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## ISPI VANCOUVER SPECTRUM

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## From Cakewalk to Timbit?

*A message from the editor, Julie Case*

My husband's daughter came home on one of the last days of school with a tale of how she had won a Timbit at the school cakewalk. "Pardon me?" I asked in disbelief, not sure if I had heard her correctly. My recollections of cakewalks are tables in gyms displaying a grand selection of homemade cakes: some plain, some in the shapes of animals, and some covered with candies. It was like a fancy bakery!

How was such a grand display of creativity and mouth-watering home-cooked delicacies reduced to a box of mass-produced, drive-thru Timbits? Just another measure of how busy our day-to-day lives have become, I supposed. But this thought haunted me for days until my initial disbelief was replaced by sadness for the loss of a lovely tradition from my youth. Then I had an even sadder thought: how old I must be when I start my stories with "I remember when I went to school. . . ."

It's been several weeks since the Timbit bit, and I've come to this perspective: the time to bake fancy cakes may be forever lost due to careers, volunteer work, kids' sports events, and so on, but this is still the time of year to rejuvenate ourselves. Let's enjoy the long lazy hazy days of summer, especially as it's a brief season on this wetcoast.

I challenge you to take time for yourself: to read, reflect and slow down. The articles that follow may give you a start. Linda Naiman's article will prompt you to relate your business to art. Thomas and Marilyn Gilbert's old but still-relevant paper will start you reflecting about students' learning methods. If you're wondering what to read this summer, check out the book review. As for me, I think I'm going to bake a cake!

**Enjoy your summer!**



## Art as a Role Model for Business

By Linda Naiman

As organizational life becomes increasingly complex, chaotic, and confusing, leaders are searching for solutions outside the traditional spheres of business. We cannot find all the answers to our problems in the world of the rational, logical, and scientific. We need to bring other competencies into the equation: creative, artistic, imaginative, symphonic, and mythic. These competencies have been largely ignored in contemporary organizations. There is growing awareness, however, that they are vital to organizational success, and consequently the arts are emerging as a role model for business to adopt.

All great art pushes boundaries beyond established norms and thus can teach us about aesthetics, ambiguity, diversity, chaos, change, courage, and complexity. (The arts encompass the visual art forms of drawing, painting, sculpture, architecture, photography, electronic media, design, and video, as well as

the performing arts, which include dance, story telling, poetry, music, film, and theatre.) *Brandweek* (1998), a publication for marketing and branding professionals, notes that "to understand the process of creative genius it is valid for business people to look at the model of the artist. The business of the artist is to create, navigate opportunity, explore possibility, and master creative breakthrough. We need to restore art, the creation of opportunity, to business."

Richard Olivier, former director of the Globe Theatre (UK) and author of *Inspirational Leadership: Henry V and the Muse of Fire*, notes that "Logical planning and implementation have got business where it is; it will not take it where it needs to go in this millennium. The call for flexibility, imagination and creativity at work is growing every year. And these are the mainstays of the creative artist. As we say to the business folk we work with, 'Actors and artists have lived with insecurity for hundreds of years. Now it's your turn!'"

According to Bonnie Goren, training manager of a large U.S. news

organization, "Some of the greatest difficulties business leaders face revolve around the need to instill passion, gather energies toward a common vision, and motivate change in employees. Traditional communication methods between leaders and staff typically do not reach deeply into employees where passion, vision, and ability to change reside. The arts have the potential to touch the minds and hearts of employees and truly engage them."

Deborah Jacroux, a work/life consultant with the Microsoft Corporation (USA) says, "Over the years the logical/analytical left brain has dominated business decision making. Skills that utilize intuition, inspiration, and active imagination haven't found a home within the corporate world. Many employees have equally separated their love of creativity and the arts, and a chasm exists between their right and left brains. The arts convey stories and the opportunity to enter a place where all is possible. The major obstacles corporations currently face such as diversity, cross-group collaboration, and work/life balance, can all be met with an increased focus on the arts.

What is art if not the enactment of diversity? All art, whether the visual arts, spoken stories, or the grace of dance, expresses the rich variety of authenticity of culture, a tapestry of humanity already painted for our eyes to read as symbols and understand with our hearts. Work rises from the soul and sculpts our future using creative imagination. Corporations of the future that understand the creative impulse within the human spirit will be the leaders of tomorrow."

### **How Can We Apply the Arts to Business?**

The worlds of the arts and business are formulating a new relationship, distinct from the traditional models of entertainment or sponsorship. As Miha Pogacnik, a concert violinist and cultural ambassador to Slovenia, argues, "The world of arts must be rescued out of the prison of entertainment, and the world of business must be led out of the desert of dullness of meaning!"

In this new relationship, art is a role model for business, since all great art pushes boundaries beyond the established norms. Thus it can teach us about aesthetics, ambiguity,

diversity, chaos, change, courage, and complexity. According to British aesthete Sir Herbert Read, "The artist's task is to break through the limitations of previously codified knowledge, to lead humanity to the future."

Businesses today want to break away from their limitations, aim higher, and be a creative force for the greater good of the world. We need the transformative experiences the arts give us to thrive in a world of change. In ancient cultures, the mystery schools put students through initiations to overcome fear, learn something about their true nature, and gain self-actualization (self-mastery). The arts give us a taste of the mystery and help make sense of the world.

Margaret Wheatley says, "I don't think we notice how much we've lost by this dead language that we use, and the jargon that we use, until we have an artistic experience and realize that life is so much richer, livelier, funnier, sadder. The reason David Whyte is so successful with poetry [in organizations] is because it takes you into this subterranean level of human experience."

Whyte, author of *The Heart Aroused*, uses poetry to reclaim the language and metaphors that are part of our broader human inheritance. People then can understand and come to grips with many of the dynamics with which they are confronted. He contends that we underestimate the drama of the workplace: "The inherited language in the work world is far too small for the kind of mythic drama that occurs there everyday; we need a language commensurate with the drama of work. I do think that most companies are like Shakespeare plays written large with dramatic entrances and exits, midnight assassinations, and noble speeches while the grave diggers are telling it as it is, and every epoch ends with a lot of blood on the floor."

### **What Can We Learn From Art That We Can Apply to Business?**

If the art we confront is more complex and advanced than our social capacities, we have an opportunity for growth and transformation. Music, for example, has complexities beyond our capacities to perceive them. Miha Pogacnik explains, "Take for example the relatively simple Trio Sonata by

Bach. Three systems move in a complex way without losing their identity. If you are in a position to hear these three 'voices' moving in a contrapuntal way, individually, and together as they relate to each other and unfold together in five, six or seven minutes, it is practically an impossible task. It is so difficult to be present in all that. That is what I mean by art being way ahead of our capacities."

Music can teach us to listen instantly and truly hear what is going on and not get stuck in conventions or patterns where we usually operate. These are crucial skills in a business environment. The arts take us on adventures in creative expression that help us to safely explore unknown territory, overcome fear, and take risks. We can transfer these learning experiences to the workplace. Art-making has an alchemical effect on the imagination. Art takes people out of the realm of analytical thinking and into the realm of silence, reverie, and heightened awareness.

In my own work with organizations, I've noticed that this shift in consciousness creates a

crucible for deep conversation from which emerge trust, caring, camaraderie, and genius-level thinking. A shared art experience enhances our sense of belonging and enriches conversation. Participants in my seminars have observed that:

- "Art can be part of the process of bridging gaps/polarities."
- "Art creates a different kind of conversation than the verbal/cerebral one of the workplace."
- "Painting was an experience of listening with other senses."
- "Art gives us new ways to experience each other."

Jerry Kail, senior OD consultant, LexisNexis, describes his use of Improv as a metaphor for management strategy: "My own special area of focus is the performing arts and their applicability to corporate training and development. Teaching the soft skills by means of procedures 'bulletized' on PowerPoint charts can provide a framework, but the real challenge of utilizing those skills is to know how to fill in the spaces between the bullets — or to know how to shift to another framework when the real

world doesn't cooperate with bulleted procedures. Actors, especially improvisational actors, have been training their minds for centuries to deal with the unanticipated or to 'anticipate surprise.' All of the learnings of improvisational acting apply to learning soft skills in the workplace.

At LexisNexis, it's very common for me to facilitate the work of a group of people who haven't worked together before and who aren't located in the same city, country, or hemisphere. Their challenge can be equated to that of an improv team: to jointly create a coherent narrative from little more than 'Here's the goal. Figure out how to get there.' Team members have to take that input and metaphorically create a long-form improv performance out of it, using the skills of the improvisational performer. They have to decide what their roles on the team are going to be. They have to really learn about true collaboration, which requires becoming comfortable with trusting one's instincts, with flexing one's reaction to follow the shift in the narrative, with supporting others and trusting them to support you. And all

of their actions must be geared toward advancing the team toward a goal or, in improv terms, 'telling the story.' Team members must identify promising directions to follow, accept offers for exploration, relate all the various stimuli to the emerging narrative, strike out into risky areas, relinquish trying to control the ultimate outcome, and ultimately create a coherent result that incorporates as many of the threads as possible. In the best improv and the best business teams, there are no stars, no upstaging. The team is the star."

Bob Root-Bernstein, professor of physiology at Michigan State University, observes: "Perhaps the most important way to improve the use of the arts in business is to recognize that the arts are not just a form of entertainment. Active participation in the arts trains minds, hands, and social skills. Learning and sharing an art form forces people to re-create the skills and the patterns and interactions that the most creative artists, musicians, playwrights, et cetera, invented in the past. Such re-creations bring together people within

corporations who would otherwise never meet in the normal course of their professional work. New opportunities arise. Re-creation therefore leads to re-creation, which in turn fosters novel creation itself."

Margaret Wheatley, author of *Leadership and the New Science*, contends: "If we don't start to learn as leaders who people are, what they are capable of, what their potential is, how creative most people can be in the right circumstances; if we don't learn all this, then we are not going to succeed. I'm hoping that leaders will come to realize that even though they work under awful pressures these days, they can't keep driving organizations by numbers. A profound shift in our culture has to take place; and providing the kind of orchestration that evokes our creativity and brings out the best of each person's talent is a very powerful metaphor."

For organizations to flourish, we must create environments that foster creativity in all its diversity. We must bring together multi-talented groups of people who collaborate and orchestrate the exchange of knowledge and ideas that shape the

future. The question to ask your organization is "What can we learn from the arts that we can apply to business?" A growing number of organizations in business and government are doing just that!

This essay was adapted from *Orchestrating Collaboration at Work: Using Music, Improv, Storytelling and Other Arts to Improve Teamwork*, Arthur B. VanGundy, Linda Naiman, Jossey-Bass/Pfeiffer/Wiley, 2003.

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## Potential Contributions of Performance Science to Education

by Thomas Gilbert and Marilyn Gilbert, Performance Engineering Group

**This article was first printed in 1992. It is important to recognize how far we've come in the last ten years or so in terms of teaching students history and other subjects. However, it is also valuable to consider how we can go even further.**

For over 30 years, we have tried to structure and apply a science of human performance, including a technology of instructional design. And although we have performed most of our work in the setting of business and industry, we have also seized every available opportunity to apply this work in schools. The book *Human Competence: Engineering Worthy Performance* (Gilbert, 1978) describes many of the details of what we call performance science.

Is performance science now sufficiently advanced to make a noticeable contribution to education? Yes, it certainly is. By practicing it diligently, we could greatly reduce instructional time (by, say, 80% to 90%), yet at the same time improve its effectiveness. This would leave a lot of time to supplement the usual school curriculum. The problem is not one of technical limitations on getting results, but of how well we can sell the science.

Let's begin with some definitions. What is *performance science* and how is it different from *behavior science*? We have been practicing both ever since leaving academia to expose ourselves to the so-called real world. And one of the first things we learned then was the absolute necessity of distinguishing between behavior and performance.

*Performance* is one of those transactional words like *sales*. A sale requires both a seller and a buyer. You can't make sense by saying, "I sold him but he didn't buy." *Information* is another such transactional word. It doesn't make sense to say, "I informed them but they didn't understand." Yet we are producing such nonsense every time we confuse information with data. Really, we should say, "The data I gave them failed to inform them." Similarly, the transactional word *performance* requires that someone does something and a result follows. In performance science, the result is the focus of our attention. Accomplishment is a valuable result. In the language of performance science, accomplishment is the dependent variable and behavior is the independent variable. Behavior is the variable we manipulate to see if we can improve accomplishments.

As in most engineering sciences, the dependent variable is our primary economic focus. We are interested in changing behavior only if it will produce a valuable change in accomplishments. It requires money to get people to change their behavior, and the behavior change pays off only when their accomplishments improve. It costs money to improve steel; it pays off when our steel bridges are better.

Although our primary focus is always on accomplishments, it helps to know a lot about behavior in order to engage in performance engineering. We have

found, for example, that a major contributor to poor productivity in the workplace is so-called superstitious behavior, which Skinner once described in the pigeon laboratory. The prime condition for this behavior is accidental reinforcement while working on a variable-ratio (VRML) schedule of reinforcement (the ratio of work to reward is high but varies from time to time). Too many sales reps, working under VR conditions, foolishly drop in on key customers without making an appointment, "just in case." Like a draw to an inside straight in poker, these cold calls sometimes pay off, though rarely. Managers too, remembering rare meetings that did pay off, are forever calling "just in case" meetings. In diagnosing and correcting unproductive behavior in industry, we need an understanding of schedules of reinforcement in order to grasp the principle that infrequent rewards can sometimes be more powerful than frequent ones. It is one of Skinner's strange discoveries that infrequent reinforcement on VR schedules supported higher rates of responding than frequent reinforcement. Ask most people, and they will tell you it should be the other way around.

We have learned how to realize great potential for improving productivity in industry by focusing on accomplishments and studying how changes in behavior can affect them. This same potential exists for improving education in our schools, which we hear need help badly. Indeed, we are told that, unless we improve productivity in our schools, we won't be able to achieve much more improvement in our industries.

## Tactics of Presenting Instruction

So, where are we? Back in the 1950s, Skinner sent a lot of us off to the educational revolution with teaching machines and programmed instruction. The thinking then was that programming was necessary to break a subject matter down for presentation in small parts, requiring the students to engage actively in the instruction by responding with correct answers and getting instant reinforcement. In reality, though, the teaching machine was just a device for controlling instruction.

What prompted Skinner's interest in instruction? It was the way we were teaching our students. We were talking to them and rarely requiring them to respond to anything. When we finally got around to requiring them to do something (usually to take a test), we would delay our feedback for several days or even weeks. Yet experiments in our animal labs had taught us that these procedures were unbelievably inefficient.

Even if the programmed instruction produced back in those days was often of low quality, it still required students to respond frequently, to engage actively in the learning process, and to receive frequent and immediate feedback about how well they were doing. That alone should have been enough to support the programmed instruction movement. But it didn't, although self-instructional workbooks did multiply and some are still in use. Actually, the slow introduction of computers into the classroom heralds the return of the teaching machine.



### Tactics for Designing Training

Recently, on a visit to some newly computerized classrooms (first grade through the fourth), we were happy to see the students spending a lot more time responding actively to materials than slumping in their chairs while the teacher talked. But if you do dumb things with the computer, you end up with an elegant system that does dumb things. While observing the teaching of the multiplication facts in the computerized third grade, we saw that the feedback was completely off base. A student was being encouraged by the computer to take his time to get the multiplication answers correct. When the computer showed him a problem, the student twisted mightily in his seat until he finally produced the right answer. Then the computer told him, "Bravo!" So the computer was reinforcing him getting the right answer, but it was also reinforcing him for getting it in the wrong way. Only high speed fluency should be reinforced. Otherwise the student

is learning a lot of useless groping behavior that will interfere with retention.

In this interesting example of teaching multiplication facts, not only was the feedback completely off base, but so was the instructional design. Over the years, we have found about 40 learning principles helpful for designing instruction, although only 8 or 10 may be relevant for any one training problem. The important point is, more often than not, that these learning principles turn completely in the opposite direction from the customary practices, not just in industrial training departments, but in schools as well. For example, by applying 9 of the 40 or so learning principles of performance science, we can teach kids to master multiplication facts within an hour or two, and they will never forget it. The table illustrates how five of these principles of performance-based instruction apply to the teaching of the multiplication facts and how differently many schools do it.

Customary Method	Performance Science Method	Principles
1. Begin with the ones.	Start with the sixes, sevens, and eights.	Teach the hard things first.
2. Then go the twos, etc.	Teach the sixes, sevens, and eights together simultaneously.	Group the most confusing stimuli together.
3. Have the students go slowly to avoid errors.	Require high speed from the very beginning.	Fluency is mastery and should be required from the beginning.
4. Avoid memory aids for one reason or the other. A common reason we've heard is that they are cheating.	Teach the nines and fives last because they are supported by excellent memory aids.	Memory aids are powerful mediators.
5. Test them once a week, and give them their test scores back a week later.	Let students know their progress instantly as they learn.	Students need to know how well they do at all times.



A brief explanation of a few of our principles is in order. The first of them, "Teach the hard things first," applies only to stimulus discrimination training, not to response skills. The hardest things to learn to discriminate here (e.g., sixes, sevens and eights) only get harder if we learn the easier discriminations first, because the easier things begin to compete with the harder things. This principle we derived from 100-year-old studies in the research literature and our own verification tests. If the children start with the sixes, sevens, and eights, the task becomes easier as they go. However, if they begin with the twos, threes, and fours, the task of learning becomes progressively more difficult. (The nines are made simple to learn by the use of a memory device, and the fives too.)

The second principle, group the most easily confused stimuli together, is also verified by 100 years of research and validated by our own experiences. This is called "simultaneous" discrimination in the literature, and it seems to work well with multiplication facts. Grouping the easily confused stimuli forces students to notice what is different about them. Think about it: students must learn to make the discriminations sooner or later, the sooner the better.

The teaching of multiplication facts is just one example of using performance science to improve instruction. In many areas, the application of performance science has had even more dramatic results. Almost always, our approaches have been completely different from the customary efforts.

## Scientific Strategies for Teaching

A friend of ours, who should know, says that little kids spend a fourth of their math-learning time trying to master mixed fractions, and doing it badly. We can't argue with him because that's about all we can remember studying in arithmetic, except for long division. But Japanese, French, and German students don't learn mixed fractions. Why not? Because they use the metric system and decimals. About the only people who benefit from the study of mixed fractions in the U.S. are carpenters and tailors who resist using metric rulers, hardly a basis for justifying a quarter of the math-learning time.

Of course, by applying the instructional principles of the new performance science we could devise a quick method for teaching mixed fractions. However, teaching things with great tactical efficiency still isn't right if they are strategically dumb things to teach. We learned this a long time ago when we designed and developed a national prize-winning course for the Centers of Disease Control. This course reduced the time required to teach people to diagnose amoebiasis (a disease caused by intestinal amoeba) from about 100 hours to about 1 hour. Our students also performed this diagnosis perfectly. But alas, we learned afterwards that there was no amoebiasis in the U.S., and the CDC really had no business studying it. The Indian government certainly has an interest. Those people squatting on the banks of the Ganges are not lazy louts; they have amoebiasis. Unfortunately, our course was never translated into the Hindu language.

Performance science rises to its best when confronted with strategic issues of teaching. Here, it requires us to focus sharply on accomplishments — and on those accomplishments we value. Without a performance science to guide us, this is unusually difficult for human beings to do. This is because, for the brief 2,500 centuries our species has existed, we have had little to do except observe human behavior. We have become very good at it. From a distance of a couple of hundred feet, the great turn-of-the-century French actress, Sarah Bernhardt, could make even her back-row audience break into tears as she lifted her eyebrow just a fraction of a centimeter. However, over those few centuries, we have had few accomplishments to observe, just a small collection of things like bringing home the berries and making clay pots. Only in the 20<sup>th</sup> century have these accomplishments in the world of work grown terribly complex and difficult to describe. We now really need a performance science to guide us in doing this well. When we ask our clients in industry to describe accomplishments, they immediately look to behavior. It's a 2,500-century-old habit. The hardest thing we have to do is teach them how to describe accomplishments, although our memory aid helps: behavior you take with you; accomplishments you leave behind.

If we begin with the notion that education, like training, should produce valuable accomplishments, we will quickly toss out mixed fractions and also a great deal of our methods for teaching history. Methods of teaching history are a particularly good example of how performance science can tackle the strategic issues of instruction.

## Saying What A Subject Matter Is

How do we now decide on our history curriculum? By letting a bunch of experts make a list of things to be learned, like the dates of Queen Anne's War and the War of the Roses. That's about all we remember being taught; we haven't the faintest idea what these wars were all about, partly because our history tests never asked.

How would we decide on a history curriculum if we applied performance science? Performance science begins with a rather precise way of sorting out and deciding which accomplishments are really valued. One of the first things the science asks us to do is to identify various alternative accomplishments we might find valuable. This is not all that easy to do in an industrial organization, where it is fairly easy to discern who is in charge. It is even more difficult in our school systems, where it can be debatable who the responsible decision makers are. We begin with the assumption that it is the public who is ultimately in charge, because ultimately the public pays for the instruction.

Using this as our lead, we begin searching for history mastery models that the public might value. What do we want our students to be able to accomplish as a result of learning history? Here are four possible models:

1. We could define history performance as a written record of past events and then select an **archivist** as our mastery model, one able to maintain a written record of the past. Students could become library scholars and teachers.

2. Or we could define mastery of history as what certain kinds of **raconteurs** do — relate and interpret the events of the past. Students could become journalists, propagandists, essayists, or historical novelists.
3. We could, indeed, even define history as what **history makers** do and train our kids to become warriors, politicians, philosophers, and playwrights.
4. We can think of only one more mastery model, the **explainers** and **predictors**, who deduce the variables that make it easier to account for events, then forecast the direction they might take and perhaps even visualize how the course of events could be altered.

Some years ago, we conducted a rather informal experiment in which we asked about 100 people, most of them parents, which of these accomplishments they most valued. Their responses were as follows:

1. Most thought that raconteurs and archivists represented valuable vocations, but not for many people to elect. So they rejected these as a guiding model. Almost all seemed to think that these were the models driving our school curricula, however.
2. Our respondents didn't make much of history makers as a model for a curriculum. One even commented that most of these people were trouble makers and that we shouldn't go out of our way to create too many more of them.
3. Very close to 100% of our respondents elected the fourth model of mastery: being able to identify the important variables that accounted for past events and paved the way for future events.

Having decided what mission our respondents wanted children to achieve — explainers and predictors — we next made a list of key accomplishments that would get our students to master this ultimate mission. Then we took several sets of events in history on which to apply our model and test it. For one of these events, we chose something called the Cargo Cult. Very briefly, *Cargo Cult* refers to the peculiar behavior patterns that developed among several primitive Pacific tribes when allied World War II aircraft misdirected their supply drops — and the natives for the first time saw “manna from heaven.” What happened, of course, was that these tribes began to engage in all sorts of destructive behavior directed by their superstitions, like banging their drums and worshipping the sky rather than hunting.

Below is a list of key accomplishments that would teach our students to become explainers and predictors of history, and how these accomplishments could be applied to teaching the Cargo Cult:

- **Step 1:** Read or hear a story rich in details. For the Cargo Cult, these were strange events, interacting in all sorts of ways.
- **Step 2:** Identify the “big” variables that could shape the events of the Cargo Cult.
- **Step 3:** Identify two or three of these big variables that most accounted for the events peculiar to the Cult. They were (a) a change in the resources of the tribes and (b) the instrumentalities of seeking a living.
- **Step 4:** Restate the question in a more abstract form. How do accidental resource contingencies affect the instrumentalities for seeking a living that have been paying off on a variable-ratio schedule?

➤ **Step 5:** Search for any laws, rules, or other experiences that would help answer the restated question. Here is an explanation: accidental resource contingencies occurring under a variable-ratio schedule of seeking food are ideal for establishing superstitious behavior. In a primitive tribe, this could be very destructive and would require planned intervention to protect the people.

Space does not permit us to unfold further details of a performance-based curriculum, but obviously it bears little resemblance to the way our history curricula are usually developed.

These examples of tactics and strategies of instruction do not nearly describe all the ways a performance science approaches instruction, but they should illustrate some of its power. We think it is inevitable that performance science, sooner or later, will begin to shape the way we conduct education in the schools. Yet now, this very day, 98% of our children could begin to achieve the following results and achieve them to the highest standards of performance if we applied performance science to education, and these are only a few examples.

1. All the mechanics of math (including algebra and plane and analytic geometry) could be accomplished by the end of the third grade.
2. Use of math to solve problems of reasoning: substantial progress by the third grade and superior skills by the sixth grade.

3. Mastery to high standards of English pronunciation, grammar, spelling, reading, and writing by the fourth grade.
4. Fluent mastery of a second language by the sixth grade.
5. By the fifth grade, reasoning through issues representing several social sciences by a model like the one we described above for history.
6. Mastery of the several main processes of science by the eighth grade.
7. By the third grade, mastery of the ability to design memory aids for learning. This, like the next accomplishment, would be taught to improve the students' ability to teach themselves.
8. By the third grade, mastery of Robinson's SQ3R method of studying (Robinson, 1946).

We have the technical know-how to teach children to these standards now. But to achieve anything, we must learn to ignore those who doubt our ability. One psychologist snarled and said we wanted to teach children to bark the multiplication table like dogs. And he was exactly right. We do want children to bark the multiplication table without pausing to think. On the other hand, we also want children to pause and think their way through history. Right now, our schools have it just the other way: our kids learn to think their way through multiplication facts, as they learn to bark out historical dates. What we will need to make all this possible is a way to sell the science, and that isn't easy. Perhaps, through, help is buried in the performance science itself.

## Performance Science at the Policy Levels

One of the great powers of performance science is its economic models of performance. (All successful engineering sciences must come to grips with the economics of what they are doing.) One of these models accounts for the costs and values of training. Industry is just now beginning to give serious attention to measuring and reporting the true costs of industrial training, which is 10 times greater than people think it is. Ninety percent of this cost appears in no one's budget, and that is the cost of the loaded wages we pay employees to learn their jobs.

Similarly, the numbers in the economics of schools are very large indeed, and especially the economic consequences of kids not learning. Unfortunately, no one is going to pay serious attention to improving instruction until people appreciate its true economics and respond to it as a real opportunity to become more productive. Yet, in point of fact, we could construct an economic model for the schools right now and begin to let people see what the cost really is. Perhaps then our client, the public, would take performance science seriously when shown blatant evidence that the investment really has something in it for them.

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"Potential Contributions of Performance Science to Education," by Thomas and Marilyn Gilbert, was first published in the *Journal of Applied Behavior Analysis*, Spring 1992. It has been reprinted here courtesy of Marilyn Gilbert.

The late Tom Gilbert is known as "The Father of Performance Improvement." ISPI's highest award — for lifetime accomplishment in performance improvement — is named after him.



Marilyn Gilbert was Tom Gilbert's partner in life and work. She currently lives in Seattle, where she is an active member of Seattle ISPI. We were honoured to welcome Marilyn as the presenter for our May 13, 2003, ISPI Vancouver event.

In 1996, ISPI published the Tribute Edition of Tom Gilbert's *Human Competence*. It remains available through the [ISPI Bookstore](#). The site states, "*Human Competence* offers an original theory of engineering human performance, coupled with a detailed plan of action." 

## Book Review

***The Tipping Point: How Little Things Can Make A Big Difference*,  
by Malcolm Gladwell,  
Little, Brown & Company, 2002**

*Reviewed by Julie Case*


*The Tipping Point: How Little Things Can Make A Big Difference*, by Malcolm Gladwell, is a fascinating book that will lead you to ponder how you can make change efforts stick in your organization through the tipping point phenomenon.

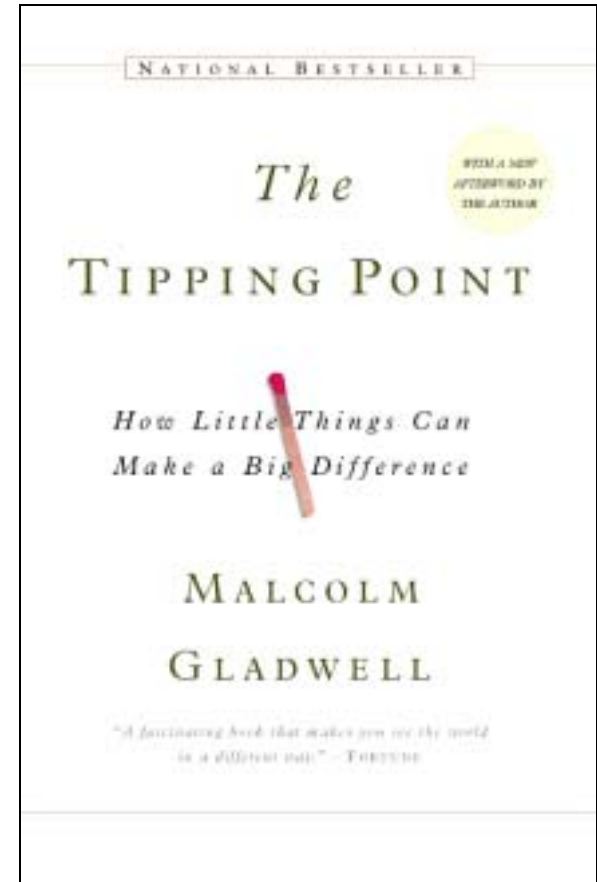
Tipping point theory hinges on the insight that in any organization, once the beliefs and energies of a critical mass of people are engaged, conversion to a new idea will spread like an epidemic, bringing about fundamental change very quickly.

The book explores and illuminates many real life examples of when ideas, trends, or social behaviours cross a threshold, tip, and spread like wildfire, whether it is the flu, a fashion trend, or a drop in crime. Gladwell takes a complex theory and applies it to everyday activities or events we've all experienced or read about in the

media. He uses three rules — the law of the few, the stickiness factor, and the power of context — to explain the tipping point theory and how leaders have used it to turn around their organizations.

Recently, in the April 2003 issue of *Harvard Business Review*, W. Chan Kim and Renee Mauborgne focus in "Tipping Point Leadership" on the changes made by former NYPD Police Commissioner Bill Bratton. Bratton is credited with turning around the NYPD and turning New York City from one of the most dangerous U.S. cities to one of the safest — using the tipping point theory. Their article will give you a taste for what Gladwell explores in more detail in his book, including the NYPD story of the 1990s.

For me, I give Gladwell full credit for reducing the stress in my life by introducing me to the concept of transactive memory: I now understand why my husband cannot remember where we put things in the house and why I cannot remember who won the Stanley Cup last year. (You'll have to read the book to understand!) 



Have you read an interesting book lately that your fellow ISPI members might enjoy? Then tell them about it in your own words. Send your book reviews to Spectrum Editor Julie Case at [johnandjulie@shaw.ca](mailto:johnandjulie@shaw.ca).

## Being Part of the SPECTRUM: An Invitation to Contribute

### Help *ISPI Vancouver Spectrum* become even more relevant for you!

ISPI Vancouver members have received earlier invitations to contribute to this quarterly, *ISPI Vancouver Spectrum*. Here is another invitation.

**Invitation:** You are once again invited to help make *ISPI Vancouver Spectrum* an even better professional resource for you and all our chapter members.

**Background:** As you may know, *Spectrum* was previously our quarterly *newsletter*, distributed for years in print by mail and later in PDF by email. We now instead share *news* through frequent updates of our [www.ispi-van.org](http://www.ispi-van.org) Website, including articles about chapter events almost as they happen, and we send frequent bulletins and other emailed information. Thus a quarterly *newsletter* has become an anachronism. *Spectrum* now fills another niche — quarterly *journal*. Still, though, we are aiming to enhance a traditional strength of *Spectrum*: contributions by our members.

**You:** ISPI members have a lot to offer. We ask you to send content for *Spectrum* and/or our Website. And you don't have to be a great writer! Send us your articles, news, tips, etc., and we'll try to use them. Perhaps *Spectrum* can even become an *interactive* journal, with members responding to articles, sharing experiences, and asking questions. This may result in ongoing themes in the journal or on related pages on our Website.

**Topics:** Here are just a few of the many possible ideas for your submissions:

- Stories about accomplishments in your work
- Reviews of relevant books, conferences, etc., like the *Tipping Point* review in this issue
- Annotated sets of URLs for Web content about performance themes or other interesting topics
- Articles based on your research and practice, like the Linda Naiman article in this issue
- Articles you've written for your own organization that you can share
- Articles by someone else that you would like to recommend, like the Thomas & Marilyn Gilbert article
- Responses to articles you've seen in *Spectrum*

**Guidelines:** Use Word, with simple formatting. Include full copyright facts if you send something from another source for re-publication. We may edit your content. We will try to use it in *Spectrum* and/or on our Website.

**Act now!** Thanks so much for considering this invitation. We look forward to hearing from *you*. Our next deadline is Sept. 18, 2003. Please send your ideas, articles, etc., to the *ISPI Vancouver Spectrum* Editor, Julie Case, [johndandjulie@shaw.ca](mailto:johndandjulie@shaw.ca). Please include the word "Spectrum" in your email subject line.

