

THE PSYCHOLOGICAL FOUNDATION – MENTAL MODELS

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1. OBJECTIVES:

Become aware of how our beliefs, attitudes and opinions affect our actions and results.

Learn about our three thought processes, the conscious, subconscious, and creative subconscious, and how they work to form our attitudes, as well as our self-image.

Become aware of some of our learning disabilities: filtering devices, leaps of abstraction, rationalization, lock-on, lock-out, cultural trances, and self-imposed limits.

Become more aware of the reasons people are different and see the value in the differences.

2. INTRODUCTION

The goal of this information is to empower you to increase your effectiveness. Some estimate that we utilize only one-tenth of our full potential, with our visible effectiveness similar to that of an iceberg.



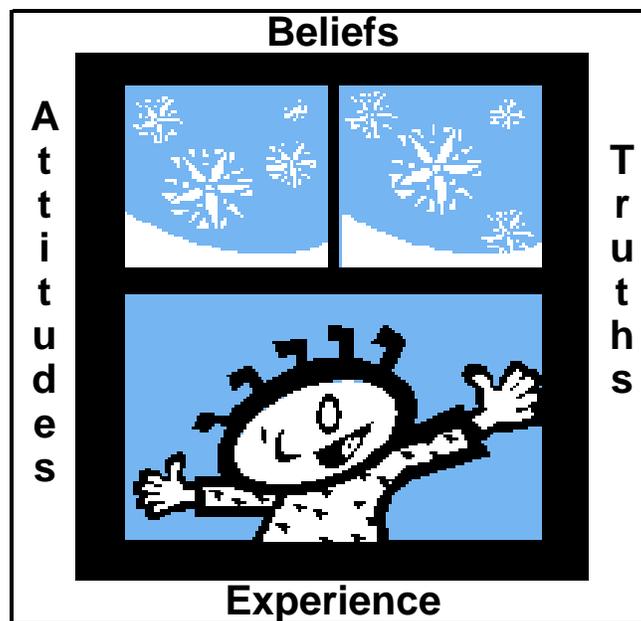
In order for us to grow, to change, to truly "realize our potential", we must first change some of our thinking. Most of us have accepted as fact the idea that some people are "born with it" while others are not. We have also accepted statements by authority figures as we grew up about the skills and potential we either did or did not have. Now we are learning we are all born with unending potential, and the only blocks to achievement are largely self-imposed.

Based on our past education and experiences in life, we have all been conditioned in a variety of ways. For example, we may eat certain foods and not others.

3. MENTAL MODELS

Mental models are powerful because they create the lens through which we see the world. The lens itself shapes how we interpret the world. Our mental models actively govern the way we see, and how the way we see determines our attitudes and governs how we behave, and how the way we behave determines our results, including our relationships with others. Mental models are inseparable from character. Being is seeing, because what we see is highly interrelated to what we are. To be most effective in achieving the results we want, we must therefore examine our mental models, the lens through which we see the world, as well as at the world we see.

Our mental models are attitudes, beliefs, opinions, "truths", theories (either simple generalizations such as "people are untrustworthy" or very complex theories), perceptions, assumptions, understandings, ways of interpreting data, mental maps of "the ways things are", mental maps of "the way things should be" (values), points of view or frames of reference. We see the world, not as it is, but as we are - or, as we are conditioned to see it, like looking through a window, conditioned by our beliefs, attitudes, "truths" and experience.



Many innovative ideas fail to be translated into meaningful strategic actions because these ideas are often at odds with the mental models prevailing in an organization. These mental models that hinder the acceptance of new insights are deeply ingrained internal images that managers working in a given organization tend to internalize unconsciously and often fail to adjust even

though they are no longer relevant in a rapidly changing business environment. Thus, there exists an imperative need to study the discipline of mental model management, which basically involves the conscious monitoring, testing and improvement of the internal images that can greatly influence the manner that an organization's managers perceive the business environment in which they operate.

A lack of implementation is not always the result of poor management. Rather, the process of adoption fails because the new ideas are at such variance with mental models currently accepted by the organization. More specifically, new insights fail to get put into practice because they conflict with deeply held internal images of how the world works - images that limit us to familiar ways of thinking and acting. That is why the discipline of managing mental models--surfacing, testing, and improving our internal pictures of how the world works-- promises to be a major breakthrough for building learning organizations.

None of us can carry all the complex details of our world in our minds. What we keep in our heads are images, assumptions, and stories. "The Emperor's New Clothes" is a classic story, not about famous people, but about people bound by mental models. The image of the monarch's dignity kept them from seeing his naked figure as it was.

Mental models can be simple generalizations, such as "people are untrustworthy," or they can be complex theories. But what is most important to grasp is that mental models shape how we act. If we believe people are untrustworthy, we act differently from the way we would if we believed they were trustworthy.

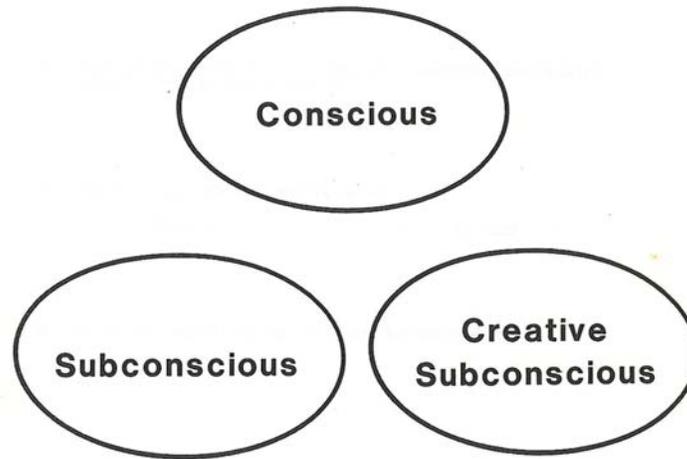
Why do mental models so powerfully affect what we do? In part, this is because they affect what we see. Two people with different mental models can observe the same event and describe it differently because they've noticed different details.

The problems with mental models lie not in whether they are right or wrong--by definition, all models are simplifications. The problems with mental models arise when the models are tacit--when they exist below the level of awareness. Because they were unexamined, the models remained unchanged.

4. HOW OUR MIND WORKS

Since we are a product of our thinking - "As we think . . . we react." - it is extremely important for us to understand our THOUGHT PROCESSES. The model we use to explain the complex operations of the human mind is a very simple, functional way of examining the "how" and "why" of our mental process - of how our mind works. Keep in mind that this model is simply that, a model, a simplification of the real thing. It may not be completely true, but it helps us to understand a complex subject.

The mind works on two different levels - THE CONSCIOUS and THE SUBCONSCIOUS. The subconscious level of your mind is also divided into what we will call the SUBCONSCIOUS and the CREATIVE SUBCONSCIOUS.



1. **CONSCIOUS:** The conscious part of the mind perceives the world, or your reality, through the sensory input of the five senses and maintains adequate contact with "reality". It is the rational function of your mind that investigates and interprets reality. The conscious mind is the bit that thinks and knows, the voice in your head. It's the bit that, in a wonderfully arrogant display of ego, thinks it's you. It's wrong, by the way.

The CONSCIOUS has four functions:

- A. **Perception:** We perceive the world through our senses and we gather input and data based on our personal interpretation of this reality. Unfortunately, as you will learn with the "F" exercise later in this module, our perception is **not** always complete or accurate.
- B. **Association:** What we perceive is then associated with our past experience "data bank" stored in our subconscious. All new information received is immediately associated, "Have I seen anything like this before?" with our accumulated storehouse of perceptual impressions.
- C. **Evaluation:** After we associate what we perceive, we evaluate it with reference to its associations for us. We want to know: "How does this new information compare with what I already know?"
- D. **Decision:** Lastly we "DECIDE" on a course of action, reaction, or inaction based on our immediate needs and goals.

2. SUBCONSCIOUS:

The subconscious works in the background and drops feelings, instincts and impressions into the conscious mind. It's also very gullible. In fact, it's completely incapable of recognizing a lie. It simply cannot comprehend the idea in more or less the same way that we can't imagine a seven dimensional cube. It is a completely and utterly alien concept, like tax forms.

And so it believes everything. *Everything.*

So, it'll make you cry when you're watching a sad movie, or make you angry again if you

remember the argument you had yesterday. You'll cringe when you remember that time everyone laughed when you said *exactly* the wrong thing, you'll be terrified of a nightmare, and you feel pride when you remember the first story you had published. That's all because the subconscious isn't aware that all of those things aren't happening. As far as it's concerned, it's all real.

The subconscious part of a mind believes all input, so this is why a movie can make a person cry, because your subconscious has been fooled into believing there is something of relevance to feel sad about (hence the importance of suspension of disbelief). The subconscious is also trainable to do tasks for you, and soon gains control of repetitive actions so that a person can do them without thinking, such as typing, walking and communicating.

The subconscious also does a massive amount of background processing in support of the conscious mind and is incredibly powerful. While most people would have difficulty with physical formulae as applied to objects in flight in an environment with gravity, the subconscious can do that same math so fast that by the time the ball's reached you, your hand is right there to catch it. (Warning: Results may vary.)

And the subconscious does a awful lot of work all the time. As I'm sitting here typing, I know pretty much what I want to say and roughly what order it should be in but I certainly don't have the entire document planned out word for word, or even paragraph for paragraph in my head. I don't think about every word I type, or even every sentence. Heck, for the most part, I just sit here and the words roll out from under my fingers. My conscious mind controls the general direction of what I'm typing but the specifics - the language used, writing style, the grammar, the spelling and so on - I don't have to think about at all.

Do you think about walking or plan every step? Do you concentrate on your driving? Do you do the math in your head to catch that ball? Do you think about where each finger needs to go when you touch type?

You *used* to. Back at the beginning, when you were first learning you did, you had to concentrate pretty hard. However, as you do that, your subconscious is watching carefully and trying to work out the rules of what you're doing as well as what you want to achieve out of it. It will create a new program based on your experiences and then refine it. Eventually, it will be able to take over and you'll be able to do the task "without thinking".

Because the subconscious is a dominating factor in all aspects of life, and also gets trained by a person's actions, it becomes important to create the subconscious 'programs' that help one succeed, rather than programs that lead to failure.

It's also a matter of learning to *trust* the program your subconscious makes. There was a time when I was learning to type when my fingers knew exactly where to go but only if I wasn't thinking about it. As soon as I thought about it - usually after about thirty seconds - I would become unsure because I'd be relying on my conscious mind and memory, neither of which is terribly good at small details like key placement.

And the more you do this task - walking, typing, catching a ball - the more refined the program becomes. Every time you get it wrong, the subconscious will adjust things slightly and try again. However, after the program has been working for a long time, it becomes entrenched and hard to change (hence the saying about old dogs and new tricks). Fun fact: It is actually impossible for

an astronaut in space to catch a ball thrown at him. He automatically compensates for Earth's gravity even though it's not there. He can't help it. It would take a lot of practice for the program created by the subconscious to realize that, hang on, it's not working any more, and that, hmm, we might need a new one...

Note: The term "subconscious" is used here to refer to both the subconscious and the unconscious mind. This isn't technically correct but the two terms often confuse people and the difference between them is actually not important here. There are no sharply delineated conventions for distinguishing exactly between the nonconscious and the subconscious -- partly because they interact with each other, and partly because, as is so often the case, psychologists are unable to agree on the definitions.

There are still fundamental disagreements within psychology about the nature of the subconscious mind (if indeed it is considered to exist at all), whereas outside formal psychology a whole world of pop-psychological speculation has grown up in which the unconscious mind is held to have any number of properties and abilities, from animalistic and innocent, child-like aspects to savant-like, all-perceiving, mystical and occultic properties.

- A. The subconscious mind **RECORDS** and **STORES** our interpretation of reality. Just like a video tape recorder, or a computer data bank, it records and stores perceptual data and information. This automatic (subjective, sensory, and emotional) recorder has been operating even before birth and it has recorded all our experiences, what we think about these experiences, what we say to ourselves in relation to these experiences, what we imagine about ourselves in these experiences, and our emotional reaction to these experiences.
 - B. A second function of the subconscious is to handle **AUTOMATIC FUNCTIONS** (your heartbeat, breathing, circulation, digestion, assimilation, etc.) and **LEARNED AUTOMATIC FUNCTIONS** (behavior like tying your shoe, walking, driving a car, golfing, playing a guitar, multiplication tables, etc.). All of these activities begin on the conscious level, then through repetition, repetition, and more repetition are eventually turned over to the subconscious level and become habits. We refer to these behavioral habits as "**FREE FLOWING**" operations because we do not have to consciously think about them before doing them.
3. **CREATIVE SUBCONSCIOUS:** The creative subconscious has three functions:
- A. The creative subconscious **MAINTAINS YOUR SANITY** by making you act like the person you **SEE YOURSELF TO BE**. This reality or picture is based upon your currently dominant image of the truth and reality as you recorded it from your **SUBJECTIVE** interpretation of the world. In order to keep your sanity, you must act like your subconscious picture of the "**REAL**" you. For example, if you see yourself as a poor public speaker, your creative subconscious will cause you to stutter, stammer or be nervous during your speech. In effect, your creative subconscious keeps you acting in a consistent manner with your subjective subconscious picture. Based upon the situation you are in, that action may be positive or negative.
 - B. The second function of the Creative Subconscious is to **CREATIVELY SOLVE PROBLEMS**. Just like a built-in file clerk, the creative subconscious scans the stored data bank

of information in the subconscious to piece together "seemingly" unrelated information into possible answers and solutions.

Many persons consistently avoid potential growth challenges. As a result, they tend to remain in one place. Deliberately giving your creative subconscious challenges to solve causes solutions to be worked on without "conscious" effort and this is what so often results in an "ah ha" experience.

- C. The third function of the Creative Subconscious is to **PROVIDE PSYCHOLOGICAL DRIVE & ENERGY** to resolve conflicts or to accomplish goals. When it senses a problem or obstacle in the way of your goals, it provides great drive and energy to find answers and solutions. The process works like this. The challenge (problem) that is presented to the creative subconscious causes dissonance or disharmony - in other words, tension. In order to regain psychological harmony and get rid of the dissonance, we work towards finding a resolution.

Cognitive Dissonance (thought conflict) is the uncomfortable psychological condition that is created when a person experiences contradictory or conflicting opinions, beliefs, or attitudes at the same time. It is possible to hold different attitudes without emotional disharmony as long as a situation does not occur in which these attitudes are brought into direct confrontation. Generally, when people are placed in new and unfamiliar environments or situations, a change in behavior or a modification of an attitude is necessary to lessen or eliminate the psychological dissonance. A person must always seek to maintain a psychological balance by attempting to get things to logically fit together inside himself. The most common way to relieve dissonance is through rationalization.

A **rationalization** is the kind of thinking people use when they attempt to explain their thinking or actions in terms of "logical" and "justifying" reasons for their opinions or conduct. In order for a person not to look ABSURD, he will gather people and information that give support to his opinion or justifies his conduct.

Example: When a person buys a new car they will subconsciously only see the good features of the car and its performance; they will lock out all the poor features and problems experienced in its performance.

Before a person makes a commitment or decision, he will usually go through a stage where he explores and evaluates the over-all situation. During this time, he will usually be open to new information and experiences. Once he makes a decision or commitment, however, he will begin to gather only people and facts that make him "look good" for believing and acting as he did.

Based upon the strength of the individual's decisions or commitment, an additional condition may occur. Following shortly after the decision may come a period of "post dissonance" during which time the individual will question the validity of the decisions. Post Dissonance is also known as "buyer's remorse".

Once a person locks-on to an attitude, it is very difficult for him to see or appreciate the other person's point of view. He constantly seeks verification for his decision by gathering information that makes him feel good about his decision. When he encounters shortcomings or faults in himself or his belief, he will rationalize these objections or simply repress them and not deal with them on

the conscious level. Our mind may even distort data to fit our mental models

Be aware that your Creative Subconscious is tremendously powerful! It can work for either destructive or constructive goals for it does not pay attention to whether or not you are acting in your own best interests - it works **impersonally** to bring into reality your subconscious picture, regardless of your TRUE POTENTIAL.

Whether you believe you can, or believe you can't, you're right. Henry Ford

The creative subconscious does far more, however. The creative subconscious is the entire psychological basis of every professional sports training regime in the world. It's used by every successful person whether they know it or not. It's the principle behind brainwashing, voodoo and it's something that's easily powerful enough to kill you. Or, indeed, save your life. You may have heard that healing is 30% mental. The creative subconscious is why.

The creative subconscious quite simply contains an image of who you believe yourself to be. That's all. The personality programs are part of it, but it covers everything from health to skills and talents. The creative subconscious will also adjust this image as it learns new things about you.

There are two things that make it so ridiculously dangerous and so incredibly useful.

The first is that if you don't correspond to the image that the creative subconscious has of you, it will make it so you do. If you believe yourself to be bad at math, it will actively sabotage your efforts to make damned sure you are. Conversely, if you believe yourself to be good at math, it will pile every mental resource it has available into making sure that comes true as well.

Sports coaches all over the world know that in order to make someone achieve his or her best, you have to convince them that they *are* the best. Then the creative subconscious will kick in and help make it true. In fact, any successful people are usually successful because they believe in themselves and in their ability to do what they're successful at.

We tend to think that skills are in-built, that talent has an upper level, that you can get so good and no better and that if you're bad at something, well, that's that. It's true, to an extent, but not to the extent that people believe. Once you get your creative subconscious on your side, you'll find you have more talents than you thought and that "this good and no better" becomes far better than you thought it could be.

It's hard to explain exactly how ridiculously powerful it is but the best examples are found on the negative side, when you believe the worst and the creative subconscious makes sure it happens.

For example, a man once died of hypothermia after being shut in a refrigerator truck. Sounds reasonable until I tell you that the refrigeration wasn't even turned on and the temperature inside, while cool, wasn't cold enough to kill. He died of hypothermia simply because he believed he was going to die of hypothermia. He was shivering, he went numb and he died, all in a room temperature environment. You could do it yourself right now if you wanted. You could sit in your computer chair and will yourself to death.

The one limitation is that you cannot be killed instantly, simply because there's no time for you to convince yourself you're dying.

The creative subconscious is also the reason voodoo works. Leave a doll with a pin in the leg on the porch of someone who believes in voodoo and they *will* get a sore leg because they'll convince themselves that they do. It's real pain, but generated by the mind. Similarly, give a man a placebo and he might just convince himself into health. In a way, it's a shame we stopped being so superstitious. It has its uses.

The second and most powerful thing about the creative subconscious is that, like the rest of the subconscious, believes *everything*. Everything you hear, everything you see, everything you think.

If the creative subconscious can turn you into what it believes you to be and if it also believes everything it hears... that means that other people can convince you that you're something you're not. Yeow!

5. BLIND SPOTS

A little knowledge, sifted through a biased mindset, may be misleading. A "**scatoma**" is defined as "a blind spot, an inability of insight into" a certain subject. That is, a personal bias prohibits an otherwise reasonably intelligent person to see the forest of reality through the trees of bias, disinformation and propagandist illusion.

Because of our conditioning, we build "blind spots". A blind spot is an automatic sensory locking out of the environment. We develop blind spots to the truth about the world and ourselves because of preconceived ideas, "flat worlds", and conditioning. This causes us to:

see what we expect to see
hear what we expect to hear
think what we expect to think

The result is we often develop blind spots to the "TRUTH".

Why a motorist notices a sign or anything while driving has psychological implications. It has to do with what is called "pay-value." If something has value to them, they will see it.

Here's an exercise that will illustrate my point. Please read these three lines and then count the total number of "F's" in all lines. No tricks-just read and count how many times the letter "F" appears in these lines:

**FINISHED FILES ARE THE RESULT OF YEARS
OF SCIENTIFIC STUDY COMBINED WITH
THE EXPERIENCE OF MANY YEARS.**

Did you count three? Then you are like four out of five people who only see three. There are more! Look again. Still see only three? Then count the "ofs" in the three lines. Amazing, isn't it? A total of six "Fs" right in front of you and you missed half of them.

This happens when a "scatoma" causes you to visually lock out something that has no value to you. In this case you are looking for an "F," but you read the "of" as "ov" instead. People tend to overlook the F's in "of" because it is consistent with how we pronounce the word. In other words you can look right at something and not see it.

Our thoughts dictate what we allow to come into our sphere of awareness and therefore what we experience. They create the framework around which we experience the world. Scientists talk about what is called a scatoma - a blind spot where we cannot see something although it may be right in front of us. By consciously changing our thoughts and beliefs - the things that dictate our life or at least our experience of it, we can change what we manifest in and as our lives. We can change what we see. We can shape the vessel of our consciousness to receive a very little or a lot, to manifest fear and lack or prosperity and love. Choose wisely. You are more powerful than you know.

6. FILTERING DEVICE

The human mind is only able to process a certain amount of information effectively in any given period of time. Since the information input is almost always more than we can deal with we become "deletion" creatures. In other words the mind prioritizes input consistent with your present circumstances and mental state. The part of the brain that handles this work is called the "reticular activating system" and its primary purpose is to screen out unwanted/unneeded information. One of the ways it accomplishes its task is by creating a state of "selective blindness" or a "scatoma".

A "social scatoma" or "cultural trance" is a condition that exists when a whole group of people believes or fails to see something. An example of a cultural trance was the widely held belief prior to Columbus's trip to the Americas that "the world is flat". Columbus had difficulty in obtaining financing for his ships, and in convincing a crew to sail "around the world", which would be impossible on a flat world. Today we still have difficulty with "flat worlds," except now the erroneous assumptions you may make and accept might be about your business and its customers. Those assumptions have a tendency to stifle creativity and the achievement of your profit and personal potential. Another more recent example of a social scatoma is to the extent that the holocaust was allowed to occur without objection from many people who refused to see it. Darfur is a current example.

The Reticular Activating System (RAS) is the part of your brain that keeps an eye out for things that are important to you. It's the bit that, for example, will spot a familiar face in a crowd or hear your name when it's said in a noisy room. It focuses your attention sharply on that event simply because it's important to you.

It's why you'll wake up in the middle of the night if there's an odd noise but you'll sleep through your own (or your partner's) snoring. The noise is important - it may be critical to your survival to react to it - but the snoring is completely irrelevant. But, if you get up and find out the noise is the garbage men outside, suddenly you know it's safe and unimportant and that noise will probably not bother you again. Not after your RAS gets the idea, anyway. It can take a couple of times.

Mothers are, of course, finely attuned to the sounds of their babies. Fantasy books are rife with the professional fighter who's a "light sleeper", such as one of the Sacketts in Louis Lamour westerns. Make the wrong noise around them and they'll have a knife to your throat before they've realized

they're awake.

Your RAS will also help you get what you want. If you decide one day to buy a new house, you'll find that you'll suddenly notice all the "For Sale" signs on your way to work. They were there the previous day, of course, but they weren't important then. That's your RAS helping you out. In fact, it's a very powerful problem-solving tool. Even if you have no idea what the solution may be, the RAS will keep a look out for any opportunity that might help you. Just be careful not to give up because you think the problem is insurmountable. Give up and so will the RAS. Want the solution, and the RAS will find a way. That's its job.

Our senses place a natural limitation on our awareness. Our ability to perceive the world is controlled or limited by our sight, hearing, smell, taste, and touch. We can increase or augment our sensory awareness by using mechanical and electronic devices to aid us, for example: using glasses, microscopes, telescopes, hearing aids, and various other sensory heightening devices.

On the other hand, we could not tolerate total or absolute awareness of all stimuli in our environment or we would be bombarded by thousands of sensory messages constantly. Our system simply cannot handle this flood of sensory information. Some kind of data-reduction, or filtering out of sensory data is necessary for us to function normally. One of the greatest controlling factors of our awareness is a group of cells in the brain which monitors sensory messages to the brain. It is a natural filtering device that allows only "**personally profitable data or information**" and "**threats**" to get through to us.

This filtering device screens the thousands of sensory messages, like a switchboard operator, and allows only the messages or information that have **Pay Value** (something which I determine has value or personal profitability for me), and **Threats** (physical harm or psychologically damaging statements) to be perceived and understood.

Examples of Pay Value Information:

- A. A mother can sleep through all kinds of non-essential noise (noisy outside traffic, television, etc.) but she immediately awakens when she hears even a slight whimper from her sick child in the next room.
- B. You are at work in an airport with constant information being given over the public address system, yet you don't notice any of the messages until your name is associated with them.
- C. You are walking down a busy downtown street on your way to work. As you are walking you don't notice the noise of the traffic until you stop at the corner to cross the street. Because this now becomes a physically threatening situation your filtering device alerts you to all the information you need to safely cross the street.

The filtering device is a powerful tool for opening up your awareness of yourself and the world around you. Understanding this concept is essential to attaining goals because each of us must first know "what I want", before we can become aware of "how to get it". By determining what has pay value to me **FIRST**, I allow my filtering device to automatically let in information and data that is relevant and important to achieving my goal. Thus, I can increase my own awareness of valuable **opportunities** and **information** by making certain that I first know **EXACTLY** what I want.

Getting a clear picture of exactly what you want is the key to opening your filtering system to valuable information. In order for you to make use of this powerful concept, specifically determine what it is you want or desire in all of the areas of your life - then the relevant and important information and opportunities will get through your natural filter.

7. LIMITS SET

Besides flat worlds, other limits to what we can accomplish are the "barriers" we establish. These limits might be identified by such statements as: "No one has ever..." or "A woman has never held that kind of position ..." Fortunately, athletes are constantly breaking though barriers and reminding us that most of them are only temporary. The "FOUR MINUTE MILE" is one example. People are running faster, jumping further and higher, constantly setting new records which become new standards of performance.

Look at this sketch:



Now look at this sketch:



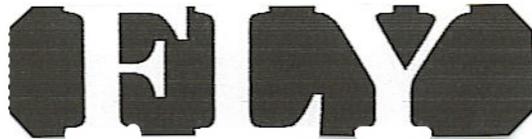
What do you see? A young lady or an old lady? Many cannot see the old lady in the picture because they have been conditioned by their experience of seeing the first picture to see a young lady. If, however, you had seen this next sketch, you probably would have been able to see the old lady:



“Nothing is so constraining as the shackles in our mind.” Source lost.

8. LOCK-ON, LOCK-OUT

What is the image below?



Study it closely. What do you see? Many people cannot see the word fly because it is in white, and we are used to seeing words in print in black ink.

As was discussed in the car and house buying examples earlier, we observe selectively. Our brain screens out or ignores facts, data or details that do not fit our mental models, and picks up on details that do. That is, we "lock on" conforming data and "lock out" nonconforming data.

New insights fail to get put into practice because they conflict with deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting.

Locking-on is not all negative. There is a very positive aspect to the locking-on process. High performance individuals use locking-on in a very constructive manner. As you lock-on to a project with real fascination, it helps you focus intently on the challenge at hand and to lock-out distractions.

9. “LEAPS OF ABSTRACTION” UP THE “LADDER OF INFERENCE”

We make leaps of abstraction, jumping from direct observation of concrete data to generalization without testing the accuracy of the generalization. Our conscious mind is ill-equipped to deal with large numbers of concrete details, so we categorize or generalize. We tend to focus on a limited number of separate variables at any one time. Our rational minds are extraordinarily adept at abstracting from concrete details - substituting simple concepts for many details and then reasoning

in terms of these concepts. But our very strengths in abstract conceptual reasoning also limit our learning, when we are unaware of our leaps from the details to the general concepts.

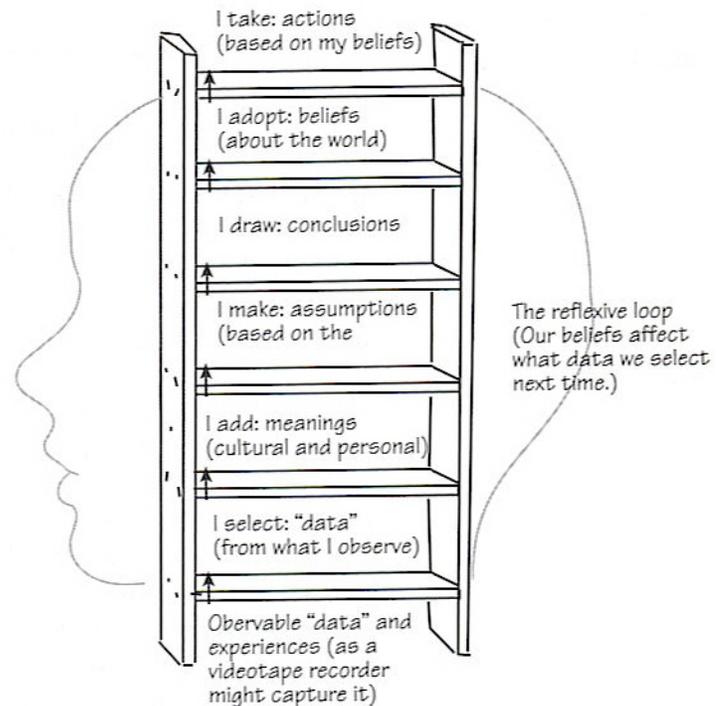
Our minds literally move at lightning speed. Ironically, this often slows our learning, because we immediately "leap" to generalizations so quickly that we never think to test them. The proverbial "castles in the sky" describes our own thinking far more often than we realize.

As shown in the figure, I go from observable data and experiences (bottom of ladder), to selecting data from what I observe, to adding meanings, to making assumptions, to drawing conclusions, to adopting a belief, to taking actions – all in milliseconds. Then, from what we learned before, we can then see how the belief we formed affects what data we select next time (the reflexive loop).

Simple examples of leaps of abstraction up the ladder of inference:

1. Jane hears her boss tell her, "Your performance is not up to standards." Jane observes the boss is chewing her out. Jane thinks her boss thinks her work is unacceptable, and further that he picks on her because she is a woman. She concludes that this boss should not supervise women.

2. The boss observes John enter the meeting at 9:20, despite the meeting starting at 9:00. The boss thinks that John knew exactly when the meeting was to start and that he deliberately came in late. He next thinks "John always comes in late." The boss concludes, "We can't count on John. He's unreliable."



Source of figure: *Schools That Learn*, Senge, et. al, page 71.

Source of example: *The Fifth Discipline Handbook*, Senge, et. al, page 245.

Leaps of abstraction are common with business issues. At one firm, many top managers were convinced that "Customers buy products based on price. The quality of service isn't a factor." And it's no wonder they felt that way-- customers continually pressed for deeper discounts, and competitors were continually attracting customers away with price promotions. When one marketer who was new to the company urged his superiors to invest in improving service, he was turned down kindly but firmly. The senior leaders never tested the idea because their leap of abstraction - that customers don't care about service, they buy based on price"---had become a "fact." As a result, they sat and watched while their leading competitor steadily increased its market share by providing a level of service quality that customers had never experienced and had therefore never thought to ask for.

We can spot leaps of abstraction by:

- First asking ourselves what we believe about the way the world works - the nature of

business, people in general, specific individuals or the specific situation at hand, and ask "What is the data on which this generalization is based?"

- Then ask yourself "Am I willing to consider that this generalization may be inaccurate or misleading?" ?" It's important to ask this last question consciously because, if the answer is no, there's no point in proceeding.
- If you're willing to question a generalization, your next step is to explicitly separate it from the data that led to its formation. Are there alternative interpretations? For example, you might say: "Paul Smith, the purchaser for Bailey's Shoes, and several other customers have told me they won't buy our product unless we lower the price 10 percent. Thus, I conclude that our customers don't care about service quality." This puts all your cards on the table and gives you, and others, a better opportunity to consider alternative interpretations and courses of action.
- Where possible, test the generalizations directly. . This will often lead to inquiring into the reasons behind your own and other people's actions. For example, if you are making a generalization about someone, inquire into the reasons behind the person's actions, by stating your assumption about the other person as a perception, citing the data upon which the assumption is based, and ask whether your assumption is accurate or whether there are facts that you are not aware of which would lead to a different conclusion. In other words, share your view and the data upon which it is based to see if others have different views and other data that should be considered.
- Be open to disconfirming data, because you are genuinely interested in finding flaws in our views. Be willing to be wrong.

These practices are useless, and perhaps counterproductive, if you are not genuinely curious and willing to change your mental model of a situation.

10. DIFFERENCES BETWEEN PEOPLE, THE VALUE OF DIVERSITY

Our perceptions or "mental models" have been formed by our experiences or social conditioning with our families, school, church, work environment, friends, associates, the media and the world around us. We might think of the subconscious like a blank canvas at birth. As we begin recording experiences we add a brush stroke to our picture of reality which we call the "truth". However, this picture of reality that is stored in the brain may not necessarily be the "TRUTH" . . . but only the "TRUTH" as seen in the eye of the beholder. Remember, we store not only the information of the experience, but also how we FEEL emotionally about the experience.

Thus, our picture of reality may be DISTORTED, INACCURATE, and PREJUDICED in comparison to an objective interpretation of our reality. We may not have recorded the "truth" about our world and our individual ability and potential. In any event, once we assume attitudes and opinions about ourselves, good or bad, we are stuck with them until we consciously decide to change them.

Because each of us have had different experiences, we each have different mental models. Because of peoples' different mental models, two people can see the same thing, disagree, and yet both be right. People see things differently from their own apparently equally clear and objective points of

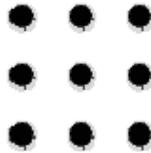
view. Sincere, clearheaded people can see things differently, each looking through their unique lens of experience. Two people can observe the same event and describe it differently, because they have looked at different details.

No two people have the exact same level of awareness of the world. This accounts for the uniqueness of each person - although we all perceive the same world we all **interpret** what we see differently. To the degree that my awareness is limited, my thoughts, habits, and actions will also be limited, and chances are, my limits will be different from yours.

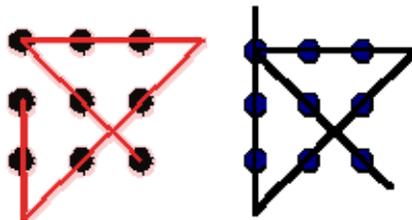
Diversity of opinion is valuable. Conflict can be healthy if handled constructively to jointly explore what is reality such that decisions can be made that are most likely to achieve the results mutually desired. Multiple mental models bring multiple perspectives to bear. Groups add dynamics and knowledge beyond what one person can do alone.

11. NINE DOTS EXERCISE

Below are nine dots or points. Can you draw four straight lines through all nine dots, without lifting your pencil from the paper and without retracing any lines?



Answer:



If you had trouble with this, don't feel bad. The success rate among undergraduates tested was less than 5%.

One reason that people find the nine-dot exercise difficult is that their prior experience in solving connect the dot problems is based in children's connect-the-dot puzzles. This experience is irrelevant to the knowledge that is needed to solve the nine-dot exercise.

Prior knowledge is the main resource that a problem solver can bring to bear on a problem. Prior knowledge creates unconscious biases that are not always helpful. The presentation of a problem can interact with prior knowledge, thus resulting in an incorrect and unhelpful encoding of the problem.

In general, prior knowledge can be helpful and productive when reasoning or solving a problem. However, when a problem solver faces a very unfamiliar or novel type of problem, there is no guarantee that prior knowledge will be relevant or helpful. Some problems activate seemingly

relevant prior knowledge which is not, in fact, relevant or helpful . To succeed, the problem solver must de-activate or relax the constraints imposed by the more or less automatically activated but unhelpful knowledge. To understand human performance on an insight problem, we should therefore try to identify the particular prior concepts, principles, skills or dispositions that constrain performance on that problem. We may need to “unlearn” something to solve a new problem.

The most frequent difficulties people have with this puzzle is that (1) people are disposed to turn on a dot, as opposed to turn on a point on the paper where there is no dot (a non-dot point) and (2) they try to draw all the lines within the dots and they do not initially want to draw lines outside it because:

- There is nothing outside the set of dots to associate to. There are no dots to join a line to outside the puzzle so they assume a boundary exists.
- It is assumed that going outside of the 9 dot square is outside the scope of the problem, even though the problem definition does not say you are not allowed to. They impose constraints on themselves that were not stated. This is where the expression “thinking outside the box” originated.
- You are so close to doing it that you keep trying the same way but harder.

Lessons to be learned from this exercise

- If a problem definition is wrong, no number of solutions will solve the real problem.
Therefore:
 - Look beyond the current definition of the problem. Analyze the definition to find out what is allowed and what is not.
 - Look for other definitions of problems.
 - Do not accept other people's definitions of problems. They may be either wrong or biased.
- Investigate the boundaries
 - Are there any real rules to the problem anyway? (especially valid in human related problems - there are only perceptions, not physical rules)
 - What are the boundaries which the solution must fit into?
 - Are the boundaries your own perceptions or reality?
 - What are the possibilities if you push the boundaries?
 - What are the benefits of small boundary changes?
- Hard work is not the solution. Repeating the same wrong process again and again with more vigor does not work. You can be very close to a solution while not getting any closer to it. Thought is the solution, physical hard work will not work.

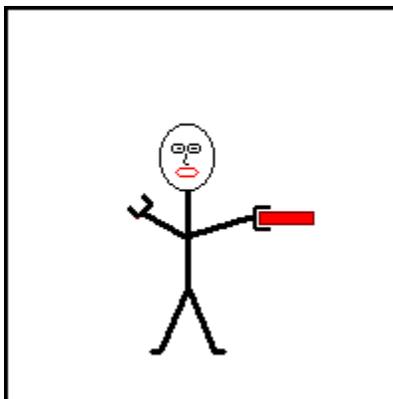
Most people struggle with the nine dot exercise for a long time, and after much frustration, conclude that it is impossible. There is no solution. Many experience the same futility about war, the nuclear threat, terrorism, and ethnic conflicts. Like the nine-dot exercise, they seem impossible to resolve. A common answer is that we haven't tried hard enough, so it's necessary to do more of the same -- more show of force, retaliation, "sending a signal", using threats and coercion, building new weapons systems, stirring up more fear of the enemy. No matter how hard we try, it seems impossible to solve the problem.

What prevents us from seeing a solution is that we limit ourselves by thinking in old ways that don't work. When they fail, we say it's impossible, or blame the parties. We are so boxed into our usual ways of operating that we don't realize where we can look for a solution.

Most strategies we used in the cold war with the Soviet Union, such as deterrence, counter-terrorism, and other forms of violent force, are comparable to our staying inside the box in the nine dot exercise. For example, arms negotiations or SALT talks were tried, as they remain locked into a framework of assumptions about enmity and a militaristic approach to problems. All words and actions occur in the context of a competitive relationship. Everything is interpreted in an environment of mistrust. By contrast, a friendly visit to China with ping-pong diplomacy, a joint space venture, and Gorbachev's unilateral initiative to withdraw from the nuclear arms race that ended the Cold War "outside the box" thinking, since they altered the basic nature of the relationship and all of the assumptions about that relationship. It allowed for new and different interactions to occur. The Berlin Wall fell, and soon thereafter the Soviet Union was dissolved. The threat of a massive nuclear war subsided.

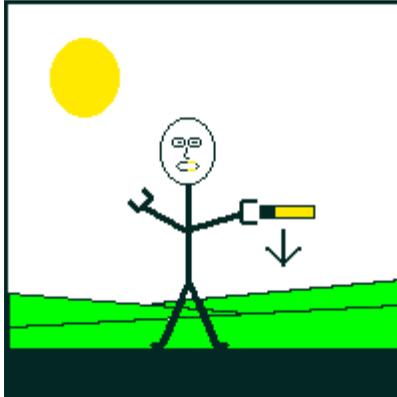
12. "DROP THE BLOCK" EXERCISE

Look at the picture below which shows a person holding a block of wood. Now, what will happen to the piece of wood when the person lets go of it?



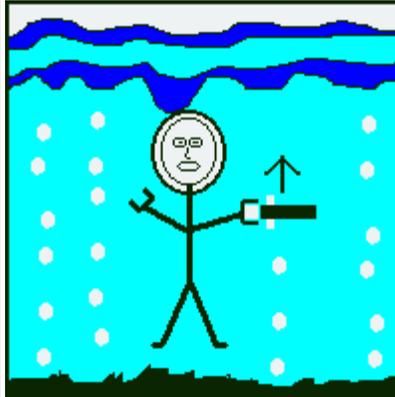
Answer: It depends on where the person is and the environment they are in:

If the person is on earth ...



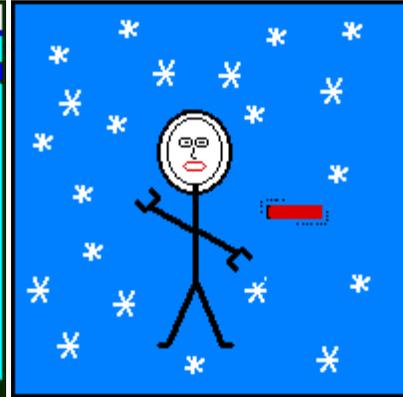
The block of wood will drop **DOWN** to the ground as it is drawn to earth by gravity.

If the person is under water ...



The block of wood will float **UP** to the surface of the water because it is less dense than water.

If the person is in space ...



The block of wood will **NOT MOVE** because there are no overall forces in any direction.

Inevitably, the most common answer is that the block of wood will fall **DOWN** to the floor. While this answer **IS** the most appropriate answer for common living, this puzzle shows how easy it is to give the most obvious answer first and to ignore alternative possibilities. It's so easy not to consider the context of the problem. Different situations need different answers. You are probably already living in a different world from the world which existed yesterday. How have you changed your view of life to take the changes into account? (But note, remember that on a practical level you must always accept that we will never know everything and that we are here to learn and enjoy the process of learning.)

A graphic example of this type of assumed thinking is demonstrated by the question, “What will happen when a woman walks out of her home dressed normally in a smart jacket and skirt?”

The answer depends on where she lives in the world. What is considered acceptable and normal in one country can be quite different in another. In many countries, the woman will be respected by society because she is working hard in an office, the assumption being that she is contributing to the economy. In other countries, she will be committing a sin of showing parts of her legs and could be stoned to death!

We see the world from our own perspective which is influenced by the closest world around us. Try to escape that mindset and explore other possibilities which will improve your current world.

Lessons to be learned from this puzzle

- **We do not see the world as it is, we see it as we are.**

- **Think about the current situation before answering**
 - If you see the world from only one angle you will struggle to change it.
 - What assumptions have you made?
 - What rules have you assumed?
 - How do your own perceptions influence the world you inhabit?
 - How do you see the world and how is your view different to that of other people? What advantages and disadvantages are there of each way of thinking?

- **How can you think differently?**
 - Imagine the problem from someone else's angle.
 - What happens in other countries/cultures/companies?
 - How can you change the situation to make a solution work?
 - Visit or read about other people's lives and try to understand why they think in the way they do.

13. SO WHAT?

Most of the time, our habitual behavior is good for us and helps us function in an efficient manner. But some habits stored on the subconscious level can also be barriers and obstacles to our need to change and adjust to new situations and experiences. To the extent that we have been conditioned or programmed to think and act habitually, we may fall into the "TRAP" of trying to use OLD and IRRELEVANT habit patterns to deal with new experiences and challenges. Have you ever wondered why doing new things causes anxiety and stress? Old and inappropriate habits, attitudes, and opinions are very often the reason why individuals of any age fail to keep growing as persons, and the reason that adjustment to a new environment, vocation, personal situation, or intellectual challenge is so difficult. To the degree that old habits, attitudes, and opinions LOCK-OUT new options for growth, change, and progress, they hold back a person's growth and are a limiting factor in developing and utilizing one's potential. In short, many events or situations over which we have no control will have an impact on our efficiency because of our present habits.

The problem is not really whether mental models are right or wrong, because by definition, all models are simplifications. The danger of our mental models is that their accuracy is rarely questioned; that we are usually even unaware that we have them. We simply assume that the way we see things is the way they really are or the way they should be. Because we remain unaware of our mental models, our models remain unexamined, and because they are unexamined, the models remain unchanged. As the world changes, the gap between our mental models and reality widens, leading to increasingly counterproductive actions. Therefore, the question is not whether the mental models are right or wrong, the question is whether they, and the actions they generate, are effective in getting the results we want.

An action or behavior pattern may work in one circumstance but not necessarily work in another.

We repeat behavior patterns, even in inappropriate circumstances, because they worked at some time in the past, either for us, or for someone we love or respect and wish to emulate. The behavior pattern is based on our mental model for achieving the result that was achieved in the past which we wish to replicate. When an attitude or behavior seemed to work for us once or seemed to work for someone we admired, we cling to it. We keep using it - even when it seems not to work anymore.

Unfortunately, the situation is never exactly the same as it was in the past, and the action may not be effective in achieving the results we want now. Mental models can therefore not be judged effective or ineffective until we not only know what the current situation is, but also know what we want to accomplish, what result we want to achieve.

The goal is to become more aware of the extent to which we are influenced by our experience, so that we can take responsibility for those mental models. I challenge you to begin the lifelong process of identifying your mental models, begin to examine them, test them against reality, listen to others and be open to their perceptions, and thereby get a larger picture and a far more objective view. The discipline of managing mental models - surfacing, testing, and improving our internal pictures of how the world works - promises to be a major breakthrough for personal growth and building learning organizations.

We need to learn how to change or to let go of ineffective attitudes, behaviors or emotions that are inconsistent with your overall purpose or Definition of Success so that significantly more of the results you want naturally occur - without going through a life-threatening crisis which causes you to suddenly see your priorities in a different light.

Results are the only indicator of your intention; results are 90% intention and 10% mechanism. A conscious intention may be overridden by unconscious intentions we are not even aware of. Therefore, if our results are not consistent with our conscious intention, we must examine our mental models to discover what is really governing our actions. There may be a difference between what we say and what we do. If we want to change situations or results, we first need to change ourselves, and that to change ourselves effectively, we first have to change our perceptions. To try to change outward attitudes and behaviors does very little good in the long run if we fail to examine the basic mental models from which those attitudes and behaviors flow.

14. REVIEW OF WHAT WE HAVE LEARNED IN THIS MODULE

Our beliefs, attitudes and opinions affect our actions and results.

We act and perform not in accordance with the truth, but only the truth as we see it.

Our past experiences, through our three thought processes (the conscious, subconscious, and creative subconscious) form our attitudes, as well as our self-image. Our subconscious records all of our past experiences and can greatly influence our perceptions, judgments, and decisions.

Our creative subconscious causes us to act in a way that is consistent with our beliefs.

Mental models are attitudes, beliefs, opinions, "truths", theories (either simple generalizations such as "people are untrustworthy" or very complex theories), perceptions, assumptions, understandings, ways of interpreting data, mental maps of "the ways things are", mental maps of "the way things should be" (values), points of view or frames of reference.

We see the world, not as it is, but as we are - or, as we are conditioned to see it.

We all have learning disabilities: leaps of abstraction, filtering devices, rationalization, lock-on, lock-out, cultural trances, and self-imposed limits.

Blind spots keep us from seeing the truths and the optional truths around us.

We make leaps of abstraction, jumping from direct observation of concrete data to generalizations without testing the accuracy of the generalizations.

Beneficial blind spots lock out unneeded and unnecessary information.

We have a natural filtering device in our brain that allows only the profitable information and "threats" to get through.

We sometimes rationalize to gain psychological comfort in the face of conflicting beliefs.

We lock onto things we are familiar and comfortable with and lock out other ideas or approaches.

A cultural trance exists when a whole group of people believes something, such as "the world is flat" or "no one can run a four minute mile".

We build barriers and restrict ourselves by beliefs we hold regarding what we and others are able to do.

People are different because of the differences in experiences we have had. The differences are valuable in collectively seeing a larger picture.

To develop and achieve excellence, we must think differently, see options, be open to new ideas, and recognize our untapped potential.