REVISED

the All New UNIVERSAL TRAVELER

a Soft-Systems guide to: creativity, problem-solving And the process of reaching goals

by Don Koberg And Jim Bagnall

This book is dedicated to those who seek to add clarity and organization to the problem-solving process of living. It is for those who desire to take charge of the multitude of situations that confront them and for those who plan to assure themselves of achieving either personally or socially satisfying ends.

In our years of leading and participating in seminars and workshops involving creative problem-solving we, along with our colleagues and students, have come to appreciate the value of having better tools and diagrams for proceeding through the problem-solving life journey. These pages represent a composite of notes gathered during such sessions, of research and experimentation, and of the comment and criticism found in feedback to earlier versions. We continue to welcome your responses toward making this book more useful in future editions. Write to:

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DON KOBERG and JIM BAGNALL are teachers of design and creative problem-solving (which they equate). Although they say that "Don writes the verse (text) and Jim makes the music (graphics)," their separate abilities and contributions often intertwine.

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INTRODUCTION

The goal of THE UNIVERSAL TRAVELER is to provide a simplified format for solving problems. We believe that all problems, no matter what size they may be, can benefit from the same logical and orderly procedures now employed in the highly specialized, computer-assisted statistical disciplines that address themselves to complex world problems. In principle our everyday and occasionally more important personal problems are no different from those larger issues. The process remains constant. It is only the methods that need to be changed, and then, often in appearance alone.

Since SYSTEMS is the general name assigned to Cybernetics and the various numerical techniques for modeling problem situations, we have similarly called our MORE CONVERSATIONAL APPROACH to problem-solving by the name SOFT SYSTEMS. We intend the language and methods we have developed to help our readers deal more logically and systematically with the situations of their lives. By helping them to become more conscious or aware of their own procedures and methods, we ultimately expect to generate more creative problem-solvers at the world level.

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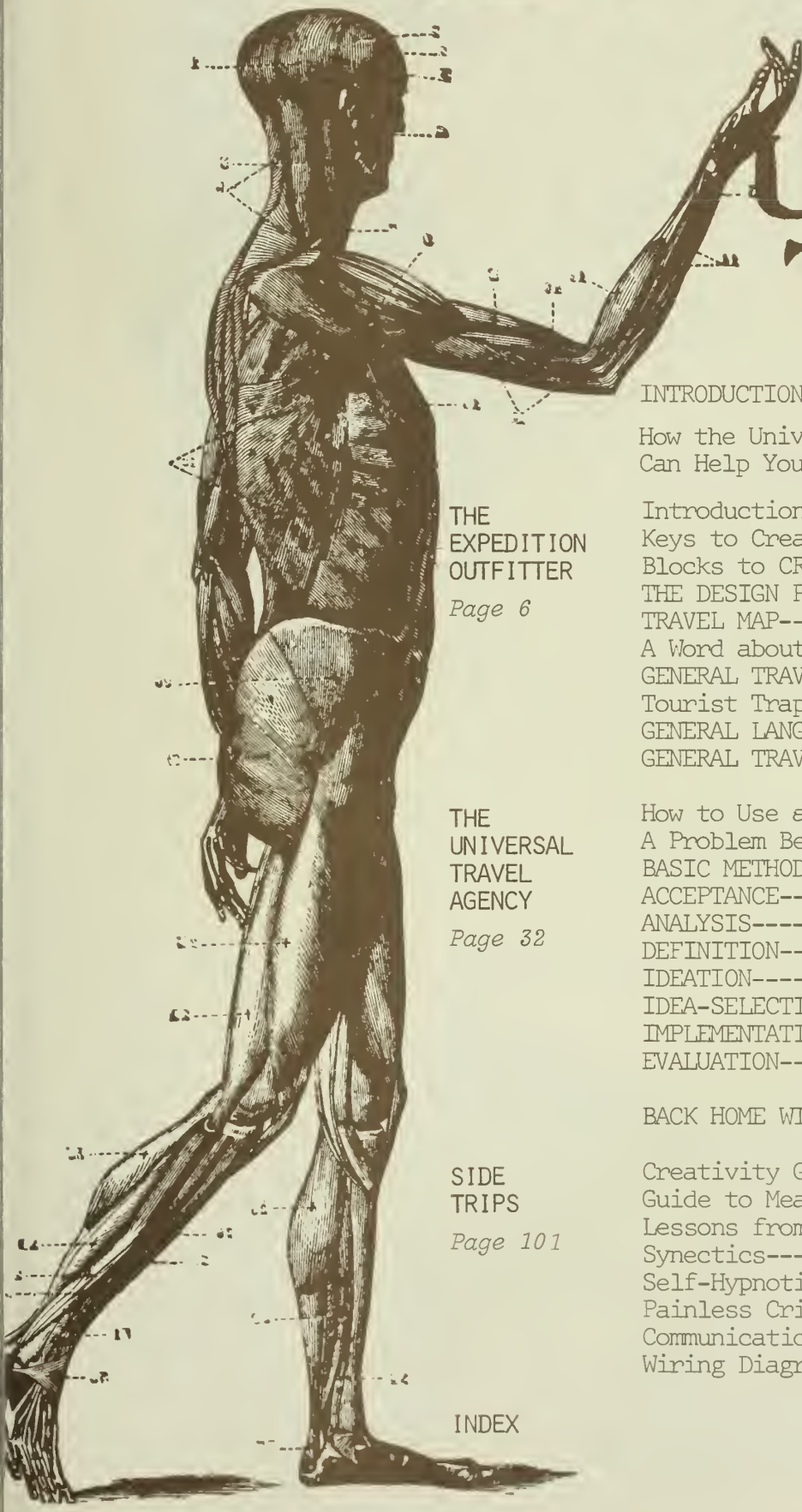


THE EXPEDITION OUTFITTER
Page 6

THE UNIVERSAL TRAVEL AGENCY
Page 32

SIDE TRIPS
Page 101

INDEX

How the Universal Traveler can help YOU

Although we expect it to be self-evident, here is the way in which THE UNIVERSAL TRAVELER has been designed to work for you:
Throughout you will find continual references to the process of design as a journey or excursion. This symbolic "travel-ese" is used in order to reinforce the concept that design is more meaningful when it can be visualized and pursued as a logical, planned journey through a series of DESIGN STAGES and not simply taken as a random, chance process.

Before beginning any serious journey, it is well to stop at THE EXPEDITION OUTFITTER where general advice and information is available for the kinds of tools and equipment you may require for the trip. The OUTFITTER can also provide TRAVEL TIPS or hints, LANGUAGE GUIDES or notes on the semantics of foreign tongues, and GUIDEBOOKS and additional references, including a TRAVEL MAP.

The central part of the book is named THE UNIVERSAL TRAVEL AGENCY because it is the information storehouse for journeys of all kinds. In it you will find the methods for getting started and for proceeding along toward the various points on your itinerary. Much in the same way that we select different ways to travel to different destinations in life, we also need to tailor our design journeys by selecting appropriate methods for each of those unique trips. THE UNIVERSAL TRAVEL AGENCY contains many alternative vehicles for traveling and it emphasizes the movement or transition from one DESIGN STAGE to another

within the total sequence of steps in the design process. THE UNIVERSAL TRAVEL AGENCY section is sub-divided into the seven major phases or DESIGN STAGES so that the traveler might take a sample problem through the process in an efficient manner.

Additional TRAVEL TIPS, LANGUAGE GUIDES and GUIDEBOOKS are provided within each of these seven sections.

The final part of THE UNIVERSAL TRAVELER is called SIDE TRIPS. It contains some information that can enhance or enrich each journey and make it more meaningful. SIDE TRIPS are like bonuses for extra effort in problem-solving.

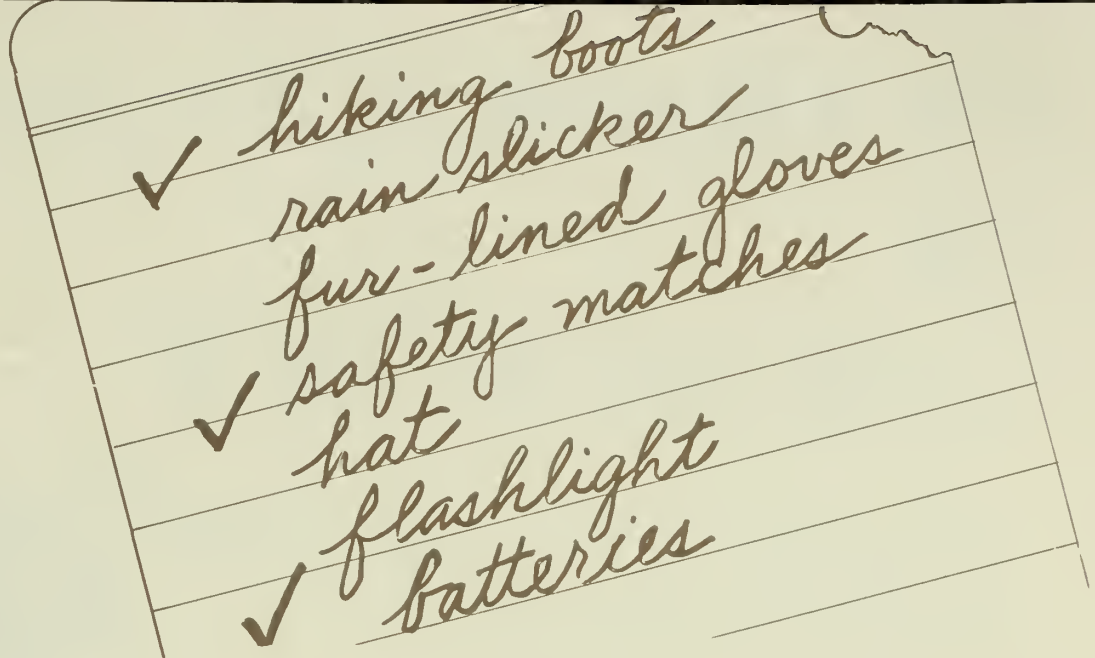
All travel guides are forever in need of updating, so THE UNIVERSAL TRAVELER has been printed with a wide margin on each page to provide plenty of room for your notes. As you discover methods of your own and adapt them to better meet your personal needs, it would be helpful to you to write them down on these pages. Then you won't have to rediscover them every time you embark on a new journey.

MAKE THIS BOOK YOUR PERSONAL TRAVEL NOTEBOOK BY ENHANCING IT WITH ADDITIONAL DISCOVERIES IN THE FORMS OF SKETCHES, CUT-OUTS, PASTE-INS, UNDERSCORES AND SCRATCH-OUTS. EACH ENTRY WILL INCREASE ITS VALUE TO YOU.

BON VOYAGE

Get everything you need to take along at

the EXPEDITION OUTFITTER



To make your journey comfortable it will be necessary to bring along sufficient food and proper equipment. The basic requirements must be given top priority; then you can add the frills and extras. You don't want to find yourself miles away from familiar ground with a pack full of fine clothes but without your compass, map, and walking boots. When your gear is incomplete or mismatched to the situation everything else seems to lose importance. BE PREPARED.

Here in THE EXPEDITION OUTFITTER you'll find the basic requirements for a more satisfying problem-solving journey. There is a discussion of the fundamental nature of CREATIVITY and of its destructive counterpart, FEAR, a kind of traveler's survival guide. Also included is a descriptive "map" of a typical problem-solving expedition. And you'll find the variations that other travelers have used to wend their ways through the same process. There is information about techniques...travel METHODS, TIPS, TOURIST TRAPS and a list of other GUIDES that may help you to realize a meaningful journey.

After reading THE OUTFITTER you may also find it helpful to breeze through the remainder of the book to the SIDE TRIPS section at the end. There, the GUIDE TO MEASURABLE OBJECTIVES may be found and put to immediate use for saving time and energy at the outset of your trip.

After looking the entire book over, you will be in a better position to custom-tailor the alternative routes and methods outlined in the main body of the text. Take it slowly and easily the first couple of times through the process. Travel is a lot more fun when you are not always on the run.

INTRODUCTION to CREATIVITY

The DESIGN PROCESS is a sequence of events that demands creative behavior from its participants. The activity of design is to improve existing conditions and to find clear paths out of dilemmas.

To improve existing conditions, it is first necessary to become aware of the "problematic" state (the general situation or what it is that needs improving); second, of the essential components of the problem; and third, of the skills and methods required to manipulate that problem condition into a better state. The same process will work while attempting to resolve the unknown conditions of a dilemma, but a cool awareness will also make it easier.

Creativity can be defined as both the art and the science of thinking and behaving with both subjectivity and objectivity. It involves being "whole" and knowing you have feelings; of alternating back and forth between what we sense, what we can know, and what we already know. Becoming more creative involves waking up to that state of wholeness that differs from the primarily objective or subjective person common to our society. For example: a primarily OBJECTIVE person, most typical in society, being a knower after the fact, briefly senses the surrounding natural and man-made environment and then determines the existence of logic and beauty within that experience. The primarily SUBJECTIVE person, a rarer species, being a here-and-now sense-response mechanism, delights in sensory experience and cares little for fixed conclusions. TO COMBINE THE TWO IS TO GAIN MORE THAN BOTH: a more natural and conscious balance between the two extremes. Such "creative" wholeness allows us to see ourselves as if from above...to BOTH lead our way AND to follow that way...to both determine our goal and to go...to both design the stimulus and to experience the response...to control our own behavior in a holistic way.

But wholeness requires alternating back and forth between thinking and feeling; an alternating, bi-modal behavior instead of a primary acceptance of one part and a rejection of the other. And to the novice traveler, fresh from the protection of a familiar home, that changing, alternating mode will be difficult. So it's going to take practice; and when learned the new behavior will in itself be just as steady and stable as it was before. Such creative wholeness leads us beyond the here and now of sensory response and beyond remembered experiences and knowledge. It leads us to a deeper understanding of the natural balance between divergent and convergent thought and the needs to both expand and to compact... to both be free and to limit...to experience the rhythm or pulse of a whole energy process.

The attributes of creative behavior follow from that "alternation" requirement. Active CURIOSITY, a divergent behavioral characteristic, leads to factual discovery and the relaxed security of KNOWLEDGE, a convergent mode; knowledge begets INVENTIVENESS (divergence) and the search for varied applications of the known. Variety suggests DECISION and selection (convergence). Decisiveness leads to ACTIVITY (divergence). And the consequences of action bring out VALUATION (convergence). Back and forth we must go to achieve our balanced view. But conscious alternation, when skillfully applied to behavior, is not the common or typical behavior found in our society. It is far more typical for someone to work hard at being critical all day long and to save "sensitivity" for "after work" or on the weekend.

It's really abnormal to balance thinking and feeling all day long...as the daily process unfolds. And because such behavior is unique it is often viewed by "normal" society as careless or care-free, sometimes boorish or maladjusted, and even at times subversive to the institutions that normalcy creates to perpetuate the slow-changing process of "remaining normal."

DESIGNERS TAKE NOTE!! IF YOUR HUMAN RELATIONS ARE ON A SMOOTH COURSE, IT IS PROBABLE THAT ONE OF TWO ALTERNATIVES IS IN EFFECT; EITHER YOU ARE NOT BEING CREATIVE OR YOU HAVE CONDITIONED YOURSELF AND THE OTHERS IN YOUR ENVIRONMENT TO ACCEPT YOUR ABNORMAL BEHAVIOR.

Some keys to Creative Behavior

People become more and more creative by simply becoming more conscious of what it is they do and of how their actions relate to their environment. Said another way, creativity and consciousness of procedures (process) and methods go hand in hand. If you become more aware of your position relative to what has gone before and what is yet to come, your ability to decide from both the broad view and the specific view is increased. If you become more conscious of the stages of the process you can become more accurate in your predictions for what to do next. And you can become more skilled at choosing better ways to move forward as you become more conscious of the work such methods must perform.

Along with developing a consciousness of process and methods, here are a few more keys to creativity:

1. FREEDOM FROM FALSE PRIDE
2. BELIEF IN ONE'S OWN ABILITY TO SUCCEED
3. CONSTRUCTIVE DISCONTENT
4. WHOLENESS
5. ABILITY TO CONTROL HABIT

SELF-DISCIPLINE OR FREEDOM FROM FALSE PRIDE

Self-discipline, or as Bobby Seale defines it, "behaving the same," is another way to say "freedom from false pride." (Pride is used here as a general term for the hangups associated with a lack of self-discipline). To be able to "hold your head up high" with pride is destructive counter-creative behavior. It is difficult to see well from that position and detracts from the positive attainment of goals. FALSE PRIDE stands in the way of creativity by inhibiting us from asking key questions, thus stifling the key requisite

for curiosity. It restricts a change of mind or direction which thereby fixes a pre-conceived and prejudical course. And it runs counter to the true selflessness required for the "giving" of oneself to the task! False pride sets up a potential for being untrue to one's self. It joins the other six "deadly sins" - greed, lust, sloth, envy, gluttony and hate - and diverts our attention from improvement.

Contrary to false pride, SELF-DISCIPLINE is a truth-reality behavior. "Behaving the same" requires the courage of convictions and the freedom from fear of social reprisal. It is a fearless acceptance of the responsibility of being what we are, of knowing what we know and do not know, and of taking the steps required to insure our own development. Self-discipline encourages an ever-enlarging knowledge, an increased sensitivity, and the formation of a true philosophy of freedom...not the false freedom of pride through autonomy, belonging or ownership. Through self-discipline, we constantly strengthen our own positions; through pride we weaken them.

Self-discipline does not mean "doing your thing" contrary to the needs of the group, and it does not mean that we cannot tailor our approach to the specific situations within which we find ourselves. But it does limit unreal behavior, untrue or devious behavior, "kind lies," and self-righteous behavior. It does not restrict us from performing tasks that we believe to be necessary although unpleasant. But it does eliminate the wasteful acting-out of many irrelevant social demands.

BELIEF IN ONE'S ABILITY TO SUCCEED

Ego-strength is not an ego-trip. A belief in one's own ability is not a license to become a blowhard: It is simply a necessary trait for the further development of creative behavior. ENCOURAGE YOURSELF. GET YOURSELF moving (motivated). If you wait for someone else to move you, it is possible to find yourself headed in an uncomfortable direction.

Contrary to developing this necessary trait, we often spend much of our time playing the social game of self-denial; of publicly denying our abilities and potentials; of enjoying the "popularity" of being "humble;" and of generally declaring that we don't think we'll make it. It is simply not socially acceptable to construct ego-strength or unique personal beliefs while it is acceptable to express a

total vulnerability to the group. Because of such pressures, we are often forced to express self-belief in private. The result is that self-esteem must be "dragged out of us;" the more deeply we bury it, the more remote it becomes from being part of our behavior pattern. "Begin to believe in your own creative potential and you will begin to be more creative" is a requisite attitude to creative growth.

CONSTRUCTIVE DISCONTENT

Arrival at adolescence is usually all that is required for achieving half of this important attribute of creativity. It is unusual to find a "contented" young person; discontent goes with that time of life. To the young, everything needs improvement. Yet, it is usually the lack of a constructive attitude that wins out in the end, turning all of that healthy "discontent" into nothing more than a "bunch of gripes."

As we age, our discontent wanes; we learn from our society that "fault-finders" disturb the status quo of the normal, average "others." Squelch tactics are introduced. It becomes "good" not to "make waves" or "rock the boat" and to "let sleeping dogs lie" and "be seen but not heard." It is "good" to be invisible and enjoy your "autonomy." It is "bad" to be a problem-maker. And so everything is upside-down for creativity and its development. Thus, constructive attitudes are necessary for a dynamic condition; discontent is prerequisite to problem-solving. Combined, they define a primary quality of the creative problem-solver: a constantly developing Constructive Discontent.

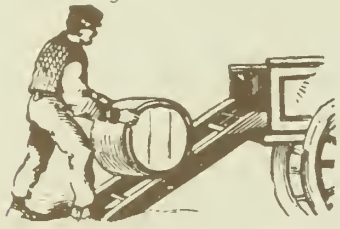
WHOLENESS

Everyone both senses and knows. It is natural both to feel and to decide. Yet, it's also normal to tend to smother our sensitivity in favor of strengthening our expression of judgment. Growing up in society we learn that it's better to know that it is to feel. It just seems more "grown-up" that way because that's the way most people are. We learn that creative people are different from "most people." Why don't we learn that we can be more creative ourselves if we don't stifle our emotions, but instead allow those "feelings" to enter into the conscious world of our knowing responses?? To become more sensitive doesn't mean we have to diminish our logical abilities or that we must

forget all about knowing. It simply means that we could attempt to redesign our behavior into a more balanced whole--to alternate between feeling and knowing, between sensing and deciding in a conscious way--and thus be more in control of our WHOLE potential.

ABILITY TO CONTROL HABIT

The things that keep most of us from behaving creatively are our habits. A habit is behavior that is preconceived; when you have a habit, you already know how to do something. Of course, there are good habits and bad habits, and the value judgment is determined by how helpful or hindering your habits become to your problem-solving ability. For instance, all of our intuition (sub-conscious response) is previously-learned behavior (or habit) that works at times for us and at other times against us. From the beginning of life we learn, and we commit that learning to our memory. Afterwards we tend to behave in ways that reflect our learning. It's perfectly O.K. to be intuitive...in fact it would be impossible not to be...almost all of what we do is intuitive, and we learn most of that before we reach eight years. But it is very important to the creative process that we don't allow ourselves to get locked into our intuition and its preconceived approach to life. To be able to see things in different ways and to remain innovative, it is absolutely necessary to be in control of our habits... always ready to take a chance on the unproven and to discard them by developing new, replacement habits when the old ones get in the way of our intentions.



STEADY CREATIVITY REQUIRES A STEADY, DETERMINED EFFORT. The more consistently we behave in ways that encourage creativity, the more likely we are to be consistently creative. Creativity is a learnable state of behavior patterns. It is not magic. And it is not a quirk of birth. Some people don't "just have it." Creativity demands listening to your own logical and sensitive conclusions, not only to the dictates of the immediate environment or society. In a mass society, conformity is the shortest route to acceptance by our peers. To become unique is a sure way to become an outcast...a stranger outside the

norm. But true difference comes automatically to the creative...who by intention are pride-less, adventurous, self-disciplined and self-believing...who have an interest in resolving problematic conditions in a positive way and... who are learning to develop their ability to be "whole." These are the keys to creativity. We must first discover them to be true for ourselves through personal experience and to then adapt them to our everyday behavior.

Blocks to creativity

There are many opportunities to be wrong in an active, creative life. However, few of our errors carry stiff penalties. Still, out of fear of being wrong we tend to wait until we know it all...until we are "experts" before we'll speak up or act out a situation. Yet few of us ever seem to become that "expert." Therefore, we keep ourselves from creativity by our own pride, fears, jealousy and competitiveness. We block our own creativity by:

FEAR of making mistakes
FEAR of being seen as a fool
FEAR of being criticized
FEAR of being misused
FEAR of being "alone" (a person with an idea is automatically a minority of one)
FEAR of disturbing traditions and making changes
FEAR of being associated with taboos
FEAR of losing the security of habit
FEAR of losing the love of the group
FEAR of truly being an individual

Being afraid is both natural and normal. It would be a mistake to think we could eliminate it altogether, nor would we want to. Fear is simply the reluctance and anxiety to deal with the unexpected or the result of lack of preparation to deal with the expected. But fear deters progress toward creativity through misdirecting our energy. By changing our focus from "I don't want to be wrong" to "I will try to be right" the positive point of view can help you to overcome this block to creativity.

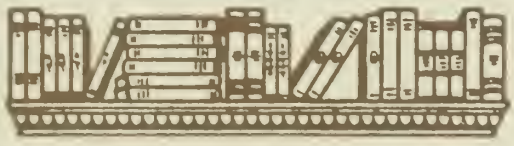
Logic is...

In essence logic helps us to understand how all things are or can be organized and interrelated. It is a basis or foundation on which to build. It is an ordering system within which we can deal with pieces and not lose sight of the totality that contains them. Logic is a way, an orderly way, to include sensory response in a conscious process.
IN SHORT...

LOGIC MAKES SENSE.

(Organized knowing develops meaningful feeling)

LOGIC is a basis or a context for order.
LOGIC is a guide for mental activity.
LOGIC is devoid of everyday linguistic content... It has no semantics.
LOGIC is syntax rather than definition.
LOGIC is structure for reason.
LOGIC is a series of operations or methodical transformations.
LOGIC is not metaphysical or philosophical. It is real.
LOGIC is the basic scientific method...a context for method.
LOGIC is simply an organizational framework. When meaning is incorporated it becomes something else, viz, architecture, physics, psychology, etc.
LOGIC is in flux. It grows with scientific discovery.
LOGIC simplifies process.

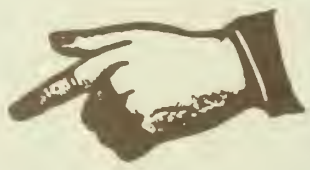


The DESIGN PROCESS is a Problem-Solving JOURNEY

Since all of us, more or less, embark on many problem-solving journeys, each of us is, more or less, involved in the design process. The more we understand about DESIGN PROCESS the more interesting and meaningful will be our problem-solving journeys.

Design can be defined as the process of creative problem-solving; a process of creative, constructive behavior. Designers are people who behave creatively relative to problem situations; people who generate uniquely satisfying solutions to such situations. Gym teachers and geology majors, free-lance writers and truck farmers, movie makers and motorcyclists, audiophiles and elevator operators, xylophonists and sci-fi fans are all problem-solvers. Everyone is a problem-solver. Some just do it better than others.

The PROCESS OF DESIGN or creative problem-solving describes a series or sequence of events, stages, phases or DESIGN STAGES, as we will call them. Before completing a total design journey, it is usually necessary to pass through each of those phases. Once each phase is known through experience, the design process as a whole can be appreciated as a round-trip that includes intentions, decisions, solutions, actions and evaluations. There are seven such ENERGY STATES given. Each has been chosen as a synthesis from many models of process.



The general process used in this book has been designed by extracting the essential characteristics of many specific problem-solving processes, including the works of Wallas, Dewey, Rossman, Guilford, Osborn, Stanislawski, Parnes, Gordon, Kepner-Tregoe, Arnold, Churchman, Zwicky, General Electric, the Military, and Pert.

THE LOGICAL GENERAL SEQUENCE OF EVENTS INCLUDED IN THE DESIGN PROCESS IS--

TO FIND REASONS FOR GOING ON:
To state initial intentions; to accept the problem as a challenge; to give up personal autonomy; to allow the problem to become the generator of process.

TO GET THE FACTS AND FEELINGS:
To get to know about the ins and outs of the problem; to discover what the "world of the problem" contains.

TO DETERMINE THE ESSENTIAL INGREDIENTS:
To decide what we believe to be the main issues of the problem; to conceptualize and to clarify those goals concerning the problem situation.

TO GENERATE OPTIONS FOR ACHIEVING THE ESSENTIAL GOAL(S):
To search out all possible ways of realizing the major goals; to search for the means to achieve the determined ends.

TO CHOOSE FROM THE OPTIONS:
To compare our defined goals with the possible ways of getting there; to determine the best ways to go.

TO TAKE ACTION (OR PLAN TO ACT):
To give physical form to our selected "best ways;" to make real or "realize" what we intend.

TO REVIEW AND PLAN AGAIN:
To determine the effects or ramifications as well as the degree of progress of our design activity; to self-improve.


analyse
DISCOVERING WHAT'S INVOLVED
accept situation
FINDING MOTIVATION; GETTING STARTED
select
CHOOSING, SELECTING FROM THE PROPOSED OPTIONS
implement
TAKING ACTION ON THE DECIDED OPTION
evaluate
REVIEWING THE PROCESS; PLANNING AHEAD
Seville
Nice
Algie
Constant


define
SIZING UP THE SITUATION
DEVELOPING INTENTIONS
OR GUIDELINES
ideate
GENERATING OPTIONS;
WAYS TO SATISFY DEFINED
INTENTIONS
Copenhagen
terdam
Berlin
Vienna
Ragusa
Constantinople
Naples
unis
Athens
the
TRAVEL
MAP
THE UNIVERSAL TRAVELER®
HELPS MAKE DREAMS COME TRUE

When comparing many different problem-solving approaches it becomes necessary to search for their basic abstractions or common-denominators. If you'll try it yourself, we're sure that the two "basic" stages of ANALYSIS and SYNTHESIS will emerge; i.e., when consciously solving problems or when creatively involved in the activity of design, two basic stages are necessary. First, we break the situation or whole problem into parts for examination (Analysis) and Second, we reassemble the situation based on our understanding of improvements discovered in our study (Synthesis).

2 stages

analysis → synthesis

When applying the basic two-stage process, it also becomes clear that "out of Analysis" we derive an understanding or concept that is then followed as a guideline in the rebuilding or Synthesis stage. The basic process can then be seen as one of three phases: ANALYSIS - DEFINITION - SYNTHESIS, where the definitive second stage forms a connective link between Analysis and Synthesis.

3 stages

analysis → definition → synthesis

In our attempt to expand the process further we found that Analysis can be performed via many operations, but that all such efforts point to the mutual goal of greater familiarity with the situation being studied. Synthesis, on the other hand, can be further sub-divided to emphasize the separate operations or work modules of option-finding, decision-making and translating (IDEATION, IDEA-SELECTION, IMPLEMENTATION) contained within it. Then the procedure can be viewed as one having five stages.

5 stages

analysis → definition → ideation → idea selection → implement

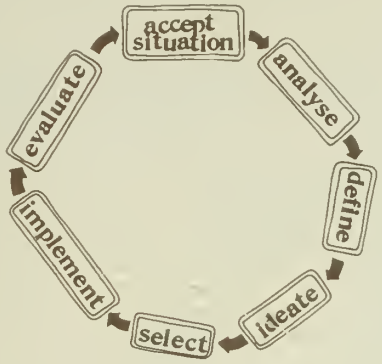
Clearly, further sub-division becomes quite personal and dependent on the type of design being undertaken. In an attempt to personalize, and yet not to institutionalize, the process we have added two more phases (one on each "end" of the now-expanded process...) ACCEPTANCE, at the beginning...to get started, and EVALUATION at the end...to review and to plan for improvement.

7 stages

accept situation → analyse → define → ideate → select → implement → evaluate

Those SEVEN STAGES seen as a series of operations provide a LINEAR view of a basic problem-solving process.

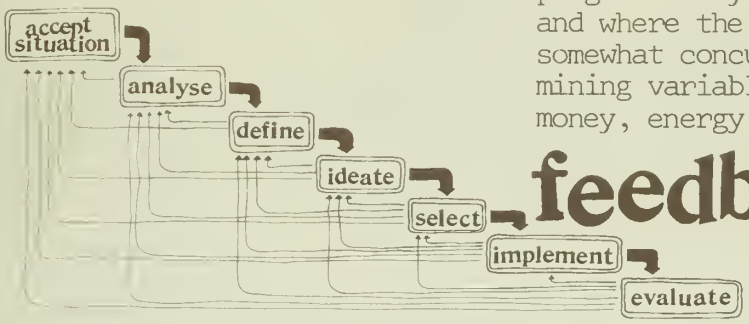
linear



But one stage need not follow another as if on a train where one cannot proceed without passing through successive cars one at a time. It is also possible that the stages can be considered in other ways... It could be

circular...

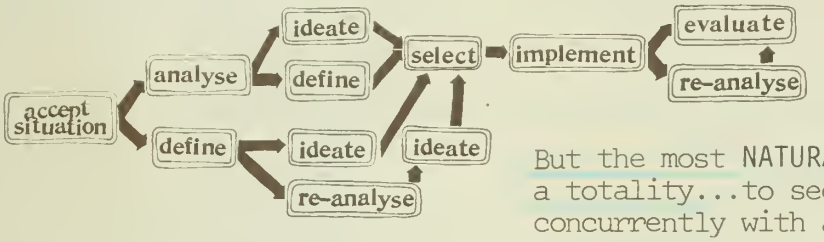
Others see it as a constant feedback system where you never go forward without always looping back to check on yourself; where one progresses by constant backward relationships; and where the stages of the process advance somewhat concurrently until some strong determining variable terminates the process (time, money, energy, etc.)



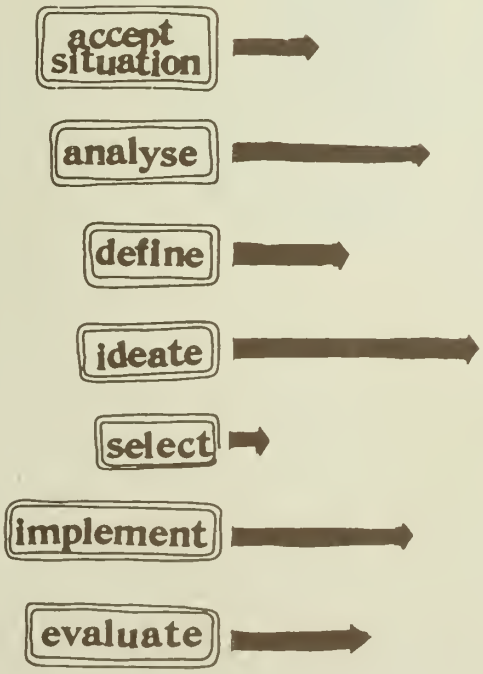
feedback

And still others see the design process as a branching system where certain events determine more than one direction and where directional progress is achieved via a many-branched excursion.

branching



But the most NATURAL way to view process is as a totality...to see each stage progressing concurrently with all the other stages...more like a "horse-race" than as the "mule-train" of pure linearity. In this manner, each stage can be considered in relationship to all others rather than just as a connection between its foregoing and following stages. Although only one of the "horses" may be out front at any moment, the rest of them are also part of the race.

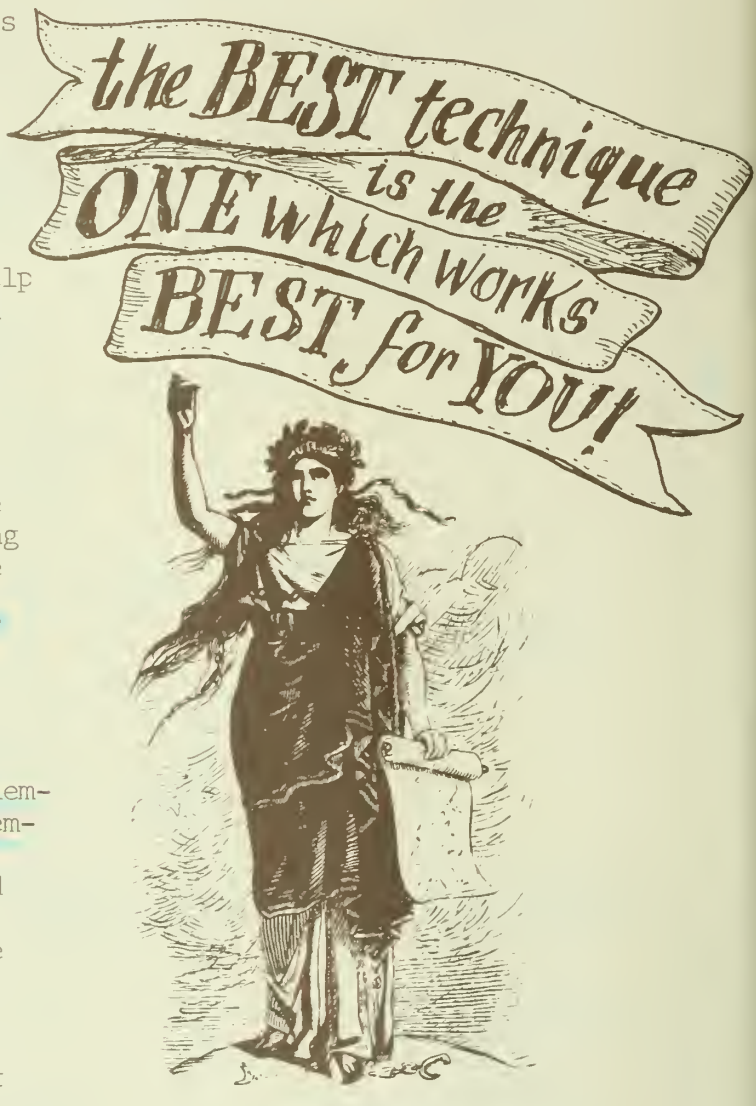


natural

With it we realize that no stage ever really stops but that like the others each stage is always "in process;" i.e., we are always in the process of accepting, analyzing, defining, ideating, deciding and acting. And even the evaluative stage works best when concurrent with all other stages and not just "at the end"...when it may be too late to improve. PROCESS NEVER ENDS...its ultimate model is the SPIRAL, a continuum of sequential round-trips that goes on ad infinitum.

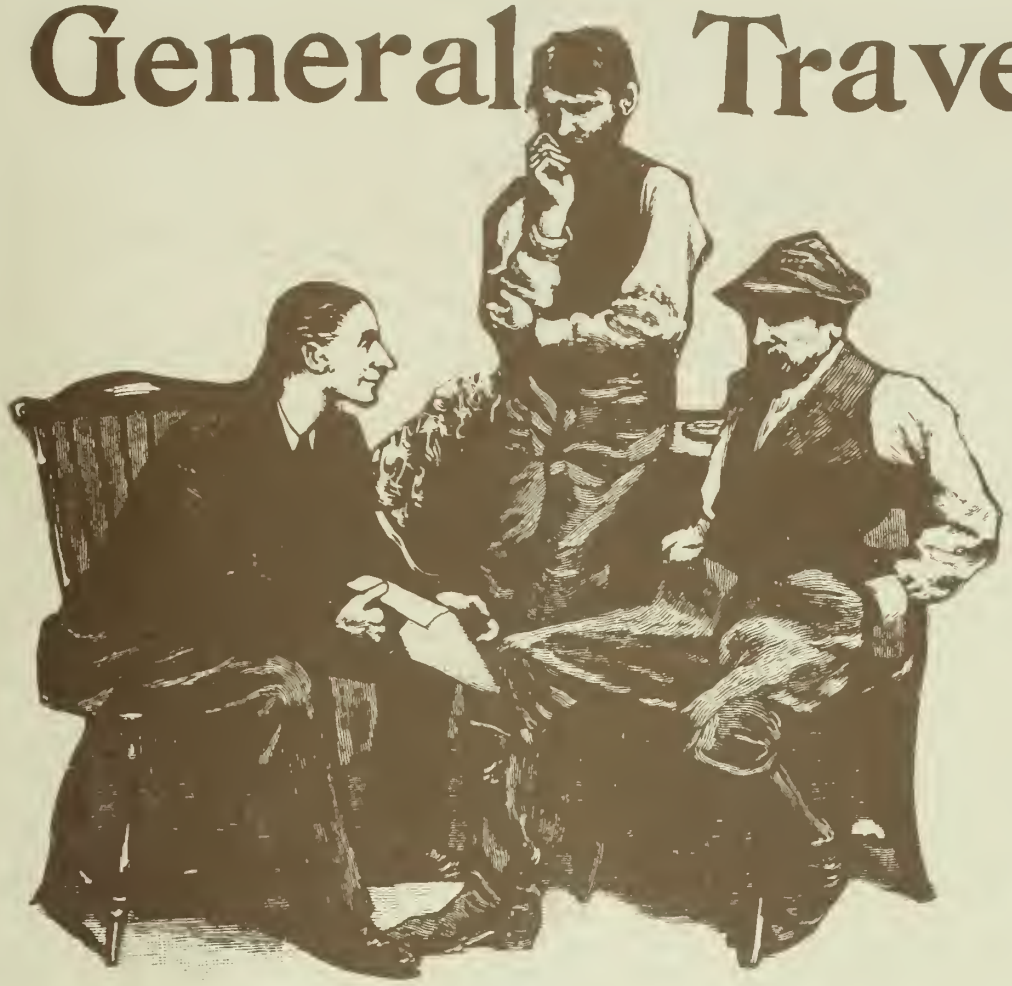
a word about Problem-Solving Methods

By now you should be able to view the process of creative problem-solving (Design Process) as a varied multi-stage experience. It includes an excursion through seven (7) different phases or DESIGN STAGES. Since travel within those phases is sometimes simple and yet at times complex, the well-seasoned problem-solver usually carries a varied bag of techniques or approaches to help along the way. DESIGN METHODS is the common name given to such techniques for advancing into and through the phases of the process. They are merely practical ways for getting from one design stage to another.

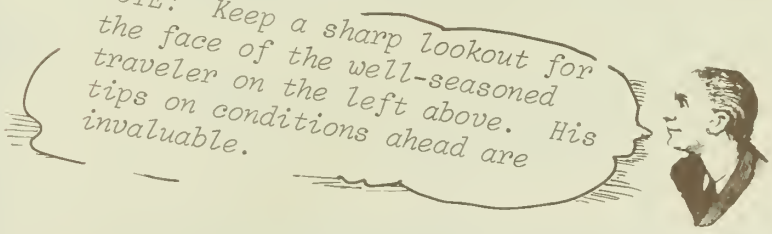


There are as many different methods as there are people with needs for methods. Designing methods of your own is easy once you realize they need not be complex or formal. Our favorite methods are called "Think and Feel" and "Write it down." A general rule for choosing methods is to find and use those that best fit both the problem and the problem-solver. To follow that rule and to tailor the methods to both problem and problem-solver is a separate task within each problem-solving journey. It is a task similar to that of selecting the route, side roads, and overnight stops for an auto trip. Just as any competent trip planner would examine the alternate routes on a map and read through several brochures, books or articles before choosing a route for a trip, so should the problem-solver read through the methods that follow, attempt to comprehend their simple techniques, and be unafraid to adapt any of them to special or personal needs or to write additional ones to meet individualized problem requirements. Common sense suggests that complex problems may utilize complex techniques while simple problems might be handled by simpler tools. It should be clear, in any event, that just as you wouldn't choose a moving van to go get the groceries, you would not attempt to use computerized techniques in order to determine your choice of your lunch menu.

General Travel Tips



BEFORE BEGINNING YOUR PROBLEM-SOLVING JOURNEY you may want to check the following "tips" that have been passed down from seasoned travelers.



Design is a process of making your dreams come true. Once you decide to improve what you desire, it's almost certain that you will find many ways to make it happen.

An old Zen motto: "If you want to get someplace, you've got to give up wanting to get to that place; In order to achieve something, you've got to stop waiting for it to happen and get into the process of achieving it." Life is a process that has many spin-offs called products. Although it may be the product that you seek, it must be involvement with the process that will eventually achieve it.

The creative person often needs to be assertive and a maker of problems. When complacency sets in, creativity goes out the window.

Although design involves making dreams come true, the designer should take care not to become an "impossible dreamer," i.e., know your limits so that you can stretch them without pain.

When you arrive at the end of a journey, you are merely ready to begin the next one. Life involves "commencement," both to finish and start at the same time.

It is important not to view the phases of the design process as fixed things or points in time. It is better to think of them as whole states through which we pass and within which we spend different amounts of time. Such a view improves our understanding of process as a universal life concept.

Ideas are truly a "dime-a-dozen." There are so many of them; they are of little value until developed. It is only after an idea is translated into reality that it become valuable.

To help recognize problems, we must begin to view them as "situations in need of improvement."

"Talking about it" needs to be balanced by "trying it out." Theory and practice must combine for wholeness.

Attitudes change with practical experience (learn by doing).

If you want to learn about something, try teaching it to someone else. No one ever learns as much as the teacher.

Inventions are easy to find. It's the job of making them work and getting them into use that is so hard.

There are billions of problems that could occupy your energy; deciding the ones that are right for you takes careful selection. It's a good idea to realize that you don't have time to solve them all.

Relax occasionally during the problem-solving process. Some people call this allowing enough time to "incubate;" allowing your thoughts to become behavior. We all need time to "digest" what we eat, before chewing some more.

Avoid prejudice. Prejudice means pre-judging, knowing the answer before you begin. Try to remember to Defer Judgment until all the facts are known.

Process orientation is a living involvement. It is usually more highly productive than an orientation toward production.

Habit-breaking is a necessity of creative problem-solving. Try not to get so locked into a habit that it will cost you heavily to break.

The more methods you have time to use or have the facility to use, the better off you will be in the long run. If you could travel by foot, auto, bus and plane, the combined view would be broader than by any single means.

Don't select a method that doesn't feel good. But try to realize that you often have to test new things in order to break them in.

Listen to your problems. Talk to them and about them. Write about them. Feel their "temperature." When all of your senses are in tune with the problem, you should have a common-sense view.

The anxiety of not knowing if you can succeed will be easily replaced by a simple time-task schedule and by getting started.

Caution: Using the same method over and over again may become hazardous to your problem-solving health. Try several methods for each phase of the problem-solving journey.

Rather than saving evaluation until after the trip is completed, a simpler way is to make incremental notes as you go.

Finding interrelationships is a most creative activity. Make Analogy-Finding one of your pastimes. Pick some random thing around you and find ten things that are like it in some way.

Subjective emotions naturally precede objective knowledge. We only know what we feel to be true from experience. The rest is conjecture or faith.

To make a good decision, it often becomes necessary to project ourselves into the future to "see" whether or not our idea will make sense tomorrow.

The statute of limitations on problem-solutions is short. Because problems are never solved for very long, the profession with the brightest future is that of creative problem-solving.

The process-oriented problem-solver who keeps a good record (words, pictures, plans, souvenirs, etc.) will have a far greater product than the product-oriented problem-solver without a record of the rush to meet a goal.

Dealing with general problems requires knowledge of generalized principles. As Bucky Fuller says...we should "get a really grand strategy for dealing with the whole."

For each different situation we must quickly determine what we can and cannot count on. Dependent and independent variables must be identified and grouped.

Tourist Traps

MORE BARRIERS TO A SUCCESSFUL PROBLEM-SOLVING JOURNEY

1

Trust and respect your intuition...but don't allow it to control all your decisions. TRY TO USE BOTH NEW ANALYSIS AS WELL AS OLD EXPERIENCE TO JUDGE BOTH NEW AND OLD SITUATIONS.

DON'T BE AFRAID OF YOUR INTUITION. It is your background knowledge, your basic reference data-bank. Intuition is also called INSIGHT... knowledge based on past experience. It governs our reactions to new situations since our new perception is a viewpoint from an old experience. It is our past coming forward as a judge of our future.

DON'T BE CAUGHT WITHOUT YOUR CAMERA or other record-keeping device such as a notebook, sketchbook, backpack, etc. Even talking about what you experience is an additional consciousness-assuring method for getting the most from an experience. To avoid having to re-discover your experiences over and over before realizing their value you can "tool up" in advance to make the most of first encounters.

RECORD THE IMPORTANT OR KEY INFORMATION AS IT HAPPENS. Don't wait until you've half-forgotten what occurred or what you "really" saw and then attempt to recreate the experience without "notes." **KEEP YOUR SENSES AWAKE** and you'll increase the efficiency of your life-journey process. You'll see relationship at the start instead of only after repeated visits.

Problem-solving travelers need to rely on both physical and mental health in order to function completely and properly. It's a cinch that when we don't feel well, whether consciously or subconsciously, we can't operate at full potential.

DON'T LET YOUR NERVES GET SHATTERED by drinking too much coffee or tea.

DON'T EAT TOO MUCH or only non-nutritive, fatty, low energy foods (try a high-protein peanut butter sandwich instead of a candy bar).

DON'T GO WITHOUT SUFFICIENT REST OR SLEEP. When tired, take a nap and then proceed on your journey with renewed energy.

BEWARE of over-valuing your initial progress. There is usually much more traveling to do after the inertia is broken.

A "first" idea can end up being your "only" idea and get you into lots of trouble if it is all you have and is not properly evaluated in terms of overall objectives. **CONSCIOUSNESS OF THE ENTIRE PROCESS** allows you to consider alternatives and to make constant comparisons with your limitations and your objectives.

DON'T BE FRIGHTENED BY THE BIGNESS OR SMALLNESS OF THINGS. There are tools for dealing with almost all contexts. Look for the tools that fit the task.

6

A consciously-applied PROCESS-METHOD approach can smooth out even the most unfriendly or unfamiliar appearing situation.

EXPERIENCE IS THE BEST TEACHER. Relax and learn. You can only be "at home" with what you discover for yourself to be true.

DON'T BE HALF OF WHAT YOU ARE. The older, more educated and experienced you become, the more you know and the less sense you imagine to need. That is, as you age and get smarter you tend to give up the need for sensitivity and to replace it with the knowledge gained through using your senses in the past. You become a KNOW-IT-ALL and a SENSE-IT-NOT.

7

Instead remember that wholeness requires both sensitivity and knowledge. It helps to enhance curiosity, uniqueness, doing the unexpected and adventure.

When problem situations arise

DON'T DO THE NATURAL THING AND ASK "WHAT CAN I DO ABOUT IT?"

8

That question will only give you ideas or ways to solve a situation that has not yet been defined. It will give you directions to an as yet undecided place and will distract you from trying to determine the nature of the true problem.

INSTEAD ASK...
"WHAT IS THE TRUE PROBLEM IN THIS SITUATION?"

And the conscious analysis that should follow can help you discover what the essential elements might be. Later, meaningful ideas can be related to the discovered real problems for more beneficial resolutions.

General Language Guide

OTHER WAYS OF SAYING THE SAME THING

To paraphrase is to say something with other words. The technique involves getting to know the subject better through a conscious attempt at finding additional ways to describe it. We've provided some starters for each of the DESIGN STAGES that appear in the next section. But here are some general subjects to get the ball rolling.

A DESIGN PROCESS is...

...A PROCESS OF maximizing goals
...A PROCESS OF optimizing objectives
...A PROCESS OF realizing intentions
...A PROCESS OF giving form to intentions
...A PROCESS OF making dreams come true
...A PROCESS OF anticipatory improvement
...A PROCESS OF bridging analysis to synthesis via concept
...A PROCESS OF taking apart, comprehending and putting together
...A PROCESS OF organizing data into improved reality
...A PROCESS OF fulfilling a prophecy

DESIGN METHODS are...

...TECHNIQUES FOR SUCCESS
...TOOLS FOR PROBLEM-SOLVING
...STRATEGIES OR TRICKS
...WAYS FOR DOING THINGS
...DIRECTIONS FOR ADVANCEMENT THROUGH A PROBLEM-SOLVING PROCESS
...SUB-PROCEDURES

A SUCCESSFUL SOLUTION IS ONE THAT...

...enhances a defined purpose
...achieves the pre-stated end(s)
...satisfies a conscious intent
...frees the problem-solver for other activities
...helps to further clarify value and purpose

A PROBLEM CAN BE VIEWED AS...

...any project undertaken; a goal sought after; a task begun
..."a situation in need of improvement" (Osborn-Parnes)
..."an excursion" (Gordon)
...an intention or plan; a desired outcome
...a collection of related objectives leading to a goal
...the acknowledgement of needs in search of satisfaction
...a barrier or obstacle to the satisfaction of needs
...a constructive purpose
...an attempt to identify and to realize (make real) a dream
...an instability or imbalance; a disharmony; a disorder; a disunity

A CREATIVE PROBLEM-SOLVER is...

...innovative and ever-renewing
...a dealer in options and decisions
...procedural and methodological
...a habit-maker as well as a habit-breaker
...a divergent-convergent thinker and behaver; rhythmical
...sensitive; an active sensory response mechanism
...a fearless adventurer as well as a cautious planner
...off-center and in-line
...abnormal; behaves differently from others by virtue of consciousness, intent and practice
...a whole thinking-feeling person
...a lovable jerk; one who subverts but does it in an acceptable way
...accepting - open-minded, relaxed, brave, adaptable
...analytic - curious, skeptical, perceptive (aware)
...definitive - conceptual, insightful, purposive, independent
...idea-prone - seeker of alternatives, varied, inventive
...selective - decisive, assertive, discerning, assured
...active - motivated, persistent, dedicated, constructive
...evaluative - judgmental, objective, critical
...a "both/and" person as well as an "either/or" person

General Travel Guides

Adams, J., Portable Stanford
CONCEPTUAL BLOCKBUSTING

Churchman, C. W. , Basic Books
THE DESIGN OF AN INQUIRING SYSTEM

JOURNAL OF CREATIVE BEHAVIOR
INSTITUTE OF CREATIVE BEHAVIOR
State Univ. of N.Y. (Buffalo)

DeBono, E., Basic Books
THE FIVE-DAY COURSE IN THINKING

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NEW THINK; The Use of Lateral Thinking

DESIGN METHODS AND THEORIES,
DMG GROUP. P.O. Box 5,
San Luis Obispo, CA.

Gordon, Wm., Collier
SYNECTICS

Gordon, Wm., Porpoise
THE METAPHORICAL WAY

Jones, J. C., Wiley
DESIGN METHODS

Mager, R., Fearon
GOAL ANALYSIS

Mager, R., Fearon
PREPARING INSTRUCTIONAL OBJECTIVES

McPherson, J. H., Pendell
THE PEOPLE THE PROBLEMS AND THE
PROBLEM-SOLVING METHODS

Osborn, A., Scribners
APPLIED IMAGINATION

Parnes/Harding, Scribners
THE SOURCE BOOK FOR CREATIVE THINKING

Parnes, S., Scribners
THE CREATIVE BEHAVIOR GUIDEBOOK

Parnes, S., Scribners
THE CREATIVE BEHAVIOR WORKBOOK

Polya, G., Doubleday
HOW TO SOLVE IT

Sanoff, H., Wm. Kaufmann, Inc.
DESIGN GAMES

Simon, H. A., Basic Books
THE SCIENCES OF THE ARTIFICIAL

Zwicky, F., et al., Springer-Verlag
NEW METHODS OF THOUGHT AND PROCEDURE

...and the PROCESS begins

·the·
···UNIVERSAL···
TRAVEL AGENCY

A storehouse of means & methods for getting from

☞HERE☞ THERE☞

How to Use the Travel Agency

The Universal Travel Agency is the place to go when planning a problem-solving trip. Here you may discover many of the various methods for wending your way through the problem-solving process in a more creative way.

Each of the seven sections within the "Agency" represents the progressive stages (or Design Stages) of an overall problem-solving sequence.

Although it is theoretically efficient and therefore generally ideal to progress through each stage in sequence, it is also normal to vary the sequence in accord with the specific demands of each problem and problem-solver. (See pp. 20-21.) In the end, the most logical procedure is that special series of events that works best for you and your special situation.

a problem begins

Solving problems is a universal occupation. Small or large, personal or social, we are all busy with one problem situation or another. What to do to pass this course? Which subject to choose for a project or term paper? What to do tonight? Which color to select? How to improve the back yard? Where to get money? Which city to begin looking for a job? How to stop pollution? Where to begin on the task of designing a safer bicycle?

Situations that present problem-solving activity do not always arrive pre-digested and clearly presented for easy management. Instead, more than likely they will be tangled within other situations; disguised or innocent-appearing and locked inside some emotional distress or values conflict or perhaps stemming from some difficulty with the way things work (or don't work). Because of this, it is possible to spend much time and energy trying to untangle the pre-problem mess before ever getting onto the initial acceptance stage.

Problems originate inside our heads. We make them up. They also come from outside of us. We accept them wholly, in part, or not at all. Some are recognized as problems; some aren't. They can involve goals, ethics, discontents, disorganizations, and needs for improvement. Although problems surround us in many apparently different forms, it is only their specific situations that differ. THE PROCESS FOR RESOLVING THEM REMAINS THE SAME. Some problems seem impossible to solve; others don't seem like problems at all.

Some Basic Methods

In the world of ways-to-do-things there seems to be an unlimited number of variations. There also seem to be few foundations or fundamentals on which all such variations are based. If lots of variations are tried, commonalities filter out. On these two pages, we've included some of those basics that form the core of many simple and complex variations. You should recognize all of these "methods" as sub-processes within an overall problem-solving process. Perhaps you'll also have others in mind which, although equally basic, are more common to your own behavioral pattern.

list-making!

LIST-MAKING is one such general or basic method having many variations, the most important of which is called Brainstorming (See Page 68). We call them Checklists, lists of components or parts of larger organizations, lists of purposes and reasons, lists of options and possibilities, lists of cautions and fears, lists of things to do, etc., etc. Practice in list-making is fundamental to becoming methodological; a basic step toward becoming more consciously procedural or process-aware. Shopping lists and other daily "to-do" lists are good places to begin. Become a better list-maker and you'll be on your way to becoming a more successful (creative) problem-solver.

ACCEPTANCE STAGE ··· the basic method is

get moving!

GET MOVING! pertains to Finding Motivation (something that will move you)...INVOLVEMENT...what's in it for you?

How you get started is a personal matter. Something different moves each of us. Some need encouragement; some need threats. Some need positive reinforcement, some need negative reinforcement; the carrot? or the whip? Self-knowledge of what we personally need to accept the challenge of problem-solving would speed up our involvement with any issue.

ANALYSIS STAGE ··· the basic method is

what's involved?

WHAT'S INVOLVED? pertains to Finding Facts and Relationships... searching for information related to the problematic situation...Questioning, measuring and comparing the resultant discoveries.

Jncovering and considering information is the first broadening stage of a problem-solving process. To get at the facts, you'll have to participate in the formulating of questions and in the search for answers to what is contained inside of the fuzzy issues of initial problem statements.

DEFINITION STAGE··· the basic method is

essence-finding

ESSENCE-FINDING pertains to Finding the important components of the overall problem context...developing an attitude or taking a stand...Finding Direction in the problem-solving process ...drawing a conclusion from the facts.

Understanding the facts and their interrelations makes it possible to formulate a "concept." When the important aspects or interrelationships are clear, it becomes those "essences" that form the basis for further options, decisions and actions. This is a converging stage, a time for narrowing lots of information down to a few "essential" guidelines.

IDEATION STAGE ...the basic method is

idea-finding

IDEA-FINDING is still another expanding or divergent-thinking phase and spreads out from the narrowed definitive stage that goes before it. Now choice has meaning and a variety of options are desirable since each of them can be fairly judged by the defined criteria established. Deferring the judgement until a reasonable number of options is generated is an important key to this phase.

DEVELOPING OPTIONS pertains to Finding a spectrum of choices or "ways" to realize the determined Definition... Searching for different possible "means" to a chosen direction or "end"...Laying out a broad range of possibilities for action.

IDEA-SELECTION STAGE··· the basic method is

the best way

THE BEST WAY pertains to comparing Ideas with Definitions...Determining which of the "ways" will best fulfill the requirements set down in the Definition Stage...Making a choice...Narrowing down the Options...Deciding.

Here is the next convergent stage; that of decision-making. It is best facilitated by a clear and specific-problem definition and a feasible and varied list of Ideas, or optional ways to realize that definition. Choice involved comparison...comparing what you want with what you can have. If either part is fuzzy or imcomplete, the resultant decision stage will also be effected.

IMPLEMENTATION STAGE··· the basic method is

make it real!

MAKE IT REAL! which pertains to Taking action on the selected idea...Giving reality or concrete form to the chosen option...Realizing the solution or resolution.

This next step involves translation, turning the determined directions (definition) and chosen means (selected idea) into a new reality. It is here where sub-problems are most likely to occur and where problem-solvers most often lose sight of their process. And translation requires vocabulary (knowledge) and skill.

EVALUATION STAGE··· the basic method is

what next?

WHAT NEXT? pertains to Looking Backward and Looking Ahead...planning a Self-improving course...Reviewing intentions and Realizations with an eye to plans for better future realities.

This is the stage where the process both ends and begins, where results and experiences are compared with initial and developed intentions, and where plans for new or continued improvements are formulated.

Introduction to ACCEPTANCE

"Relax and enjoy it"

ACCEPTANCE is the first major DESIGN STAGE along our problem-solving journey. Although it is possible to physically go on and have some fun and also learn some skills, facts and attitudes without accepting the task of solving a problem situation, it should be clear that deeper learning and greater pleasure can only be gotten via whole-hearted acceptance of the situation in question.

To **ACCEPT** something is to take it into your life... to open up to it...to assume responsibility for that thing. It involves a voluntary agreement to adapt yourself and your needs, at least in part or for a trial period, to the new addition. In short, **ACCEPTANCE** is an act of self-giving. So it makes sense to consider carefully what you can feasibly accept or must practically reject in life. Getting in over our heads or Never getting involved are the extreme alternatives of poor Acceptance management.

Conscious Acceptance can help you determine whether or not you have the time, resources, ability, and energy to tackle any situation...to determine whether or not you should or could get involved...to see if the issues that face you will fit into your existing schedule of priorities or not.

Since it's more difficult to "back out of" than "rush into" a situation, this first stage involves some self-knowledge if it is to be successfully experienced. Knowing your limits and your potentials will also help in your development of self-motivation; helping you to get moving and to get involved.

DEPTH OF INVOLVEMENT is the best measure of ACCEPTANCE. When the problem and the problem-solver become synonymous, as though they are one, a deep involvement will be perceived. Involvement comes in varying degrees. Some problems, because they are obviously more important than others, will get your undivided attention. Others may only need partial recognition and less effort on your part. It is therefore possible to accept many situations concurrently. It isn't necessary to deal with only one situation at a time. But when our energy and attention are divided among too many situations, the depth of involvement in at least some of them will diminish. Students taking a "heavy load" of varied courses in school often begin with the best but unrealistic intentions to give each separate subject their full attention. Later on, the illogic of the plan becomes clear.

Plan to ACCEPT whatever you undertake so that your involvement will be seen in the results. But also beware of accepting more than is physically possible at any one time.

Language Guide For Acceptance

To accept the Problem Situation is often stated as:

*to declare initial objectives and get started
*to "buy" the problem; set aside resources for the situation
*to give in to the situation
*to assign autonomy to the problem; to give it life
*to assume the responsibility of the problem
*to re-dedicate your time and energy
*to believe in the problem; become its advocate
*to pledge self to the problem; contract-making
*to alter existing priorities
*to give consent or approval to solving the problem
*to confirm and become wedded to the situation
*to make the problem a part of yourself
*to make the problem synonymous with yourself
*to establish motives; become motivated; get going

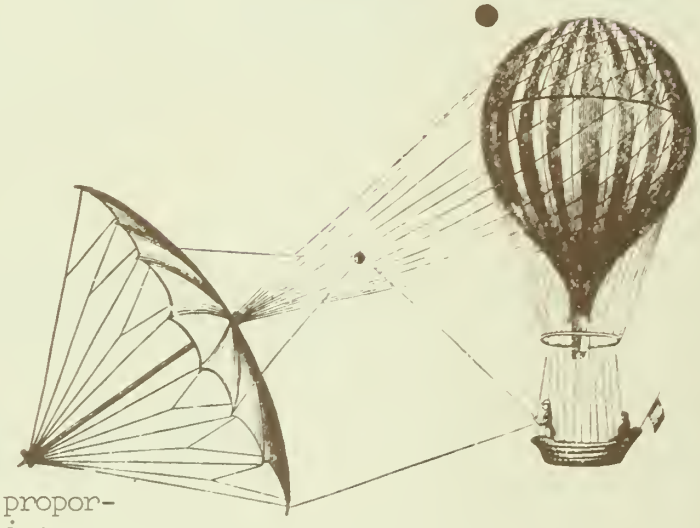
What does "to accept the problem" mean to you?

Methods for Acceptance

Here is a group of methods that might help you to begin your problem-solving journey with a deeper acceptance.

1. AD VALOREM METHOD
2. PERSONAL PRIORITIES MATRIX METHOD
3. WHAT'S IN IT FOR ME? METHOD
4. SELF-HYPNOTISM METHOD
5. CONFORMITY METHOD
6. GIVE IT UP METHOD
7. WHO'S IN CHARGE? METHOD
8. I AM RESPONSIBLE METHOD
9. TRAGIC SCENARIO METHOD
10. ANALOGY ACCEPTANCE METHOD
11. CONTINGENCY MANAGEMENT METHOD
12. DECLARATION OF ACCEPTANCE METHOD
13. WHAT'S HOLDING YOU BACK? METHOD
14. STANISLAVSKI METHOD
15. HABIT MAKER METHOD

ways to get started



1 AD VALOREM

Generally you get out of something in proportion to what you put into the thing; i.e., your mood or frame of emotions regarding things usually determines your enjoyment of things. For example: an inexpensive trinket that you might ordinarily ignore can begin to have higher value if it was a gift from a loved one. By association, the trinket increases its importance to perhaps that of a far more expensive piece of jewelry. Likewise, a notebook that has been personalized with carefully drawn, colored illustrations or with other relevant notes or details will increase the value of a project or course of study for its owner.

In the same way, problem situations can have their values increased by finding ways to upgrade any apparently low values that unfriendly situations may present...helping to increase your interest by increasing their importance to you. How could you make your situation more valuable?

Before intending to spend a chunk of your life solving a problem, check to see how that problem relates to your other life objectives and abilities.

Since acceptance means to assume the responsibility for something, it's a good idea, before the fact, to see whether or not you have room in your life for one more responsibility.

2 PERSONAL PRIORITIES MATRIX

Using a simple matrix or grid of squares you can compare your objectives with your time and energy and other existing demands you have facing you.

EXAMPLE:

1. Analyze the situation to estimate costs in money, time, stress, etc., and place that list to the left of the horizontal columns of the matrix.
2. Next, list those "given" demands on your time, bankroll, etc., in the vertical columns of the matrix.
3. Compare the two columns, noting where conflicts appear. Overly conflicting situations suggest that the problem does not fit your current life-style or that those things currently taking up your time could stand to be altered or eliminated.

This method gives a brief overall graphic model of the entire problematic situation that faces you and also provides a clue to your expected chances for solving it. Remember! Try to keep your head above water.

3 WHAT'S IN IT FOR ME?

What do you expect to benefit from your involvement? How much do you expect to be paid? Make a list of all the benefits that may be gained if you do choose to accept the responsibility for the problem that faces you. Be as selfish as you like. The truth is that direct benefits such as immediate pleasures, recognition, money, property, and gifts provide more incentive than indirect ones. But don't forget to include those intangibles such as improvement of skills and gaining new knowledge and general attitudes, which could be useful for other situations in life. In the end the benefits should outweigh the costs to you in order to make your investment of energy worth your effort.

If you do choose to accept the problem, you may want to carry your "payment" schedule along with you. It will be a constant reminder to persist if the going gets tough later on.

4 SELF-HYPNOTISM

This is a method for talking yourself into and through a problem-solving situation.

If you are active at the outset of a problem, ride with the feeling.

Go to a quiet place. Take a walk alone or shut out the world of people and problems in some way. Clear your mind of everything. Relax. Get very still and try to shake off all awareness of your environment. Your body should feel first heavy, then numb, and then asleep. Don't allow anything to distract you from concentrating on nothingness.

When you are relaxed and almost on the verge of sleep, change your concentration from the void to the positive aspects of the problem situation. Think how good it will be when it is solved. Think of how exciting it is to be involved in such an important task and of the feeling of well-being you will have as you continue to work at that task. Remind yourself of one of the rewards for solving problems and then slowly wake yourself up again to the task. The entire process could take as little as five minutes or as long as one hour and can be repeated as often as necessary throughout the course of your problem. (Also see SIDE TRIPS for more on this method.)

5 CONFORMITY

The quickest and easiest way to become a part of something is to become as much as possible like that thing. Conform to the situation and you will begin to exhibit all of the necessary behavior of acceptance. Wear the clothes of the problem; talk its language. Go to its favorite places; eat its food; sing its songs; carry its mottos. Be as much like the problem as you can.

When your friends begin to mention how much like your problem you have become, you will be well on your way to the next energy state.

Acceptance demands freedom from pride, adaptability, tolerance and self-motivation.

6 GIVE IT UP

Zen philosophy suggests that the attainment of a thing requires the giving up of that thing. This means if you want something you must stop concentrating on having that thing and on the fact that you want it (product orientation) and begin concentrating on what the thing is and on what must be done to get it (process orientation).

EXAMPLES

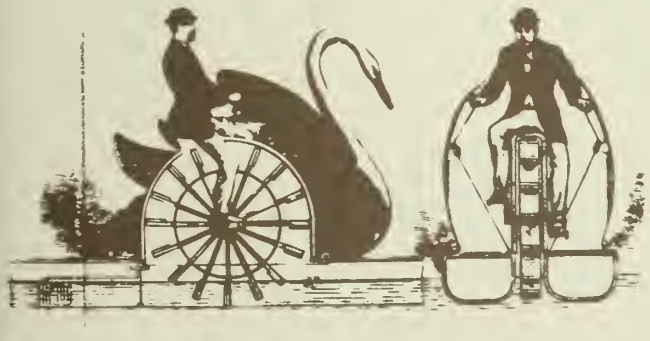
1. If your problem-situation requires you to get $1,000, "give it up." Instead, get involved with things that earn money like turning your hobby into a profit or getting into some money-producing interest. By thus "giving it up," you will probably end up with more than the mere $1,000 you had as an initial product intention or goal.
2. If your problem is to design a house, "give it up." Get into what makes a house satisfying and you will soon be designing a good house.

7 WHO'S IN CHARGE?

There are two profound choices in life: to accept things as they exist or to accept the responsibility for changing them. We control our own environment in accord with our number of decisions to accept change to meet our needs. The moment we recognize a situation in need of improvement we are faced with choosing to live with that shortcoming or to accept the task of improving it.

Half-hearted acceptance produces half-way solutions.

One method to encourage acceptance, therefore, is to constantly remind yourself of "Who's in charge" of your life and to realize that freedom and self-control only accrue to those who accept the responsibility to change their lives in terms of their conscious intentions for improvement.



8 I AM RESPONSIBLE

The work and responsibilities that go with everyday small problems are easy to handle compared to those that accompany heavy social, humanistic, or ecological situations. Just to get the feeling of how simple it is to carry the load of your problem, try playing some of those "heavy" roles. Make it as real a game as you can, and imagine all the headaches of a really tough situation.

Think of a job you imagine as being really tough... and take it on (in your imagination) to find out how simple your task is by comparison.

9 TRAGIC SCENARIO

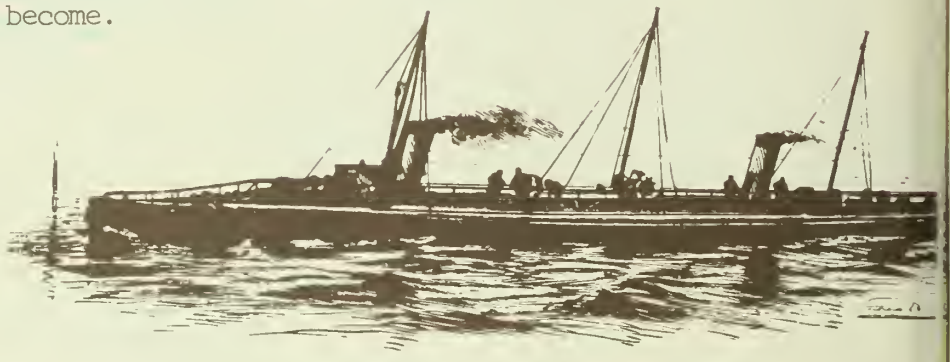
Try opening some new doors. "Originality is simply a fresh pair of eyes." - Woodrow Wilson

One method for developing a strong motivation to solve the situation that faces you is to imagine becoming the victim of all of the worst things that could happen if the situation were not solved.

EXAMPLES:

Suppose you want to accept the problem of helping others in your town see the pollution caused by burning trash and paper in home fireplaces.

Imagine that 1,000 new homes are being built with large fireplaces and then imagine that trash collectors go on strike and every new fireplace becomes a home incinerator for burning trash and garbage. Try to see the sky as being filled with smog and dirt. Keep on this line of attack and you will build a strong case in your mind for immediate action. The more tragic the imagined consequences, the greater your involvement might become.



10 ANALOGY ACCEPTANCES

When you have trouble with accepting some problem situation, try thinking of ways in which other people or things accept their situations.

Then, through the imagery of the analogy, perhaps you, too, can accept your problem. Select subjects very different from your own in order to get fresher viewpoints!

You may climb the tree, take your arms from around the trunk, and walk out on a limb, but you will never experience flying until you actually jump.

EXAMPLES:

How does a toaster accept toast?
It makes it easy by providing a large push bar.
It takes it in completely.
It concentrates its energy on surfaces of the toast.
It accepts different sizes and types of bread (within limits).
It never half-toasts unless it is broken, etc.

FURTHER EXAMPLES:

How does a door accept people?
How does a cat accept affection?
How does a tree accept winter?

11 CONTINGENCY MANAGEMENT

Behavior Modification is a well-known and practiced method for changing from one set of habits to another; a way toward managing those barriers that keep us from succeeding or progressing on the path to our goals. From the study of "Behavior Mod" psychologists discovered some basic rules to follow when we find ourselves stymied by the negative inertia of a "contingency" (or unexpected but powerful "reason" that keeps us from moving forward to a goal). Those rules can be paraphrased as follows:

1. BE STRICT and BE CONSISTENT. Don't allow "exceptions."
2. BE REASONABLE and take it slowly. Don't rush in over your head and then have to plead for mercy. Become process-oriented by consciously starting at the beginning and working toward the end.
3. UNDERSTAND YOUR LIMITS. Don't try to do more than is physically possible or probable.
4. PROVIDE INCENTIVE. Make your rewards (or punishments) clear ahead of time...and pay off as you progress. Remember, too, that only short term rewards have motivating clout.

It's time for a break. I am making too many mistakes!!!

12 DECLARATION OF ACCEPTANCE

This is a variation of the previous method. It took great courage for the signers of the Declaration of Independence to put their names on a document that subverted their existing government. But their signatures attest to their full acceptance of backing up their beliefs. Perhaps such a document could help you to accept the responsibility of your problem situation.

EXAMPLE:

Write down why you believe that the solving of your problem is a viable way to expend your energies. Write it like a long motto. Make it large and clear and hang it up near you so that you and others can see it. Maybe you could Xerox copies and give them to people who you think might be interested as a further expression of your commitment.

13 WHAT'S HOLDING YOU BACK?

The four main causes of non-acceptance (other than physical disability or lack of skill) are:

1. It seems like or actually will be punishment to do it...as for losing weight or giving up a habit.
2. It seems like or actually will be more beneficial to do something else...as for watching TV instead of studying.
3. The relevance of doing it is not understood... as for being nice to a rude person.
4. There are other problems that come before or stand in the way...as when you procrastinate.

To overcome these factors, it is necessary to identify which of them victimize you and to begin setting up a plan for "contingency" management...i.e., giving yourself the authority to control your behavior in a conscious way.

14 STANISLAVSKI

Constantin Stanislavski, the Russian director and dramatic coach who is noted for his METHOD acting principles, provides choice advice relative to becoming "involved." He writes of being "ceremonious," or turning the task into a memorable event...of treating the situation (problem) with reverence and respect. He suggests being lightheaded and buoyant regarding the situation...as if it had almost MAGICAL QUALITIES...of flowing with the situation...allowing it to carry you instead of imagining to confront it or of dealing with it as manipulator. He suggests that we drop our preconcepts and other generalized opinions of the situation and meet it with a new openness and love. It's the trick that made Marlon Brando famous. Perhaps it could help you, too.

It is a hopeless mistake to wait until you have a sure-fire solution before declaring your acceptance of solving a problem. With such an attitude you enter problem-solving processes with all decisions previously made. You will have no alternatives.

15 THE HABIT MAKER

Since acceptance calls for adaptation to new situations, the things between you and accepting your problem are your habits. It's not easy to change from what you are doing or what you thought you would be doing. You resent being "told" what to do by the problem. Change hurts.

Acceptance is like signing a contract to buy an old house. You simply commit yourself to get involved with a lot of work in exchange for the security of having a place of your own.

The mere act of beginning a project increases your chances of completing it and builds confidence in your ability to go on to the end.

Make an assessment of your long-range goals to decide if the problem does fit into your life, IF it does fit you'll have to make new habits to help you to stay inside your proposed limits.

RECIPE:

Make a list of the reasons why you don't want to face the problem or why you are afraid to face the problem. The list will probably describe, in other terms, all of those habits that currently make your nonaccepting lifestyle comfortable.

Next, take the items, one by one, and consciously attempt to break them by replacing them with new accepting behavior. It will be difficult and exciting since it will open new doors into the problem that you can enter more easily.

EXAMPLE:

I don't want to accept this problem because:

1. It will keep me from seeing my friend.
2. My money is already committed.
3. The problem seems complex and I've always disliked big "head" trips, etc.

HABIT MAKERS:

1. Allow this to be a test of your friend's understanding and tolerance.
2. Reorganize your finances and payment schedule.
3. Take a chance on seeing if the problem is really as complex as it appears or if the block is in your mind.

Travel Guides for Acceptance

Fromm, Erich, Avon
ESCAPE FROM FREEDOM

Mager, Robert, et al., Fearon
ANALYZING PERFORMANCE PROBLEMS

Marott, Richard, Behaviordelia, Inc., Box 1044
Kalamazoo, MI 49005
CONTINGENCY MANAGEMENT

Stanislavski, Constantin, Theatre Arts
CREATING A ROLE

Introduction to ANALYSIS

Once deeply inside of any single thing, you find yourself automatically into all things.

Getting to know more about the problem situation and clarifying all that you already know about it are the two basic tasks of ANALYSIS, the next logical problem-solving stage. By traveling through the ACCEPTANCE stage you may have already uncovered many new possibilities and/or clarified some of what you need to know. When a deeply involved acceptance calls for an intense ANALYSIS you will further discover many new interrelationships between your subject-situation and other parts of reality.

Once you can see the necessity for Analysis in the problem-solving process, you will welcome this convergent, mind-expanding stage as an important effort on the path to successful conclusions.

Since the basic method for ANALYSIS asks WHAT'S INVOLVED? it is often necessary to linger in this stage of the problem-solving process in search of the answer to that question. For some unfamiliar or complex situations, the time required for analysis may actually exceed the total time needed for all of the other stages combined. Yet for simpler or other often-encountered problems, analysis may be performed quickly and totally in-the-head.

Because it is easy to imagine how little we know about any issue or situation we can also easily imagine the analysis stage to be endless. In fact analysis does continue endlessly because we never finish gaining knowledge about anything. But reason and time limits must guide us in recognizing when we have the sufficient or appropriate amount of information to proceed to the following stages of the process.

Successful ANALYSIS requires ample ACCEPTANCE. To be productive in this stage of the process, the problem-solver will need to bring along sufficient interest to insure an active involvement, an energetic curiosity and a steady persistence. It may also be helpful to stop now for a moment to consider the relation that the ANALYSIS STAGE has to other process stages so that the effort of analysis (stopping for information) can be viewed as forward motion instead of as a time-wasting sidestep.

Language Guide for Analysis

TO ANALYZE A PROBLEM IS OFTEN STATED AS:

to BREAK the problem down to its component parts
to RESEARCH and QUESTION
to DISCOVER interrelations and patterns
to EXAMINE the parts in relation to the whole
to DISSECT or decompose the problem
to GATHER facts and opinions
to GET FAMILIAR with the problem; make friends with it
to COMPARE a problem situation with other situations
to SPREAD the problem out before yourself (divergence)
to SORT, sequence or order the problem
to CLASSIFY the elements of the situation
to SEARCH for insight within the problem

What does "to analyze the problem" mean to you?

Methods for Analysis

1. THE BASIC QUESTIONS METHOD
2. THE CLEVER PACK RAT METHOD
3. SYNECTICS/FORCED RELATIONSHIP METHODS
4. START A JOURNAL METHOD
5. BACK TO THE SUN METHOD
6. ATTRIBUTE LISTING METHOD
7. "RECORD ALL YOU KNOW ABOUT IT" METHOD
8. "WHAT HAVE OTHERS DONE" METHOD
9. ANALYSIS MODELS METHOD
10. MATRIX METHOD
11. "SEARCH FOR PATTERNS" METHOD
12. THE EXPERT CONSULTANT METHOD
13. EXPANDING OBJECTIVES METHOD
14. THE IDEA-DUMP METHOD
15. THE SENSITIVITY GAME
16. SQUEEZE AND STRETCH METHOD

ways for getting to know the problem

1 THE BASIC QUESTIONS

The mere asking of a question calls for courage; however, asking a question is all that really is necessary to enter the Analysis Stage. It is the universal method for finding out about something. It calls for throwing off fear and pride and a desire to determine what, why, where, when, and who or how. The basic questions of analysis tend to be:

What is the total scope or "world" of this problem?
Which limits can I control and which are fixed?
What is contained within the limits of this situation?
Who can help me solve this problem?
What has already been tried to solve this problem?
What are my resources and what is required?
Where can information be found?
What is allowed and what is ruled out?
Can the rules be changed?
How can I be most effective in dealing with this situation?

Analysis never stops unless you stop it because getting to know about something is an endless process. Remember that all things are related to everything else. Set a time limit on your analysis phase.

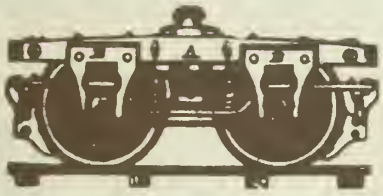
None are so blind as those who refuse to see. Analysis also suggests that we question and compare with all our senses.

2 THE CLEVER PACK RAT

The Pack Rat, like the crow, gathers things around it that have attracted its attention for one reason or another. Analysis, handled in the style of the Pack Rat, is a random and haphazard thing. To deliberately pursue analysis that way would suggest that time and energy expense were of no importance. But much information can still be gathered this way, especially if the gathering is done with a specific analytic purpose in mind.

EXAMPLE: For half an hour each day during the course of your problem, go somewhere new and bring back something new to your problem "nest." Go to a new room in the library, see a new "consultant," walk into a strange laboratory, visit another problem situation in progress, etc. Don't be too concerned about categorization; that can happen later. Just be a Pack Rat and bring back something that "attracts" you.

Afterward you can make a game of relating the bits of your "collection" to your problem situation while remembering that all things are interrelated.



3 SYNECTICS/FORCED RELATIONSHIP

Gaining deeper insights and new perspectives are both attempts to see things in ways that you have not seen them before. Synectics (see SIDE TRIPS) and Forcing Relationships are two methods for reaching such new views.

SYNECTICS asks, "How is this thing like that thing?" and uses the results uncovered as new viewpoints or ways to look at the subject being analyzed.

FORCED RELATIONSHIP asks, "What would result if I combined or joined this thing to that thing?" with conclusions providing deeper insight into the roles of both "components."

EXAMPLE: Analyze a fireplace.

1. How is a fireplace like a breakfast cereal?
   They both provide heat by distributing energy.
   They are both involved with fuel consumption, etc.

4 START A JOURNAL METHOD

From the Italian word *Giorno* meaning "day" we derive our English word *Journal*; something recorded daily or at least regularly. Keeping a "journal" is becoming a popular way to record notes regarding the facts and discoveries about special interests. Sometimes a problem can benefit from having its own "record book" or journal to separate it from other problems in your life. This documentary technique lends itself directly to the Analysis Stage of problem-solving, especially when the journal becomes a collection place for comparisons and interrelationships along with facts and data. Many variations of "blank" books are now available for neat journalistic analysis. Try it.

To learn about something means to take that something into your brain by relating it to something that is already there. Familiar landscapes are everywhere if we only choose to see them that way

5 BACK TO THE SUN

Since all physical things are reducible to primary energy sources, you can analyze any of them by tracing their "history" to their basic natural resource, the Sun.

EXAMPLE:

A LEATHER SHOE

NAILS

Hammer
Forge
Wire Spool
Steel
Pittsburgh
Shipping
Minnesota
Iron
Fossil
Deposits

SHOE POLISH

Application
Coloring
Container
Mixing
Trucking
Petroleum
Chemicals
Fossil Deposits

LEATHER

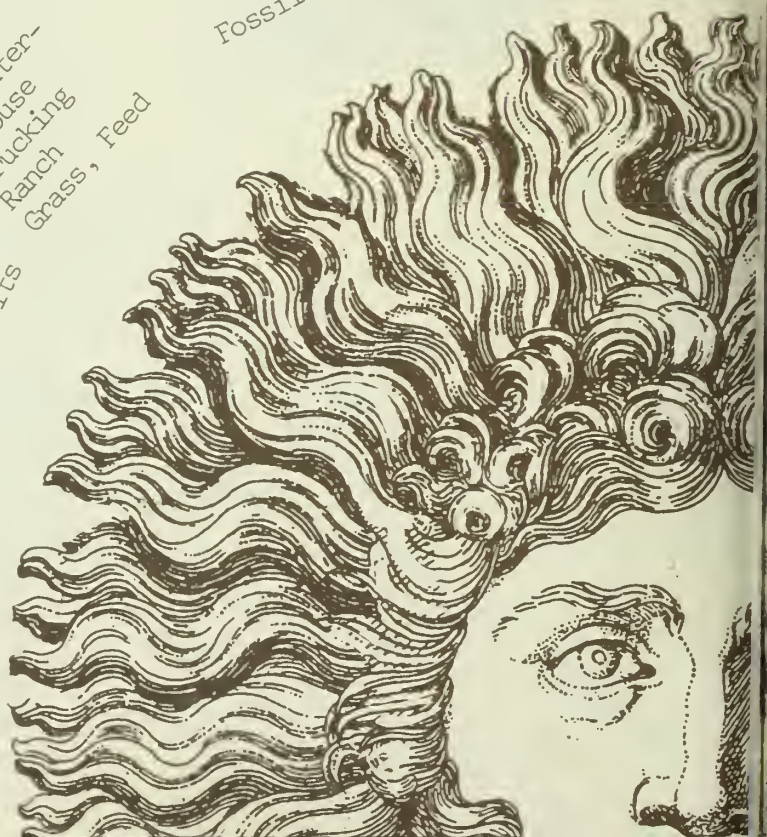
Texturing
Coloring
Holes Punched
Cut Out
Tannery
Slaughter-house
Trucking
Ranch
Grass, Feed

STRINGS

Plastic Tips
Woven Fabric
Coloring
Fibre
Woven
Fibre
Spinning
Fibre
Drawing
Fibre
Synthesizing
Plastic
Petroleum
Chemicals
Fossil Deposits

RUBBER-PLASTICS

Stamps
Molds
Heel Factory
Shipping
Raw Latex
Processing
Rubber Plant
Rubber Tree
Fossil Deposits



The more you attempt to see inside of things, the more you develop your power of insight.

6 ATTRIBUTE LISTING

Attributes are what we call the different categories into which the physical, psychological and social characteristics of things can be placed. Getting to know something better involves discovering the special or unique attributes of that thing.

By making a list of the Attributes of a subject being analyzed you gain both a general and a specific view of the "world" of that subject.

SOME EXAMPLES OF ATTRIBUTES ARE:

Physical (color, weight, mass, speed, odor, size, structure, order, etc.)
Psychological (appearance, perceptual stimulus, symbolism, etc.)
Social (group approvals, taboos, responsibilities, politics, etc.)
Others (cost, function, durability, ecological connection, time, etc.)

Note: Attributes can also be considered as problem variables that are either dependent (on other attributes) or independent. To discern which is which may prove helpful in later problem-solving stages when determining essential relationships.

7 PUT DOWN ALL YOU KNOW

We begin all analysis with a question. The first question is the hardest, but one question leads to another.

Most of us know much more about things than we give ourselves credit for knowing. We may back off when asked what we know about something we imagine not to have examined carefully before, only to discover, upon examination, that we already knew much of it. Let someone ask us if we know the names of 25 wines and we'd probably say "no." Then, seeing a list of 50 wine names, we'd probably recognize them all and say, "Oh, I knew those!" But by then it is too late!

This method requires writing down all that you know about the subject in question. You must force it out of yourself, though, because you are naturally reluctant to write down the "obvious." In short, most of what you know is locked inside as potential awaiting your authority for release.

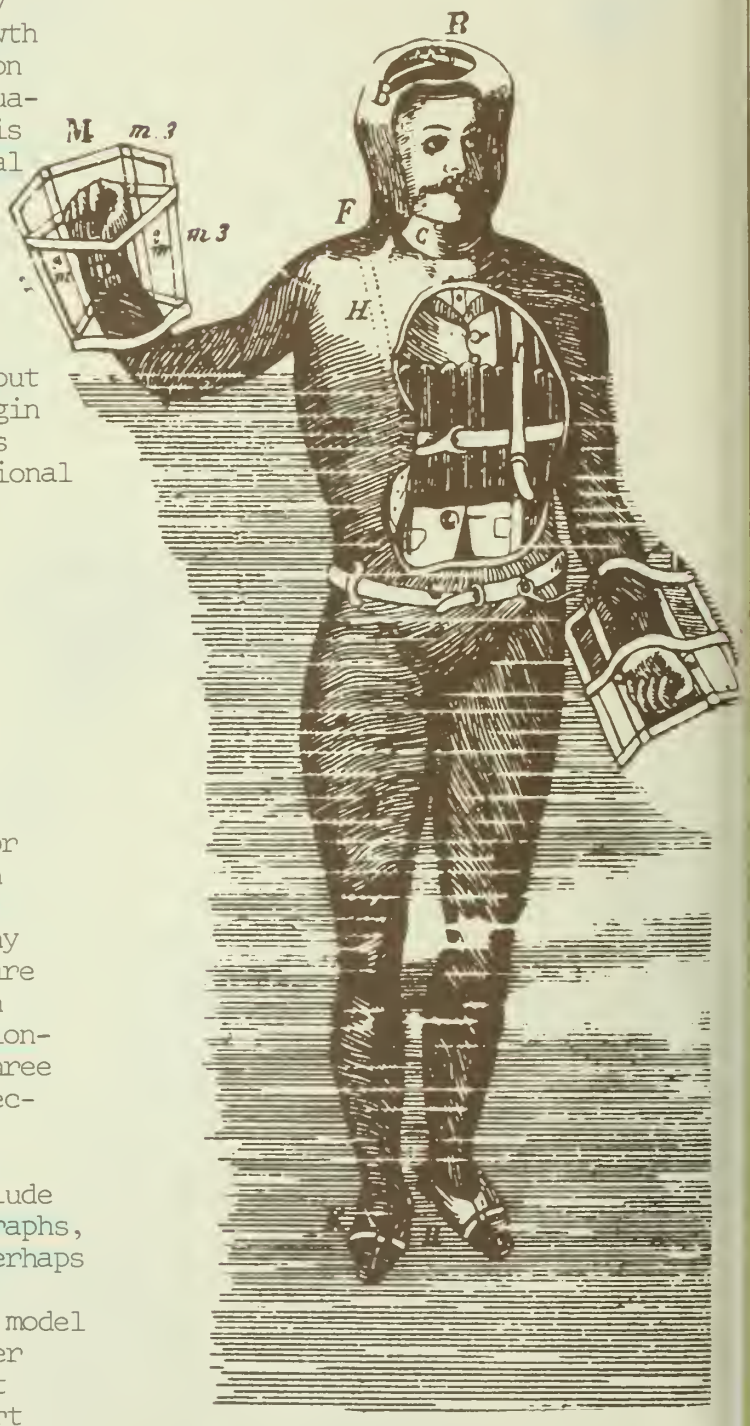
For example, by "talking things over" with a friend you'd be surprised at the knowledge the two of you have about things. Writing the information down or putting it on tape and then writing it down is all-important. So get a pad and pencil and sit down alone (or with a friend) and start writing down an outline of all you already do know about your problem situation. Start with the "obvious."

A wide-awake young traveler can surpass the overconfident tour leader in the gathering of information about a place.

8 WHAT HAVE OTHERS DONE

Although revolutionary developments that deny process are possible, it is evolutionary growth that is probable. Both you and your situation are parts of long chains of interrelated situations over time. This commonly used method is based on that fact and deals with the critical examination of solutions that others have applied to solve problems similar to yours.

Once again, MAKE A LIST; this time your list is of previous solutions. After each entry, include some critical evaluative comments about each one. The library is a good place to begin because most important or ingenious solutions are recorded in magazines, books and professional journals.



9 ANALYSIS MODELS

Another way to get to know about a subject or situation is to make a model of it. Such an abstract "simulation" will help you see the situation more clearly. Models can take many forms. Model trains, airplanes and houses are just one kind of model. They are helpful in visualizing form, color, proportional relationships, etc. But models can be other than three dimensional miniatures of your intended objectives.

Other ways to model intended objectives include full-size prototypes, charts, statistical graphs, pattern assemblies, biological analogies; perhaps even an ant farm could successfully model a social system, etc. For instance, the best model for analyzing the problem of writing a letter might actually be writing the letter. If it doesn't work out, it's simple enough to start over.

Nothing important will be wasted, and some parts may be reusable if you decide to scrap the first attempt. For more complex problems where people and resources become important, such an approach could get out of hand and quickly become irresponsible. At those times more efficient models would probably be more practical.

Don't begin your analytic search with a ready-made answer. Use the search to determine the answer. A fixed mind is closed to discovery.

Since "waking up" to the existence of problems within the problem often comes only after doing it wrong the first time, a bag of different model techniques is handy to carry along on problem-solving journeys.

One kind of model found to be useful in visualizing "whole worlds of potentials" of things is the "morphological" model, a simple way of organizing the attributes or components of a subject and for dealing with them as interrelationships.

Follow this simple procedure:

1. List all the problem attributes (variables)
2. Categorize the attributes, making separate lists for each category
3. Systematically determine the combinations by taking one attribute from each list and finding out about that particular combination of parts.

Seek out some of the "dirty jobs" in analysis. Truth often hides in the corners.

The 3-D Morphology uses solid geometric forms (cube, rectangular solid, or polygonal solid) to help visualize the complete possibilities or potentials of a subject by examining all the relationships found at each intersection or "cell" formed by the meetings of attributes within the model.

10 MATRIX

A matrix is like the mileage chart found on most road maps. On these charts you see the names of cities in vertical and horizontal lines at the top and side of a grid. At each intersection of the grid you find a number that corresponds to the distance between the two cities involved. When a city connects with itself there is a dot or a blank to symbolize "no relationship."

Get your questions out of your mind by asking them out loud and by writing them down. Questioning is a learned skill and is developed through practice.

Similarly, a matrix can help clarify relationships between elements or attributes of a problem situation. By placing variables, attributes, or limitations of a problem on both axes of a matrix, you are able to plot the interrelationship between each of them. In this way you can systematically determine which of them are most dependent or independent. (Note! A numerical rating system can add more precision to this method.) Draw a grid. Place the problem components at both the top and side of the grid and start determining relationships. You will have to work out a system for dealing consistently with all the decisions you must make in the matrix.

11 SEARCH FOR PATTERNS

Within every problem there can be found smaller problems or sub-situations, and for each of them separate solutions might also be found. Problem-solving often consists of resolving lots of small situations that get you closer to a collective end or goal. The search for patterns in the sub-situations is another useful method for dealing more knowledgeably with larger issues. Clearly, the more patterns that can be collected, the greater will be the "understanding" of the situation under study.

Analysis means looking into places you haven't looked before or seeing familiar things in new ways. Going over the same things in the same ways teaches nothing new.

FOR EXAMPLE: In the problem of how to improve travel by air, we might find that one typical sub-situation is the too-great distances between cities and airports. One workable response to this situation has been to add helicopter service between airports and downtown centers. This pattern then becomes a part of a larger language of patterns to be compiled for use in other air-traveler problems.

Patterns can be found wherever previous experience or a collection of bits and pieces exists.

12 THE EXPERT CONSULTANT

When the going gets tough and a problem leans heavily on your back, being able to rely on an expert consultant can save the day. Professional diagnosticians (physicians, lawyers, architects, etc.) suggest that you consider their services as "preventative" measures instead of only when "it's almost too late." This method therefore suggests calling in an expert before, instead of only after, the fact of acting on your problem. The experts you call in may be real or imaginary depending on your time, needs and resources.

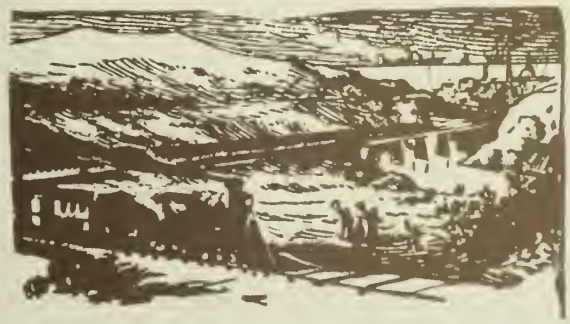
TRY THIS: In your mind (or via books, tapes or even reality) call in the one or two people you think would be most helpful to your solution. If your problem deals with religion, you could call in Christ, Moses or Buddha to sit and discuss the situation with you. They are there, available to be your consultants (without charge), if only you will call them into your mind.

Always keep your recording tools close at hand while passing through the Energy State of Analysis. You'll need plenty of references later on that can be best collected and organized right now.

13 EXPANDING OBJECTIVES

We enter the analytic state by having already accepted certain basic intentions or objectives. As we follow the course outlined by those objectives, we will probably discover new territory in the line of our desires.

Problems tend to begin somewhat blurry or fuzzy and get more clear with time and effort. As we enter into ANALYSIS we bring those unclear beginnings with us.



When our new discoveries are fed back to clarify the basic objectives, those objectives will then guide us into ever new territory as in a chain reaction. In the end, objectives that have been expanded as far as possible become our specifications for the improvements we seek. The more we expand and clarify them, the closer we get to the realization of the solution itself. (See SIDE TRIPS for more on how to clarify objectives by making them "measurable.")

14 THE IDEA-DUMP

Sometimes an idea like an "ace-in-the-hole" can be our worst enemy, especially if it blocks us from thinking of other alternatives at the Analysis Stage.

If we enter into problem situations carrying the solution in our pocket, no matter how much we "say" we are going to analyze and "be objective" about this thing, we still know that we don't have to work too hard at it because there is always one way out of the dilemma, and we already have it in hand.

The **IDEA-DUMP METHOD** suggests that you get your "aces" out front from the beginning so that they don't block your path to better solutions. Once revealed, those ideas can be critically examined by you and others and add to your understanding of the situation.

EXAMPLE:

1. Search your mental "pockets" for ideas as you enter the Analysis Stage. Cleanse your mind of solutions.
2. Share your ideas with others. Be critical to see why they will or won't work.
3. Save all usable ideas and parts of ideas for later use if your Analysis still proves to be valid.

Don't let the need to make records get in the way. If your eye is glued to the camera you may miss seeing the whole scene. Record with the senses (to be transcribed later on) as well as with equipment.

15 THE SENSITIVITY GAME

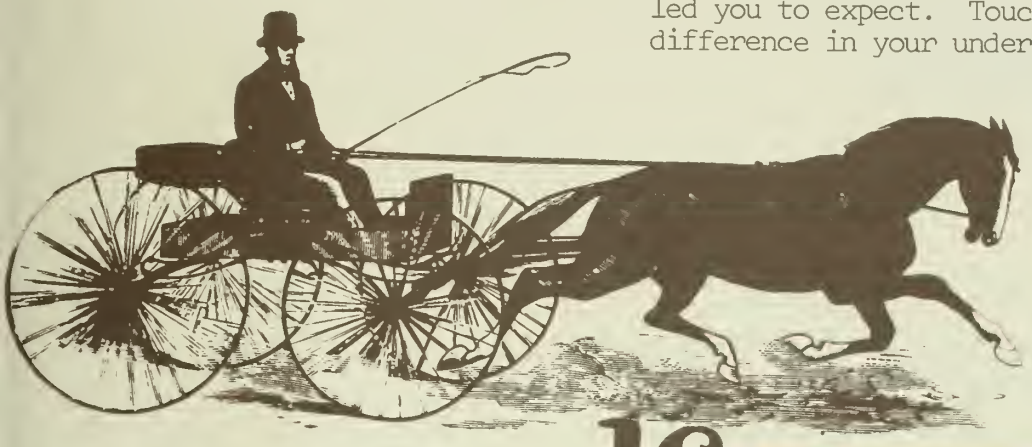
Imagination rarely matches reality. Before reaching sixteen years old, we tend to touch, taste, smell, and listen to everything strange to us. That's how we learn and those who consciously sense the most usually learn the most. After that, society programs us to keep our senses "under control" and to turn our senses off. But who needs an insensitive analyst?

If you want to find out more about something, it's a good plan to get very close to it. Touch a felt pen to your mouth and at once you become aware of the taste of the ingredients of ink. Touch a snake and you probably discover it to be much less slimy than you thought. Touch a fish and you may find it to be twice as slimy as you thought, etc.

Because it asks that you open up your sensory responses to your consciousness, this method is a socially reactionary game.

If you want to find out some basic information about a situation, turn on your senses and experience it in a sensory way. Feel it, Taste it, Listen to it, Smell it, Look at it from many angles. Get close.

Remember that day when you petted a horse for the first time; how different it was from what your imagination and anxiety had previously led you to expect. Touching made all the difference in your understanding of horses.



16 SQUEEZE AND STRETCH

Just as the wholeness of both convergent and divergent thinking is necessary to a creativity process in general, Squeezing and Stretching a problem situation becomes a viable method for Analysis.

To see how much is contained within a situation we have to spread it out. To see its limits and essentials, we have to squeeze it in. In this way we begin to see both the "whole world" of the situation as well as its specifics. The technique requires a chain of questions.

The things we lose are often found in unexpected places. If you are looking for information... like anything else, try looking in the unexpected places, too.

To STRETCH out a problem situation and discover its parts, ask a chain of questions beginning with "what."

EXAMPLES

Q. What is this problem about? ANSWER: Judo.
Q. What is "Judo" all about? ANSWER: Physical efficiency.
Q. What is "Physical Efficiency" all about?
ANSWER: Finding the optimal use of body movement.

To SQUEEZE a problem down to its essentials, ask a chain of questions beginning with "why."

EXAMPLES

Q. Why am I doing this? ANSWER: I want to.
Q. Why do I want to? ANSWER: It makes me happy.
Q. Why will it make me happy?, etc.

Travel Guides for Analysis

Alexander, Christopher J., Harvard
NOTES ON THE SYNTHESIS OF FORM

Gordon, William J. J., Collier
SYNECTICS

Jones, Christopher, Wiley
DESIGN METHODS

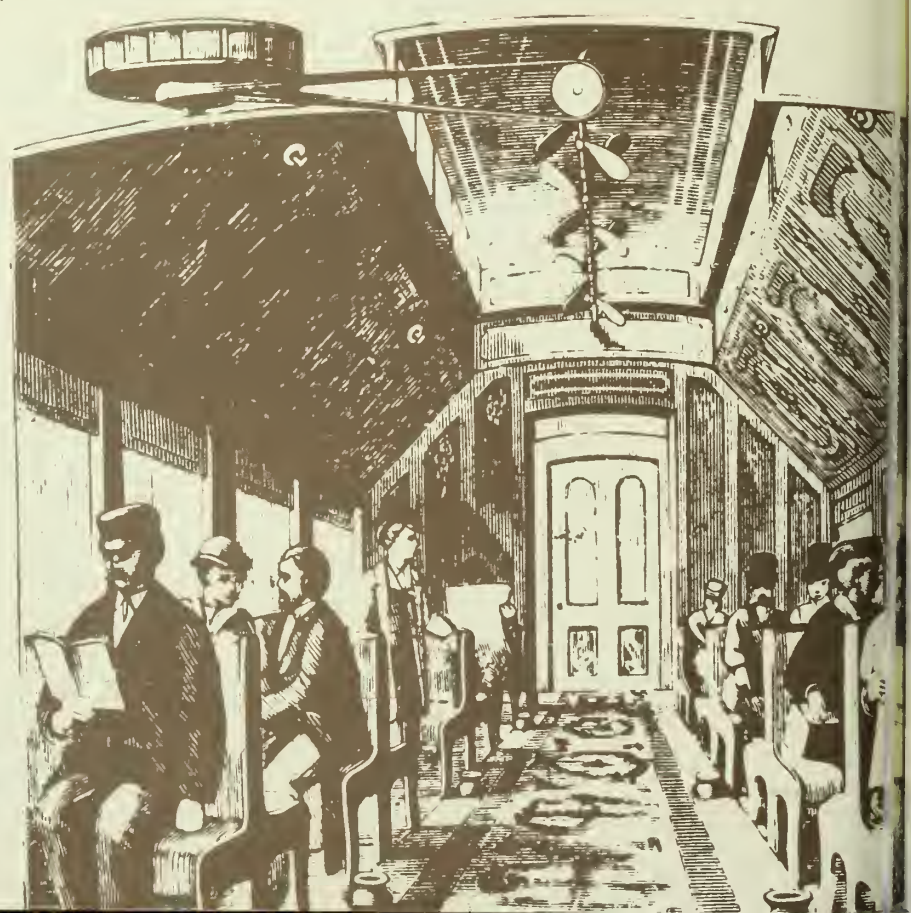
Mager, Robert, Fearon
GOAL ANALYSIS

Potter, J. H., Van Nostrand
HANDBOOK OF THE ENGINEERING SCIENCES
VOLS. I & II

Simon, Herbert A., Wiley
MODELS OF MAN

Stevens, John O., Real People Press
AWARENESS: Exploring Experimenting Experiencing

Editors, Simon and Shuster
THE WAY THINGS WORK, Vols. 1 and 2.



Introduction to DEFINITION

Every country has its own version of vegetable soup. The names are different but the stuff is the same.

To understand the purpose and importance of the DEFINITION STAGE of the problem-solving process, it may help to look first at a dictionary. For the lesson it will make no difference whether the one you choose is complete or abridged, large or small, or even if it is in English or another language, because you will not find the "definitions" of words there. Instead you will find word "usages" -- different ways in which word symbols have been used in attempts to convey meaning. In large dictionaries, you'll find many different usages for each word-symbol entry. The particular usage you will select is the one that most clearly reflects the meaning you intend to communicate; i.e., the one that best says what you imagine it to mean. Another person may choose another usage to reflect a different understanding of meaning. Still others may select a totally different word-symbol to convey their understanding, etc.

Since each person exists in a unique environment established by individual experiences, physical realities, and values, each will also view the world from a different perspective. And it is those differences that establish our special personalities and potentials and allow us to remain apart from one another within large harmonious societies.

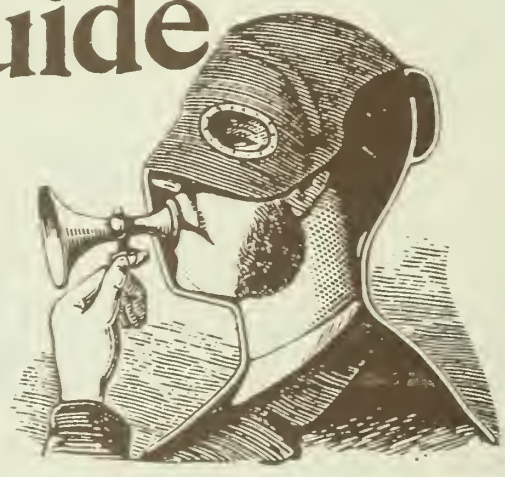
Like the other stages of process, DEFINITION is constant and never-ending. It is a progressive activity; the more we ACCEPT to do, the more ANALYSIS we pursue, the deeper our understanding or DEFINITION will be. We begin every stage at one level and end it at another level. We start by accepting a problem or project with one understanding, and we end it with still another level of understanding.

So here in our process we now arrive at the DEFINITION STAGE. The analysis is underway and, although probably not complete, has provided a clearer collection of problem-related information. And now it is necessary to converge all of those data into an overall understanding--into a unifying or "definite" direction that reflects a determined meaning.

We now must build a bridge between what we have discovered (ANALYSIS) and what we will eventually do about it (SYNTHESIS). We have looked into the situation and must now attempt to encapsulate and specify what we saw there. If there has been "insight," we want to know it and to bring it to light for eyes to see and ears to hear.

The DEFINITION bridge will act as a filter in the stages that follow, allowing only relevant matters to pass into the problem-solving context. It will specify both options and the criteria for choosing from among those options. It will become the standards and parameters for all further realization within the particular problem context. It will be the "stand" that we take, the expression of our understanding, the declaration of what we believe, the truth of the matter...the "concept" or essence of the situation.

Language Guide for Definition



DEFINITION IS:
...analysis in a nutshell
...a clarification of objectives
...a statement of essence
...directions for action
...a distillation of research
...the translation of facts into guidelines
...design objectives and specifications
...derived conceptual guidelines
...a declaration of attitudes and intentions
...a viewpoint

A **DEFINITION** embodies the philosophy of the problem-solver. It conveys the Art and Science content and clarifies the design intent.

A **DEFINITION** is a unifying concept. It brings all design activity together under a single frame of reference.

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BRIDGE

between Analysis & Synthesis

Methods for Definition

1. POINTS OF VIEW METHOD
2. ESSENCE-FINDING CHART METHOD
3. THE "HAPPINESS IS" METHOD
4. KING OF THE MOUNTAIN METHOD
5. KEY WORD DISTILLERY METHOD
6. PROBLEMS WITHIN PROBLEMS METHOD
7. TALK IT OUT METHOD
8. PARAPHRASE METHOD

Words don't have meanings; only people have meanings. People use words to express their meanings.

1 POINTS OF VIEW

ways to determine a point of view

If we could know ahead of time how others, especially those involved, would feel about a particular situation, we would be in a better position to determine how we would like to feel about it ourselves. This technique suggests that it IS possible to know ahead of time, perhaps not exactly or always correctly, but at least with better and deeper understanding than with no view at all.

List those people who you expect will or should have a point of view of the situation with which you are dealing. Attempt to see the situation as they might see it. Write down their views. Then determine which views or parts of views you feel should be included in your own viewpoint.

You may even try to determine how relevant animals and/or objects would view the situation if they could make their feelings known.

The basic definition-triggering question is "What is the real problem?" It may have to be asked many times before an acceptable response occurs.

2 ESSENCE-FINDING CHART

In a simple Chart of relationships, all of the attributes or components of a problem can be rated according to their degree of dependence upon or independence from one another. By comparing them, one at a time, against each other we can also determine their degree of dependence or independence within the group as a whole. In this way the key or essential elements can be determined.

Situations containing vast numbers of components can become quite difficult to manipulate requiring neat grids or matrices and strict adherence to notation and consistent criteria. Computer assistance might be required in very complex or very important situations.

WEATHER FORECAST: The Problem Definition State is likely to be enshrouded by fog.

3 HAPPINESS IS

Charles Schulz suggests another useful definitive tool with his **HAPPINESS IS** cartoon book. To manufacture so many "definitions" for one word forces us to expand our limits of understanding of that word (or situation).

If you can't find a meaningful definition, it is possible that your journey through Analysis was too superficial.

On a blackboard or sheet of paper, list as many definitions as possible for the problem you are studying. When you run out of energy, ask others to join in. Leave writing tools near the list so others will add definitions from time to time while you are involved in other aspects of your research. You can also encourage everyone to treat the list as a graffiti game, allowing them to write down anything regarding the subject that might occur to them. It won't take long to collect many definitions as well as more information for analysis.

Stating clear, complete, definitive objectives now will save lots of time when making selections and evualations later on. Be prepared.

4 KING OF THE MOUNTAIN

In the children's game called **KING OF THE MOUNTAIN**, one player gets on top and the others try to undermine that position so that they might take it over. Each unsuccessful attempt to unseat the "king" strengthens the topmost position within the context of the game.

By using the same procedure, the elements, components, objectives, and attributes of problems can be played against one another in order to determine a hierarchy of importances. By pitting them against each other, one at a time, and adding their total number of wins, you will eventually be able to decide on the ones which are the strongest or which you most prefer over all others; the last one(s) you would be willing to discard in a show-down. This technique might also be applied to the Idea-Selection stage which comes later.

A second round might also be played. This time pit two players against other teams of two. Play this out until every pair has played against every other pair to determine if the "essential" ingredient (winner) is really a combination of concerns rather than simply one of them.

5 KEY WORD DISTILLERY

This is a boiling-down method that consists of writing a statement describing the key issues of the problem as you see them and then extracting the key words or essentials from that statement.

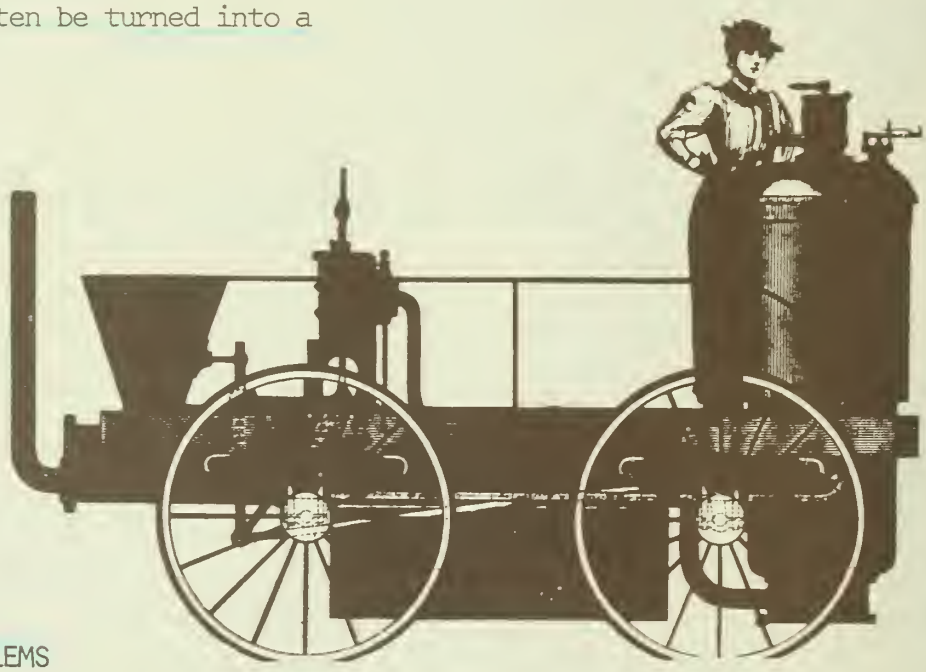
DIRECTIONS:

FIRST, either alone, or with a group, prepare a statement of what you believe to be important about the problem. In it, describe your objectives and all of the concerns that you feel to be important and/or clearly relevant. Do not stop until you are satisfied that the statement describes the problem clearly and broadly. THEN go through the statement word by word, encircling all words and phrases that appear more essential than the others.

NEXT, using only those key words and phrases, prepare still another statement; a closer approximation of your definition of the problem. It may be necessary to rearrange the key words several times until a logical statement can be made from them. But via this deductive method, a series of disjointed facts can often be turned into a set of directions.

Definitions are often quite different after analysis than they were before it...sometimes the initial problem situation is unrecognizable as you proceed on the basis of your new knowledge.

Don't stay silent until you are positive that your definition will sound poetic. Work it out as best you can. Scribble it down. Talk it out. Try it on for size. Experts develop; they don't "just happen."



6 PROBLEMS WITHIN PROBLEMS

If you solve the sub-situation that is determined most crucial you solve the entire situation. Trying to improve situations and make things work better teaches us that inside of every problem situation, we can find many other sub-situations. Locating and resolving the key sub-problem from among them is another way to describe problem DEFINITION.

The secret to solving problems is to find the bridge between the way things are and the way you want them to become. That bridge is your definition, the link between the situation as already solved and its resolution as you envision it to be.

Definitions are individual points of view. It is unlikely that everyone will have the same point of view, so don't expect your definition to be whole-heartedly accepted by everyone.

7 TALK IT OUT

"Two heads are better than one" is the basis for this method which simply suggests that definitions come easier when you sit with a friend or consultant and "talk it out." You can attempt to discover, through discussion, what you agree upon as being the core of the situation. It's amazing to see how many definitions can be talked out of situations that seemed complex and befuddling only minutes before when the problem was yours alone. Others will usually join in since it is easier to deal with a situation where the responsibility has been accepted and assumed by someone else.

8 PARAPHRASE

Saying the same thing many ways is a proven technique for expanding familiarity and gaining insight. To find new and different words each time forces a change in perspective and viewpoint. The result is a deeper understanding or definitive view.

Using the knowledge gained during Analysis, write out a statement of Definition as best you can. Then, trying not to use the same words twice, rewrite the statement several more times.

Travel Guides for Definition

DeBono, Edward, Harper-Colophon
LATERAL THINKING

Doyle, M. and D. Straus, Playboy Press
THE NEW INTERACTION METHOD: HOW TO MAKE MEETINGS WORK

Editors, Signet-New American
ROGET'S COLLEGE THESAURUS

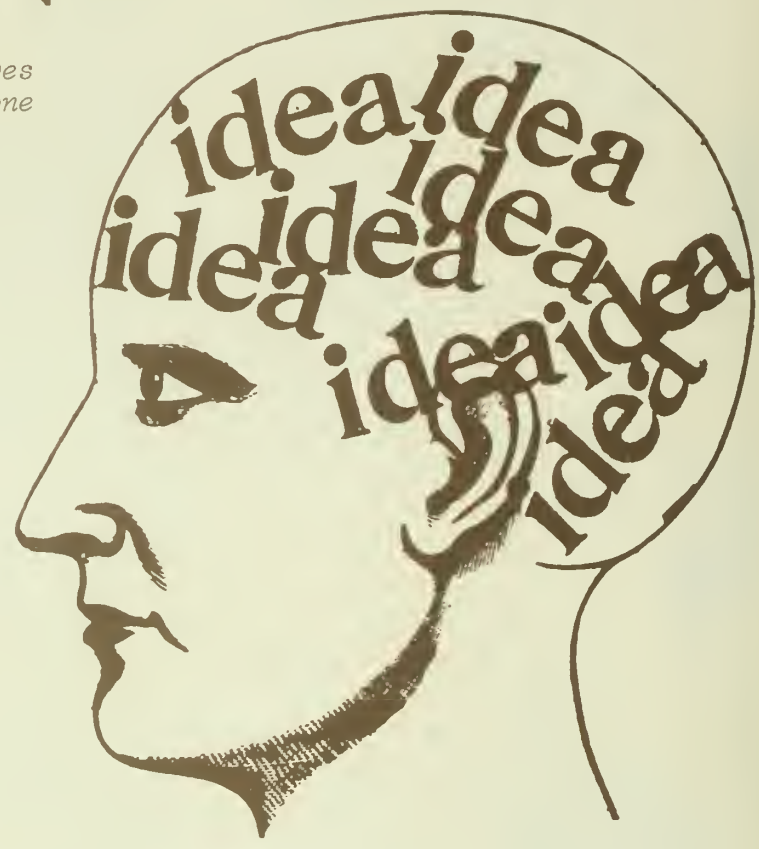
Kogan, Zuce, Z. Kogan
ESSENTIALS IN PROBLEM-SOLVING

Suzuki, D. T., Evergreen
AN INTRODUCTION TO ZEN BUDDHISM

White, Edward, Architectural Media, Ltd.
P.O. Box 4664, Tucson, AR 85717
CONCEPT SOURCEBOOK

Introduction to IDEATION

Having many ideas improves your chance for having one good idea.



Knowing where you want to go puts you in a position to find many, many ways to get there.

Ideation is a new word that is being used to convey the message that now is the time to actively begin searching for options. After having Accepted, Analyzed and Defined your directions it's time to generate alternative ways to follow those directions.

Ideas are merely ways to get where we want to go. If we have no place to go (poorly defined objectives), then ideas won't be of much help. Instead, they will just confuse the issue and get us going to an indefinite place.

When someone else tosses an idea in our way before we have a "definite" direction, as they often will do, we might be misled into taking a trip to someone else's destination instead of our own.

Getting lots of ideas is really not as tough as it may appear to many who struggle to find just one "good idea." With only a few idea-generating methods a skilled problem-solver can manufacture great quantities of ideas quickly.

Language Guide for Ideation

When attempting to generate options don't worry about having too many. You can deal with them later in the decision stage. Instead, focus your attention on widening the array of choices.

Don't worry about having lots of ideas from which to choose. You may as well choose from as wide a selection as possible.

IDEATION is often stated as:

...Finding the ways or means for reaching goals
...Outlining various strategies for achieving objectives
...Generating alternate routes
...Listing the options or alternatives
...Uncovering the possible choices for action
...Becoming aware of the different paths that might be taken to realize a concept
...Making an index of potential plans for resolving the problem
...Considering the means to a chosen end

What does searching for ideas mean to you?

WATCH FOR THE MEANING

Because the word "*idea*" is so often used to communicate action it is not uncommon to see it used to communicate *concept* or *method* such as...

...I don't have the slightest *idea* about what Calculus means (concept).
...It's easy to get the *idea* of how to swim (method).

Methods for Ideation

1. BRAINSTORMING METHOD
2. MANIPULATIVE VERBS METHOD
3. SYNECTICS (ALSO SEE SIDE TRIPS)
4. TELL ME, STRANGER METHOD
5. GO TO THE LIBRARY METHOD
6. ATTRIBUTE ANALOGY CHAINS METHOD
7. GET OUT OF TOWN METHOD
8. MORPHOLOGICAL FORCED CONNECTIONS METHOD
9. SEEDS OF IDEAS METHOD

ways to broaden the field of choice

1 BRAINSTORMING

If you want lots of ideas you've got to ask a question that begs for ideas such as..."What are all the ways to...??" Asking a leading-question and following some rules are the essential keys to finding ideas.

BRAINSTORMING is the universal idea-generating method. (It may also be found useful in all stages of the process.) Generating alternatives is its basic function. With it any individual or group of two to twelve persons can quickly manufacture scores of ideas for any problem situation in very short periods of time. (Fifty ideas in five minutes is not an unusually large number for a beginning group using Brainstorming rules.)

Its originator, Alex Osborn, lays down four REQUIREMENTS for all who participate in a session. (The session is automatically retarded when the rules are ignored.) They are:

1. DEFER JUDGMENT. (Criticism comes afterward, not now.)
2. FREE-WHEEL. (Hang loose; allow it to happen.)
3. TAG ON. (Don't wait for ideas. Make more from what you already have.)
4. QUANTITY IS WANTED. (Work hard and fast... don't stop.)

SUGGESTIONS:

1. Learn to Brainstorm with a small group before going it alone. The RULES are easier to absorb into your behavior that way.
2. Restrict the sessions to about 5 minutes per subject and stop altogether after 15 or 20 minutes.
3. A followup session, using the same participants on the next day, is a good way to pick up all of the "after-thoughts."

Don't let your ideas get in your way. If you have ways to go before having places to go you may take a trip to the wrong place.

2 MANIPULATIVE VERBS

Another ALEX OSBORN method uses a series of words to help visualize a subject in new or unique ways. The words (verbs) suggest manipulating the subject in some way such as changing its position or altering its shape, function, size, etc. Using MANIPULATIVE VERBS can produce a series of ideas in a short time.

Osborn's verbs are MAGNIFY, MINIFY, REARRANGE, ALTER, ADAPT, MODIFY, SUBSTITUTE, REVERSE and COMBINE.

Used in search of ideas for a new view of "*the family organization*", we might find:

The more ideas you gather, the better are your chances for having good ideas.

- MAGNIFY - *Many persons in one group; commune*
- MINIFY - *A one person family; multi-role individual*
- REARRANGE - *Children take governing roles of parents*
- ALTER - *Add outside members to the group; neighbors*
- MODIFY - *Roles for members rotate each year*
- SUBSTITUTE - *Use an adoption service instead of parents to build group*
- REVERSE - *Children choose parents*
- COMBINE - *All members play all roles*

OTHER verbs which might also be used to produce unique views are:

Multiply	Distort	Fluff-up	Extrude
Divide	Rotate	By-pass	Repel
Eliminate	Flatten	Add	Protect
Subdue	Squeeze	Subtract	Segregate
Invert	Complement	Lighten	Integrate
Separate	Submerge	Repeat	Symbolize
Transpose	Freeze	Thicken	Abstract
Unify	Soften	Stretch	etc.
Dissect			

Can you think of five (5) more?

3 SYNECTICS

Synectics is another general purpose technique that may be used for generating ideas as well as for better definitions. Basically, it is a process of connected methods. (See SIDE TRIPS for a more complete description.)

4 TELL ME, STRANGER...

Those problems that are easiest to solve usually belong to someone else. The moment a problem becomes "our problem," psychological barriers are set up that make it seem more complex than it ever could have been before. Because the "other person's" problems are so simple to solve, we are often ready with ideas for solving them.

Following that line of thinking, you might benefit by asking someone else for ideas. Since your problem is not their problem they may be ready with an idea for you. The more casual the acquaintance, the more likely it is that you will be given a unique view. (Close friends are often useless when it comes to unique views because they assume nearly the same personal feeling toward your problem as you do.)

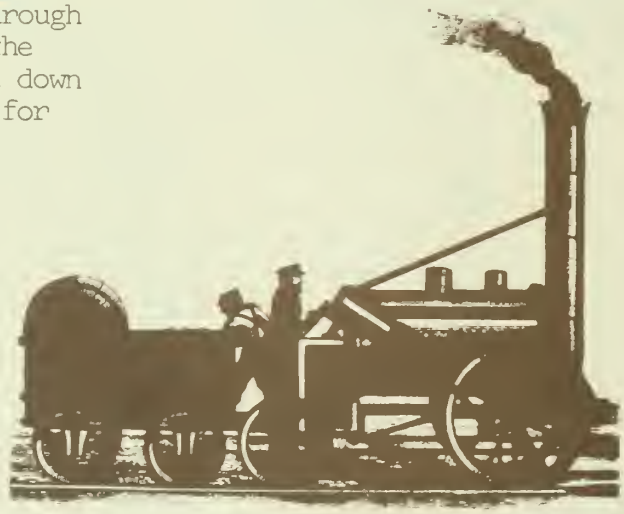
Freedom is often defined in terms of the availability of options and choice; a variety of alternatives. Yet how often do we begin a journey thinking that there is but one way to get to our destination.

EXAMPLE:

You are a Biology student trying to solve a problem regarding tide pool regeneration. You have defined your problem, stated your objectives, and now need ideas for correcting the situation you have defined.

METHOD:

Ask a Sociology student. Ask an Environmental Technology instructor. Walk through the Marine Sciences Building and ask the first five (5) people you meet. Write down all of the ideas, and bring them home for consideration.



5 GO TO THE LIBRARY

Libraries store records of how your problems (and problems very much like yours) have been solved in the past. You will find "how to do it" books, magazines on current techniques and many points of view regarding your situation. The REFERENCE LIBRARIAN, who may spend much time trying to help you, has a knack for uncovering piles of information on ways of doing things and other idea-spurring materials. By writing down or Xeroxing all of the ideas you find in the library, you will develop a long list of alternatives.

6 ATTRIBUTE ANALOGY CHAINS

Similar to other facets of life, ideas begin to flow easily once they get started. Inertia both keeps them from moving and, once started, keeps them moving along. Here is an inertia-breaker and an inertia-maker. Analogy-finding is the key...one thing leads to another.

It makes no difference where ideas come from; it's what we do with them that matters. We don't have to justify our ideas but only our action and its consequences if we decide to follow one or more of them.

Until you acquire idea-producing methods of your own, the search for ideas can be painful. Once you know how, discovering ideas is the most fun-filled part of the problem-solving journey.

METHOD:

1. Go back to your Analysis and recall the various physical, functional, social, etc., attributes of your subject (See p. 51)
2. Find some analogies for each attribute.
3. Build new ideas from the results.

EXAMPLE:

FIREPLACE:
- MATERIALS - brick, stone, steel, cast iron, adobe
- FUNCTION - provide heat, psychological warmth, decoration, sculpture, structural strength
- FUELS - wood, coal, charcoal, paper, gas

IDEAS:
- MATERIALS - bricks of iron, cast clay ovens, stones of steel (stamped sheet metal), paper stone (asbestos entrained inside clay), molded heat-proof glass
- FUNCTION - cook on the hearth, "hearth warmer," fire wall - room becomes fireplace becomes gas-fired radiator, solar fireplace (focus of sun's rays), sculptures that emit heat

IDEA!

- FUELS - coal made of paper, fuels that burn twice, wood to charcoal, coal to gas

7 GET OUT OF TOWN

Although discoveries can be made without leaving your own chair, getting away to a new environment is the standard way of developing new points of view. If you were attempting to solve the problem of polluted air in Los Angeles you might get out of town (at least in your imagination) to Tokyo or Ankara or London to see how it is dealt with in those foreign places.

It is easiest to find ideas for "other people's" problems. Everyone likes to pass out "free" advice when someone else seems to have a direction in mind. New ideas are rare. If you do find one you will be all alone, since no one else has ever gone that way.

8 MORPHOLOGICAL FORCED CONNECTIONS

Ideas and inventions are somewhat synonymous. Here is a technique for using other techniques already given.

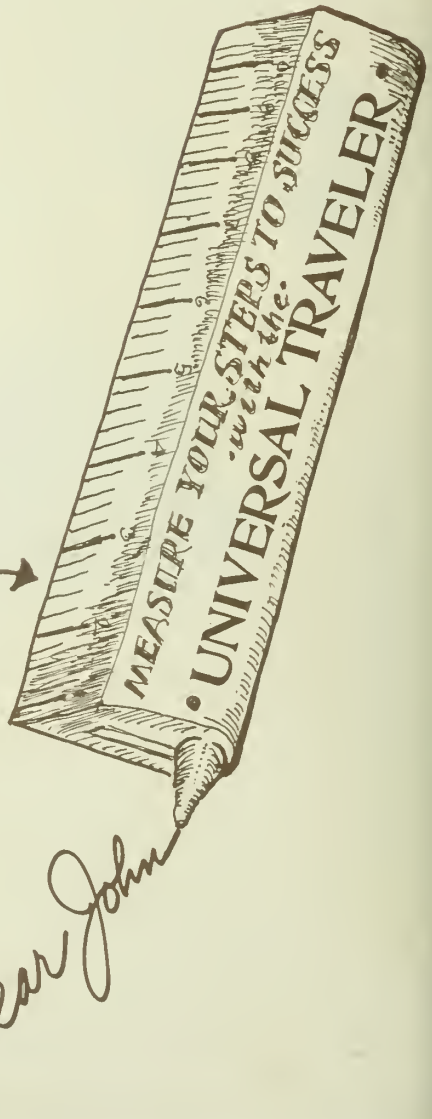
1. Again, list the attributes of the subject being studied.
2. After each attribute, list as many alternatives for that attribute as you can. (Brainstorming will help.)
3. When your lists are full, make random runs through all the lists, taking one item from each list and combining them into new forms... Remember: Inventions are merely new ways of combining old bits and pieces!

EXAMPLE:

Ideas for improved ball-point advertising pencil

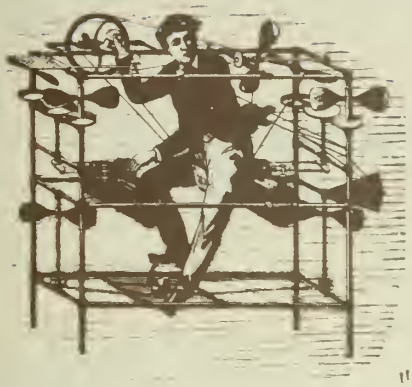
ATTRIBUTES:

FORM	MATERIAL	INK	AD COPY
CYLINDRICAL	PLASTIC	COLORED	ON SURFACE
FACETED	WOOD	CARTRIDGE	INSIDE
SPHERICAL	METAL	SOLID	ON CAP
CUBED	GLASS	LIQUID	EMBOSSED
POLYHEDRAL	PAPER	ERASABLE	DOUBLE-DUTY
FLAT	EDIBLE	NON-BLEEDING	MULTI-COLOR



IDEA or INVENTION:

Using the random combination of "flat, plastic, erasable, double-duty" we might envision a pencil similar to the type used by carpenters, with a ruler printed along with the advertising message as illustrated.



Ideas are "a dime-a-dozen." The expense comes about when you begin to develop one of them. Only then does an idea become valuable.

Inventions are but new ways for combining old bits and pieces.

9 SEEDS OF IDEAS

To find an idea is to have only one. To find the source of ideas is to have discovered the potential for many.

Instead of looking for "one way out" of every situation, it might be more useful in the long run to search for the seeds or principles of ideas that might then be applied over and over again to a variety of problem situations.

METHOD:

1. Analyze your situation to find the possible principles involved.
2. Apply one of the principles or one of its known variations to your idea-finding task.
3. Use the ideas...and save the principle for other situations.

EXAMPLE:

1. My economics problem involves the principle of reducing wasted motion. How can I use that principle to generate ideas?
2. Wasted motion is reduced in a bread toaster as it heats bread on both sides at once... maybe I could do two tasks at the same time.

   A truck pulling a trailer saves the wasted motion of making two trips...perhaps I could take an extra load the first time and save the extra expense of going twice, etc.

Travel Guides for Ideation

Clark, Charles H., Doubleday
BRAINSTORMING

Osborn, Alex, Scribners
APPLIED IMAGINATION

Taylor, Jack, Prentice Hall
HOW TO CREATE IDEAS

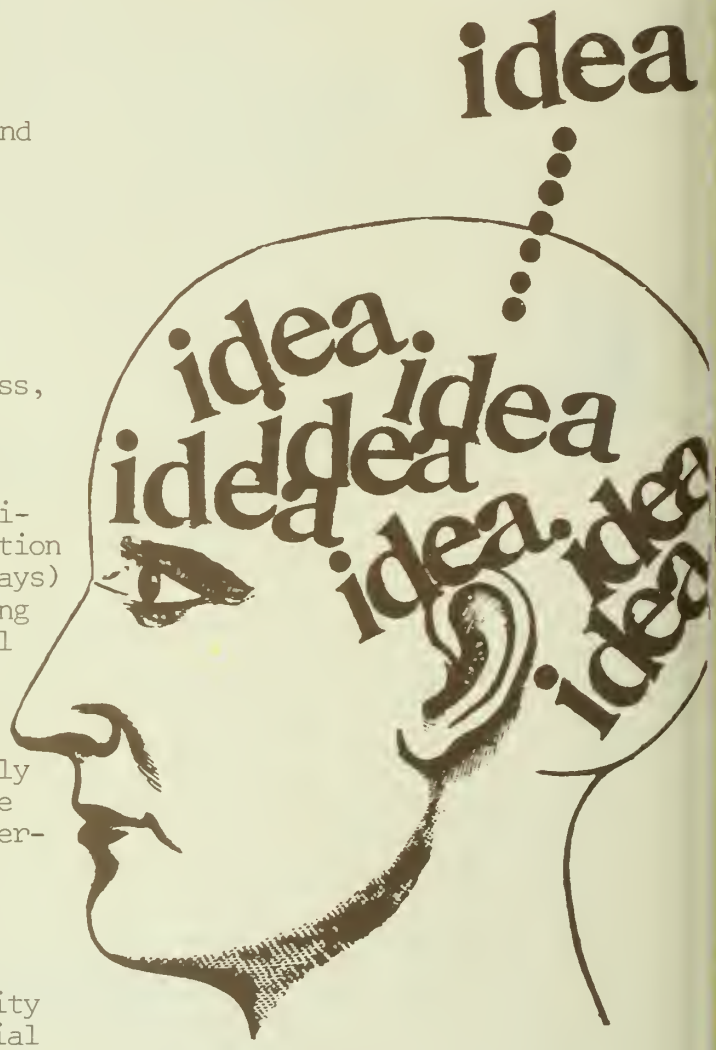
Parnes, S. J., & H. Harding, Ed., Scribners
A SOURCEBOOK FOR CREATIVE THINKING

Anonymous, Lama Foundation
SEED

Zwicky, Fritz, MacMillan
DISCOVERY, INVENTION, RESEARCH THROUGH THE MORPHOLOGICAL APPROACH

Introduction to IDEA-SELECTION

To review the process allows us to see that Definitions or conclusions were derived from Analysis; just as the depth or intensity of Analysis was determined by the level of Acceptance. Likewise we see that Ideas or optional ways of doing something gets its purpose and direction from our Definitions. The process and its by-products are closely interrelated.



Here, in the IDEA-SELECTION STAGE of the process, the crucial decisions are to be made. But instead of having a hard time of it, deciding on which of our options to follow should now be relatively simple. The components of easy decisions are already developed...we have a Definition or purpose and we also have a list of ideas (ways) to attain or resolve that purpose. By comparing ideas with definitions, the "best" options will stand out as being those that will most likely succeed in realizing the defined direction.

It's just that simple. If not, it's undoubtedly because either the Definition is not definitive or the Ideas are not clear-cut options and alternatives.

Difficulty with decision-making is a universal problem. Fuzzy goals, unclear objectives and purposes, lack of options, lack of option clarity and their related frustration stop many potential problem-solvers from success. If you experience such problems with your decisions, remain aware of the process and its stages so that you can go back to re-clarify your intentions (define the problem) and better envision your options (ideas).

When confronted by a wide selection of choices creative decision-makers can quickly decide on which way to go...they merely compare what they want with what they can have. Those options that promise to satisfy stand apart from the others. But options have a way of enticing us from our goals. Many of them offer possibilities that are not included in our considered "definitions" and "concepts." That's when Definitions get put to the test...to be either altered, replaced or followed.

CAUTION: When testing your Definitions in the Idea-Selection stage, try to view each situation objectively and subjectively. Don't coldly stick to your original statement of intent if new ideas promise better possibilities. Go back and change your intentions to reflect the potentially improved view. But don't waiver from your previously determined conclusion just because a new possibility presents itself. Deciding requires maturity. To make a choice requires leaving the other options behind...at least for that moment in time.

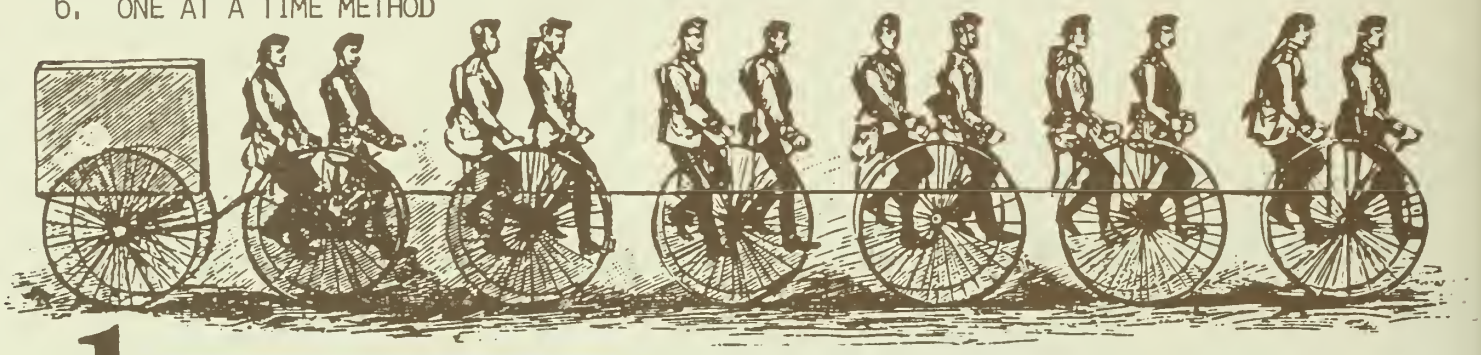
Language Guide for Idea-Selection

How is it possible to choose one person as a mate when so many options exist? How can one goal be selected as a lifetime endeavor? Decision requires comparing desires with possibilities. Knowing what we want acts as our screen for filtering out the "best bets" in life.

To SELECT IDEAS is often stated as...
...to compare desires with choices
...to make a decision
...to find the "best" way to reach the destination
...to narrow down the choices
...to evaluate "means" by assigning values to "ends"
...to choose one way from all the ways
...to decide which action best balances the potential benefits and liabilities of the situation

Methods for Idea-Selection

1. SCREENING BY PERSONAL OPINION METHOD
2. IDEAS--OBJECTIVES COMPARISON METHOD
3. THE POTPOURRI METHOD
4. THE INDIAN SCOUT METHOD
5. USER-CHOOSER METHOD
6. ONE AT A TIME METHOD



1 SCREENING BY PERSONAL OPINION

To compare ideas is to uncover the similarities and differences between them. To judge ideas is to relate them to the clearly-defined objectives.

The most common of all self-determined or self-directed decision-making methods is to judge the options available by passing them through the "screen" or test of personal opinion. It is a technique that calls for stating your personal belief regarding the situation (defining the problem) and comparing possible actions (ideas) with your statement to determine the potential positive or negative consequences of such actions.

TAKING A STAND is also further evidence of "acceptance" since it includes an implied agreement to take at least part of the responsibility of any conclusions that might result. It is also a form of self-belief, a willingness to go along with the results of your own analysis. And it expresses faith in your problem-solving abilities...even though new information may emerge at any time causing a possible change of conditions and an accompanying change of your opinion.

To follow this method simply requires you to compare your choices, one against the other, deciding which one or ones best fulfill the statement of definition or intentions...as you have written or stated it. Do this until all apparent options have been so tested or screened. Then choose the one that best fills the bill.

ways to decide from among many options

The difference between one idea and another is that one of the two more closely achieves what we intend to happen...if they have no differences they both are equal and thus a toss-up.

The more clearly we specify our intentions the easier it is to evaluate our options.

2 IDEAS-OBJECTIVES COMPARISON

Many frustrations and anxieties can be eliminated when we are conscious of procedure and techniques and use that awareness to deal with problem situations. We gain more security when we emerge from the Analysis-Definition stages with a deeper understanding of a problem subject and the formulated criteria for judging its successful resolution. Then after Ideation, with perhaps many possibilities or ways to go, the door is open to select one of those ways and go on to settle the issue quickly.

But, it's not always that simple in practice.

Therefore, this technique is a no-nonsense variation on the previous method for making the crucial decision regarding which action to take. It goes like this:

1. ITEMIZE YOUR CRITERIA for success, not your overall goal but your specific objectives. List what you would demand of a successful solution to the situation. What must it do to be solved well?

2. CHECK FOR REPETITIONS and obvious overlaps so that you don't overvalue any single criterion and thus cause it to outweigh others that might be equally important.

3. RANK AND WEIGH all the criteria to see which are more important than others. Relist them in their order of importance and assign a relative numerical value to each one.

4. CATEGORIZE AND SORT OUT YOUR OPTIONS. Get rid of duplicates. Place similar ideas in a group so they can be judged in their proper context. Note their differences and which are more clearly understood than others.

5. COMPARE YOUR OPTIONS WITH YOUR STANDARDS. Use a point system for consistency of judgment.

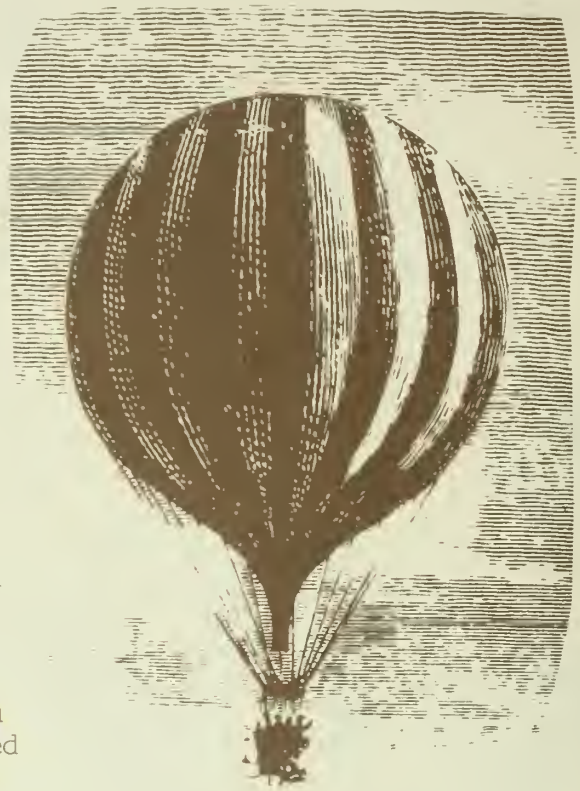
3 POTPOURRI

If you can't decide between your options because they all seem to have some important advantage that would be a shame to lose, try this: COMBINE the good points of all the alternatives into a new, improved option that is not yet on your list. Make the best of it by taking the best of all of them. CAUTION: Sometimes it's better to save some possibilities for another day!

EXAMPLE: If ideas 1, 2 and 3 are:
1. to take a vacation
2. to continue working
3. to find a vacation substitute

A POTPOURRI that combines all three might be:
4. to turn work into a vacation;

a scheme that utilizes the essential concepts of all three (3) original ideas.



4 THE INDIAN SCOUT

The most commonly practiced technique for selecting ideas is to try them all before choosing one. Like the Indian scouts of the last century, you go up ahead to see what it's going to be like when the main force arrives in order to improve your chances of avoiding an ambush or other disaster.

This method is based on the premise that if you use your imagination (or other form of simulated reality) to experience each of your ideas, you will be in a better position to choose from among them. The Indian Scout technique attempts to answer the question, "What could possibly happen if you actually carried out this idea to completion?"

A variation of this method is known as P.E.R.T. (Program Evaluation Review Technique). With it the problem-solver searches for the "critical path"; that sequence of options that will have the most important consequences for the total operation. It is a method for planning ahead to avoid barriers by having pre-experienced the situation in a simulation of the real scenario to come.

Remember to ask yourself how you "feel" about the ideas you evaluate. You may discover that a seemingly best idea really gives you emotional "fits" and won't be comfortable at all.

Unclear objectives make it impossible to decide between the alternative ways of proceeding to a goal.

5 USER-CHOOSER

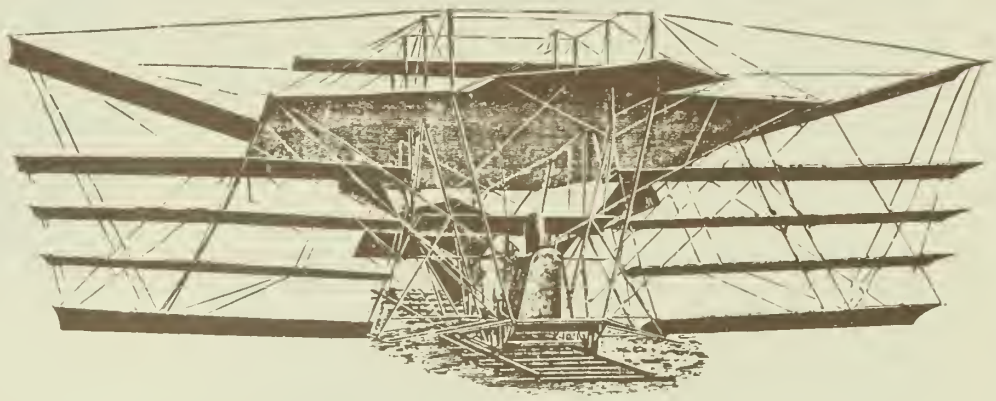
At times certain problem-situations warrant the inclusion of outside assistance in the decision-making phase...times when your decision alone would be overly manipulative of others or where your lack of experience somewhat disqualifies you from taking total command.

To simplify matters it would be helpful if you would organize the existing points of view (defined criteria), as well as the options being considered, in such a way as to eliminate confusion and facilitate choice for those who will be asked to decide and who have not been as consciously involved with the situation as you.

6 ONE AT A TIME

The inability to decide quite often leads a frustrated problem-solver to try this time-worn method...taking the options in a "one by one" experimental sequence until all of them have been given a real trial. Although this is a long, hard, wasteful way to choose, the method can nonetheless work when others fail or seem inappropriate.

Enjoying freedom of choice can be work. Dealing systematically with choosing between lots of ideas often forces us to spend a great deal of time clarifying objectives.



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PERSONALITY AND DECISION PROCESSES

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P.E.R.T. (PROGRAM EVALUATION REVIEW TECHNIQUE)
"THE CRITICAL PATH METHOD"

Evarts, Harry F., Allyn & Bacon
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TECHNIQUES OF EVALUATION FOR DESIGNERS

Introduction to IMPLEMENTATION

Travelers who have followed a systematic sequence as outlined in this guidebook are hopefully no longer the awkward problem-solving tourists who would act on impulse alone. Instead, by applying the logic of the design process, they should now be more balanced, integrated and holistic, well-seasoned travelers.

Implementation can begin by simply picking up the phone and ordering a round trip ticket to your destination. It means GET GOING. You are ready for action. The time has come for you to put your chosen idea(s) to work.

IMPLEMENTATION is that segment of the problem-solving process where the idea chosen (in the previous stage) as the one best able to satisfy your intentions is at last put to a test. Implementing your choice is the "moment of truth." The foundations have been completed. You are ready to act; prepared to test your involvement and skills at analysis, definition, idea generation and decision-making. Implementation is the PAY-OFF.

You should now be prepared to enter the tactical, active state of translating your carefully selected alternative (idea) into the reality of a solution. There should be excitement in the pleasurable experience of knowing where you are going and why while enjoying the security of having explored many alternatives and concepts along the way.

Language Guide for Implementation

Words are symbolic sounds denoting meanings that represent reality as perceived by a writer or speaker. They are far from reality but they are the best means we have for objectifying our subjective experiences.

To IMPLEMENT a selected idea is often stated as:

...putting the plan into effect
...taking action on the chosen idea
...giving embodiment to the concept
...giving form to an idea
...optimizing the intentions
...achieving the solution; the concrete reality of product
...doing it, getting on with it
...realizing or actualizing the product

DEPENDING on what you do or need to do, IMPLEMENTATION may take the form of one or more of these activities:

ACTING...ARGUING...ACCEPTING...ADMINISTERING
BAKING...BALANCING...BICYCLING...BLOCKING
BREAKING...BUILDING...BUYING...CANVASSING
CLEANING...COMPOSING...COOKING...DETAILING
DIGGING...DRAWING...DRIVING...EATING
ENJOYING...FACILITATING...FINDING...FLYING
GRINDING...HELPING...INVENTING...JAZZING
JUMPING...KIDDING...LEARNING...LECTURING
LISTING...MILLING...MOURNING...NESTING
NIBBLING...OWNING...PAINTING...PLANNING...PLAYING
QUIETING...RAKING...REPORTING...RUNNING...READING
SCULPTING...SEEING...SELLING...SPENDING...TEACHING
TELLING...TESTING...TRAVELING...WRITING...WISHING

Which actions must you now take in order to implement your chosen idea?

Methods for Implementation

1. THE TIME-TASK SCHEDULE TECHNIQUE
2. THE BRAINWASHING METHOD
3. THE PERFORMANCE SPECIFICATIONS METHOD
4. THE ADVOCACY METHOD
5. THE ATTRIBUTE ANALOG, or "You can build a computer at home in your spare time" Method
6. "LIVE UP TO YOUR NAME" TECHNIQUE
7. THE NATIVE ARTISANS--FLEA MARKET

   A. Principles of Design Method
   B. Diagrams and Schematics Method
   C. Models Approach
   D. Bionics Method
   E. Follow a Similar Model Method
   F. Pattern Language
   G. Archetypical Form Method
   H. Common Denominator Method
   I. Essential Unit Building Block Technique
   J. Holistic Method
   K. Response to Human Needs Method
   L. "Implications" Technique
   M. Consultants Team Technique
   N. Structural Limits Method
   O. Sensory Checklist Method
   P. Role-Playing Method
   Q. Notation Systems Technique
   R. Inspiration or Lightning Bolt Approach
   S. Trial and Error Method

(What other methods can you suggest?)

1 THE TIME-TASK SCHEDULE

Another basic way to get on with this tactical phase of your problem is to make a time-task schedule. The procedure goes like this:

1. DECIDE how many and what kind of tasks are involved in performing the selected idea requirements. Answer the question, "What are all the steps that must be taken in order to complete this thing?" Specify even small tasks since it is those little things that eventually add up to the total job.

Plan to have an occasional "rest stop" to recharge and to examine how well things are going.

Plan ahead. Before diving right in, try to imagine what it would be like if the trip were already over. The consequences of following a wrong idea could be worse than following no idea at all.

2. Carefully **DETERMINE THE AMOUNT OF TIME** available for the overall project. Don't kid yourself.

3. **ASSIGN**, in the most reasonable way you can, portions of the total time to each of the small tasks found in Step 1.

4. **PREPARE A GRAPH** that shows the relationship of your time to your tasks. A calendar that has space for writing is commonly used.

5. Allow the **TIME-TASK GRAPH** to guide you through the implementation phase.

SAGE ADVICE: Since "actions speak louder than words," try not to scream with your feet in your mouth.

2 BRAINWASHING

Taking action on an idea is not very different from accepting the responsibility for solving the problem at the outset. The main difference is that in the beginning what lies ahead is unknown. By now you have gone through five (5) phases of a systematic excursion and you should be confident. But physical and emotional strength is probably still required for "getting it on." You may even have to go back to some of the self-motivation methods from the initial phase of the process and brainwash all misgivings and fears from your head to find the courage to go on. You may have to reconvince yourself of the logic of your process and any personal reasons you may have had at the outset.

Note: BRAINWASHING is a pre-implementation method and is useful in combination with all other implementation methods.

ways for taking action on a decision

3 PERFORMANCE SPECIFICATION

Intentions can be changed into action by breaking them down into small specific behaviors. Once the exact bit by bit performance you desire is specified, all that remains is to translate it into real actions, materials, or other physical forms.

In essence, this is a technique for a continual elaboration on the selected idea until it stops being abstract and starts being concrete or real. The more that each specific aspect of the idea can be stated in terms of performance, the closer that idea comes to being realized (turned into reality).

EXAMPLE:

If your chosen option had been to move out of your dull room and find a livelier, friendlier place to live, the SPECIFICATIONS FOR PERFORMANCE might begin to read like this--

Find an apartment where other people having interests similar to mine live.

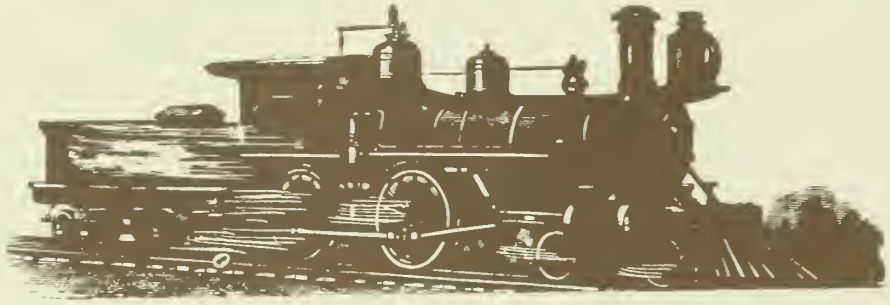
Look for a place that has a recreational history of parties and social exchange.

Swimming pools, saunas, game rooms and nearby shopping are a must.

etc...

Don't forget to carry a few spare ideas along just in case the ones you selected fail without warning.

Note! If the exact specification for performance begins to look like a list of exactly specified "objectives," it is because they are synonymous.



4 ADVOCACY

The action of implementation usually requires the expenditure of natural resources. Don't make our environment suffer by neglecting to check out the efficiency of your scheme.

Another way to get an idea going is to help it to help itself. For instance, try to explain to the beneficiaries of the idea how they can pull it forward while you get behind and push. An architect might help clients become amateur environmental designers and thereby receive "inside help" in achieving their mutual goals. If the idea selected for implementation was something impersonal, such as "to inaugurate one day a week when no cigarettes will be smoked," it can be encouraged to help itself by supporting it with additional bolstering ideas. In this particular case, the supportive ideas might include: Replace your need for cigarettes with a substitute; make a reward and a penalty for achievers and non-achievers; set up a mock trial for those caught smoking, etc.

5 ATTRIBUTE ANALOG or YOU CAN BUILD A COMPUTER AT HOME IN YOUR SPARE TIME

One person's scheme for improvement will surely become another's problem situation.

Slide rules are really analog computers. With them, two sets of scales may be related to each other. The relationships may be varied within established limits to reveal resultant values. A centigrade-Fahrenheit thermometer does the same thing using mercury as one scale for sliding up and down a numerical scale. And so do certain children's construction kits that contain programmed interchangeable parts able to be assembled into many variations of the same things if prescribed operations are followed.

If your idea has definitely fixed limits and yet could take a wide variety of forms, you may wish to build an analog computer to use as a tool for studying many possible combinations that could be achieved within those limits.

Similar to the morphological methods, your "computer" might allow any combination of potentials to be assembled as long as those combinations stayed within the prescribed limits of the selected idea. Sometimes your finger could be the "moving" part as when used to look down a list in the phone book to match names with numbers.

6 LIVE UP TO YOUR NAME

Names help us to identify the various people, things, places and events of our experience. Once named, a formerly complex assortment of bits and pieces comes together in our minds as a totality. Similarly, it is possible to begin an active translation of an idea into physical form by finding a name for that idea which seems to pull its parts together as a whole and to then give form to the name.

EXAMPLE:

Suppose your idea was to triple enrollment of the local Eco-Action group by throwing a recycling party. Give the party a name: Let's say you call it "Smashing Good Time." What remains is to live up to that name. Have the band call themselves the "Can Smashers." Invent a dance called the "Carton Twister." Print "invites" on can bottoms and tops. Have a can-smashing competition and a bottle-breaking race, etc. It's easy. Once you've got a title, what remains is merely to fill in the blanks.

Every problem has "contingencies." As they say - "one problem leads to another." The minute you think you have it all settled, dozens of other problems might appear.

THE NATIVE ARTISANS

7 Flea Market

HERE ARE TWENTY (20) ADDITIONAL IMPLEMENTATION METHODS. THEY ARE MERELY SOME OF THE WAYS PROBLEM-SOLVERS USE TO EXPRESS THEIR IDEAS. ALTHOUGH IN MOST CASES THESE METHODS HAVE BEEN GLEANED FROM THE VISUAL DESIGN DISCIPLINES, IT IS NOT UNLIKELY TO FIND THEM BEING USED BY OTHER ARTFUL AND SCIENTIFIC DESIGNERS (CREATIVE PROBLEM-SOLVERS). WHETHER ART OR SCIENCE, A PROBLEM REMAINS A PROBLEM WITHIN ANY DISCIPLINE. ITS TRUTHS MUST STILL BE UNCOVERED (SCIENTIFIC ACTIVITY) AND THOSE TRUTHS MUST BE COMMUNICATED (ARTISTIC ACTIVITY). THE METHODS GIVEN ARE ADAPTABLE TO MANY DIVERSE PROBLEM CONDITIONS.

A) PRINCIPLES OF DESIGN

Implementing ideas is often defined as composing or synthesizing wholes from parts. Many diverse and personal compositional rules and principles exist for putting things together, but one set that seems universally common includes these:

HARMONY or Recognizable similarity for all parts of the whole
CONTRAST or Recognizable difference for all parts of the whole
BALANCE or Recognizable stability for all parts of the whole
ORDER or Recognizable pattern of organization to the whole
UNITY or Recognizable collectiveness for all parts of the whole

The fact that the Principles of Design are easily translated from and attributed to the natural laws of physical behavior attests to their universal validity.

B) DIAGRAMS AND SCHEMATICS

Designers often begin the implementation phase with scribbled diagrams and schematics to symbolize relationships between the parts of problems. They search, via sketchy organizational diagrams and lists, for the relationships that link the factors and aspects or components of their problem. We hear such diagrams called "bubble" diagrams, "flow" charts, layouts, organizational charts, etc. Through repetition and by trial and error, the sketches eventually emerge as refined definitive relationship drawings that are then translated into physical materials.

C) MODELS

Although we realize that because of endless interrelationships just about anything can be used as a model for the study of another thing, some problem situations just seem to call for constructing small "scale" models as a method for moving from the abstract to the real. Complex forms and difficult-to-visualize ideas often demand to be "mocked up" in order for "parts" to be visualized in context with "wholes." The normal procedure is to begin with rough "study" or "sketch" models and to work through a series of models until a "finished model" or "working prototype" is developed.

D) BIONICS

Bionics, the science of interrelating natural and man-made systems, is still another variation on the MODELS approach. The basic difference is that the bionic model is a natural one. For every possible idea some natural counterpart can be found. By studying how the natural model works and how it survives or achieves its ends, you will find guidelines for the implementation of your idea.

Being a part of nature and also being able to (mentally) stand apart from nature, it is possible to allow nature to model the behavior of your human intentions.

E) FOLLOWING A SIMILAR MODEL

Finding problems similar to yours that have been solved to the satisfaction of all concerned is another common technique. You might review how others implemented their problems and assemble yours in the same way.

This approach, often misjudged as stealing, is really a form of apprenticeship. When used consciously we can express a wish to learn by following a leader and are perhaps wise enough to realize how foolish it would be to overtly avoid the experience of others.

F) PATTERN LANGUAGE

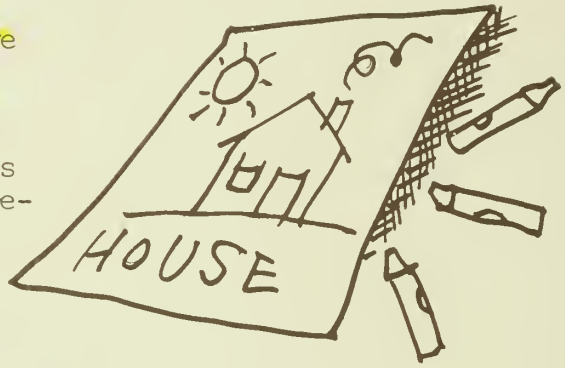
A variation on the similar model technique is PATTERN LANGUAGE.

Within every problem situation many sub-problems exist. For each of those sub-problems, socially, psychologically, and physically-acceptable solutions already

exist. If a large number of these sub-problems within a system can be identified and if acceptable solutions to each of them can be logically recalled, a language of the behavioral "patterns" of the problem situation begins to emerge. The PATTERN LANGUAGE method suggests using that context of sub-solutions as a language to derive new systems. (This regenerative technique is still in development by a group in Berkeley under the direction of C. J. Alexander.)

G) ARCHETYPICAL-STEREOTYPICAL FORM

Typical repeated internal and external forces and pressures acting on a situation tend to give things archetypical forms that reflect response to such forces. Change being normally an evolutionary process, we eventually learn the archetypes of our environment and respond with them rather than with ever new solutions. When a child draws a gable roof and bearing walls to represent a house, such a drawing represents the stereotype of house, while the triangular "trussed" roof shape also reflects the structural archetype for that situation.



Archetypes and stereotypes can be thought of as the traditional or original prototypes of things.

H) COMMON DENOMINATOR

Complex or multi-part ideas may be more easily implemented by locating a common denominator--an element, unit or component--that gives every part of the intended idea some common relationship. For example, use of a grid to compare problem or project attributes would yield one or more of them as being influential over all the others. But grids and/or matrices can also be used as unifying contexts for planning and organizing multi-component systems (sometimes called "field theory" in environmental designs).

I) ESSENTIAL UNIT BUILDING BLOCK

A House of Cards and a "castle" made from children's building blocks are examples of larger things achieved by assembling small typical or identical units and by following

a consistent set of "rules" or limits for assembly. In a similar way, other large or apparently complex systems can be constructed. This method begins with a search for an essential unit that can later be assembled in quantity to achieve large and complex "configurations" not easily possible when all parts are allowed to be individually unique. "Small units" grow into larger systems by following determined consistent rules of interconnecting and assembly. The ESSENTIAL UNIT BUILDING BLOCK METHOD can be seen to be a variation of the Common Denominator Method. Still another name for this technique is UNIT GROWTH.

J) HOLISTIC OR TOTAL FORM

The Unit Growth approach begins with small units and assembles them into larger wholes. The opposite approach, often referred to as the Sculptural, HOLISTIC or Total Form Method, begins with whole assemblages conceived as abstract configurations and proceeds to break those wholes down into orderly systems of smaller components. It should be clear that no matter which of the two (UNIT GROWTH or HOLISTIC) methods is chosen, it is not long before the other must also be considered. Only a few small units may be assembled before it becomes necessary to consider the total form that might emerge. Similarly, attempts to generate whole forms can be taken only so far before attention must be given to the components needed to realize those totalities.

K) RESPONSE TO HUMAN NEEDS

This method contends that all problems in some way begin as unsatisfied needs and that solutions must be acceptable responses to the human needs that inspired them in the first place. Lists of human needs are still somewhat rare, but researchers are fast collecting them. In the interim, lists that are available suffice to help produce solutions having far more humanistic concerns than before. They include the full range of physical (survival) needs such as food, rest, shelter, etc., as well as the many psychological needs such as self-respect, friendship, achievement, and orderliness. Ideas being implemented are checked against "needs" on the list and implemented as a response to them. Since human individuality is an expression of the separate, unique proportions we each have of a common set of needs, you can be sure that implementation based on this technique will never satisfy all persons involved.

To use this method, the essence or core of the idea is first reviewed and translated into "needs" terminology. The new statement is then used as the ultimate decision-making screen for all further decisions in the implementation phase. Such an approach simulates the entire problem-solving process. It distills a definition (essence) from a previously defined situation and proceeds to use that new definition as a primary source for evaluating all other decisions pertaining to the situation.

L) IMPLICATIONS

Another method for translating an idea into reality is to build a working vocabulary of concrete solutions for each idea abstraction. The basic question to ask is "What does this idea (or part of it) imply in terms of physical fact?" The answers will get you one step closer to reality.

EXAMPLE: What is implied by a chosen idea that directs you to make more friends? The social implications might be to join a group or club, to go into more places where people congregate, to become more interested in others, to buy a season ticket to the Mozart Festival, etc., etc.

M) CONSULTANTS TEAM

Become a team leader. Break your idea down into the various categories that can be individually acted out by experts. If, for instance, your idea deals with the development of a new product, divide it into the separate areas of market analysis, design, production, advertising, distribution, etc. Arrange to meet the various consultant teams who know each of those areas best. You act as the coordinator who resolves all of the opinions of your "expert" staff. The theory here is that the more people you get in on the act, the better will be the total performance. The dangers are either that the performance will have so many prima donnas it will be difficult to recognize the idea beneath it or that the idea will become separated from its objectives due to one of the experts being stronger than the coordinator.

N) STRUCTURAL LIMITS METHOD

Every assemblage has a structural framework that holds it together and stabilizes its form. This is true for music and dance notations just as it is for buildings and bridges; and all structures have limits which, if exceeded, cause failure or collapse of the system. To operate by the STRUCTURAL

LIMITS METHOD is simply to allow the "structure" or system of loads, stresses and reactions to be the limiting factor. In the end there will be an orderliness or equilibrium about the whole which is undeniable. Although this method is common to problems of civil engineering it is nonetheless adaptable to other situations.

O) SENSORY CHECKLIST

To be wholly perceived, reality must be consciously experienced. The senses must be turned on to the stimulus from "outside." Likewise, solutions that are designed to be perceived should consider the fact that sense perception can be enhanced. Designers can include some obvious stimuli for the eyes, for the ears, for the nose, etc.

By simply using the five senses as a checklist, no solution would be considered complete unless it included a variety of stimuli for each of them. Solutions thus enhanced become easier for all to appreciate.

P) CHARADE/ROLE-PLAYING

If you want personal experience with implementation, you may have to "get into the act." This is a technique of BECOMING THE THING, playing the role of the people affected by your ideas. It is an expression of the imagination and therefore requires image-making skills. As a method, Role-playing is a technique of living through the experience of implementation before it actually happens and later responding to that experience in a more informed way. The pre-experience allows fears to be acted out and eliminated and can provide the security of "having been there before."

Q) NOTATION SYSTEMS

When your job requires you to implement great numbers of similar complex problems, it may be advantageous to develop your own notation system. Numbers and words and other symbols are devised to simplify the apparently complex problem of dealing with reality.

It can save needless repetition of operations during developmental processes, and it can allow you to write or manipulate information more quickly, keeping more apace with your thinking ability. Mathematical and musical

notation systems should be already familiar to you. But others which are graphic, sonic, or behavioral can be invented quite naturally. A sine curve could stand for "process", and arrow for "method," etc.

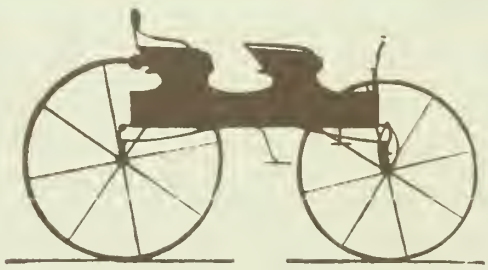
When you're headed toward a goal of your own, it is not unusual to cross paths with others going to different places.

R) INSPIRATION OR LIGHTNING BOLT

Lots of problem-solvers use the age-old technique of just waiting around for inspiration. They read, talk, scribble and wait. They know about their problem and now expect the lightning bolt of inspiration to hit them in the back of the neck. When it hits, they shout something like EUREKA and then get on with it. This method is often used for "definition" and "ideation" as well as implementation. Alex Osborn calls it INCUBATION. Its general symbol is a light bulb shining over the head of the enlightened problem-solver. This approach is probably the most untrustworthy of the lot since it is highly dependent on factors outside of your control, misleading many to believe in its magic. Fate and design-by-luck are poor substitutes for goal achievement by intention and orderly process. They can be fun but they can also be tragic; and no one can say how "the cookie will crumble."

S) TRIAL AND ERROR

Both evolution and the Law of Natural Selection express this well-known technique for translating ideas into reality through stages of trial and error. This is a strategy of implementing and evaluating in an experimental way with a view to eliminating error as you go. No matter how sophisticated design methodology becomes, the TRIAL and ERROR method will continue to be viable. Because when it's all said and done every problem-solver must invariably say, "The next time I try this kind of thing, I certainly won't make the errors that were made this time."



Travel Guide for Implementation

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A PATTERN LANGUAGE

Doyle, M. and D. Straus, Playboy Press
HOW TO MAKE MEETINGS WORK

Editors, Shelter Publications, P.O. Box 279, Bolinas, CA 94924
SHELTER

Hanks, K. and L. Belliston, Wm Kaufmann, Inc.
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Nicolaides, Kimon, Houghton-Mifflin
THE NATURAL WAY TO DRAW

Introduction to EVALUATION

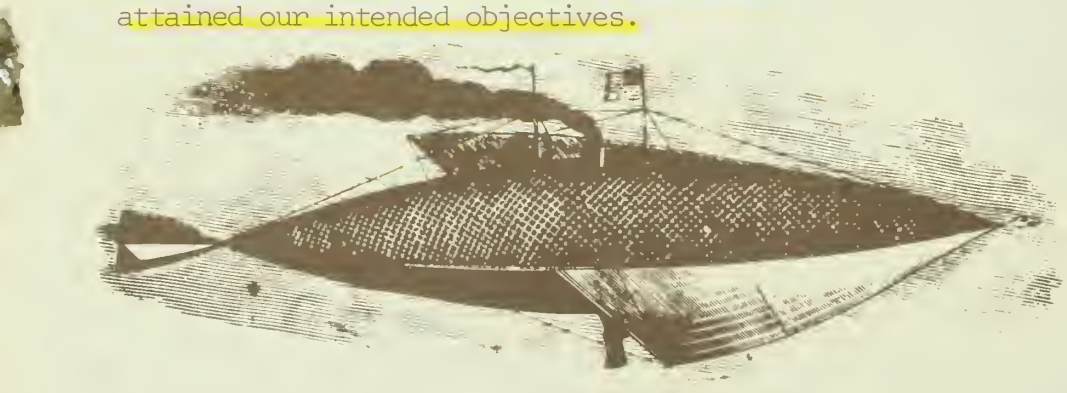
One final DESIGN STAGE remains--EVALUATION--the time taken both during and at the end of any problem-solving journey for review. We look back to determine how far we have traveled and to see how valuable the journey has been so that the remainder of our trip and future trips will be smoother.

Evaluation is a time for accounting; for comparing actions with consequences; for detecting flaws and making improvements; for planting the seeds of future challenge. Since it requires getting both inside and outside of ourselves to see our behavior more clearly, it can seem to be an anxious time of being "off center" and out of control.

HOWEVER...
To evaluate is to measure how far we've gone and how well or how rich the travel experience has been. The "complete evaluator" measures both quantity and quality. The sum of the two represents the total "value" or what the journey is worth. If we didn't clearly state where it was that we intended to go in the first place it will be hard to measure how far we've gone.

After a trip or two, it becomes clear that creative problem-solving journeys can be evaluated without tears; that it is a simple process of defining, achieving and measuring objectives; that the process of design is really just a systematic series of events that leads us to determine just how much or how well we have attained our intended objectives.

Evaluations are not conclusions; they are commencements. They end one journey and carry us on to the more knowledgeable beginning of another journey. Just as commencement means both to complete and to begin, so evaluation is a link between our problem-solving journeys.



"The world is full of people who know the price of everything and the value of nothing." Oscar Wilde

Language Guide for Evaluation

If words had distinct meanings, it wouldn't be possible to say the same thing in more ways than one.

EVALUATING THE PROBLEM-SOLVING PROCESS IS OFTEN STATED AS...

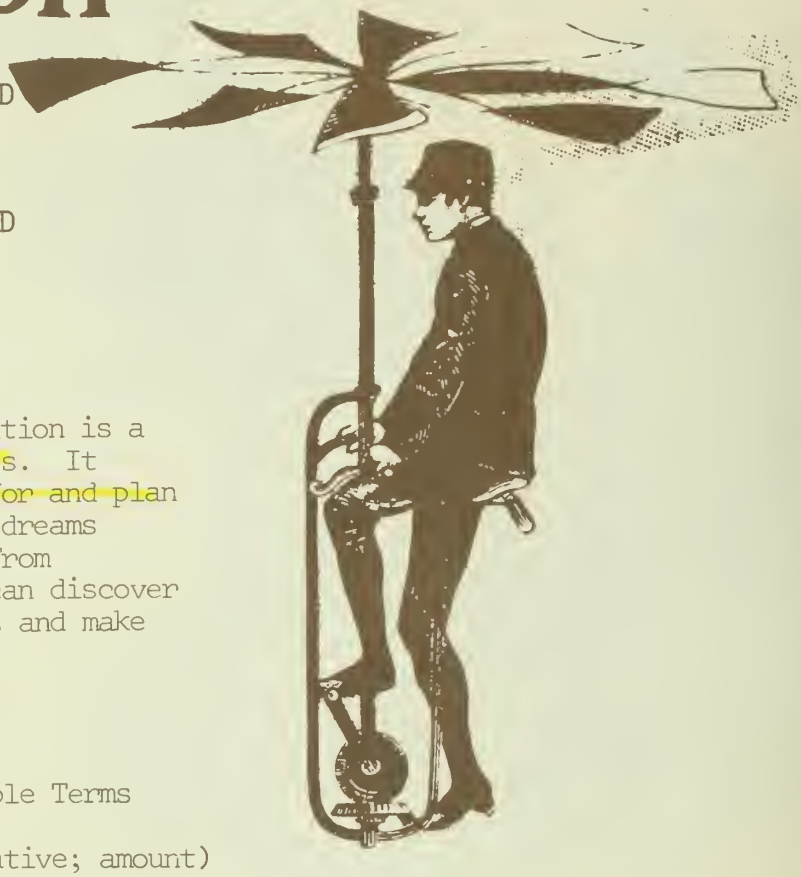
...LOOKING BACK to determine the quantity and quality of our achievement
...EXAMINING CHANGES in behavior over time
...GETTING OUTSIDE of ourselves for a more objective view
...TAKING A CRITICAL LOOK at our process
...SELF-CRITICIZING; SELF-IMPROVING
...REVIEWING our actions in order to better determine how to proceed
...TALKING IT OVER; appraising what we have done
...ASSIGNING VALUE to achievement; grading

...REFLECTING on the past with an eye to the future

As you prepare to evaluate your process, be sure to list all "extra-curricular" benefits. It is easy to miss the specific value of those bits of experience when you focus on larger goals.

What does "to evaluate the process" mean to you?

Methods for Evaluation



1. THREE PHASES OF EVALUATION METHOD
2. STEP OUTSIDE FOR A MINUTE METHOD
3. WHO ELSE HAS AN OPINION? METHOD
4. PROGRESS CHART METHOD
5. LETTER TO YOUR BEST FRIEND METHOD
6. ACADEMIC METHOD

1 THREE PHASES OF EVALUATION

In a most systematic view, an evaluation is a comparison of objectives with results. It initially asks, "What did you hope for and plan to happen?" and then measures those dreams against what actually did happen. From the measurement the problem-solver can discover the quantity and quality of progress and make plans for improvement in the future.

EXAMPLE: GUIDE TO EVALUATION

1. STATEMENT OF GOALS
   Objectives Described in Measurable Terms
2. ACHIEVEMENT AND MEASUREMENT
   A. How far did I go? (quantitative; amount)
      Number of objectives reached
   B. How well did I do? (qualitative; enrichment)
      Benefits accrued
      Educational:
      - Knowledge acquired
      - Skills developed
      - Attitudes altered or reinforced

   C. Contingencies
      1. Unforeseen benefits outside of objectives
      2. Unforeseen problems outside of my intention
      3. Additional objectives discovered late in the process
   D. Comparison of Goals with Achievement
      1. Point by point comparison
3. PLANS FOR THE FUTURE
   A. Review and reinforcement of behavior changes

2 PROGRESS CHART

If you have tried making a chart relating your defined objectives (tasks) with your available time, you have already found a simple way to keep

ways to assign value or worth to process

It is never too late to change your mind about how much something is worth (unless of course you have contracted to follow through on a specific value).

The intensity of evaluation should be determined by the importance of the journey attempted.

Evaluation teaches that design is a form of optimism because it anticipates the best possible outcome.

a running evaluation. When you keep the chart up-to-date it allows you to see, at a glance, how far along you are in terms of meeting your objectives. This method usually works best for quantitative measures but quality can be added in the form of side notes or comments made as in a journal.

3 WHO ELSE HAS AN OPINION?

Being objective about our own achievements is tough enough without always having to depend on our own frame of reference. Others, who view the same world with different perceptions, can often open our eyes to a truth of reality, which was there in front of us all the time but unseen. For the opinions from outside to be more effective and less hurtful, they must be understood...not just dropped on you without follow-up explanations.

Here is a technique of tips for getting an outsider to help you help yourself:

BE SPECIFIC AND DIRECT; don't ask general questions which will only get you general answers.

BE SINCERE and **PROMISE A REWARD**; make it look as if helping you will be pleasant and perhaps valuable to them, too.

BEG FOR SUGGESTIONS, NOT APPROVALS; be convincing that you are interested in improvement.

4 STEP OUTSIDE FOR A MINUTE

Making plans and setting out to achieve them is positive behavior. The relevance, social value and possible negative consequences of the success or failure of such behavior is another matter. If our self-image is good, we know that our intentions are good and that our behavior is likewise the result of good intentions. When those "good intentions" are challenged...as in an evaluation...we become self-protective and often offensively- defensive.

Evaluation calls for **STEPPING OUTSIDE** of our self-image...at least for a moment at a time... to look objectively at what transpired. The purpose is positive, to make plans for improvement. As for any problem, it requires ACCEPTANCE. When the evaluator realizes that it is attainment and not "self" being studied, measurements and improvements can proceed.

Think of yourself as a Controlling Spirit that controls a body and its behavior (yours). Since that Spirit has good intentions, it is concerned with improvement. And it welcomes the opportunity to observe and improve the behavior it controls.

3 LETTER TO YOUR BEST FRIEND METHOD

Another painless way to determine the value of your intentional achievements is to write a letter about them. Simply write as if to a friend or parent (you could easily play the role of your own best friend). Describe your accomplishments and what they mean to you in terms of your initial intentions and how they developed along the way. Tell how valuable they are in both a broad sense and specific sense. You might even mail it for still more feedback... or mail it to yourself to see how it sounds several days from now.

Prejudice is a poor companion on evaluative journeys.

4 ACADEMIC METHOD

If you are looking for an age old evaluation method, you'll be sure to find it in school. The subject of grades and grading has been under scrutiny and in use there for centuries. But few appreciate the potential or intrinsic educational value of its process.

Grades are commonly referred to as a major problem of academia. Yet if considered as an evaluative strategy, with intentions for improvement or behavioral change, the process of grading is seen as far more meaningful than the apparently misunderstood symbolic letters or numbers that appear on student records.

In academic evaluations, letter grades stand for verbal descriptions: A, Superior Attainment of Course Objectives; B, Good or Better than Average Attainment of Course Objectives; C, Acceptable or Average Attainment of Course Objectives; D, Poor or Least Acceptable Attainment of Course Objectives and F, Non-Attainment of Course Objectives. For these symbols to be re-translated back again to evaluative meanings, the "Course Objectives" must be known by both teacher and learner and the measurement process clearly understood.

Travel Guides for Evaluation

Churchman, C. W., Wiley
MEASUREMENT: DEFINITIONS AND THEORIES

Leopold, Luna B., et al, U.S. Dept. of Interior
A PROCEDURE FOR EVALUATING ENVIRONMENTAL IMPACT, Geol. Survey Circular 645

Mager, Robert, Fearon
GOAL ANALYSIS

Back home with the memorabilia

A foreign language is simply a different set of symbols for the same reality that confronts us all.

Looking back over a completed journey is a mellowing experience. The good times and bad tend to fuse together to become a single memory or general impression. Such general impressions are merely accented by those most memorable experiences encountered; minor pleasures and acquisitions are as easily forgotten as are some minor difficulties and sub-problems. As we lose sight of the small experiences and begin to remember only the major "ports of call," we set ourselves up once again to think more of the by-products and less of the joy and reality of process *experience*.

Product - instead of process - orientation makes improvement difficult. The task of determining value can best be done by viewing the process of interwoven and diverse behaviors that comprise the living activity occurring between goals.

Learning from our life experiences requires us to concentrate on their interrelationships. If we wish to improve skills or develop knowledge and values, we must work toward improving the bits and pieces (objectives) of the process. The by-PRODUCTS will improve accordingly.

LIFE IS PROCESS. Living involves going from one activity to another...being procedural. To be conscious of the activities of life is to be aware of life itself. To be concerned for improvement suggests a concern for methodology... developing skill in using the techniques that enhance the enjoyment of process.

PRODUCTS are but moments in time. Their value and meaning derive from process and are re-applied to future process. The product called *graduation* is the result of years of study, eating, writing, problem-solving, TV watching, vacations, etc. When it arrives, it is gone. But the process goes on. The day before graduation is little different from the day after graduation; *only* the process is being viewed with a new set of limits.

To document process is the best we can do. One commonly enjoyed form is the "diary" or personal record of what transpired. An increasingly popular version of that record is the JOURNAL where a record develops to include not only observations, but conclusions and predictions as well.

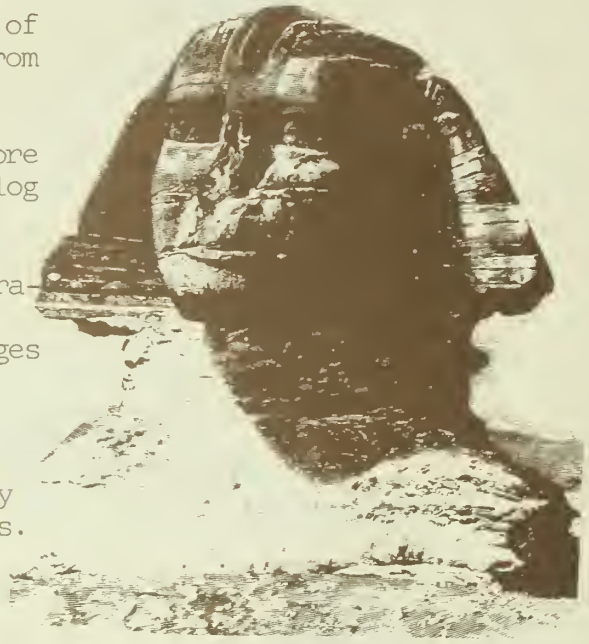
The value of such a documentary product is that it makes process valuable...able to be valued. It turns experience into an observable and thus improvable thing. For those who solve problems for others, as in a profession, documentation of process is part of the responsibility of such professional practice. And with an evaluative document kept up-to-date, the creative problem-solvers will always have a clear view of where they are relative to the continuing process of life.

-SIDE TRIPS-

Separating the TRAVELERS from the tourists

Why Side Trips ?

It is the difference in quantity and quality of the SIDE TRIPS that separates the tourists from the well-seasoned travelers in the world of problem-solving. The more extra-curricular discoveries encountered along the way, the more interesting and meaningful will be the travelog in the end.



In this section, we offer a selection of extra-curricular Side Trips for beginning problem-solvers. We hope they will enrich your voyages as they have helped others.

But, just as they can become mind-expanding experiences, Side Trips can also become delay or avoidance tactics and act as tourist traps.

CREATIVITY GAMES

Actions that seem to stem from the conscious application of an unorthodox or unusual method are what most people refer to as *creative behavior.* The ability to make and break rules or habits without an undue amount of stress is typical of such behavior. But creative behavior might be better defined as "behavior that is both subjectively and objectively whole, free from pride and other deadly sins, expressive of constructive discontent and a willingness to succeed, and fearless in the face of rules or habits." Since any change in behavior denotes the breaking of a habit, any game that produces change is a HABIT-BREAKING exercise.

Here are a series of games designed to help with the learning and development of habit-making and habit-breaking.

Games to develop Humor 1

LAUGHTER IS an abrupt physical reaction to something "unexpected." Find a cartoon in a magazine and cover up the caption. Then write several captions of your own by changing the "expected" in the drawing to something unexpected. If you assumed the character was a housewife, change her to a business manager on vacation, etc.

2 MIMICRY, MIME AND ROLE-PLAYING are sure-fire ways to make you smile at your own behavior...another observed trait of creative persons. Go ahead and try it. Be the President. Be your TEACHER. See if you can't do convincing renditions of several TV stars as you watch them perform.

3 PUNNING IS a clearly observable trait of creative persons. They see the double meanings in many facets of life...and they are amused by the often strange relationships. Get with the "groaners" and have some "pun" of your own. It frees up any tensions you might be feeling and brings a smile to your face.

Games to develop Awareness

1 Try EATING AN APPLE or orange as if you've never eaten one before. Use all five senses to their fullest appreciative potential. Examine the object slowly and carefully with regard to its shape, color, flaws, textures, flavor, sound-producing aspects, odor, temperature, etc. Make lots of analogies as you go, finding image-filled ways to describe the event. Be poetic.

2 TAKE YOUR SENSES ON A FIELD TRIP. Go for a walk and concentrate on getting the maximum stimulus for each of your senses in turn. Begin with your skin; feel the temperature differences between one place and another; note where the wind picks up, where heat comes from, etc. Take your time. Then focus on your ears: what sound?, from where?, what background noises?, what faint hints of sounds from afar?, etc. Take a notebook and document what you discover between each separate sense excursion.

Games to renew the Child in You

BI-MODALITY is a recently accepted term for the conscious use of both halves of the brain. It is known that one "hemisphere," typically the left one, deals with our thinking and ability to exert conscious control; and that the other, the right side, houses our sensory response and urge center. One side "knows," - the other "feels." One is the controller; the "adult." The other is the playful child and sensory respondant. Here are three exercises to help free the child in you (whose left brain is probably working overtime to calculate the consequences of such a proposition). The desired result is for a more holistic balance and conscious use of the whole brain's potential.

1

IMAGINE THAT YOU CAN JUMP right out of your shoes and into someone else's shoes "just like that." Form the image clearly in your head. Now start by jumping from your shoes to someone else's shoes. Stop to see how it feels to be there. Then jump to another person's shoes...and on...and on. Try at least five such experiences before stopping altogether. It's the jumping part that counts as the right-brain activity.

2

QUICKLY...NO TIME FOR THINKING about the consequences...take off your shoes and sit on your feet; look under your chair; look at the room from upside down; examine your toes with your eyes closed; make the sound of a small bird; chuckle to yourself. Your right brain is active again.

3

Since it is normal for one part of the brain to sense and be sensitive and the other part to know or "make sense" of the stimulus received, try some sensing WITHOUT also trying to make sense of it. Allow your body to feel hot water in a tub, but don't think about it. Just relax and allow your skin to sense the heat. The determination to stop thinking through sensory relaxation is also physically therapeutic and may encourage your other physical senses to join in for a multi-sensory picnic of tastes, sounds, smells and images.

Games to develop Belief in Self

1 WRITE A COLUMN FOR YOUR LOCAL PAPER describing how well you have solved some important problem. Tell about how you were able to achieve what you did. Be as laudatory as possible. Describe in detail what a really good person you were (are).

2 DESIGN A MONUMENT TO YOUR DREAMS. What form will it take? Why? Where will it be located? Why? How long should it last? Why?

3 EXPLAIN TO SOME FRIENDS HOW DIFFICULT IT IS TO DO WHAT YOU DO but how well you accept your responsibility for doing it despite those difficulties. Brag just a little.

4 IMAGINE THAT YOU HAVE JUST WON THE NOBEL PRIZE for humanity, which brings fame and fortune your way. Now that you are well known and economically secure and no longer need be concerned with those gnawing distractions, imagine how well you can achieve other current goals.

5 TRY TO GO A WHOLE WEEK WITHOUT EXPLAINING OR EXCUSING YOURSELF TO ANYONE. Forget apologies and other humbling practices for this week. Be a little pushy, not aggressive and hurtful but merely assertive of your own rights. This game is an exercise in releasing yourself from the imagined controls of others and taking charge of your actions.

6 Look ahead to the time when you will be a Senior Citizen. Set up a scenario in your mind where you are talking to a group of college sophomores about all the good things you experienced when you were in school. Concentrate on your successes but add a laugh or two about your failures also.

Games to develop Freedom from Pride

PRIDE OFTEN LEADS US TO BEHAVE CONTRARY TO OUR FEELINGS. Try to decide how you actually feel about some matter of importance and allow that feeling to rule your behavior in every situation and contact. Don't behave one way in front of your friend, another in front of your boss, and still another in front of your parents. Stay with your feeling and express it consistently.

1

GET SOMEONE TO TAKE A MOVIE OF YOU doing some everyday thing like having a conversation. Make sure that you get long shots, medium shots, and close-ups and that you see yourself from front, side, rear, below and above. This is one sure way to discover how different you actually are from what you may proudly imagine.

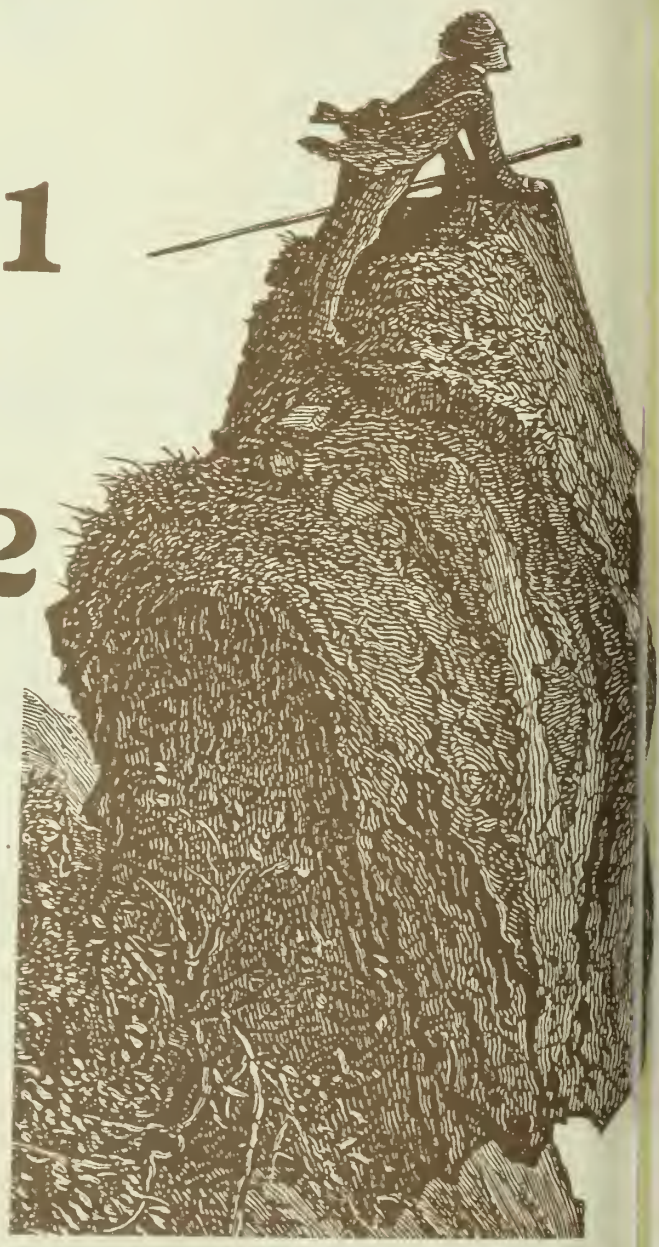
2

BREAK SOME FEAR HABITS:

a) DON'T ANSWER THE PHONE the next 5 times it rings, and examine why the phone has such power over your attention.

b) SPEAK OUT. The next time someone says something that sounds or seems outrageous to you (something bigoted, insulting or fallacious), put it straight by speaking out. Again, try not to be either aggressive or chicken-hearted. Simply state your objection as calmly as possible. A rehearsal might help forestall excuses or unnecessary digs brought on by your anger.

c) DON'T ALLOW YOUR PRIDE/FEAR TO WASTE YOUR TIME. The next boring lecture you attend can be made less boring if you ask lots of questions and make an attempt to get the subject matter into a personally relevant form.



Games to develop Constructive Discontent

1 Try to see what a problem feels like from someone else's point of view...Close your eyes and form images of what seems to be implied by the following statements and then try to turn the "discontent" into a constructive situation.

a) The president of a college addressing an angry student body

b) The manager of a fast food franchise whose business is failing

c) The environmentalist viewing a polluted sky

2 Suppose that while you are out of town for a relaxing weekend your car, containing all your travel money, credit cards, luggage, etc., is stolen. Find at least ten ways to TURN THIS APPARENT DISASTER INTO A POSITIVE or ENJOYABLE EXPERIENCE.

Games for developing Wholeness

Wholeness is the awareness of your full potential. To behave in a "holistic" way is to use your full potential...both "sides" of the brain...both thinking and feeling...to reason and plan in seriousness and to sense and discover playfully.

Your reflection as seen in a mirror is a reverse image. But looking into a corner made by two mirrors at right angles will give you an exact image as others see you. Study yourself by experiencing some SERIOUS PLAY in front of such a mirror corner. ALLOW yourself to horse around, but STUDY the movements carefully. Compare the two halves of your face for differences related to their opposing-controlling brain hemispheres. (Right-brain normally controls left side of body and vice-versa.)

1

SERIOUSLY NOW, HAVE SOME FUN. Take two photographs of yourself (or get some help from a friend). In one of them, pose as the intelligent, serious thinker you know yourself to be. In the second, respond to any urge for playfulness; no thinking allowed. Mount them side by side with appropriate titles and keep them available to remind you of your whole two-sided nature.

2

Guide to Measurable Objectives

A GOAL is a statement or declaration of an intentional result or outcome...it doesn't tell you how to get there but merely where you want to end up...tomorrow, next month, five years from now, decades from now. GOALS are usually stated in more or less unachievable terms; but they can be attained in stages, piece by piece, bit by bit. Each step in the process becomes an objective along the way. THEREFORE if you know the stages (objectives) and can measure their achievement...one by one...you can eventually arrive at a goal.

To make OBJECTIVES MEASURABLE it is necessary to make them specific and clear. Simply, you can think of objectives as the work determined as important or necessary to reach the goal. For example, a college may define a curriculum of courses (objectives) required to obtain a degree (goal). Then each course will in turn define its separate objectives necessary for passing that course.

Unless mutual standards are accepted, the task of translating goal statements into lists of clear and specific objectives is a personal matter; each person's requirements would differ from someone else's standards unless they derive from common values, experiences and expectations.

The CREATIVE PROBLEM-SOLVING process can easily be viewed as a series of activities (objectives) leading to a goal. Beginning with the tasks of Acceptance and Analysis and ending with the tasks of Ideation and Selection, Implementation and Evaluation, the Definition stage is a statement of goals.

AS AN EXERCISE, try listing the objectives you might have to reach if you intended to reach one of the following long and short range goals:

Cook a special meal for six friends.
Buy a new bicycle.
Learn to speak a foreign language really well.
Design an enjoyable vacation house.

As you can see, there are no specific directions in any of those typical goal statements...they must be translated into the activities of a step-by-step process for getting there. To get the "special" meal or the "right" bicycle or learn to speak "well" or design an enjoyable house, it's going to be necessary to further define the quantity and the quality of the actions required of each objective along the way. Only in that way will you be able to measure the accomplishment of your overall goal. For instance, the first objective involved in the "special meal" goal might be "to determine the likes and dislikes of the six friends...what they can and cannot eat, which of them are on a diet, etc." When you have such a list, that objective can be said to be met. Then on to the next objective, etc., etc.

OBJECTIVES outline the paths to your goals. But clear foresight is not always possible. That's where anxiety sets in. To lessen its impact, stop to review your goals and the tasks you have already accomplished; try to assess the amount of work that seems to still remain.

Some lessons learned from Problem-Solving...

by first-hand experience

1. Don't believe everything you hear...or read.

2. Without having been there before, you may have to feel your way slowly.

3. Having been there before can stop you from finding new ways to get there.

4. The solution of one problem can be related to other kinds of problems.

5. Just as the conscious-thinking process can work for your, so can the subconscious or "chance" processes.

6. You must learn to find a definition through analysis and not be misled by initially fuzzy problem statements.

7. You can define things by determining to see inside rather than to merely LOOK at the surface.

8. When you relate your definitions of things to one another, you will find connections between them.

9. It can be helpful to have a free imagination, to turn things upside down, to take them out of their context for a different point of view.

10. When you free your imagination you open the door to many new images and to an increased image-vocabulary.

11. There are more ways than one to get to the same place.

13. If it doesn't work, you may have missed something. Try it again.

14. Get lots of facts. Try to see that the problem is stated "realistically."

15. Success is the result of either conscious intent or chance. Neither is dependable. We can only do our best.

16. Learning by doing is often faster (but not necessarily easier) than learning vicariously through others.

17. One thing leads to another. Follow the clues.

18. Unpleasant memories can get in the way of discovery. Block them with a concern for new experiences.

19. Intuition is the subconscious accumulation of past experiences.

20. All experience is permanently locked in the brain. Some of it is just blocked by our lack of attention.

by logic

1. A subconscious random sample of thoughts can stimulate a need for order.

2. It makes sense to set limits in order to get on with an intentional process (as long as the limits do not rule out "hot" ideas).

3. Logic alone does not insure creativity, which is the purview of the "whole" mind.

4. Searching for an idea that can work for lots of things is often easier than searching for a solution to only one thing.

5. When you examine only part of a problem at a time, it helps to keep the whole problem in mind.

6. Proper assessment of all ideas is essential.

7. Losing your guide (security and habit) is one way to discover new paths.

8. A problem solution is dependent on the relationship of many subdecisions.

9. There is some form of relationship between all things.

10. The solution to one problem opens up the possibility for new problems to occur.

11. It is easier to reach a goal when the path of objectives is clear.

12. A weak understanding can lead to an ineffective conclusion.

13. Clear judgment calls for clear evaluative standards.

14. The "playful you" is always there to help when the "logical you" gets stuck.

15. Solving components is one way toward solving entire systems.

16. To determine the solution to a mystery, you must find the essential clues.

17. Some problems require side-trips into strange new territory before they can be resolved.

18. Finding simple ways to deal with complex situations is always possible.

19. Some problems are so connected to other problems that they cannot be considered by themselves alone.

20. A well-kept journal of a process provides an automatic product.

by planning

1. General principles come in many different forms.

2. Experimentation can be expensive.

3. Inappropriate principles can stand in the way of a search for appropriate principles.

4. Planning can insure the enjoyment of a journey by including the pleasures with the other necessities.

5. Although desirably balanced in an overall sense, a predominance of either subjective or objective influences will still exist.

6. Apparently complex problems can often be defined quite simply.

7. By determining the differences between various points of view a unique point of view can be formed.

8. A computer may be required to solve some problems that exceed the capacity of your awareness. Some things just can't be dealt with properly without making many simultaneous comparisons.

9. Evaluative criteria can eliminate much leg-work.

10. Experience often leads to quick but incorrect conclusions about new situations.

11. Experimentation can get things going when knowledge has them bogged down.

12. You can learn by doing but first you must get started.

13. Advance assessment can either prevent a pitfall or block a new idea.

14. Thinking depends on a good balance of logic and experience, orderly thought, and lots of images.

15. The application of principles can greatly reduce the time for acquiring problem-solving experience.

16. Unproven principles can get us into trouble.

17. A good strategy is to expect the unexpected.

18. To know what you don't know is critical to successful solutions. Dealing with your ignorance in a conscious way leads to a keener awareness.

19. What appears to be is not always what really is. Perception and reality differ.

20. Records help to prolong the appreciation of experience.

SYNECTICS...

Synectics Education Systems
121 Brattle Street
Cambridge, Mass. 02138

One of the many separate problem-solving processes synthesized into the "universal" process presented in this book is SYNECTICS, a series of techniques utilizing ANALOGY, METAPHOR and SIMILE to develop solutions, alternatives and unique or fresh viewpoints. Derived by William J. J. Gordon, the SYNECTICS process is an "excursion" through a sequence of three stages.

In STAGE 1 -- You EXAMINE initial viewpoints
You analyze the situation
You criticize and unload preconceptions and
You restate your initial viewpoint

In STAGE 2 -- You "STRETCH" your limits by examining other problem situations without concern for your own situation...you get away from the situation that is troubling you

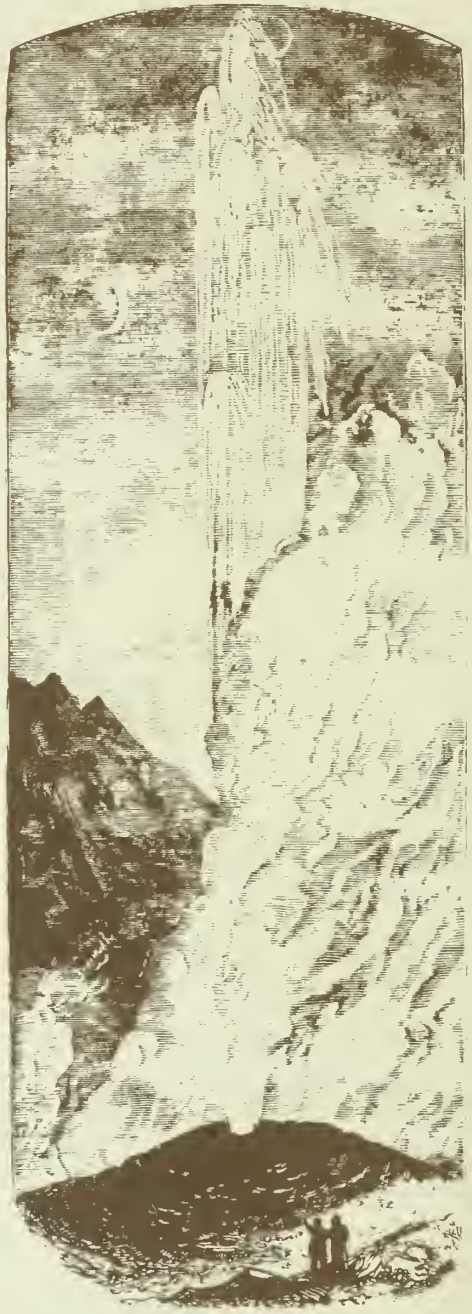
In STAGE 3 -- You RETURN to your problem situation with the fresh experiences of other situations and apply that new energy to your own situation with the intended result of a new viewpoint

In short, SYNECTICS is a process of developing "insight" by utilizing the technique of "outsight." The key to this process is the word "stretch"--a psychological attitude that it is easier to work on problems other than your own and that you can profit by applying solutions derived outside of your situation to solve your own problems.

According to Gordon, four paths to creative behavior are:

1. DETACHMENT and INVOLVEMENT
   Getting both outside the problem as well as inside the problem

2. DEFERMENT
   Having consideration and tolerance for all manner of input



To uncover imaginative definitions for problems, find the problems within the problems. A problem is always made up of lots of little problems. For one reason or another, each of us will decide that one of those particular sub-problems is more important than any of the others, thereby taking that one as our personal definition.

3. SPECULATION
   Having fantasies, posing questions, making suppositions

4. OBJECT AUTONOMY
   Allowing the product being sought to become the process being experienced

The three "MECHANISMS" used to facilitate such behavior are:

1. DIRECT ANALOGY
   Finding how one thing is related to another... discovering the ultimate interrelationship between all things

2. PERSONAL ANALOGY
   Becoming personally sympathetic to various situational conditions...role-playing, often to the point of empathy, to discover internal problems difficult to see from an outside view only

3. COMPRESSED CONFLICT
   Dealing with key sub-problems as an effort to resolve a total issue by way of solving its internal conflicts

SYNECTICS is a process wherein "the joining together of apparently different and irrelevant objects" is used as a means of formulating new views of problematic situations.

If you are searching for a fresh point-of-view, try the Synectics techniques of asking how your situation is similar to very different things... remembering to "stretch" as far as you can. A problem in human relations might find unique relationships in the corners of agriculture or mechanical engineering. Asking how a financial problem is like a plate of spaghetti is more likely to reveal a fresh viewpoint than if you tried to keep your attention glued to monetary matters.

Try "getting into" the situation by allowing yourself to "feel" the uniqueness of people, things, and situations outside yourself. The strange experience of attempting to role-play an object often reveals a hitherto unnoticed sub-problem or relationship. Step outside your situation in order to be able to view it as part of a universal context and not merely as the tough, isolated thing you may incorrectly imagine it to be.

Procedure for Self-Hypnosis

Hypnosis in all its many forms is a universal way for reaching the subconscious mind with messages; it is the key to all forms of mind-control. Whatever you are into or want to get into, hypnosis can work as a basic method. Essentially, it involves a process of convincing yourself of your goals by freeing you of distraction and fears and by helping you to see how your behavior can be changed. It is both a relaxation technique and a learning-discovery, self-improvement technique.

Deep prayer, meditation, EEG feedback, mind control, reevaluation counseling, Zen, karate, yoga, most positive thinking techniques, cosmic consciousness, etc., all begin with hypnosis in one form or another. It's all a matter of getting yourself into a "receptive state." Then, when you are ready, you tell yourself what to do and begin to change accordingly. Hypnosis can't make you go against your own will. Rather it is a way of helping you to hear what your will is saying.

The basic procedure for self-hypnosis is as follows: (approximate time: 20 minutes)

1. State (perhaps in writing) your purpose.
2. Get into the hypnotic state.
   Relax--Close your eyes, lie down, let go.
3. Then, plant your suggestions. Talk to yourself in a soft but firm tone.
4. When your message has been inserted, wake yourself with confidence.

How to Criticize Painlessly

The need for assertive criticism often emerges in the realm of conscious problem-solving.

Here is a fool-proof method for telling yourself or someone else that something is wrong without fear of losing a friendship or of starting a battle.

The trick is to place the criticism within a context of positive reinforcements...just simple diplomacy.

1. BEGIN WITH TWO POSITIVE REINFORCEMENTS
   "You really are a well-seasoned traveler."
   "You have all of the best gear for hiking."
2. INSERT YOUR CRITICISM
   "I wish we could stay in step when we hike together."
3. ADD ONE MORE POSITIVE REINFORCEMENT
   "I notice that you can adapt easily to most things."
4. FINISH WITH A RAY OF HOPE
   "If we work on this together, I'm sure we'll be able to get harmony into our stride."

Now you try it!

How to Accept Criticism

It is easier to feel a discontent than it is to accept the challenge of constructively improving the situation. And it is also easier, as the old saying goes, "to give criticism than it is to receive it." Being "defensive" of our position, which we imagine to be under attack from outside, is wasted motion. But it is also far more normal than an outlook of receptive self-improvement.

Be abnormal. Instead of wasting time with defenses and soothing self-inflicted, imaginary hurts, get procedural. Accept the comments for further ANALYSIS and DEFINITION. If the criticism then seems appropriate, "try it on for size." If not, discard it as irrelevant and the matter is finished.

Creative problem-solvers are often faced with the additional problem of communicating what they uncover to others. If you recognize this to be the case, and if you have wondered what to do about it, here's a guide that could help you along.

COMMUNICATION involves translating a meaning or definitive message into a medium and through the environment to an intended receiver. The process is affected by many factors.

THE IMPORTANT DETERMINANTS OF A SUCCESSFUL COMMUNICATION SEEM TO BE:

YOU, THE SENDER (knowledge and attitudes)

YOUR ABILITY TO SHAPE AND SEND MESSAGES OF YOUR MEANINGS (skill)

THE QUALITY OF THE MESSAGE (substance and relevance)

THE MEDIUM SELECTED

THE ENVIRONMENT (external elements that facilitate or block the message)

THE RECEIVER (knowledge and attitudes)

THE RECEIVER'S ABILITY TO RECEIVE

Check these factors...

SENDER AND RECEIVER ABILITIES (Skills)

Experience, breadth or scope of practice
Preferences related to training
Physical handicaps
Mental blocks
Vocabulary
Awareness; ability to relate to other interests
Propensity to distraction (attention span)

SENDER AND RECEIVER

Age, personal relationship to each other, expectation based on experiences
Attitude and potential ramifications or consequences
Beneficial outcome: motives, values needs
Recent experience: uplifts, traumas, sickness, diversions, fatigue, anxiety, etc.
Habits, customs, rituals, taboos, prejudices, biases, assumptions
Education, travel experience, breadth of outlook
Influential aspects: idols, models, aspirations
Areas where influence can be affected
National, religious, racial heritage
Social attitudes, politics
Insecurities and strengths
Specific knowledge of message area
Concurrent focus of attention

QUALITY OF THE MESSAGE

Content: completeness
Relevance to receiver familiarity
Facilitates recognition
- clarity
- simplicity
- strength of stimulus
- orderly

CHARACTERISTICS OF THE MEDIUM

Potential for sensory stimulation
Appropriateness to message content
Appropriateness to sender's skills, knowledge and attitudes
Within ability of receiver to accept
Energy required
Symbolic characteristics
Speed
Noise (distraction) characteristics

THE ENVIRONMENT

Harmony with message and sender-receiver relationship
Noise (distractions)
- movement
- sound interference
- temperature discomfort
- threat to physical or mental security

Pressure to perform

Need PEP ?? try...

...consulting a professional trip consultant.

...maybe you need help with **DIET** planning or **PHYSICAL FITNESS**
see a nutritionist, physical therapist or physician involved with preventive medicine

...maybe you have a **HANG-UP** or mental barrier
try a psychologist or psychiatrist; visit a counseling center; call a trusted religious leader, or simply dial your local HOTLINE number

...maybe you need other **SPECIALIZED** help
the local police? city administrators? consumer protection agency? women's or minority organization? librarian? credit union? bank manager? building code? a toll-free (800) telephone call to another part of the country??

Wiring Diagrams

Attempting to find direction, pattern and order is a constant task. All of us carry some "rules of thumb" along with us on our day-to-day problem journeys, using them as basic frames of reference to help us cope with new experiences or for categorizing and retranslating familiar experiences. They help us get a better hold onto reality as we attempt to organize the many bits and pieces into a manageable form.

A commonly used and familiar example of a WIRING DIAGRAM is to know that the sun rises in the east and sets in the west. When the sun is visible such knowledge therefore becomes valuable as a substitute for a compass. It acts as a clock; it allows us to regulate physical comfort, becomes a guide for planning, etc.

WIRING DIAGRAMS are universal relationship finders; they simplify analysis. R. Buckminster Fuller reminds us that the only true specialist is the generalist and suggests beginning with a good engineering handbook. We suggest that you start by recording those you already use. Start filling your personal bag of generalized principles as soon as possible.

THE BASIC ABSTRACTION FOR THE CREATIVE PROBLEM-SOLVING PROCESS:

ANALYSIS	CONCEPT	SYNTHESIS
Take it apart	Decide what it means	Put it back together

Some "wiring diagrams" we have found useful are given on the next pages.

THREE LEVELS OF HUMAN AWARENESS:

ATTRACTION	UNDERSTANDING	MANIPULATION
Become attracted	Develop a meaning	Apply your discovery

FOUR WAYS OF VIEWING THE FUTURE:

1. Things will go on as they are...but will increase in size and benefits.
2. Same as 1, but things will get worse instead of better.
3. Some marvelous inventions will turn our lives into a wondrous new existence.
4. The future is the result of our plans and efforts.

THREE MAJOR ASPECTS OF HUMAN EXPERIENCE:

SKILLS KNOWLEDGE ATTITUDES

or

What you can do, what you know, and what you believe. Education deals with effecting changes in behavior through developing skills, increasing knowledge, and clarifying attitudes. Education is experience.

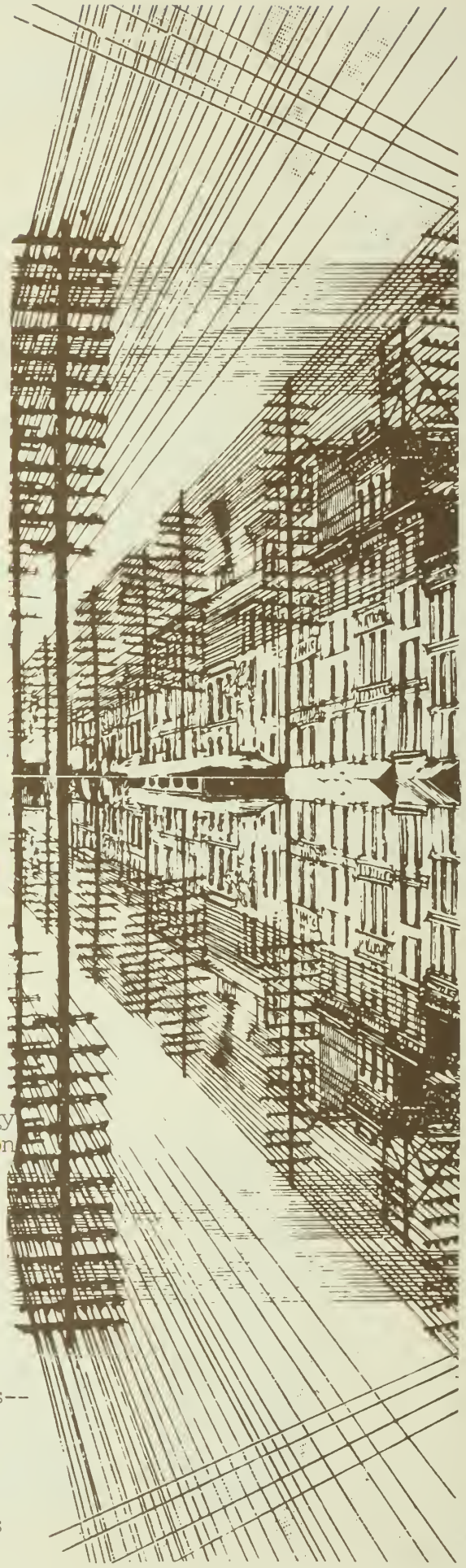
THREE STEPS TO SELF-CONTROL AND PERSONAL CHANGE:

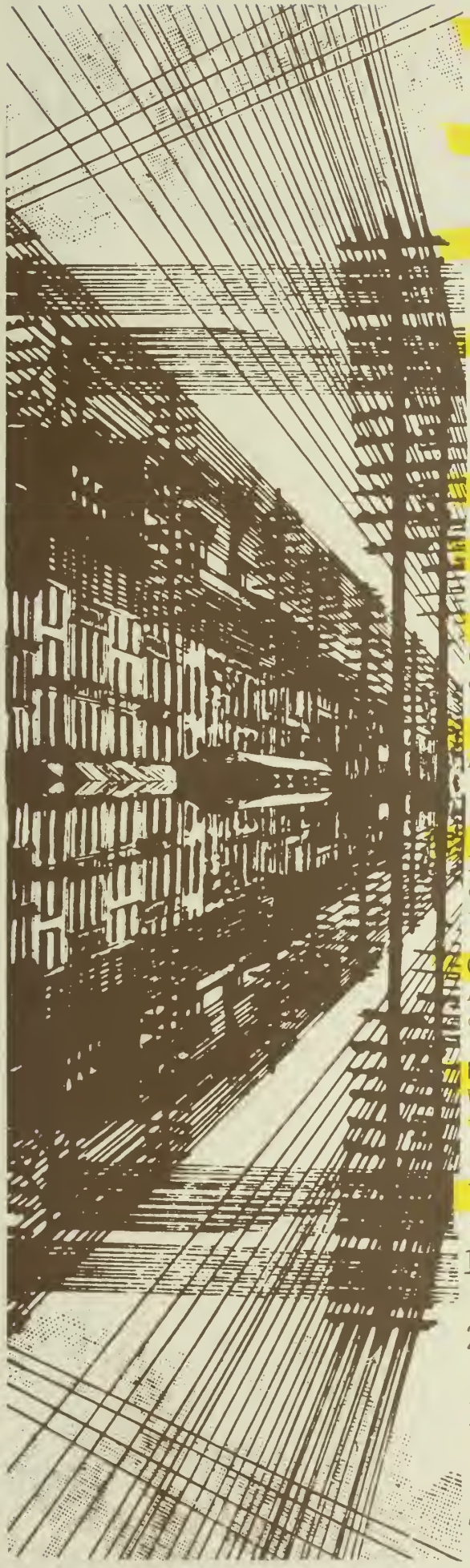
RELAXATION: giving yourself over to the process; not holding back; making friends with the situation (Acceptance)
IMAGINATION: using your ability to form images that vividly describe the changes you desire to occur; having intentional pictures of your dreams (Analysis)
CONCENTRATION: bringing your attention and energy to focus on your intentions; avoiding distraction (Synthesis)

GENERAL PRINCIPLES OF COMPOSITION or THE NATURAL WAY IN WHICH THINGS ARE PUT TOGETHER

The basic organizational patterns derived from Nature that can be applied to human organizations--

HARMONY
...defined as recognizable similarity among the parts of a whole...there needs to be a consistency of language or idiom in any synthesis intended to communicate harmony





CONTRAST
...defined as recognizable difference among the parts of a whole...the need for active conflict or difference to stimulate attention

BALANCE
...defined as recognizable equilibrium...the need for stability of interrelationships

ORDER
...defined as recognizable pattern of organization...the need for systematic operations

UNITY
...defined as recognizable wholeness or "oneness" ...the need for an undeniable totality

THE GESTALT RULES OF VISUAL ORGANIZATION
Clear visual perception requires--

SIMILARITY
Something alike about the parts of the whole

PROXIMITY
Close togetherness rather than wide apartness of the components of the thing being organized

CLOSED FORMS
All parts seen as complete and not partial, singular parts becoming wholes

GOOD CONTOURS
Enclosures and lines must not be so complex or amorphous as to be difficult to reform in the mind

COMMON MOVEMENTS
All parts should operate within the same organizational patterns

RELEVANT EXPERIENCE
We tend to see only that which we are programmed to see

THE BASIC DREAMS AND EXPECTATIONS OF MODERN SOCIETY:

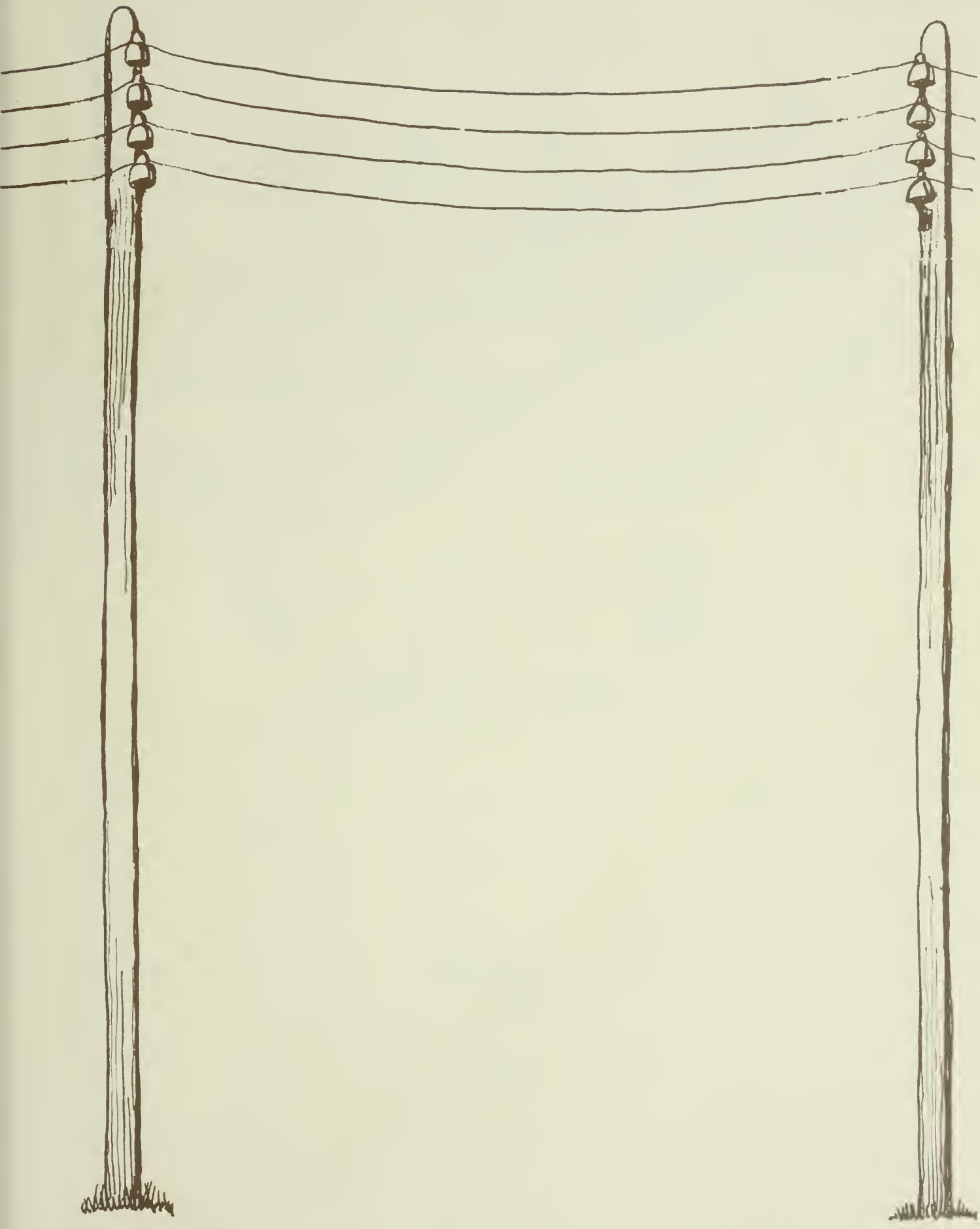
1. **TO BE ENGAGED IN CREATIVE WORK**--something that may be looked upon as constructive
2. **TO HAVE AN IMAGINATIVE LIFE-STYLE** and be considered by others as being unique
3. **TO HAVE A COMPLETE LOVE AND SEX LIFE**--a total experience of intimate human relations

and

4. **TO BE IN CONTROL OF SELF** rather than to be controlled by others

Wiring Ahead

Use these pages to begin your personal collection of "wiring diagrams." Begin with recording those you believe have potential for simplifying the journey to your special goals.



Wiring Back

If you have been learning to be more organized and creative while reading these pages, you should be anxious to do something "constructive" about one or more of your "discontents." If you'd like to tell us about how to improve some part of this book, we'd like to hear your thoughts. Write them down and mail them to us. (By writing your discontent you will also give yourself the opportunity to see whether or not your words are as good--or as bad--as your feelings.) We'll respond to all feedback.

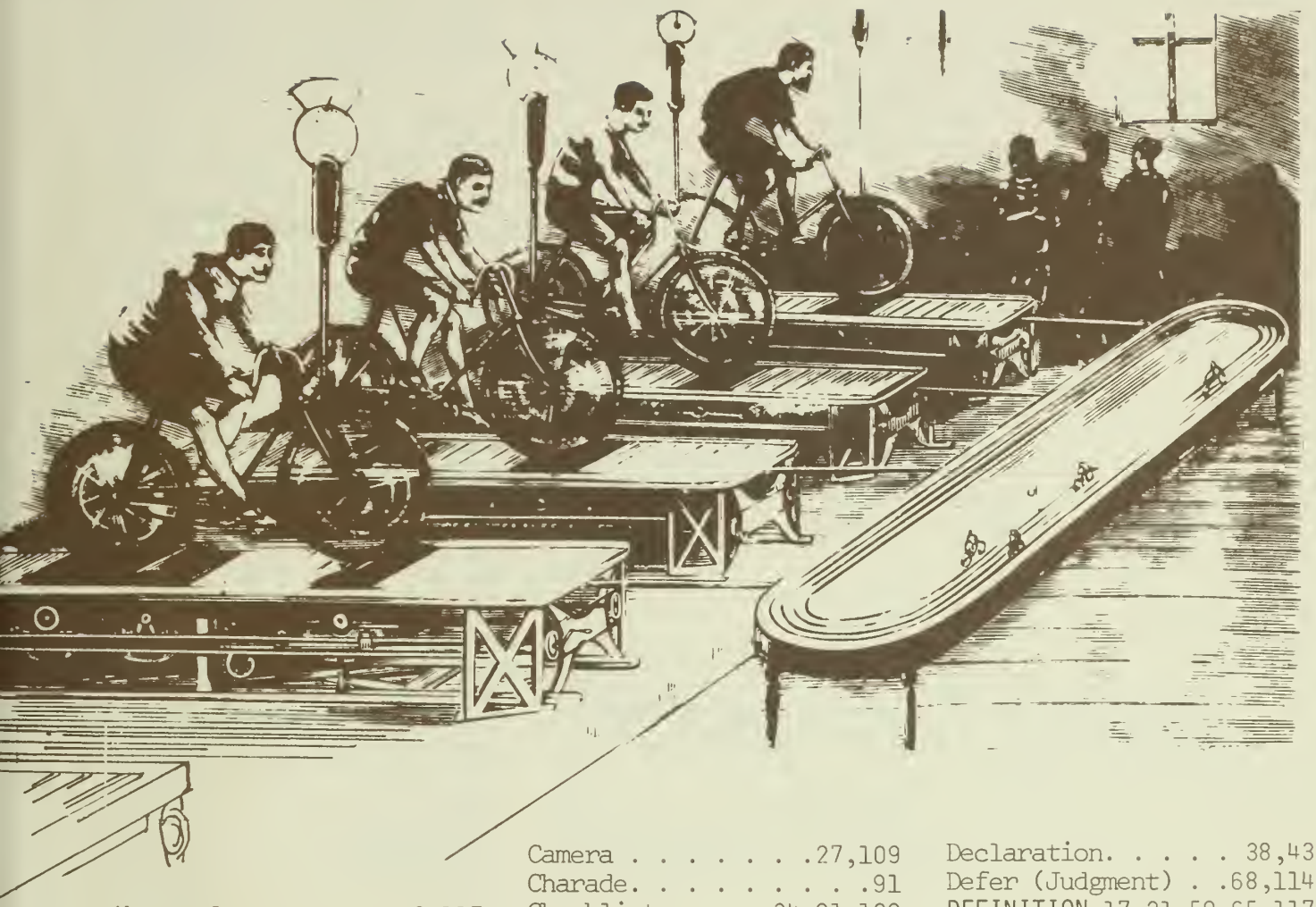
Send feedback to...

Don or Jim

SCHOOL OF ARCHITECTURE and
ENVIRONMENTAL DESIGN
SAN LUIS OBISPO, CA. 93407

Many readers have asked us to send them an official UNIVERSAL TRAVELER button to identify themselves as creative problem-solvers. If you'd like one, too, send a self-addressed, stamped envelope to:

William Kaufmann, Inc.
95 First Street
Los Altos, CA 94022



INDEX

Be wise!
Plan ahead.

Avoid heartbreak or anxiety

at time for departure

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the
UNIVERSAL
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