

CREATIVITY AND LEARNING As Skills, Not Talents

By George Prince '37

ABOUT THE AUTHOR

George M. Prince '37, Captain of the varsity football team in his Senior year, was also a member of the hockey and track teams. After graduation from Williams College in 1941, he served on destroyer duty in the Navy during World War II. Since then, he has been teaching people how to think creatively, first as Director of Creative Services at Ruml-Hoyt, then as General Manager of the Invention Design Group at Arthur D. Little Inc. In 1960, he formed his own company, Synectics Inc., where he and his associates identify what forces impede creative productivity and then design procedures to overcome these impediments. "Creativity and Learning as Skills, Not Talents" was especially written for THE PHILLIPS EXETER BULLETIN.

The Exeter course that made the deepest impression on me was English 5. It was taught by Frank Cushwa and he used a book titled *Ways of Thinking and Writing* by Mr. Cushwa and a colleague. English, as taught by Mr. Cushwa was unlike any course I have ever taken. He seemed totally uninterested in those elements that in my experience were treated as the *reason* for English courses: grammar, sentence structure, spelling, and punctuation. In retrospect I imagine he believed that if we did not know those by then we would never learn them, so why use energy on a lost cause. His focus was on ideas and other evidence of thinking.

Class time was spent with Mr. Cushwa reading from worthy themes handed in earlier. He would read a paper that contained an idea and then ask us to explain why it *was* an idea. It was strong medicine and I have been fascinated by ideas, thinking, and learning ever since.

This fascination led me to experiment with the advertising business — often billed as the business of ideas — and when that palled, I joined Arthur D. Little, an industrial research firm, as a member of its invention Design Group. It was the mission of this eight-man group to invent products and processes for ADL clients. The work was charged with exhilarating frustrations. Developing an idea that seemed a beautiful answer was endlessly thrilling. Reducing it to practice was continual proof that Murphy's Law is the law: If Anything Can Go Wrong, It Will.

The thinking and invention that comes *after* the original idea represents 95% of the effort, and two of us in our group became obsessed with learning just how we actually did get ideas to solve problems. We examined our own process by tape recording all our meetings. If we had an idea we could trace it on the tape to understand how we had done it. When we needed another idea we could repeat the process. This proved to be a wonderful way to discover the inner workings of creativity. We not only identified idea-getting strategies, we also began to observe that there were some patterns of thinking. Some of these were productive and others were not. For example, an attitude of optimism is far more productive than pessimism. This now seems obvious, yet we encounter many people who make it a policy to take a dim view of its possibilities.

Our tape recorder and later, our videotape recorder, was to the creative process what the early microscope must have been to biology. We were flooded with new information about what goes on when a small group — five to seven people — meets to work on a problem. With or without a chairman, confusion reigns. Each individual is in business for himself. He listens to his group only when convenient, he criticizes the thinking of others, he offers counter opinions to any opinion given, and generates many opinions himself. It is usually quite a random procedure.

Our research began in 1958 and by 1960 we believed we knew enough about the creative process to start our own invention company, Synectics, Inc. In addition to inventing products to develop ourselves, we offered a service called a Problem or Innovation Laboratory. When a company wanted a new product, service, process, or had a serious problem, we asked it to bring the relevant people to our laboratory. Over a two-and-a-half day period we facilitated meetings in which they solved their own problem.

The Problem Laboratories were quite successful and led to our offering courses in how to facilitate such meetings. One important byproduct of the Labs and the courses was the continual flow of people with real problems. We could videotape the sessions and study them later to see which actions helped and which hurt. We could then experiment in later sessions with those that helped. When perfected we could make them part of the procedures we used and taught.

I have now observed several thousand participants in many thousands of meetings and I have developed a substantial body of information about what makes a problem solving meeting succeed or fail. In addition, we have identified many procedures to help a group succeed. I have derived from these observations and experiments some hypotheses about how people think and act to solve problems and learn. It is about these that I wish to report.

Good Thinking

Good thinking is that kind which is appropriate to the situation. It will range from routine at one end of the spectrum to speculative or creative at the other. Situations where routine thinking is good thinking are those where I have tested answers that work. There are many, many times when routine thinking is good thinking; when I am filing something, when I am on a thruway, and in other everyday situations.

On the other hand, there are situations where I need to think speculatively; when tested approaches are not working in getting a raise, or in finding a new job; when my child is not doing well in school and nothing seems to help; when I have a flat tire and my tested jack is far away propping up one end of my boat.

Nearly everyone I have worked with is quite good at routine thinking. It is when we need to speculate that most of us have trouble. I have repeatedly observed groups that have met to speculate and invent, unable to do so effectively. I believe I know some of the reasons why.

The Thinking Operations

I have hypothesized that there are six distinct thinking operations that we use when faced with a problem. The easiest way to make these clear to you is to ask you to experiment with yourself. Pretend that you have been hired by the Thermos company to invent for them a new stopper for their wide-mouth Thermos bottle. The problem you must solve is that of losing stoppers. Mothers complain that when the stopper is lost, the bottle is no good. The company has tried using strings, chains, and hinges, but for some reason, mothers do not find these a satisfactory solution. The stopper must be somehow built in. Any solution must retain the wide mouth, be easily cleaned, and be thermally effective. Take a minute or two and develop a beginning idea. A beginning idea is one that does not need to work.

Here is what I believe happens: I wish for a new stopper. *Wishing* is the first thinking operation. Next, I retrieve from my stored experiences something I believe will help me. Let us say I retrieve a spice can which has a built-in sliding 'stopper.' *Retrieving* is the second thinking operation. Then I image my retrieval — I see it in my mind's eye. *Imaging* is the third thinking operation and it is used with all the operations. Many good thinkers use a split screen in their imaging:

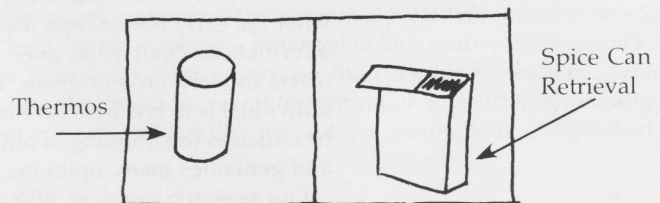
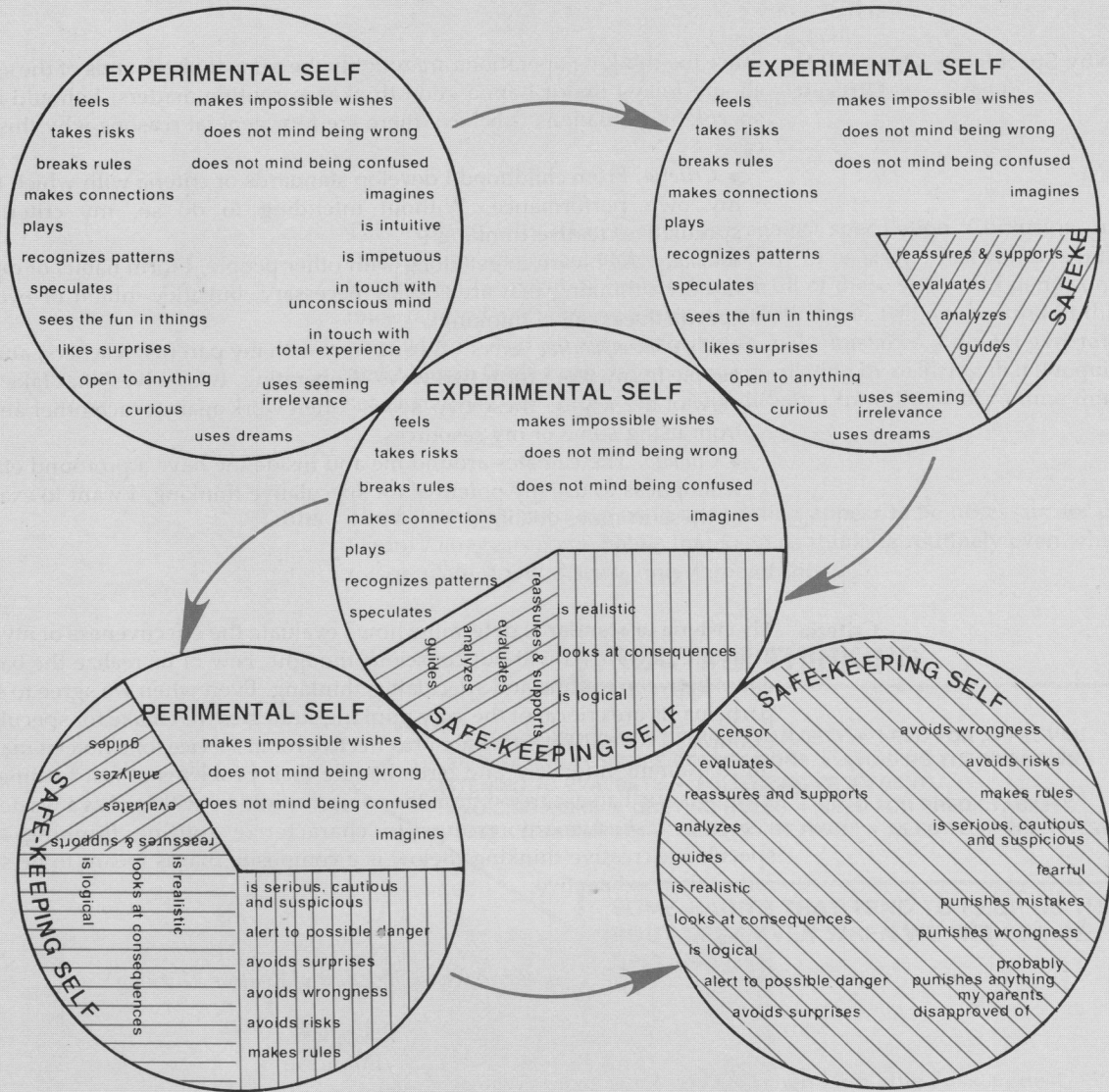


Figure 1

In my case I image the thermos on the left side and the spice can on the right. Then I compare what I have with what I need. *Comparing* is the next operation. I see that the spice can is rectangular, so I transform it to round. I transform it to come all the way out to give a wide mouth. I add some thickness to it for insulation, and so



on. *Transforming* is the fifth thinking operation. I recycle comparing, transforming, retrieving, and wishing until I have something that fits my need and then I do the final thinking operation. I *store* this new concept.

Thinking Operations and Routine/Speculative Thinking

Both routine and speculative thinking involve these same operations. The only difference is that when the problem is routine — such as tying my shoe — my retrieval is usually close to a precise fit. I have little or no transforming to do, and since I do not develop any new connections, there is little or no storing or learning.

Why Speculative Thinking Is Difficult

Since the thinking operations are roughly the same for both ends of the spectrum, it should follow that if I am a good thinker in routine matters, I should be good in speculative situations. I believe there are four general reasons why this is not the case:

- *Criteria.* From childhood I develop standards or criteria with which to evaluate my own performance. Without intending to do so, my criteria devalue speculative/creative thinking.
- *Habits.* As I learn to get along with other people, I form habits of dealing with my own thinking that are socially necessary, but they inhibit or even prevent speculative/creative thinking.
- *My noncooperative 'selves.'* As I interact with my parents, teachers, and the other people in my life, I form two ways of operating, two 'selves' that take a different view of the world. These two 'selves' often work against each other and keep me from using some of my resources.
- *Climate.* The climates around me and inside me have a profound effect on my willingness to use my potential for speculative thinking. I want to examine each of these in more detail.

Criteria

My criteria or standards determine how I evaluate the effectiveness of my thinking. They are developed without conscious thought. Few of us realize the basic differences between routine and speculative thinking. Even when we agree to speculate, participants are critical of the very thinking strategies that make for speculation. For example, if we are inventing a more effective room service for a hotel it may be fruitful to examine how bees and birds handle their problems of fast feeding. In most meetings such an excursion from the subject would be criticised as a waste of time.

I have asked many groups to characterize routine thinking and then speculative/creative thinking. Below is a composite that is meant to be suggestive rather than exhaustive.

Criteria (characteristics) of Routine Thinking

Logical
Empirical
Few mistakes are tolerable
Focus is on completing the task
There are specific guidelines
Boundaries
Predictable
Comfortable
Familiar
Low risk
Socially acceptable
Supported

You know where you are going and there are roadmarks along the way

Criteria (characteristics) of Speculative/creative Thinking

You do not know where you are going
You do not know whether you are going to get there
Focus is on the process as well as getting there
Many mistakes are necessary
Much confusion
Much uncertainty
High risk
Not provable in advance (and sometimes not after the fact)
Makes you anxious
Unpredictable
Appears inefficient and wasteful
Easy to reject as impractical or impossible

This explains why there is prejudice against speculation. Confusion, uncertainty, and wrongness are not states of mind any of us seek. Most cultures punish these. Yet, if I am to speculate I must dwell in all of these states. If I deny confusion and uncertainty, I am feigning a routine situation and will do the kind of thinking that goes with it. And if I am careful not to make mistakes, I do not generate anything new to learn from. I can improve my speculating by realizing that it requires its own set of standards and they are vastly different from those of routine thinking.

Habits The habits that handicap us in speculating appear to be necessary for our society. Figure 2 suggests some habits that keep us thinking routinely even when we wish to speculate. I will discuss only three of them.

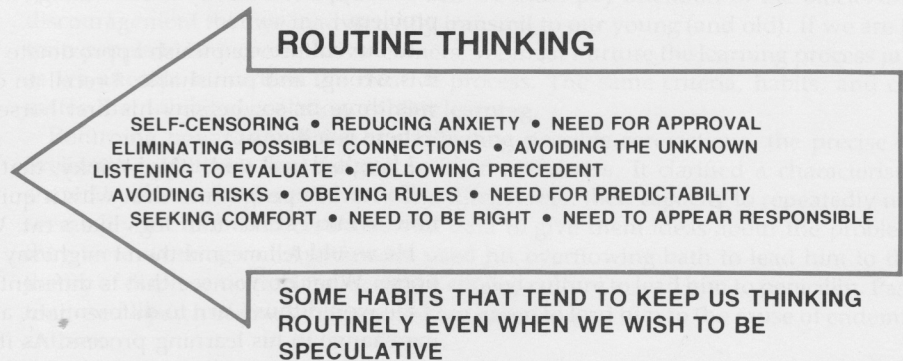


Figure 2

Self-censoring is established young. When I am little I ask a guest, "Why are you so fat?"

My parents make it crystal clear to me that I do not do that again. I dutifully set up a censor to stop such things before they happen. Then I learn that there are several hundred other things I must censor. My self-censor becomes more and more powerful and finally goes into business for itself. It stops consulting me. It decides that an idea or thought is too dangerous for me to have and it blocks it from my consciousness.

This does not hurt routine thinking, but it is a serious handicap when I want to speculate. Our self-censors get more and more strict as we get older. The next time you need an idea and you pull a blank, your self-censor is refusing entry to beginning ideas because they are too imperfect to meet its tough standards.

One strategy most of us use to outwit our censors is to turn away from the problem and attend to something else. While thus occupied, beginning ideas for the other problem slip by the censor unnoticed. A night's sleep will often allow the same thing.

Another strategy we observed and then institutionalized is a procedure we call an Excursion. We change the search specifications to relax the censor. If I were pulling a blank in the Thermos problem above, I might say "Never mind the Thermos specifications, I want to retrieve examples of built-in closures from my body."

Several come instantly to mind: the eyelid . . . the iris closure in my eye . . . or my mouth . . . or one of my sphincters. By imaging, comparing, and transforming I may be able to turn one of these into a solution. If not, I can think up other beginning ideas by searching for built-in closures in the kitchen, from nature, or from some other source.

How large is my storehouse of experiences to draw from?

Using the 'bit' concept from computers we have calculated that stored in our brains is the equivalent of 700 volumes of processed information for each year of our lives. When I am thirty I have about twenty thousand, five hundred-page volumes. My self-censor, with its strictness and precision, restricts me to using only a tiny fraction of these.

Eliminating possible connections — another habit I come by honorably. To concentrate on a task I learn to decide what is and is not relevant. When a thought or observation is not instantly connectable with my objective, I rule it a distraction. This is efficient for routine tasks, but defeating for speculation. This brings me to another hypothesis:

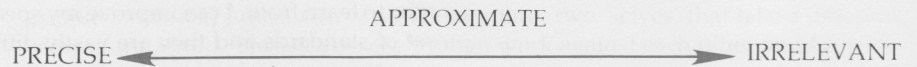


Figure 3

Retrievals will fall on this spectrum. In the Thermos problem, which is new to me, it is unlikely that I will find a precise retrieval. Chances are, all my retrievals will be approximate. By transforming I may be able to make them a precise fit to my problem.

In our culture we punish approximate thinking. It is not precisely right, therefore it is wrong, and punishable. I recall an experience with one of my sons. When he was three or so, he saw his first horse. "Daddy!" he said, clutching my hand, "There is a big cat."

I laughed and said, "No, Winky, that is a horse."

Today I hope I would deal with it quite differently: "That is a good approximation, Winky. It has four legs like a cat. What else is like a cat?"

He would tell me and then I might say "This is a new animal for you. It is called a horse. What do you see that is different from a cat?"

He would thus learn to differentiate, and I would avoid bringing about a damaging change in his learning process. As it is, after a few thousand punishments for guessing and inventing answers, Winky, as most children do, stops asking for trouble. He switches to questions: "Daddy, what is that?"

This happens to most children at about three or four and often lasts them a lifetime. It is a giant step backward in learning because it subtly shifts the burden away from the learner and onto the teacher.

It has another destructive consequence. The child rejects speculation (guessing and inventing) as too likely to bring punishment. Instead of continually practicing connection-making, inventing, and guessing; instead of steadily increasing his or her skill in retrieving, making approximate connections (comparing), transforming, and storing; the child takes a passive posture. When he or she does not know the precise answer or does not understand an observation, he or she goes into a holding pattern until an authority can be found to explain.

Learning And Speculation

I would like to introduce here, in the midst of my discussion of the habits that inhibit speculation, the notion that much of the learning process is almost exactly like the process of speculation or creativity. In the episode in Part One, Winky was learning 'horse.' When he saw it, he wished to understand what it was — to learn it. He retrieved from his experience the closest image he could find in his storehouse of experiences — a cat. Then, if I had responded supportively, he would have imaged the cat and compared it to the horse. After seeing the likenesses and the unlikenesses and getting a name for the new animal, he would store this new information. I believe that most learning involves these thinking operations. The exception may be the learning of such things as the multiplication tables and other rote memorizing.

The significance of equating learning with speculation and creativity is that it redefines the process of learning. It can no longer be thought of as a routine, taken for granted talent. Since it is a creative act, we must pay attention to the blocks and discouragement that we inadvertently transmit to our young (and old). If we are to train people to be more effective learners, we must nurture the learning process just as we attempt to nurture the creative process. The same criteria, habits, and climates that inhibit speculation, inhibit learning.

Returning now to the habit of eliminating possible connections, the precise — irrelevant hypothesis had for me another usefulness. It clarified a characteristic shared by the really great thinkers and discoverers: their capacity to repeatedly use seemingly irrelevant observations and data to give them ideas about the problem they were working on. Archimedes used his overflowing bath to lead him to the theory of displacement. Fleming used a spoiled culture to lead him to penicillin. Pasteur used a patch of grass that seemed too green to lead him to the cause of endemic anthrax.

In the history of science these are referred to as 'happy accidents.' I do not believe they are accidents at all. With outstanding thinkers it is a habit of thought. It is the opposite of eliminating possible connections. When engrossed in a problem, a great thinker considers *anything* that captures his attention relevant until he is unable to connect it to his problem.

I will increase my skill in speculating and learning if, when appropriate, I can shift myself out of the habit of eliminating possible connections and into the mode of searching for connections in anything that catches my attention.

If, in addition, I can accept the value of approximations, I can instantly make approximately relevant and useful many thousands more of the experiences stored in my head. For most of us this storehouse is so rich and varied that we have *some* experience that will illuminate with approximate understanding nearly *any* problem or learning task we face. I have experimented with many individuals and groups to test this point. When a participant is willing to use approximately relevant experiences, he or she readily understands complex problems in his or her own terms and is able to contribute to their solution. This approximate understanding does not

usually lead to precise ideas for solving the problem; it *does* lead to approximate ideas that the expert can transform.

Consider the implications of approximate thinking for the learning process. When I am willing to use an approximate retrieval instead of drawing a blank until my teacher gives me the precise answer, I become an active, interested partner instead of a passive blotter.

Listening to evaluate — this is the last habit I will discuss. As an inhibitor of speculative thinking it is the most serious of all. It is rooted in a lesson I learn early: making mistakes leads to punishment. This becomes so deeply ingrained that I not only want to avoid making mistakes myself, I do not want to be associated with the mistakes of others. I begin to live by Mohr's Law: Don't Get Any On You. I listen to every idea and proposal with my ear tuned for flaws. If there is anything mistaken about the idea, I discard it. I also develop a strong need to point out the flaws to the owner. This has two consequences. Beginning ideas tend not to get transformed into possible solutions no matter how promising. Just as important, idea-getters learn to be so cautious that many good ideas are never presented.

I can overcome both of these obstacles by considering listening as only the first step in a three-phase operation or process. Step one, I listen and note the flaws. The next step is to invent ways to overcome the flaws and be ready to build them into the idea when the owner is finished. The third step is to use the idea, however flawed, as a stimulus to give me an additional idea. This three-phase procedure is the earmark of a skillful thinker.

An implication for learning is that I listen open-mindedly rather than to find flaws and discard. I listen for connections and to identify the parts of the proposal that can be useful to me. I can experience a situation that is a mixture of useful and unacceptable and extract what is helpful to me. I am not impelled to throw out the whole experience.

My Non-Cooperative Selves

Freud hypothesized three selves: Ego, Id, and Super Ego. Transactional Analysts use three also: Parent, Adult, and Child. I find it useful to think of two selves: Experimental Self, and Safekeeping Self. These are metaphorical conveniences — I really do not have two selves in my one skin.

I first began to examine my two selves in the Cincinnati airport several Christmases ago. The airlines had just started searches to prevent hijacking. I was at the end of a long line feeling frustrated. An airline pilot passed the line, skipped the search procedure, and, looking trim in his blue suit with the gold stripes, disappeared into the distance. A small, timid voice in my head said, "Hey, George, let's get a blue suit, put some gold stripes on the sleeves, and we can save some time."

"You IDIOT," said a strong, mean voice, "you will get us put in jail."

After a long pause, the Timid voice said, "You know, we tell everyone else to be open-minded about ideas. . . . how about you being more open-minded?"

"Oh, all right." Replied Mean voice. "It would save us time. . . . and it might save us money. We would not need a ticket. Also, it would not be difficult to implement — we already have a blue suit, so all we would need is some gold ribbon. (Long pause.) What if they made us fly the airplane?"

I never did implement that idea, and I continued to think about that inner dialogue. There was such a difference in the way the two voices treated each other that I began to speculate about the personality and functions that went with each voice.

If you are familiar with recent brain research, you will note some correspondence between my Experimental Self and right hemisphere of the brain functions and also between my Safekeeping Self and left hemisphere functions.

I have built a number of models of my selves in an attempt to understand the way they interact. To the degree Safekeeping dominates, it tends to shut down my Experimental Self. When Safekeeping punishes, that shuts down Experimental altogether.

APPROXIMATE CHARACTERISTICS

Safekeeping Self

censors
 evaluates
 reassures and supports
 analyzes
 guides
 is realistic
 looks at consequences
 is logical
 alert to possible danger
 avoids surprises
 avoids wrongness
 avoids risks
 makes rules
 is serious
 cautious
 suspicious
 fearful
 punishes mistakes
 punishes wrongness
 probably punishes anything
 my parents disapproved of

Experimental Self

feels
 takes risks
 breaks rules
 makes connections
 recognizes patterns
 plays
 speculates
 curious
 sees the fun in things
 likes surprises
 open to anything
 makes impossible wishes
 does not mind being wrong
 does not mind being confused
 images
 is intuitive
 is impetuous
 in touch with unconscious mind
 in touch with total experience
 uses seeming irrelevance
 uses dreams

Figure 4

We know from observation of groups that a punishing person greatly reduces the production of ideas — both quantity and quality. Punishment, in this sense, consists of such things as finding fault with ideas, ridiculing, interrupting, and anything that is perceived as a put-down. Extrapolating from that, I wondered if this would apply to my two selves. This led me to identify some of the ways people punish themselves, evaluate the benefits and bad effects of such punishment, and then to design ways to achieve the benefits without the punishment. More than a third of the subjects report a significant increase of willingness to be experimental and speculate.

It seems common sense to me that if I have a strict and punishing self looking over my shoulder I will be hesitant to take risks and be punished for it.

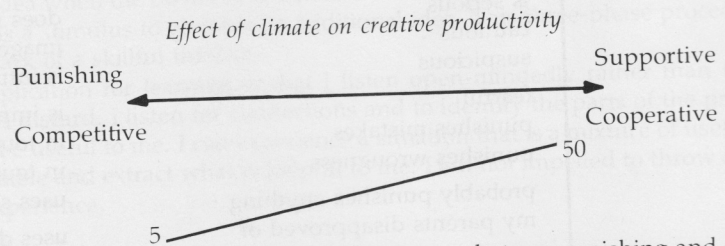
To conclude this section, each self has much to bring to any problem solving or learning activity. The ideal is to have two selves that cooperate fully. When I need speculative beginning ideas or approximate connections, my Safekeeping Self shuts down by agreement. As soon as I have the glimmer of an idea, my Safekeeping comes out in full force, except for punishment, and builds on the glimmer. When I need further ideas or connections, Safekeeping turns off again. This rapid oscillation gives me the benefits of both selves. In a sense, it lets me use my whole self.

Climate I am here using the word climate to represent all the elements that affect a person. There are three communication channels that govern climate: words, vocals (tone, emphasis, pauses, etc.), and non-verbals (gestures, expression, muscle tension). In a broader sense, non-verbals include the physical environment and any other noiseless transmission such as rules, required reports, dress, and so on.

Albert Mehrabian did some experiments to establish the relative impact of these three channels in face-to-face communication. If total impact is 100%, he asserts that words account for only 7%; vocals convey 38% of my meaning; and non-verbals 55%. I do not believe it matters whether words equal 7% or 50% impact. The important point is that vocals and non-verbals transmit a large proportion of my message, and they are two channels I do not pay much attention to. Yet, each of us is skillful in using them. Consider how many ways you can say the words 'that is a good idea.' Using vocals and non-verbals you can make them anything from a great compliment to a stinging insult.

We have discovered that there is, practically speaking, no such thing as a neutral action in communication. Everything makes a difference. Either it helps create a climate where it is safe to speculate or it hurts the climate. This becomes critical when we see that climate determines creative or speculative productivity.

Figure 7



At one end of the climate spectrum are actions that are punishing and competitive. At the other are acts that are supportive and cooperative. The capacity for problem solving and creativity is such that even when the climate is punishing, people are productive. As the climate shifts from punishing to supportive, we know from thousands of observations and experiments that there is a significant increase in creative productivity. The numbers 5 and 50 are not an idea count but are used to indicate the enormous difference in quality, quantity, and usefulness of the group output.

The Actions The two organic outlines on page 45 summarize some specific actions that on the one hand discourage speculation and creativity, and on the other, encourage them. When people see these outlines they often say such things as "Challenge! How can you list that as destructive? I use it very effectively with my subordinates."

It is true that challenging sometimes works as a stimulus. Perhaps two out of ten people respond to it well. The other eight tend to stop using their creative resources when the climate is challenging. They become quite safekeeping. Even with the two who deal well with challenge, it is more productive to support and cooperate than to challenge.

The usefulness of the outlines is in raising questions about practices that we have assumed are harmless or even valuable. I have minutely studied hundreds of instances of these actions and their consequences. I have also experimented extensively with preventing the discouraging actions and stimulating the encouraging, and observed the consequences of that. There is no doubt that the discouraging actions work against speculation and creativity. This is not to say that it is easy to operate without some of these actions.

It might be interesting to assign some arbitrary numerical value to each of these actions and then do an audit of any given climate. My guess is that most of our organizations would rate poorly in a climate that encourages creativity. And I expect the rating for most schools would be poor in encouraging learning.

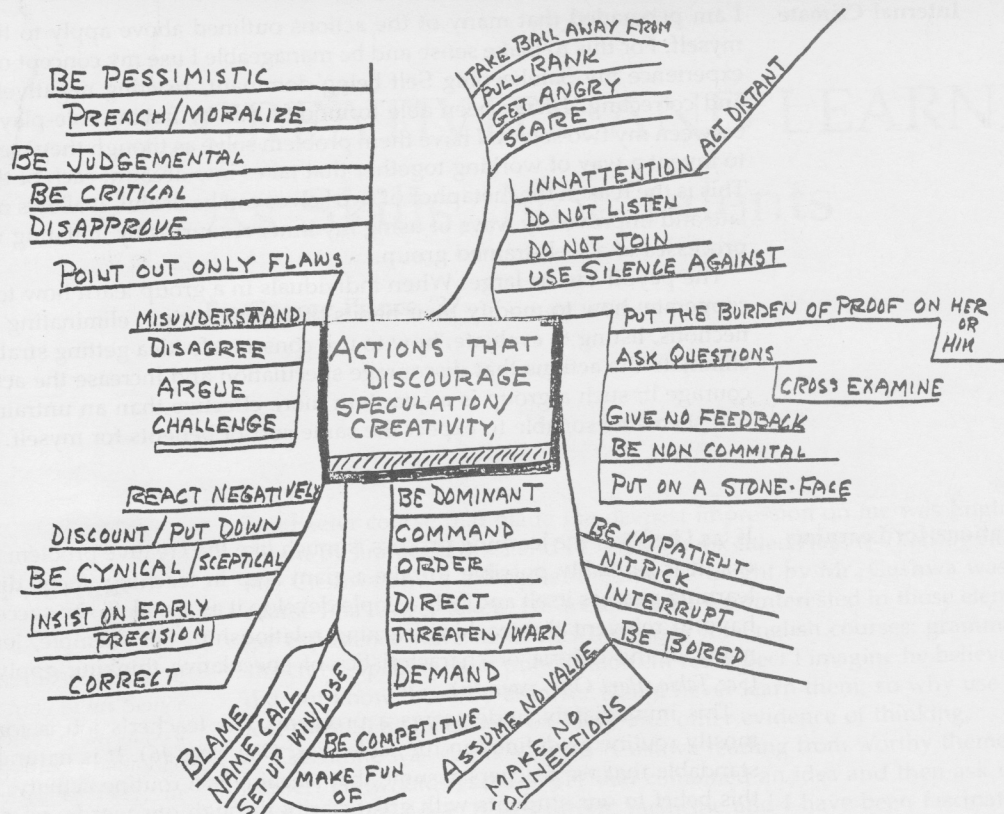


Figure 5

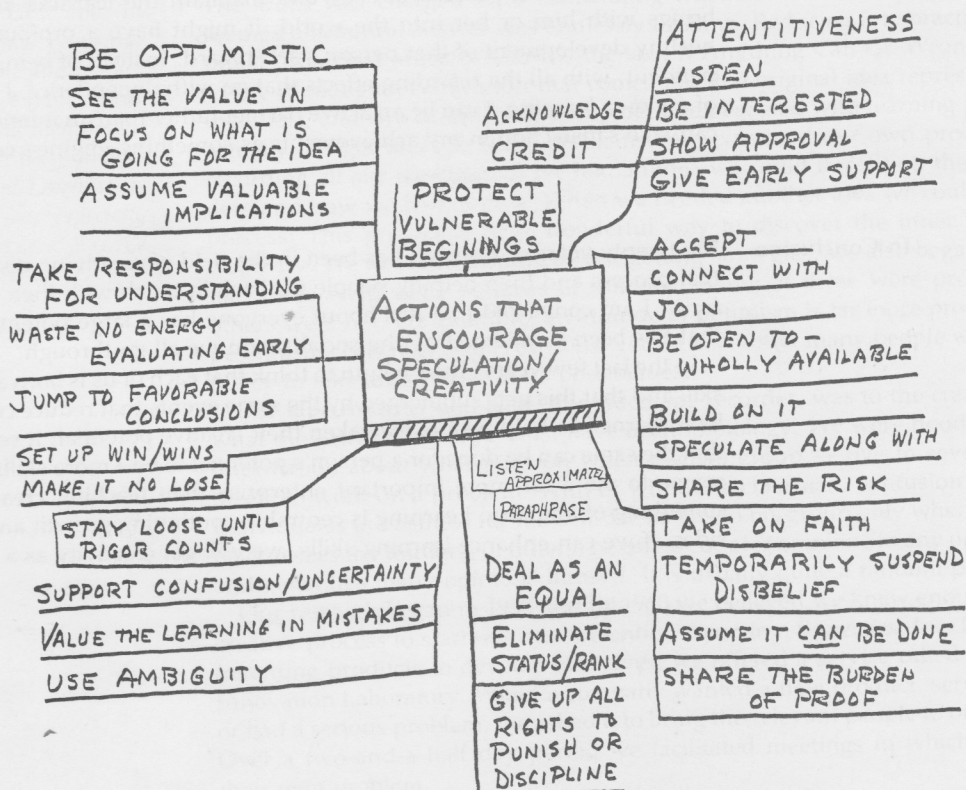


Figure 6

Internal Climate

I am persuaded that many of the actions outlined above apply to the way I treat myself. For this to make sense and be manageable I use my concept of two selves. I experience my Safekeeping Self being dominant, reacting negatively, devaluing, and correcting. I have been able to modify this by having role-playing dialogues between my two selves. I have them problem solve as though they were two people to invent a way of working together that takes into account each of their missions. This is the reason the metaphor of two selves can be useful. It allows me to manipulate and improve my ways of using my inner resources by imitating within me the processes of a well-trained group.

The payoff can be large. When individuals in a group learn how to support and cooperate; how to modify their habits of self-censoring, eliminating possible connections, listing to evaluate; how to use consciously idea getting strategies; how to eliminate the actions that discourage speculation and increase the actions that encourage it; such a group is a quantum more effective than an untrained group.

It seems reasonable to expect the same sort of benefits for myself.

Some Implications for Learning

If, as I believe, the learning process is much like the creative problem solving process, it is probably possible to take a giant step in teaching: focus directly on the learning process itself and help people develop it as a skill. To be successful we will have to reinvent the teaching/learning relationship. For example, let us say that many of the criteria or characteristics of speculative thinking apply to learning (See Table, Part One, page 45).

This immediately underscores a problem. The teacher's job is for him or her mostly routine as defined in the table (Part One, page 46). It is natural and understandable that we teachers assume that learning is a routine activity. We transmit this belief to our students with great clarity through our words, vocals, and non-verbals. The student experiences learning as a speculative, creative venture fraught with confusion, uncertainty, mistakenness, and anxiety. But she or he follows our model and strives to turn learning into a routine task, where all the habits and practices that slow and blunt learning are in force.

There is another dimension to this opportunity. If we were able to devise ways to teach the learning process directly and maintain the learning skills that a child brings with him or her into the world, it might have a profound effect on the healthy development of that person's self-regard. Instead of being a continual dependent, with all the retarding effects that go with dependence, I can be in charge of my own learning. I can be an active partner rather than an inferior subordinate. I can take satisfaction in my achievements as something engineered by me.

In Conclusion

My twenty years of research has been in the field of creativity: discovering the actual process and then helping people get back in touch with their latent capacities for it. I am convinced that just about everyone has a large potential for creativity that has been submerged by the socialization we all go through.

In the last few years I have begun to think that each of us is born a learner of great skill and that this gets submerged by the same events that reduce creativity. Since I have learned to help people reawaken their creative potential, it seems reasonable that the same can be done for a person's potential to be a more skillful learner. This seems to me a far more important enterprise than teaching creativity, which is something of a luxury. Learning is central to continuing growth and maturity. Besides, if we can enhance learning skills, we will get creativity as a byproduct.