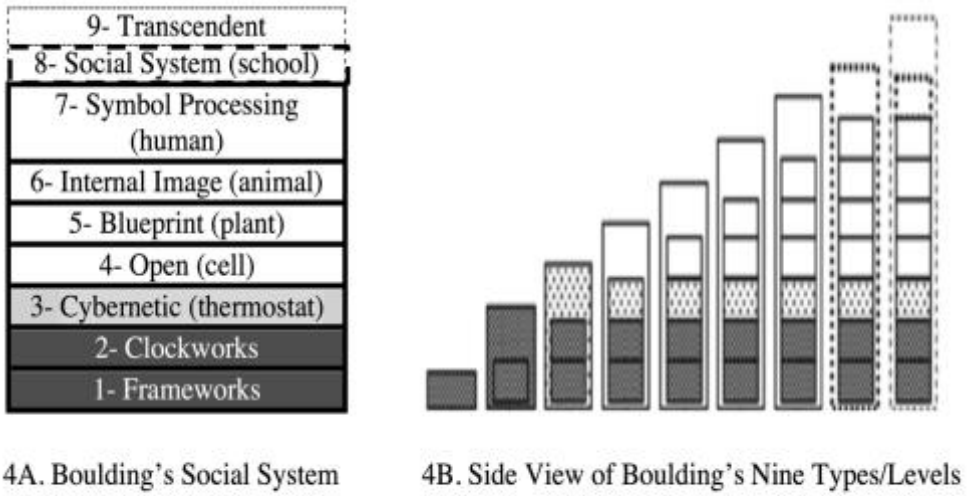
The shift in instruction/management theory is only a partial answer, resulting in the two conflicting camps: those who propose that the leader is sole agent and must control the supervised vs. those who argue that the supervised are agents of their own learning/performance and need total flexibility. In this paper, satisfying resolution is proposed in an elaboration of Kenneth Boulding's general systems theory (Boulding, 1956; Gabriele, 1997, 2014).

Boulding's General System Theory

Kenneth Boulding, a cofounder of general system theory, looked to nature to uncover the hard facts of soft social systems. He organizes the systems of the world into his typology of system complexity (Figure 4A). Each type is composed of all the levels below it (Figure 4B) and is named by the

new property that it adds (Figure 4A).

Boulding's nine-level social system unifies the conflicting camps. In other words, top-down bureaucratic models assume all parts of a social system are designable. Laissez-faire models assume no parts are designable. Boulding's typology shows how both paradigms have merit and which parts of a social system are designable and which are not. Frameworks, clockworks, and control systems or "thermostats" (Levels 1-3 in Figure 4), are predictable, designable to *exteriorly prescribed criteria* (e.g., goals determined by a teacher, engineer, or CEO).



4A. Boulding's Social System 4B. Side View of Boulding's Nine Types/Levels

Figure 4. Boulding's Nine Level Typology and Social System

Open, blueprint, image-aware, and symbol-processing parts (Levels 4-7) are not designable. These undesignable systems, organisms, act according to *interiorly prescribed criteria*—needs (Level 4: e.g., living cell), abilities (Level 5: e.g., plant), perceptions (Level 6: e.g., animal), and choices (Level 7: human)--of increasing variability. Level 7 system boundaries are mandatory; Level 8, optional (illustrated with dashed lines). Social and transcendent levels (levels 8-9) are even more variable. Level 7 systems (humans) can ignore the leader's input and even take opposite action. Thus, level 7 (individual) goals pre-empt level 8 (organization) goals. Individual humans can move from one level 8 system to another – changing their schools or workplaces. They cannot change their level 7 system – their physical body.

The Individual Human Being as Agent

Boulding's typology reveals that each system member is agent of his/her own learning and behaviour. This is true of all people in the system, both the supervised and their leaders or supervisors. Boulding's social system informs TPO Theory (i.e., Things, People, Outcomes), which clarifies the following principles. In a social system such as a school or organization, the leader's tasks, policies, and resources or *THINGS* (levels 1-3) will be used by *PEOPLE* in the system, to meet their own self-determined needs and goals (levels 4 - 7), according to their own individual differences, whether inherent or learned (level 5), their own immediate perceptions from among conflicting stimuli (level 6) and their short or long term choices (level 7). It is a natural hard scientific fact (physics, not ethics) that level 7 systems, *PEOPLE,* must adequately meet their basic individual needs (survival, safety, belonging) before the needs of the organization (levels 8-9), which determines *OUTCOMES*. The three parts of TPO Theory (things, people and outcomes) has parallels with the three domains of schools--technical, personal, and organizational—identified by Cordell and Waters (1993).

Implications for social system design are as follows: In a social system such as a school or other organization, *THINGS* (levels 1-3: resources, equipment, materials, schedules, policies) must be designed and arranged so that *PEOPLE*, each at his/her own pace, can easily meet both their self-determined individual goals (levels 4-7) and their organization's goals for best *OUTCOMES* (levels 8-9).

Within the Individual: Pickup, Throughput, Output, and Links to Boulding

A final downshift in focus lands on the individual. Figure 5 illustrates the structures and processes of 'pickup' and output and those in between (throughput). The unit of focus is the individual. Figure 5A illustrates three main pickup points (in red): the eyes, ears and hands.

Figure 5B downshifts from outside of the individual to inside the individual. Pickup occurs when there is an adequate match of the input to the individual's CAP domains: cognitive (dark gray); affective (yellow); and psychomotor (light gray). Depending on each individual, pickup may be followed by learning, mastery, creativity, and action/performance. If there is not an adequate match or serious mismatch, the individual may not notice, ignore, misinterpret, or display fight, flight or submit responses.

Figure 5C upshifts from inside the individual to outside the individual again. Pickup is followed by individually variable throughput, and then results in even more variable outputs. Figure 5C illustrates three main output points (in red): the mouth, hands, and feet.

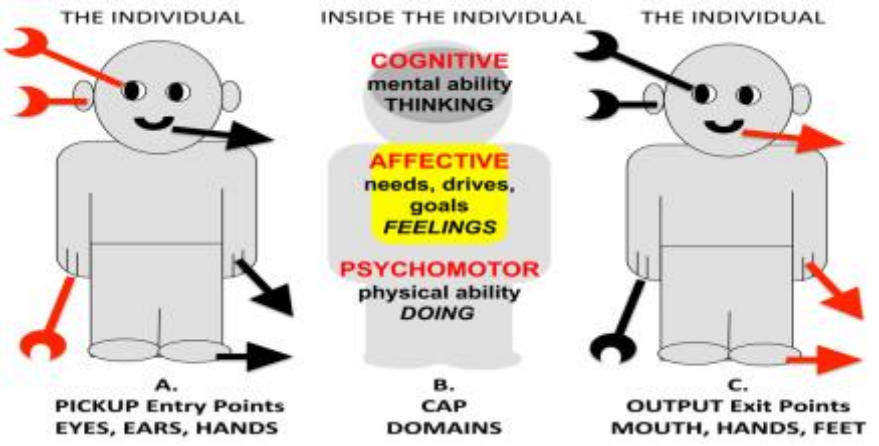


Figure 5. From Pickup to Output at the Level of the Individual

Links to Boulding in Figure 5 are as follows: Level 1 'frameworks' in the pickup through output processes are eyes, ears, hands, mouth, feet; and also, inside the individual, the cognitive, affective and psychomotor domains. Pickup, when automatic, is mainly a Level 2 'clockwork process' as are circulation, respiration, and digestion. Level 3 is a 'control system,' an ON/OFF switch. When there is a CAP match, the process is ON and pickup occurs. When there is a CAP block, the process turns OFF and pickup doesn't occur or is skewed. Levels 4 – 7 add non-clockwork processes determined by interiorly prescribed criteria. In other words, at Level 7, pickup is determined by each individual's image, his or her willingness (affective), and ability (cognitive and psychomotor). Throughputs and outputs are non-clockwork.

In other words, pickup occurs when there is adequate match of the input, (what the leader provides) to the system member's (learner, worker, or engineer) cognitive, affective and psychomotor (CAP) domains. To be clear, pickup is just a first step. The individual system member, in the process of learning and performance, will pick up, learn, and master the input. He/she then may act, perform or create a corresponding product. Main entry points for pickup are the eyes, ears, and hands. Main exit points for outputs are the mouth, hands, and feet/body. The focus here is pickup,

however, because pickup is where the breakdown occurs, elaborated in the next sections. It is important to reiterate that pickup will not occur if there is a block in any of the domains. For example, a student or employee may not understand the task (cognitive), or he or she may not see value in the task (affective), or he or she may feel overloaded with too many other tasks to do and does not notice or retain the new task (psychomotor).

Updated Practice: 'Room' Level

Upshifting to the room level, informed, experienced leaders (teachers, facilitators, managers) aim to create an environment with many opportunities for pickup. Leaders may usefully compare the systems that they supervise to a complex thermostat system (Figure 6) with three modes: design (cf., OFF); deliver (cf., ON: Manual); then monitor (cf., ON: Auto). Instead of goals of optimal range of temperature, heat (65 to 75 degrees), their goals are optimal CAP, or input that is in a range with system members' cognitive, affective and physical/psychomotor domains. When work or class is not in session, the leader or leadership team designs the input and resources. Metaphorically, windows and doors can be wide open, as the "heater" is turned off so heat (resources) will not be wasted out the window (Figure 6A). At the beginning of a project or school semester, when work or class is in session, the leader delivers the input, introducing the new input and carefully managing the delivery to match the CAP of the learners (cf., keeping the temperature range of 65-75 degrees). Metaphorically, the heat is turned on and being distributed throughout the room. Windows and doors are closed, so resources are not lost out the window (Figure 6B). Nor are disruptions coming through open windows. When learners have picked up and acquired the new input to a sufficient degree, and everyone is on task, the leader shifts to 'ON: Auto.' Learners and workers continue with their tasks independently. Leaders are then freed up to do their own work (Figure 6C).

In 'ON: Auto' mode, leaders also monitor the room to adjust the providing, and to notice if someone is off-task, where pickup has not occurred, to determine or help the system member identify the block preventing pickup. A block might be cognitive: For example, the learner or worker doesn't understand the task. It might be affective: For example, he/she does not see the importance of the new task and has set it aside to continue other work. A block might be physical/psychomotor: For example, he/she needs glasses and cannot read the small font of the document. It might be a mixture: For example, the worker didn't eat breakfast, cannot concentrate, and also thinks the project is unimportant, not useful, or even flawed

(Gabriele 2014).

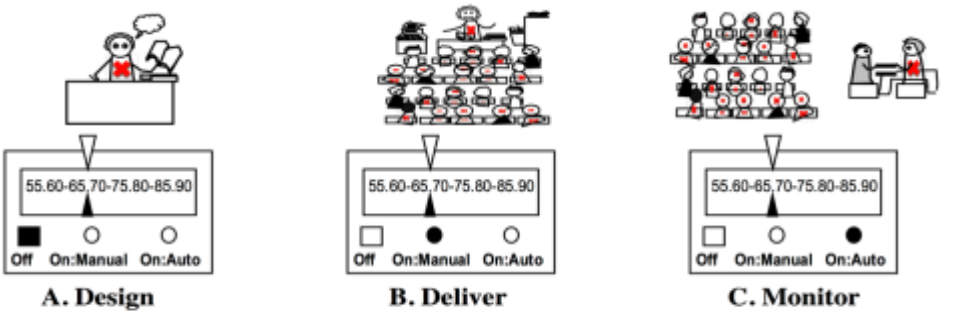


Figure 6. Three Mode Thermostat Leadership

This 'ON: Auto' mode, where the leader puts his energy in his/her own work while remaining aware of the work environment, has an interesting parallel in a best practice in business called *management by exception*, which is:

> A style of management that involves giving the people who work for you the authority to control their work or particular jobs, projects, and so forth, unless there is an exception (= an unusual situation) that causes a problem (Management by Exception, 2016).

Updates for Large Social Systems

The final step on the path is the upshift in the unit of analysis from the room (classroom or work team) or small building, to very large social system, including the multisite corporation or institution (e.g., public education). At this point, the term *span of control* serves to introduce the important new issues that arise. Span of control is a term used commonly in business management, referring to the number of subordinates a supervisor has. It is most closely related to the old paradigm assumption of teaching and management: leader as sole agent. The term *span of control* can be usefully reconceptualized to *span of pickup* or *span of CAP pickup* to fit the more fully-specified paradigm – learners as agents, everyone a learner, and the infinitely variable learning and behaviour of individual members of social systems. This human systems paradigm, that understands agency in the individual, that the first step in learning is pickup, undergirds this new term. At the room or small building level, CAP identifies the *nature* of pickup, or a block in pickup. The nature of pickup is the fact that the individual will pick up (learn and master) according to the match of the

input with his/her unique cognitive, affective and psychomotor domains. The *span* of CAP pickup refers to another dimension of pickup, its *range*. The range of pickup is a key new issue in large social systems, where input may not be in the range of the system member's [1] awareness and understanding (cognitive span), [2] concern and care (affective span), and [3] physical control (psychomotor span).

Hardin's "Tragedy of the Commons"
Range of pickup, or CAP span, is a significant issue in large social systems. Garrett Hardin addresses this very issue in his seminal paper, *Tragedy of the Commons* (1968). Hardin uses the example of cattle herders and grazing lands, explaining how individual herders will overuse common pool resources (CPRs) because they easily see the advantages for their own personal gains, but are too distant from the big picture, too distant from the toll it takes on all the others in the system. With regard to the terms introduced here, Hardin found the CAP span insurmountable, that pickup was outside the individual CAP range. Hardin further argued that there was no technical solution to such grand problems.

Ostrom's revisiting of 'the commons'
Ostrom and colleagues found evidence that institutions can successfully govern common pool resources, especially when "individuals face a public good or CPR problem and are able to communicate, sanction one another, or make new rules (1998, p. 279)." In terms of this paper, Ostrom found the CAP span surmountable, that individual system member CAP pickup was possible, given certain conditions—such as common goals, mutual respect, and ability to communicate.

Discussion

Ostrom's findings are clarified for large social systems by insights from James Martin (2015). Martin brought attention to the multiple levels of organization in a large social system and the fact that, at each level, specific expertise is different and resides within members of the specific level. He explained that a specific solution to a problem should be designed by members of the specific system level or type, and then approved by the level immediately above it.

Social systems learn and behave not by system leader *installation* (illustrated by arrows, left in Figure 7A), but by system member *pickup* (illustrated by graspers, right in Figure 7B*)*. Pickup occurs if the leader's provided input, resources, or display (T) matches system member's

cognitive, affective and psychomotor or CAP domains (illustrated in Figure 5). The great variability in every learner is indicated by colors, (Figure 7). Thus, there is value is providing and displaying tasks, input, resources in a variety of ways, (illustrated by differently shaped Ts). Two paradigms are illustrated in Figure 7B. Left, the old paradigm: Agency in the leader (P), rather than the employees or learners (pp). Center, the updated *provide-pickup* paradigm.

Pickup, which has been suggested as infinitely variable in individuals, is even more variable due to system levels, as each level has different functions and all system members are learners. Figure 7C illustrates the infinite variability -- in learners, both system members and system leaders, as well as in system levels and types.

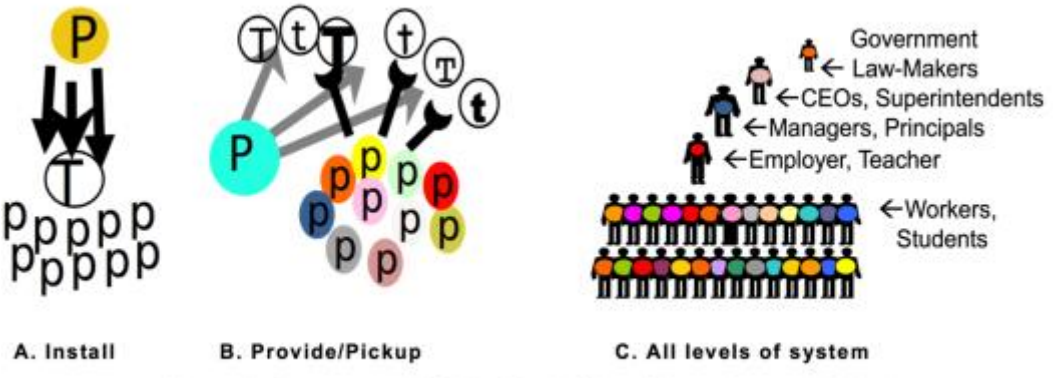


Figure 7. Agency and Infinite Variability of Learning and Behavior

In large social systems, much important input is beyond system members' pickup span. For example, it is easier for CEOs in the ivory tower to care more about their children's college tuition than their employees' salaries. And, it is easier for front-line employees to care more about their weekly paycheck than the big picture goals of the organization.

IMPLICATIONS FOR DESCRIPTION AND PRESCRIPTION IN LARGE SOCIAL SYSTEMS

A useful way to describe outcomes in large social systems is achieved by linking TPO Theory (things, people, and outcomes) to Boulding's Levels 7, 8 and 9. Figure 8 illustrates. Left, in transcendent social systems THINGS are provided, designed, and arranged so that PEOPLE meet their needs and goals easily. People then have energy (E, E) for the new unanticipated goals that emerge. Center, in average social systems, THINGS are provided in a way so that PEOPLE can meet some of their needs and goals

and some social function is evident. In unhealthy, ill-designed social systems, THINGS are not designed and provided effectively. PEOPLE are not meeting their needs. They use their energy for survival. No or little social function is evident. People are not acting for social system gain (Level 8 goals). They are acting for personal gain (Level 7 goals), for example, their own promotions, weekly paychecks, and so forth.

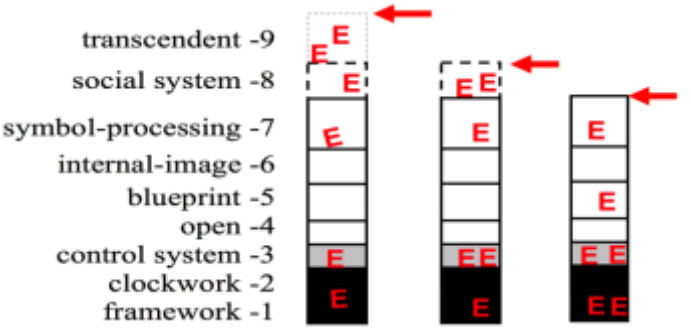


Figure 8: Describing Outcomes as Level 7, 8 or 9 Functioning

Recalling the thermostat metaphor, if the organization is designed so that system members have a difficult time meeting their goals, they downshift from level 8 goals to Level 7 goals.

Prescription for large social systems is also advanced by linking TPO Theory (things, people, and outcomes) to Boulding's system levels. Boulding's Level 3 control system is usefully understood as the key to social system agility and heath. Principles of mechanical control systems, plus principles of provide-pickup, TPO Theory, and CAP can inform social control systems. There is merit to an investigation and elaboration of the *Thermostat Leadership* metaphor, *User-Designed Ideal-Based Automated Social Control Systems*, and the *rICE methodology* (Gabriele, 2014; Wilby et al., 2016).

Thermostat Leadership

In this scenario, system leaders, with the members of their systems, are to specify details of the Provide-Pickup Thermostat metaphor for their particular social system and system level. For example, they are to identify and carefully design, deliver, and monitor their frameworks, clockworks and control systems for optimal social system function, to increase opportunities for optimal system member pickup, to increase likeliness that, over three years or increments, the result will be 19 + 1 = 20 … 21 …

22. In a mechanical control system such as a thermostat system, size of the building, size of the engine, number of vents, placement of vents, and so forth, and their relationship to each other (their ratios) are key to its effective functioning. Ratios are key for effective control systems and for effective social control systems.

In some domains of some large social systems, optimal ratios are policy. For example, the California Education Code (California, 2015) states

> § 41400. It is the intent and purpose of the Legislature to improve public education in California by maximizing the allocation of existing resources, to discourage the growth of bureaucracy in the public schools, and to emphasize the importance and significance of the classroom teacher.
>
> § 41402. The maximum ratios of administrative employees to each 100 teachers in the various types of school districts shall be as follows:
> a) In elementary school districts—9.
> b) In unified school districts—8.
> c) In high school districts—7.

In other cases, optimal ratios are not policy. The ratio of a CEO's salary to worker salaries is an example. Corinne Wilson reported on the Institute for Policy Studies in Washington's 18th annual survey of executive compensation. Her findings were that the "263-to-1 ratio between CEO pay and average worker pay in the U.S. grew to 325-to-1 last year" (2011, p. 1). Wilson further argues that "our communities will thrive when we bring the unemployed and underpaid into the middle class, so they can pay their mortgages and their taxes," (2011, p.1).

CEOs and leadership teams, each at their own system level, would do well to develop holistic, systemic perspectives of their organization, to understand their functioning and choose their optimal ratios for optimal outcomes, to achieve the 19 + 1 = 20 … 21 … 22 effect.

User-Designed Ideal-Based Automated Social Control Systems

In this scenario, users are to automate the desired ratios. The 8:100 ratio of administrator to teacher, and ideal ratio of CEO salary to employee salaries could be linked to payroll. It has been fifty years since Hardin wrote that there was no technical solution to the tragedy of the commons. Today we

do have the technology. Today, it can be accomplished. However and moreover, it is to be accomplished by the users themselves, at their own level of system, within the policies of the larger system in which it is embedded.

A word of caution: It is important to clarify an empowering rationale for *user-designed automated social control systems*. Linking user-determined optimal ratios (e.g., leader/employee ratios and salaries) to payroll is not to criticize, punish, or weaken current leaders or any system members (e.g., the cow herder). On the contrary, it is to free up system member energy. McPherson illuminates an important principle here, claiming that "neither the few destructive laggards nor the handful of brilliant performers" are the key to organization health. Instead, he urges attention to the "care, feeding, and unshackling of the average man" (Peters & Waterman, 1982, p. xxii).

The value of automated policy consequences recalls the findings of Berliner (1986), who found an abundance of "scripted" review routines in his observations of expert teachers' classrooms. He found routines

> ... embedded in the classroom activities ... shared, scripted, virtually automated pieces of action [that] allow students and teachers to devote their attention to other, perhaps more important, matters inherent in the lesson. (1986, p. 5)

Ideal-based user-designed automated social control systems are to allow leaders and system members at each level of system to design their own optimal "thermostat" systems—including types and flows of resources. Automation is to bring the important big picture policy into system members' pickup range, to free their attention for more important matters.

In a nutshell, the elements or cumulative meaning of *Ideal-Based User-Designed Automated Social Control Systems* is constructed using the following examples.

Control Systems → When the temperature turns 65, the heater turns on.

+ *Social* → When an employee is late, he/she makes up the time -- (Honor system, or superviser controlled).
+ *Automated* → When an employee is late he/she makes up the time -- (Information automtically goes to time clock and payroll).
+ *Ideal-based* → The aim is not to berate or punish, but to free up everyone's time for more important matters.
+ *User-designed* → People at each system level decide together the

automated consequences for themselves (in alignment with suprasystem policy).

The rICE Methodology

An initial formula or representation of a new social system methodology informed by principles of the provide-pickup paradigm is illustrated in Figure 9. The three dimensions and axes are labeled: from the left, Inclusive (axis Z), Continuing (axis X), and Emancipatory (axis Y). Note that the three conditions ICE in a specific example become rICE in the general premise (toward a general theory), adding an r (relativity) factor. Relativity is defined as depending on other factors that vary according to context.

To maximize the power of a high quality input, innovation or intervention (T) to effect systemic change in an implementation or study, three desirable, optimal (or necessary and sufficient) conditions are assumed: that the input is designed to be inclusive, continuing, and emancipatory (ICE). In this way, it increases members' opportunities for pickup, learning, and mastery. Goals of systemic change are reframed as goals of systemic renewal, and the rICE framework is usefully viewed both as a seed to be planted inside the system and a process nurtured. To be clear, it is given that inputs are high quality, that is, designed to match and/or be slightly higher (+1) than individual CAP traits. The four elements of ICE and examples of the r factor are elaborated next.

I= *Inclusive:* Designed to serve (1) the whole person (the face in Figure 9); (2) the whole group—each person in the room, class, or meeting; (3) the whole building or school; (4) the whole school district or organization, in (5) the whole city, state, or country, and (6) the whole world. Axis Z is a first dimension and a space view (also Boulding's system level 1, a designable Thing). The measure of Inclusivity has two dimensions. First, T = In what ways and to what degree is design of the input inclusive? Designed for everyone in the system? Second, O = (a) To what degree and in what ways do the outcomes match, surpass, fall short of, or differ from the inclusivity traits in the design? (b) Has everyone in each group, and all groups in the system, been included at the end of the study?

C = *Continuing:* Regularly revisited (e.g., in auditory review routines), daily, weekly, or monthly (small black arrows pointing up to the X-axis in Figure 9); and always accessible (e.g., wall charts or at the fingertips of users). Axis X is a second dimension and a time view (also Boulding's

system level 2, a designable Thing). Like Inclusivity, the measure of Continuity has two dimensions. First, T = Does the design of the input build in the continuity traits? Is the input designed to be reviewed weekly? monthly? Second, O = Is the outcome continuous? To what degree and in what ways do the outcomes match, surpass, fall short of, or differ from the continuity dimension in the design? At the end of the study, did the users actually have review routines weekly? monthly?

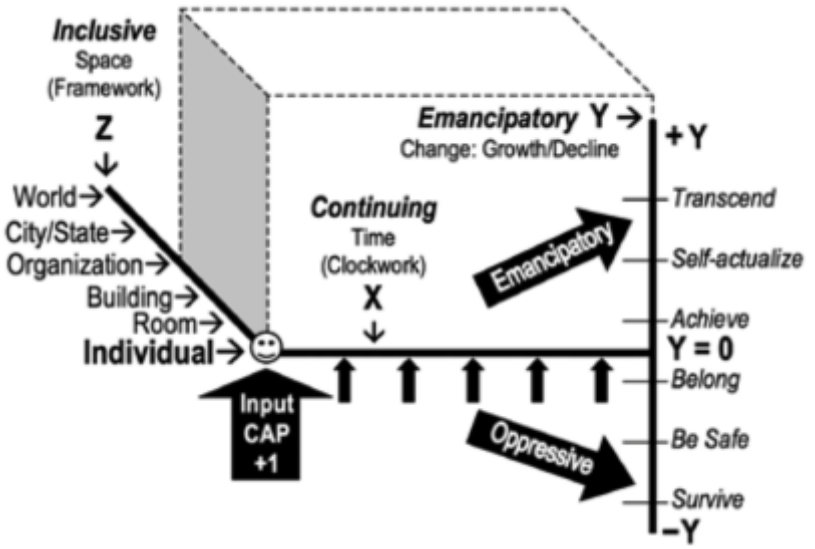


Figure 9. The ICE or rICE Design and Evaluation Methodology

E = *Emancipatory:* Unshackling and accelerating positive development. Axis Y is a third dimension and an outcome view (also Boulding's system levels 7–9 functioning). Figure 9 illustrates this condition, and its opposite, in two arrows labeled *emancipatory* and *oppressive*. On the right of the figure is Maslow's hierarchy (in Valle and Halling, 1989) as a loose guide. In other words, if system members are able to use their energy to achieve, self-actualize, and/or transcend, this suggests the emancipatory condition. If system members have to use their energy to belong, feel safe, or survive, this suggests the oppressive condition. The condition of emancipatory is not designable; it is emergent. However, aspects of the emancipatory condition are designable because program quality or input (large black arrow pointing up in Figure 9) is designable.

r = *Relative:* Specific criteria and measures of ICE—the inclusive, continuing, and emancipatory conditions—are relative, depending on the factors (i.e., Things: frameworks, clockworks, and control systems) characteristic of each specific system level and/or system type.

NUTSHELL SUMMARY PLUS FOLLOW ON WORK

To transcend the silo and Tower of Babel effects, and to transform the 19 + 1 = 18 ... 17 ... 16 mathaphor to 19 + 1 = 20 ... 21 ... 22, in our large social systems especially, reconceptualization at all levels of system is needed. Further reconceptualization is needed in language and concepts that make sense across disciplines, for specialists and non-specialists, for everyone. It is proposed that the Provide-Pickup paradigm might suffice as the cornerstone concept or paradigm. Then, at each level of system, key corresponding concepts are needed. At the level of the individual: CAP-Cognitive-Affective-Physical clarifies agency; and the fact that personal needs trump organization needs. At the pair level: the Provide-Pickup is to replace the install and laissez-faire paradigms. At the level of the small social system (perhaps room size) TPO Theory (Things-Technical, People-Personal, Outcomes-Organizational), as well as the TPO Thermostat for more effective governance and adjustability. With large social systems, new concepts are proposed for follow-on-work: CAP span-of-pickup (to accompany and sometimes replace) span-of-control; User-designed Ideal-based Automated Social Control Systems; and the rICE methodology.

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