

FREE FIRST CHAPTER

MENTAL MODELS AT WORK

The Importance Of Mental Models In The Workplace

The 16 Most Valuable Thinking Tools To Master Complexity — Chapter One. About a 19-minute read.

A man at work and at leisure – but which is which?

A young mother was once called to a meeting with her five-year-old daughter's kindergarten teacher concerning the child's behavior in school. "Mrs. Webb, Chrissy exhibited a rather peculiar behavior yesterday," the teacher began.

"I don't understand, Teacher Ellen," said Mrs. Webb, perplexed. "Chrissy is a bright, amiable child. Did she create any trouble?"

"Not really, but she was uncharacteristically obstinate," Teacher Ellen explained. "Yesterday, our lesson was about rest and work. I showed the class these pictures," and Ellen pointed to two pictures she used as visual aids. The first photo showed a man sitting down reading a book, while the second showed a man doing carpentry work.

"I explained that reading a book was resting while doing carpentry was working. The rest of the class understood the lesson, but Chrissy became adamant. She insisted that the man reading a book was at work, and the man doing carpentry was at rest. I tried to correct her, but she said I was wrong. She became increasingly disturbed until she began to cry. So, I thought I should have a word with you, Mrs. Webb."

Chrissy's mom looked at the pictures, and a wave of relief and understanding came over her countenance. "I know why, Teacher Ellen. Chrissy was not being difficult. She was just expressing what she sees at home. Her dad is a college professor, and when he is reading his books while preparing his lessons, she knows that she must not disturb him because he is working. But when he wants to take a break, he turns to his hobby, which is carpentry. Working with wood relaxes him, and he makes little tables and things for the house. He just finished a small dresser for Chrissy. When he works in his shop, Chrissy knows she could talk with him."

"So, reading a book is work, and working with wood is rest."

How we think about work will greatly influence our attitude and behavior towards it. If we think of work with the right frames of reference, we create exceptional outcomes. If we regard work with an outlook unsuitable for its purpose, we end up wasting time, resources, and effort by coming up with unsatisfactory results.

This book discusses how we use mental models at work. As I mulled over the topic, I realized that if this book is to deliver on its promise, we should distinguish between work and non-work. What sets apart mental models that are more applicable at work, and those which are not? In which aspects should we be more mentally agile when we work compared to when we are not at work?

There ought to be a difference between doing an activity for a living and doing it solely for pleasure. For instance, cooking is work if a chef at a restaurant does it, but it is not work when we cook for ourselves or our family. The principal distinction between "work" and "non-work" is not the activity, but the main beneficiary of the work. If we work for our benefit alone, then we work to our own standard. But working for an employer, a client, or a customer involves achieving a standard to their satisfaction and benefit commensurate to the compensation earned.

When we work to satisfy others, we comply with certain demands. First, we must be able to solve problems and make effective decisions. Second, we must achieve acceptable

productivity levels. Third, we must learn new things to adapt to changes. Finally, we must gain enhanced phygital flexibility because technology defines our market of goods and services. There are countless more things work demands of us, but these can form the basics of what we need to meet.

The chapters of this book explore the mental models that best serve these four work objectives. We will not go into an exhaustive discussion of theory, but we aim to acquire enough practical tools to become effective and efficient workers and managers. Several of the models are instinctively familiar to most people – working or not – because they are patterned after the way we think. Much of what are contained in these pages will seem very familiar, but by categorically identifying and describing the mental models, this book will hopefully facilitate their recollection and future application.

I am honored to share with you a lifetime of knowledge and experience regarding the value of mental models in the work environment. Insights that I have garnered as an investment professional, stock brokerage manager, graduate school professor, and electronics engineer have all contributed to enhancing the practical application of mental models used in this book. I hope the vignettes used as illustrative examples provide a light touch that resonates with your own experiences.

Let us now turn the page and begin our journey.

The Importance Of Mental Models In The Workplace

"This is a monumental waste of time! I move to adjourn!" And without waiting for a second for his motion, the committee leader Gary stormed out of the room.

The Columbian Foundation, Inc.* determined that it needed a flagship project for the coming year. Management appointed an interdepartmental committee to decide on which of the proposed projects it would undertake. The members of the committee included Anna from project finance, Bruce from technology innovation, Candace from human resources, and Don from business development. Gary from central management headed the group.

The goal of the project was to embody the Foundation's social development vision to improve the lives of its community stakeholders. There are three projects shortlisted for consideration: holding a youth sports festival, launching a micro-entrepreneurship program for stay-at-home women, and building a community water filtration system.

The first meeting was a disaster, as Gary's outburst showed. No decision was made, but there is bound to be a second and maybe a third meeting until a decision is reached. But what does it take for a group of people, all with divergent mindsets, to make a good decision?

In a workplace setting, decision-making becomes complicated because of the various factors at play – the individuals who comprise the organization, policies, systems, culture, leadership, and the nature of the business itself. These confounding factors differ for each organization, such that there is no one-size-fits-all approach to problem-solving effectiveness.

McKenna and Martin-Smith* investigated the factors that caused poor decision-making. They discovered that possible causes such as failure-prone tactics and poor choice of leadership styles were only minor contributors to wrong decisions. The major causes were actually complexity and chaos in the decision-making environment, alternative psychological approaches, and political and ethical behaviors. Stating it another way, faulty decision-making does not reside principally in organizational factors, but in human factors.

To make sound decisions, we must develop and enhance the ability to take apart ideas in a way that we can understand and explain them from alternate viewpoints to be able to connect to different minds. We must deconstruct the problem to its most basic elements so that the different stakeholders can arrive at the same rationale and the best solution. This process requires systematic thought and action.

Our Natural Tendencies

Unfortunately, it is not in our nature to think and act systematically, but intuitively. When we act according to our instincts, our cognitive biases govern our decisions and actions.

Cognitive biases are a type of mental model, the type that we rarely subject to careful analysis and deliberate thought, particularly when we have not challenged them in the past.

We Are Programmed To Eliminate Complexity And Focus Only On A Few Salient Aspects

This is a result of our attentional bias, or the tendency to focus only on those aspects that grab our interest while ignoring everything else. Attentional bias can be useful when it centers our attention on crucial elements. In prehistoric times, our ancestors focused their attention on gathering food and running from predators, ensuring their survival. But the bias becomes a liability when it distracts us from necessary matters. Thinking of the Saturday night party may draw our attention away from preparing for the Friday report presentation at the office. In the case of the Columbian Foundation, the members focused their attention on one thing alone: to get their own favorite project selected. They disregarded the goal of the committee and the merits of the other projects and were blind to the weaknesses of their own.

We Easily Create Our Own Model Of Our Work Environment

Mental models aid us greatly in our work, but when we become too comfortable and accustomed to the models, we lose the motivation to challenge them and improve on them. Choice-supportive bias sets in. This is the tendency to attribute positive traits to options we have previously selected to the exclusion of other alternatives, even if we haven't considered the others yet. The Columbian Foundation committee members have each become comfortable with the mental model they adopted for their foundation. This is reflected in the projects they have chosen – a foundation directed at youth sports promotion, livelihood creation, and community services development. Their proponents appear to be too fixated on their mental model of the foundation to think of designating a different flagship project.

When We Work With Other People, We Typically Share The Same Mental Models That Feed Us Not Only The Same Facts But Also The Same Subjective Judgments

When we work in the same environment, we experience the same rewards and penalties when we encounter success and failure, respectively. Siblings, classmates, and co-employees experience reinforcement when they act according to certain behavior patterns. This is called operant conditioning, a process that links voluntary behavior to a consequence.* The tribalism

displayed by the Columbian Foundation committee members in competing for the flagship project may be a manifestation of this culture within the organization. The project proponents who win the selection process may be responding to the reinforcement that comes with the flagship team distinction and the perks that come with it.

The Mental Models Involving The Way We Do Things Can Collide With Other Mental Models

Corollary to the preceding paragraph, people who come from dissimilar backgrounds will tend to develop different mental models that sometimes clash. Within the Columbian Foundation, the groups who work on the different projects have different ideas which collide, particularly when they share the competitive culture within the organization. This realization is vital to Gary, the committee leader, if he wants to foster unity in the group and arrive at a productive outcome. This, he can do by:

1. Defining the main goal of the committee: "The aim of this meeting is to decide on a flagship project that symbolizes our Foundation."
2. Minimizing the degree of opposition between the parties: "In this project, we will all have a role in contributing to its success."
3. Stressing collaboration rather than competition: "All the groups will have a role to play. Finance will take care of the money matters, youth development will organize promotions among our junior volunteers, entrepreneurship will take care of marketing and sales, and technology innovation will set up our IT and online communication."
4. Creating compromise among the members so all interests are served*: "Remember, this is a give and take for all of us, so if there are any issues, bring them to my attention and let's resolve them to everyone's advantage."

The Fifth Discipline

Whether we are leaders or members of a team, we can make better decisions if we change our perspectives and challenge our mental models as we grow in knowledge and experience. In order to accomplish this, Peter Michael Senge, an American systems scientist, suggests that an organization requires five key disciplines – personal mastery,

understanding of mental models, creating a shared vision, team learning, and systems thinking.

Personal Mastery

A Thracian gladiator, an astronaut on a journey to Saturn, the caretaker of a haunted hotel, and U.S. marine recruits preparing for Vietnam. What do these highly divergent characters have in common? They are the cinematic creations of a brilliant director, screenwriter, and producer named Stanley Kubrick.

If the name is not familiar, his many works may ring a bell – *Spartacus* (1960), *2001: A Space Odyssey* (1968), *The Shining* (1980), and *Full Metal Jacket* (1987), to which we may add *Dr. Strangelove* (1964), *A Clockwork Orange* (1971), and *Eyes Wide Shut* (1999). If Kubrick had not suddenly passed a few hours after delivering a print of *Eyes*, his last film,* he may have produced many, many more award-winning motion pictures.

Kubrick was one of those people we may call lifelong learners, who have a penchant and an incessant drive to create, expand, and achieve. They do this not to achieve fame or fortune, but for the pure desire to realize their vision. Kubrick was a genius, but as a youth, he failed all social norms. Although his father was a doctor and he had the full attention of his mother, young Stanley was a mediocre elementary student whose record of attendance was evenly split between days present and absent. He was a social outcast in high school, an underachiever, and the class laggard despite being highly intelligent. He applied at several colleges, all of whom declined him. But he was passionate about his interests such as photography. He tried writing, playing baseball, and being the drummer in a jazz band. He eventually chanced upon filmmaking, and it was here he found his calling and never looked back.

Stanley Kubrick is an example of one who has developed a high level of personal mastery. According to Peter Senge, these are people who live in a continual learning mode, and "They never 'arrive.'"* Learning becomes a way of life. Personal mastery is "the discipline of personal growth and learning"* where learning is internally driven rather than externally

goaded. Ironically, it was Henry Ford, the father of the assembly line that many perceived mechanized human labor, who spoke of the creative drive within people*:

"The smallest indivisible reality is, to my mind, intelligent and is waiting there to be used by human spirits if we reach out and call them in... I know there are reservoirs of spiritual strength from which we human beings thoughtlessly cut ourselves off... I believe we shall someday be able to know enough about the source of power, and the realm of the spirit to create something ourselves." — Henry Ford

No doubt, there is some degree of this power in all of us, but to derive the greatest advantage from it, we should instill it as a discipline within ourselves, an activity we constantly practice. Two elements comprise the discipline of personal mastery. The first is retaining a vision, a clear picture of what we regard as imperative – not to others, not to society, but to ourselves. The second is to discern the current reality around us. When we compare our vision with existing reality, we become aware of what Senge calls "creative tension." This is the force we feel as we strive to reconcile reality with vision. "The essence of personal mastery is learning how to generate and sustain creative tension in our lives."*

So how does this work in the workplace setting? During the staff development programs you have attended, you may have heard the phrase "the learning organization." It means that the organization is one that has an intrinsic ability to grow and develop its knowledge reservoir through time so that it constantly innovates and creates. It is a fine notion, indeed, except for the tendency to diminish the fact that learning resides in the individuals who make up the organization. A learning organization does not exist without the self-motivated people who comprise it. The success in maintaining a learning organization lies in its members' personal mastery of continual learning.

Understanding Of Mental Models

A mental model is "the internal representation of a state of affairs in the external world."* The deeply-held images of our understanding of how the world works comprise our mental models. Senge likened mental models to the images, assumptions, and stories we retain in our memories – stories such as "The Emperor's New Clothes." This literary folk tale from

the pen of Danish author Hans Christian Andersen tells of an emperor walking among his people without a stitch of clothing while his people saw him in resplendent clothes. The mental model here is the image of the monarch's dignity in the people's minds which prevented them from seeing the reality of his naked figure.

While mental models help us respond quickly to situations we encounter, they also tend to limit the way we think and act. All of us have our own representations shaped by our experiences. Many of us are unaware of these constructs, and none of us hold the same set of models. Mental models support our understanding, reasoning, and prediction* in dealing with our surroundings, but they are so pervasive because they reside in the core of our psyche. We are disadvantaged by retaining the same models over time because as we grow, our situations change and we need to adjust the models we rely upon.

There is an example of a man who built a model that ultimately defined an entire nation. The man is William Edwards Deming and the model is the contemporary quality movement. Total Quality Management (TQM) was invented by Walter Shewhart and initially implemented by Joseph Juran in Western Electric Company. But it was only after the Second World War that TQM gained traction in industrial applications. After the war, Japan was in shambles and her recovery seemed almost impossible. It was during that time that Deming, a statistician and business consultant, was commissioned as an advisor in sampling techniques to the Supreme Command of the Allied Powers.

He went to Japan in 1946 and delivered his first lecture on quality control to Japanese engineers and business leaders in 1950. By 1951, the Japanese established the Deming Prize for industrial achievement aimed at encouraging quality in industry operations.* Deming developed the philosophy of cooperation and continual improvement that avoids blame and perceives mistakes as opportunities for improvement.* Deming profoundly influenced quality excellence in Japanese industries that led to Japan overtaking the United States as the world leader in TQM.*

William Edwards Deming, who was hardly recognized in the U.S.A. in the 1940s, enabled a war-ravaged Japan to transcend industrialized America in a matter of decades. Total

Quality Management was the powerful mental model that made it all possible. Something to ponder, is it not?

Creating A Shared Vision

Leonardo da Vinci, Jules Verne, Steve Jobs. What do these men have in common? We can say that they are visionaries in their own time and place. What does it mean to have a vision? For some, the phrase "having a vision" alludes to psychics who can foretell the future or see things at the supernatural level that is invisible to ordinary people. That's a bit extreme and likely applies to a few gifted individuals. But we are all capable of envisioning for ourselves goals that we can strive for.

Let's go back to Da Vinci, Verne, and Jobs. What sets them apart from each other? We could say they differ to the degree that they realized their visions. Da Vinci is a philosopher and inventor who conceptualized the early flying contraptions, armored war machines, revolving bridges, and scuba gear.* Verne is a literary genius who wrote stories about electric submarines, moon landings, newscasts, and the "phonotelephote," a precursor to video conferencing.* Eventually, their visions became reality through the efforts of others when technology became available.

But Steve Jobs differed from the two in the sense that he was able to actualize his vision through the organization he headed, Apple Inc. His creations are well known to us: the iPhone, Macintosh, iPad, iPod, and the technology described in 346 patents in his name.* Steve Jobs may have had the money, manpower, and technology to realize his creations, things that were not available to Da Vinci and Verne. But his success relied on something much more profound – the ability to share his vision with the hundreds of men and women comprising his organization, and motivate them to work towards its realization. This is not an easy task. Anybody who has worked with others in a committee, a team, or any group knows that it is close to impossible to agree on anything unless all are guided by the same goal and vision.

Visions are more concrete than dreams, more attainable than ideals. Our best leaders are visionaries capable of articulating our aspirations. They create for us an image of the future that inspires and motivates us.

Creating a shared vision is the third discipline necessary for effective decision-making in an organization. Individuals each have their goals in life, but unless these goals are incorporated in a shared vision, then they are not much help to people who work together as a group.

The world-renowned Greenpeace exemplifies a vision transcending individuals and propelling a movement. Begun in 1971 by a small team of activists in British Columbia, with few material resources and a loose-knit operation, the movement is now an international organization driven with the same vision – that of preserving the earth through direct, nonviolent action. Through such dramatic campaigns as directly steering small, inflatable watercraft between harpoon gun whalers and the whales they hunt, or protesting the dumping of nuclear wastes at sea, Greenpeace has inspired millions to support ecological causes and mobilized public opinion to establish legislation to protect the environment.* This is an example of a shared vision leading to decisions and actions.

Team Learning

The fourth discipline required for organizations to make decisions effectively is team learning. A team is more than just a group of people – it is "a group of people with different skills and different tasks, who work together on a common project, service, or goal, with a meshing of functions and mutual support."* Stated simply, teams are "people who need one another to act."* While every team needs a leader, the best teamwork takes place when all the members are empowered in the roles they discharge. This means that even though each member defers to the leader and the team goal, they each have discretion about how they think and act. They work towards their own objectives and, at the same time, achieve the overall goal. Peter Senge calls this "alignment."*

Picture numerous arrows of two colors. The blue arrows point in various directions, while the red arrows point in only one direction. The red arrows are arranged to form a giant arrow pointing in the same direction as the small red arrows. This illustration is a metaphor for team alignment. The small red arrows correspond to the team members, and together they form a large arrow that corresponds to the team. The direction of the arrows represents the goal of the person or team. Alignment, therefore, means that the members' individual goals are consistent with the team's overall goal.

When individuals' goals or visions align with the overall goal of the team, then they are motivated to work for their own interests which in turn contributes to the team effort, like tailwinds can speed up the distance covered by a sailboat or aircraft. However, what happens when the members' individual goals do not align with that of the team? Then they will experience a clash between their interests and that of the team, similar to headwinds in the journey of our hypothetical aircraft or sailboat. This is the reason why goal alignment is necessary for the empowerment of team members.

Toyota is an example of a business organization wherein teamwork drives success.* In most of its business areas, the company uses teamwork, organizing groups of people with specific goals to maximize synergy and empower each member. Each employee goes through a teambuilding training program that emphasizes continuous improvement through learning and innovation. Team learning, which is a collective undertaking, is one of the reasons Toyota remains the world's biggest car seller.*

Systems Thinking

The fifth discipline is "systems thinking," which is an integration of the other four disciplines. We think of systems thinking as the way by which teams and individuals seek out changes that provide long-term improvements in the workplace. Senge conceives of this as "the key that holds all the five concepts together as a coherent whole."* A system refers to a set of people, machines, guidelines and policies, and other elements that work together to produce the desired outcome. Personal mastery, mental models, building a

shared vision, and team learning are essential elements that make systems thinking possible.

Costco is one such organization that demonstrates systems thinking in its strategy of investing in organic producers. The process of making fresh produce available to the end-user is not a simple task. Running a large-scale operation that regularly provides affordable, fresh, and high-quality products every day to urban residents is complex. It requires a well-oiled system that evolves with its changing environment. Delays in perishable food delivery result in poor quality goods on the shelves. Inefficient sourcing raises costs to levels beyond what households can afford. Failure to run a sustainable system of farm-to-store shelves logistics will cause ruin to producers and scarcity to consumers. And yet every day, on the way home from work or school, we can expect to pass by any Costco outlet and purchase fresh meat and vegetables to cook for that evening's dinner.

Action Steps

Of the five disciplines we have earlier encountered, the most vital is personal mastery. It is the foundation for the other four disciplines. Developing personal mastery requires continual learning.* To develop learning as a habit, you may begin with these five steps:

1. *Make time.* There is always time to learn because it is one of the few things you can do while occupied with something else. Binge-watching on a streaming service? Riding home on the train? Conversing with a client? Cooking dinner? Learning is just being conscious of your senses, what you see, hear, smell, feel, and taste. Later, journal your impressions and reflections of everything you noticed throughout the day.
2. *Question the status quo.* Never be satisfied with the way things are. Remember the saying, "There's always room for improvement." Thanks to the fact that we are all imperfect, there is always something we can do better.
3. *Develop the habit of curiosity.* As children, we were innately curious, so we learned the most and the fastest during this stage. If only we could retain that inquisitive streak throughout our lives that moves us to ask the what, how, and why that comprise the Golden Circle!
(Curious?)

4. *Commit to finding the truth.* Growing into adulthood, we learn to accept duplicity and deception as the normal state of affairs. Not so, according to Winston Churchill, because when falsehood fails us, the truth is the anchor that keeps us stable.*

"The truth is incontrovertible. Malice may attack it and ignorance may deride it, but in the end, there it is." — Winston Churchill

5. *Look inward to the source of your problems.* Remove the artificial barriers you use to excuse your failures. There is no need to save face from yourself. Rather, accept your mistakes and use them as stepping stones to discover something new about yourself. Every failure is an opportunity to learn. Take full advantage of them.

Moving On

We mentioned that curiosity is linked to the Golden Circle. This is one of the mental models used to solve problems and make decisions more effectively. The next chapter will introduce us to the Golden Circle and other valuable models we can incorporate into our mental toolbox.

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