PEGASUS COMMUNICATIONS

THE SYSTEMS THINKER®

BUILDING SHARED UNDERSTANDING

VOLUME 19
NUMBER 10
DEC./JAN.
2008/2009

IN THIS ISSUE:

FEATURE

HABITS OF MIND: STRATEGIES FOR DISCIPLINED CHOICE MAKING

BY ARTHUR L. COSTA AND BENA KALLICK

"We are what we repeatedly do. Excellence, then, is not an act but a habit."

—Aristotle

By definition, a problem is any stimulus, question, task, phenomenon, or discrepancy for which we don't immediately have an answer or solution. We are interested in performance under challenging conditions that demand strategic reasoning, insightfulness, perseverance, creativity, and craftsmanship to resolve a complex problem. Not only are we interested in how many answers individuals know, but also in how they behave when they *don't* know.

We use the term "Habits of Mind" to mean having a disposition toward behaving intelligently when confronted with problems to which we do not immediately know the answers. When humans experience dichotomies, are confused by dilemmas, or come face to face with uncertainties, our most effective actions require drawing forth certain patterns of intellectual behavior. When we draw upon these intellectual resources, the results that we produce are more powerful, of higher quality, and of greater significance than if we fail to employ those patterns of intellectual behaviors.

Employing Habits of Mind requires a composite of many skills, attitudes, cues, past experiences, and proclivities. It means that we value one pattern of thinking over another, and therefore it implies choice making about which pattern should be employed at which time. It includes sensitivity to the contextual cues in a situation signaling that it is an appropriate time and circumstance to employ this pattern. It requires a level of skillfulness to employ and carry through the behaviors effectively over time. Finally, it leads individuals to reflect on, evaluate, modify, and carry forth to future applications their learnings.

Research in effective thinking and intelligent behavior indicates that there are some identifiable characteristics of effective thinkers. Scientists, artists, and mathematicians are not the only ones who demonstrate these behaviors. These characteristics have been identified in successful mechanics, teachers, entrepreneurs, salespeople, and parents—people in all walks of life.

16 HABITS OF MIND

The 16 Habits of Mind identified by Costa and Kallick include:

- Persisting
- Thinking and communicating with clarity and precision
- Managing impulsivity
- Gathering data through all senses
- Listening with understanding and empathy
- Creating, imagining, innovating
- Thinking flexibly
- Responding with wonderment and awe
- Thinking about thinking (metacognition)
- Taking responsible risks
- Striving for accuracy
- Finding humor
- Questioning and posing problems
- Thinking interdependently
- Applying past knowledge to new situations
- Remaining open to continuous learning

TEAM TIP

When confronted with a problematic situation, employ one or more of these Habits of Mind by asking, "What is the most intelligent thing we can do right now?"

Habits of Mind

Following are descriptions and an elaboration of 16 attributes of what human beings do when they behave intelligently (see "16 Habits of Mind"). These Habits of Mind are what intelligent people do when they are confronted with complex problems. These behaviors are seldom performed in isolation. Rather, clusters of such behaviors are drawn forth and employed in various situations. When listening intently, for example, one employs flexibility, metacognition, precise language, and perhaps questioning.

Please do not think that there are only 16 ways in which humans display their intelligence. It should be understood that this list is not meant to be complete. You, your colleagues, or your students will want to continue the search for additional Habits of Mind by adding to and elaborating on this list and the descriptions (for an example of an additional list, see "13 Habits of a Systems Thinker," compiled by the Waters Foundation).

1. Persisting

"Persistence is the twin sister of excellence. One is a matter of quality; the other, a matter of time."

—Marabel Morgan

Efficacious people stick to a task until it is completed. They don't give up easily.

They are able to analyze a problem to develop a system, structure, or strategy to attack it. They employ a range and have a repertoire of alternative strategies for problem solving. They collect evidence to indicate their problem-solving strategy is working, and if one strategy doesn't work, they know how to back up and try another. They recognize when a theory or idea must be rejected and another employed. They have systematic methods of analyzing a problem that include knowing how to begin, what steps must be performed, and what data need to be generated or collected. Because they are able to sustain a problem-solving process over time, they are comfortable with ambiguous situations.

2. Managing Impulsivity

"…. [G]oal-directed self-imposed delay of gratification is perhaps the essence of emotional self-regulation: the ability to deny impulse in the service of a goal, whether it be building a business, solving an algebraic equation, or pursuing the Stanley cup."
—Daniel Goleman

Effective problem solvers have a sense of deliberativeness: They think before they act. They intentionally form a vision of a product, plan of action, goal, or destination before they begin. They strive to clarify and understand directions, develop a strategy for approaching a problem, and withhold immediate value judgments about an idea before fully understanding it. Reflective individuals consider alternatives and consequences of several possible directions prior to taking action. They decrease their need for trial and error by gathering information, taking time to reflect on an answer before giving it, making sure they understand directions, and listening to alternative points of view.

3. Listening to Others—With Understanding and Empathy

"Listening is the beginning of understanding. … Wisdom is the reward for a lifetime of listening. Let the wise listen and add to their learning and let the discerning get guidance."
—Proverbs 1:5

According to Stephen Covey, highly effective people spend an inordinate amount of time and energy listening. Some psychologists believe that the ability to listen to another person, empathize with them, and understand their point of view is one of the highest forms of intelligent behavior. Being able to paraphrase another person's ideas, detecting indicators of their feelings or emotional states in their oral and body language, accurately expressing another person's concepts, emotions, and problems—all are indications of listening behavior (Piaget called it "overcoming egocentrism").

Peter Senge and his colleagues suggest that to listen fully means to pay close attention to what is being said *beneath* the words. Generative listening is the art of developing deeper silences in yourself, so you can slow your mind's hearing to your ears' natural speed and hear beneath the words to their meaning. This is a complex skill requiring the ability to monitor one's own thoughts while, at the same time, attending to the partner's words. Honing this behavior does not mean that we can't disagree with someone. A good listener tries to understand what the other person is saying. In the end, he may disagree sharply, but because he disagrees, he wants to know exactly what it is he is disagreeing with.

4. Thinking Flexibly

"If you never change your mind, why have one?"
—Edward deBono

An amazing discovery about the human brain is its plasticity—its ability to "rewire," change, and even repair itself to become smarter. Flexible people are the ones with the most control. They have the capacity to change their minds as they receive additional data. They engage in multiple and simultaneous outcomes and activities, draw upon a repertoire of problem-solving strategies, and know when it is appropriate to be broad and global in their thinking and when a situation requires detailed precision. They create and seek novel approaches and have a well-developed sense of humor. They envision a range of consequences.

Flexible people can approach a problem from a new angle using a novel approach (deBono refers to this as *lateral thinking*). They consider alternative points of view or deal with several sources of information simultaneously. Thus, flexibility of mind is essential for working with social diversity, enabling an individual to recognize the wholeness and distinctness of other people's ways of experiencing and making meaning.

Flexible thinkers are able to take a "macro-centric" perspective. This is similar to looking down from a balcony at ourselves and our interactions with others. This bird's-eye view is useful for discerning themes and patterns from assortments of information. It is

13 HABITS OF A SYSTEMS THINKER

The Water Foundation has identified 13 Habits of a Systems Thinker. For detailed definitions of each, click here.

- Seeks to understand the "big picture"
- Observes how elements within systems change over time, generating patterns and trends
- Recognizes that a system's structure generates its behavior: focuses on structure, not on blame
- Identifies the circular nature of complex cause and effect relationships, i.e. interdependencies
- Changes perspectives
- Surfaces and tests assumptions
- Considers an issue fully and resists the urge to come to a quick conclusion
- Considers how mental models (i.e., attitudes and beliefs derived from experience) affect current reality and the future
- Uses understanding of system structures to identify possible leverage actions
- Considers both short- and long-term consequences of actions
- Finds where unintended consequences emerge
- Recognizes the impact of time delays when exploring cause and effect relationships
- Checks results and changes actions if needed: "successive approximation"

intuitive, holistic, and conceptual. Since we often need to solve problems with incomplete information, we need the capacity to perceive general patterns and jump across gaps of incomplete knowledge or when some of the pieces are missing.

Yet another perceptual orientation is "micro-centric"—examining the individual and sometimes minute parts that make up the whole. Without this "worm's-eye view," science, technology, and any complex enterprise could not function. These activities require attention to detail, precision, and orderly progressions.

Flexible thinkers display confidence in their intuition. They tolerate confusion and ambiguity up to a point, and are willing to let go of a problem, trusting their subconscious to continue creative and productive work on it. Flexibility is the cradle of humor, creativity, and repertoire.

5. Thinking About Our Thinking (Metacognition)

"When the mind is thinking it is talking to itself."

—Plato

Occurring in the neocortex, metacognition is our ability to know what we know and what we don't know. It is our ability to plan a strategy for producing what information is needed, to be conscious of our own steps and strategies during the act of problem solving, and to reflect on and evaluate the productiveness of our own thinking. Probably the major components of metacognition are developing a plan of action, maintaining that plan in mind over a period of time, then reflecting back on and evaluating the plan upon its completion. Planning a strategy before embarking on a course of action assists us in keeping track of the steps in the sequence for the duration of the activity. It facilitates making temporal and comparative judgments, assessing the readiness for more or different activities, and monitoring our interpretations, perceptions, decisions, and behaviors.

Metacognition means becoming increasingly aware of one's actions and the effect of those actions on others and on the environment, forming internal questions as one searches for information and meaning, developing mental maps or plans of action, mentally rehearsing prior to performance, monitoring those plans as they are employed. It involves being conscious of the need for midcourse correction if the plan is not meeting expectations, reflecting on the plan upon completion of the implementation for the purpose of self-evaluation, and editing mental pictures for improved performance.

6. Striving for Accuracy and Precision

"A man who has committed a mistake and doesn't correct it is committing another mistake."

—Confucius

Embodied in the stamina, grace, and elegance of a ballerina or a shoemaker is the desire for craftsmanship, mastery, flawlessness, and economy of energy to produce exceptional results. People who value these qualities take time to check over their products. They review the rules by which they are to abide; they review the models and visions they are to follow; and they review the criteria they are to employ and confirm that their finished product matches the criteria exactly.

To be craftsmanlike means knowing that one can continually perfect one's craft by working to attain the highest possible standards and pursue ongoing learning in order to bring a laser-like focus of energies to task accomplishment. For some people, craftsmanship requires continuous reworking. Mario Cuomo, a great speechwriter and politician, once said that his speeches were never done—it was only a deadline that made him stop working on them!

7. Questioning and Posing Problems

"The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill. To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advances."

—Albert Einstein

One of the distinguishing characteristics between humans and other forms of life is our inclination and ability to *find* problems to solve. Effective problem solvers know how to ask questions to fill in the gaps between what they know and what they don't know. Effective questioners are inclined to ask a range of questions. For example, they request data to support others' conclusions and assumptions through questions such as, "What evidence do you have?"

They pose questions about alternative points of view: "From whose viewpoint are we seeing, reading, or hearing?"

They inquire into causal connections and relationships: "How are these people/events/situations related to each other?"

They pose hypothetical problems: "What do you think would happen *if* ... ?"

Inquirers recognize discrepancies and phenomena in their environment and probe into their causes: "Why do cats purr?" "Why does the hair on my head grow so fast, while the hair on my arms and legs grows so slowly?" "What are some alternative solutions to international conflicts other than wars?"

8. Applying Past Knowledge to New Situations

"I've never made a mistake. I've only learned from experience."

—Thomas A. Edison

Intelligent human beings learn from experience. When confronted with a new and perplexing problem, they will often draw forth experience from their past. They can be heard to say, "This reminds me of . . ." or "This is just like the time when I . . ." They call on their store of knowledge and experience as sources of data to support, theories to explain, or processes to solve each new challenge. Furthermore, they are able to abstract meaning from one experience, carry it forth, and apply it in a new and novel situation.

9. Thinking and Communicating with Clarity and Precision

"I do not so easily think in words . . . after being hard at work having arrived at results that are perfectly clear . . . I have to translate my thoughts in a language that does not run evenly with them."

—Francis Galton

Language refinement plays a critical role in enhancing a person's cognitive maps and their ability to think critically, which is the knowledge base for efficacious action. Enriching the complexity and specificity of language simultaneously produces effective thinking. Language and thinking are closely entwined. Like two sides of a coin, they are inseparable. Fuzzy language is a reflection of fuzzy thinking. Intelligent people strive to communicate accurately in both written and oral form, taking care to use precise language, defining terms, correct names, and universal labels and analogies. They strive to avoid overgeneralizations, deletions, and distortions. Instead, they support their statements with explanations, comparisons, quantification, and evidence.

10. Gathering Data Through All Senses

"Observe perpetually."

—Henry James

The brain is the ultimate reductionist. It reduces the world to its elementary parts: photons of light, molecules of smell, sound waves, vibrations of touch—which send electrochemical signals to individual brain cells that store information about lines, movements, colors, smells, and other sensory inputs. Intelligent people know that all information gets into the brain through the sensory pathways: gustatory, olfactory, tactile, kinesthetic, auditory, visual, Most linguistic, cultural, and physical learning is derived from the environment by observing or taking in through the senses. To know a wine it must be drunk; to know a role it must be acted; to know a game it must be played; to know a dance it must be moved; to know a goal it must be envisioned. Those whose sensory pathways are open, alert, and acute absorb more information from the environment than those whose pathways are withered, immune, and oblivious to sensory stimuli.

Furthermore, we are learning more about the impact of arts and music on improved mental functioning. Forming mental images is important in mathematics and engineering; listening to classical music seems to improve spatial reasoning. Social scientists solve problems through scenarios and role-playing; scientists build models; engineers use cad-cam; mechanics learn through hands-on experimentation; artists experiment with colors and textures; musicians learn by producing combinations of instrumental and vocal music.

11. Creating, Imagining, and Innovating

"The future is not some place we are going to but one we are creating. The paths are not to be found, but made, and the activity of making them changes both the maker and the destination."

—John Schaar

All humans have the capacity to generate novel, original, clever, or ingenious products, solutions, and techniques—if that capacity is developed. Creative individuals try to conceive problem solutions differently, examining alternative possibilities from many angles. They tend to project themselves into different roles using analogies, starting with a vision and working backward, imagining they are the objects being considered. Creative people take risks and frequently push the boundaries of their perceived limits. They are intrinsically rather than extrinsically motivated, working on the task because of the aesthetic challenge rather than the material rewards. Creative people are open to criticism. They hold up their products for others to judge and seek feedback in an ever-increasing effort to refine their technique.

12. Responding with Wonderment and Awe

"The most beautiful experience in the world is the experience of the mysterious."

—Albert Einstein.

Efficacious people have not only an "I can" attitude, but also an "I enjoy" feeling. They enjoy figuring things out by themselves and continue to learn throughout their lifetimes. They find beauty in a sunset, intrigue in the geometry of a spider web, and exhilaration at the iridescence of a hummingbird's wings. They see the congruity and intricacies in the derivation of a mathematical formula, recognize the orderliness and adroitness of a chemical change, and commune with the serenity of a distant constellation.

13. Taking Responsible Risks

"There has been a calculated risk in every stage of American development—the pioneers who were not afraid of the wilderness, businessmen who were not afraid of failure, dreamers who were not afraid of action."

—Brooks Atkinson

Flexible people seem to have an almost uncontrollable urge to go beyond established limits. They are uneasy about comfort; they "live on the edge of their competence." They seem compelled to place themselves in situations where they do not know what the outcome will be. They accept confusion, uncertainty, and the higher risks of failure as part of the normal process, and they learn to view setbacks as interesting, challenging, and growth producing.

However, they are not behaving impulsively. Their risks are educated. They draw on past knowledge, are thoughtful about consequences, and have a well-trained sense of what is appropriate. They know that not all risks are worth taking! It is only through repeated experiences that risk taking becomes educated. It often is a cross between intuition, drawing on past knowledge, and a sense of meeting new challenges.

14. Finding Humor

"Where do bees wait? At the buzz stop."

—Andrew, age six

Another unique attribute of humans is our sense of humor. Laughter transcends all cultures and eras. Its positive effects on psychological functions include a drop in the pulse rate, the secretion of endorphins, and increased oxygen in the blood. It has been found to liberate creativity and provoke such higher-level thinking skills as anticipation, the identification of novel relationships, visual imagery, and analogy. People who engage in the mystery of humor have the ability to perceive situations from an original and often interesting vantage point. Having a whimsical frame of mind, they thrive

on finding incongruity and perceiving absurdities, ironies, and satire; finding discontinuities; and being able to laugh at situations and themselves.

15. Thinking Interdependently

"Take care of each other. Share your energies with the group. No one must feel alone, cut off, for that is when you do not make it."
—Willie Unsoeld

Humans are social beings. We congregate in groups, find it therapeutic to be listened to, draw energy from one another, and seek reciprocity. In groups, we contribute our time and energy to tasks that we would quickly tire of when working alone. In fact, we have learned that one of the cruelest forms of punishment that can be inflicted on an individual is solitary confinement.

Cooperative humans realize that all of us together are more powerful, intellectually and/or physically, than any one individual. Probably the foremost disposition in the post-industrial society is the heightened ability to think in concert with others and to find ourselves increasingly more interdependent and sensitive to the needs of others. Problem solving has become so complex that no one person can go it alone. No one has access to all the data needed to make critical decisions; no one person can consider as many alternatives as several people can.

16. Learning Continuously

"Insanity is continuing to do the same thing over and over and expecting different results."
—Albert Einstein

Intelligent people are in a continuous learning mode. Their confidence, in combination with their inquisitiveness, allows them to constantly search for new and better ways. People with this Habit of Mind are always striving for improvement, growing, and learning. They seize problems, situations, tensions, conflicts, and circumstances as valuable opportunities to learn.

A great mystery about humans is that we confront learning opportunities with fear rather than mystery and wonder. We seem to feel better when we know rather than when we learn. We defend our biases, beliefs, and storehouses of knowledge rather than inviting the unknown, the creative, and the inspirational. Being certain and closed gives us comfort, while being doubtful and open gives us fear. The highest form of thinking we will ever learn is the humility of knowing that we don't know.

In Summary

Drawn from research on human effectiveness, descriptions of remarkable performers, and analyses of the characteristics of efficacious people, we have presented descriptions of 16 Habits of Mind. This list is not meant to be complete but rather to serve as a starting point for further elaboration and description.

These Habits of Mind may serve as mental disciplines. When confronted with problematic situations, students, parents, and teachers might habitually employ one or more of these Habits of Mind by asking themselves, "What is the most *intelligent* thing I can do right now?"

- How can I learn from this? What are my resources? How can I draw on my past successes with problems like this? What do I already know about the problem? What resources do I have available or need to generate?
- How can I approach this problem flexibly? How might I look at the situation in another way? How can I draw upon my repertoire of problem-solving strategies? How can I look at this problem from a fresh perspective?
- How can I illuminate this problem to make it clearer, more precise? Do I need to check out my data sources? How might I break this problem down into its component parts and develop a strategy for understanding and accomplishing each step?
- What do I know or not know? What questions do I need to ask? What strategies are in my mind now? What am I aware of in terms of my own beliefs, values, and goals with this problem? What feelings or emotions am I aware of which might be blocking or enhancing my progress?
- The interdependent thinker might turn to others for help. She might ask, How does this problem affect others? How can we solve it together? What can I learn from others that would help me become a better problem solver?

These Habits of Mind transcend all subject matters commonly taught in school. They are characteristic of peak performers, whether in homes, schools, athletic fields, organizations, the military, governments, churches, or corporations. They are what make marriages successful, learning continual, workplaces productive, and democracies enduring.

The goal of education therefore should be to support others and ourselves in liberating, developing, and habituating these Habits of Mind more fully. Taken together, they are a force directing us toward increasingly authentic, congruent, ethical behavior. They are the tools of disciplined choice making. They are the primary vehicles in the lifelong journey toward integration. They are the "right stuff" that makes human beings efficacious. ◘

This article is adapted with permission from Arthur Costa and Bena Kallick, "Describing 16 Habits of Mind." **Click here** to access the original article. The authors have a new book coming out, *Learning and Leading with Habits of Mind: 16 Essential Characteristics for Success* (Association for Supervision and Curriculum Development, 2009).

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THE KAOSPILOTS: SCHOOL OF SOCIETAL CHANGE, BUSINESS CREATIVITY, AND PERSONAL MASTERY

BY NOVEMBER SKY FREYSS-COLE

Imagine you attend an educational institution where your ideas are supported and anything seems possible. Imagine that, as a student, you are valued as an equal part of the organization. You are there because you want to *take* an education, not *get* one. You are there because you want to start a business, lead projects, develop new ideas. You are there because you want to change the world. At your school, you learn by doing. Your lecturers are entrepreneurs, authors, consultants, and fellow students. You are encouraged to explore your strengths and weaknesses, to learn from your teammates, to be curious, and to do the incredible.

Meet the KaosPilots: a team-based international business education with the aim of being the best school *for* the world. Each year, this Danish-based program welcomes in a team of students from around the globe. Together these students embark upon a three-year journey that takes them though the disciplines of project design, process design, and business design. The teams consist of individuals between the ages of 21 and 31 with diverse nationalities, professional backgrounds, and ambitions for the future.

Why KaosPilots? Why Now?

In this time of rapid change, we need individuals, organizations, and communities that are able to embrace complexity, dance in the moment, and navigate in times of chaos. We need leaders who are not only able to make tough decisions but who are also visionary, supportive, collaborative, and creative.

Now the question is: Are our schools, colleges, and universities being designed with this goal in mind? Unfortunately, not often enough. Many aspects of the traditional educational system end up resembling mechanisms for control rather than tools for change.

In his book *The Fifth Discipline*, Peter Senge highlights the importance for organizations of having a focus on personal mastery, or learning and personal growth. He writes, "Organizations learn only through individuals who learn." This understanding lies at the heart of the KaosPilots. Their aim is *"...that each individual student acquires the skills, knowledge, and understanding of themselves and the world around them, enabling them to realize their values, visions, and goals in an organizationally, socially, and economically viable way."*

The KaosPilots was founded in 1991 in Denmark's second-largest city, Aarhus. The school rose out of a local youth group called the Front Runners, which took a positive approach to creating cultural projects that responded to relevant social issues. With their creative and innovative solutions, the Front Runners proved to be pioneers of social entrepreneurship in the local area.

After years of creating these cultural projects, some of the Front Runners, including project leader and director Uffe Elbaek, began developing an idea. They would create a school that would provide students with knowledge, experiences, and skills in the field of social entrepreneurship (see "KaosPilot Values"). The rest, as they say, is history. The KaosPilots was born.

Over the years, the KaosPilots has received support from companies such as Apple, Lego, and Carlsberg. Currently, the program is financed by the Danish government, the in-house consulting company, KaosWorks, and student tuition fees. Most applicants

KAOSPILOT VALUES

The program is designed and operates according to the following values:

Streetwise	The wisdom and know-how for maneuvering in society, in both the cultural and business worlds
Risk-taking	The courage to step forward, experiment, and challenge one's own fears
Balance	The cohesion, coherence and dynamic interplay between content and form, the individual and community, the local and the global, praxis and theory
Compassion	The striving to alleviate others' suffering
Real World	The staff and students must work with real people and real problems, carrying out projects for external stakeholders
Playful	Work and study life should be light-hearted, good-natured, and fun

In 2007, the KaosPilots was nominated for an Index award and named by *BusinessWeek* as one of the Top Design Schools in the world.

TEAM TIP

Following the KaosPilots' example, seek possibilities in challenging situations. Instead of pointing fingers, ask, "How am I going to do it?" and "How can others support me?"

discover the school through word of mouth. KaosPilots are out in the world working on projects, engaging with others, and often talking about their education. They don't hesitate to share why they are enrolled in the school, what they love about it, what they'd like to change, and how they are part of changing it. In addition, articles in the international media, including magazines such as *Fast Company*, *Ode* Magazine, and *BusinessWeek*, tell the KaosPilots story to those who are farther away, leading potential students to the website, where they are able to find more information, contact current students, or download an application (www.kaospilot.dk).

Based on their written applications, approximately 70 individuals are invited to attend a unique application workshop that takes place in Aarhus over the course of two days at the end of April. During this workshop, the potential KaosPilots-to-be complete various assignments while working in small groups with other applicants. Using the information gathered from this experience as well as from the applications, members of the staff and student body then select a diverse team of about 35 aspiring KaosPilots to begin the program in the fall.

Each year, a single team is welcomed to the KaosPilots. The program lasts three years, which means that at any one time, around 100 students are enrolled at the school. Since 1991, 15 teams have matriculated. Fifteen staff members fill the roles of school leadership, administration, technical support, team leaders, and consultants for KaosWorks. Others who influence the KaosPilots are the board of directors and the school's vast network of lecturers, graduated KaosPilots, clients, partners, members of sister schools and programs, and friends.

The Education: A Closer Look

The layout for the three years, in short:

1st Year – The ToolBox

First year is focused on methods, theory, and practical project work related to three core areas—Project Design (project development and management), Business Design (business development and management), and Process Design (process management and leadership).

2nd Year – Process Management and International Project Management

Second year is focused on Process Design and Process Management (including the design and facilitation of processes for external customers). In the spring, the team goes on a three-month "Outpost," implementing projects for external clients in another country.

3rd Year – Project and Business Design

Third year is focused on Business Design (entrepreneurship and building the business plan), an individual world practicum, in which the student further explores his/her area of focus in an organizational setting, and an individual project leading to the final exam.

"You can always count on the KaosPilots to take you exactly where you need to go . . ."
—Alan Webber

Students generally work five days a week from 9 a.m. to 4 p.m. The curriculum is a mix of lectures, projects, and individual, group, and team assignments. All members of the team go through a similar course of study, as they are a single learning unit throughout their three years at the KaosPilots. Students also engage in cross-team and organizational projects and events throughout the year.

In the fall of 2008, the school experimented with a new initiative called "White Week." During this four-day program of inspirational learning, the whole organization participated in lectures, workshops, and dialogue around the theme of community. Guest speakers included Robert Fortunato from ForStrategy Consulting (US), Nick Nissely from The Banff Centre (Canada), and Anna Kirah from CPH Design (Denmark).

In the last few years, sister schools and programs have opened up in Sweden, Norway, and the Netherlands. A couple of years ago, the school in Aarhus switched from conducting lectures in Scandinavian languages to English; this shift has allowed the student body to become more diverse. Currently, the KaosPilots hail from Denmark, Norway, Sweden, Iceland, Brazil, the Netherlands, Cuba, the United States, South Africa, Iraq, Costa Rica, and Morocco.

"Best School for the World"

The KaosPilots has always had a global focus. Since the school's founding, teams have worked and studied around the world during their projects, Outposts, and internships. The experience is exciting and is seen as crucial as the borders of organizations and nations are becoming more and more permeable in this globalized world.

Over the years, the KaosPilots has developed and shifted in response to the changes taking place around the world. This adaptation includes a focus on three key areas: sustainability, social innovation, and cultural diversity. Together students and staff are exploring these subjects to discover their deeper meaning and the possibilities they hold for the future.

Last February, a team of KaosPilots spent a semester in Shanghai exploring the theme of social innovation. Their work included a joint project with Chinese graphic design and multimedia students and British photography students. The group created and displayed an exhibition of more than 30 art pieces aimed at highlighting social needs in China and the initiatives that are bringing people together to fill those needs.

Upon their return to Denmark, the KaosPilots students created a book about their discoveries in this field entitled, *Social Innovation, A Travel Guide.* With regards to this publication, Alan Webber, founding editor of *Fast Company,* wrote, "You can always count on the KaosPilots to take you exactly where you need to go—in this case on a journey to the future."

Making, Not Looking for, Work

Founder Uffe Elbaek was once quoted as saying: "KaosPilots are people who don't look for work, but make their own." This could be related to the school's culture of seeking possibilities

in challenging situations. If you want something done, instead of pointing fingers, KaosPilots tend to ask "How am I going to do it?" and "How can others support me?" With the space for individual initiatives, this element of responsibility creates a learning and working environment that is flexible, inspiring, and alive.

The students at the KaosPilots conduct their projects almost exclusively for external clients. This process of taking action based on their skills and theoretical understanding deepens the learning process. Success is the aim, but there is always the freedom for failure. This mindset allows students to take greater risks and therefore create stronger results than they might otherwise. Integrated in this learning experience is team and individual reflection, which supports the projects before, during, and after their execution.

One of the central concepts of the KaosPilots is that projects should produce a "Win-Win-Win" result: that there is a gain for the two parties involved as well as for the society of which they are a part. Whether students are developing an entrepreneurial education in Rwanda, working to "green" Dublin with rooftop gardens, or creating a youth dialogue project in Bosnia, the goal is to use the mechanisms of project, process, and business to create a positive impact in response to pressing needs in communities and nations.

Although unique in its approach, the KaosPilots is one of many alternative education programs on the rise around the world focusing on leadership, innovation, social entrepreneurship, and organizational change. So perhaps the question to ask ourselves is not, what does it mean to educate creative, young leaders, but instead, what does it mean for our future if we don't? ◘

November Sky Freyss-Cole is from Wellfleet, Massachusetts. She is a final-year student at the KaosPilots and carried out her World Internship at Pegasus Communications, Inc.

My Story

In 2005, I came across an article about the KaosPilots in a magazine that had magically ended up on my doorstep. Immediately upon reading the words on the pages before me, I knew I had to try to make my way in. A year later, I moved to Denmark and became the first aspiring North American KaosPilot.

Over the last two and a half years, I have acquired tools, experiences, confidence, and abilities to help me realize my dreams. I have gained new ways to view situations and insights into the numerous possibilities that exist for solving the challenges we face. I have become more aware that, in the process of creating positive change, I am only able to start with myself. I need to be aware of my passions, abilities, and visions as well as my values, mental models, and weaknesses in order to join with others to create something bigger than ourselves.

I remember after having been at the KaosPilots for one semester, I returned home to the United States over the holidays faced with the challenge of describing to my friends and family exactly what I was learning. My answer: I'm learning how to work with others. It sounds simple, I know, but that's what stood out most in my mind. Through the process of working in a team, I was getting to know more about communication, conflict, and collaboration. I was beginning to better understand myself and others and how we could get things done together.

I feel this element of group learning is a component that is widely lacking in our traditional school systems, especially in the United States. We are more or less individually insulated all the way through to college. When we head out into the workforce, we are all of a sudden expected to work well with others. Interpersonal skills are some of the qualities most weighted in job interviews, yet the abilities to be with people, communicate ideas, reflect, take criticism, and create visions are not generally a priority in the curricula of our schools.

I was inspired when I heard one of the team leaders welcome the new students this fall. Each year, there is the feeling that things are coming full circle, that we are all part of a learning experience that continues to evolve. In some ways, the new students have similar experiences and epiphanies as those who came before, but underlying everything is the understanding that the new team should and will surpass the previous team's achievements and that all members of the KaosPilots are a part of making that happen.

After these years, I value most my surge in curiosity, my newfound awareness around leadership, and my understanding of how important it is to take risks, be bold and creative, and dare to go beyond what I thought was possible.

—November Sky Freyss-Cole

What You'll Find on the KaosPilots Bookshelf:

Organizational Culture and Leadership by Edgar H. Schein
Building Strong Brands by David A. Aaker
Birth of the Chaordic Age by Dee Hock
Take It Personally by Anita Roddick
Leadership and the New Science: Discovering Order in a Chaotic World by Margaret J. Wheatley
Theory U: Leading from the Future as It Emerges by C. Otto Scharmer
The Rise of the Creative Class: And How It's Transforming Work, Leisure, Community and Everyday Life by Richard Florida

WIRED FOR CHANGE: LEVERAGING INSIGHTS FROM BIOLOGY

BY ANN BUTLER

"Almost no one expected what was coming. It's not fair to blame us for not predicting the unthinkable."

—Daniel H. Mudd,
former chief executive, Fannie Mae
in *The New York Times*, October 8, 2008

Either way you spell it, this former CEO's name is "mud." Though the pun may be entertaining, the result of failing to explore "unthinkable" scenarios of the future—as evidenced by the current financial crisis—is not.

All of us are susceptible to this shortcoming at some point, in part because of what cognitive scientists and others refer to as "mental models." These deeply held assumptions—formed through experience, biology, and culture—filter our perceptions and fix the scope of our thoughts, words, and actions.

Mental models may work for us (for example, when our assumption of future success fuels such an outcome) or against us (as when fear of making a mistake dooms our best-laid plans). Either way, what all mental models share are stealth and a resistance to modification. They persist because they influence what we see by causing us to select information that supports them and filter out contradictory data. So, if I believe all small cars are unsafe, I will notice news stories of crashes involving small vehicles and ignore any stories involving large ones.

TEAM TIP

Consider the investment in building the skills needed to stretch your mental models as a "must have" rather than a "nice-to have."

Unless we learn to identify and modify outmoded mental models, we will continue to cling to a partial view of reality. This tendency can lead to conflict with others who have a different perception, an inability to see new options or solutions to problems, and adherence to existing ways of doing things. Fortunately, the field of neuroscience offers evidence that biology may be on our side: the discovery of so-called mirror neurons and their possible role in hard-wiring empathy and perspective-taking. The act of walking in another's shoes can be the first step toward identifying and modifying our own outdated mental models.

Monkey See, Monkey Do

As is often told of scientific breakthroughs, the discovery of mirror neurons was serendipitous. In the early 1990s, neuroscientist Giacomo Rizzolatti and colleagues were studying brain activity in macaques performing simple tasks, such as eating peanuts. During a break between experiments, a lab assistant picked up a peanut in view of a monkey that was still wired to electrodes capturing brain activity. To Rizzolatti's surprise, the monkey's brain responded as if it had carried out the action itself. This was the first evidence of motor neurons firing in the absence of physical activity. "It took us several years to believe what we were seeing," said Rizzolatti.

Because these nerve cells appeared to be involved in mentally "mirroring" the actions of others, they were eventually termed "mirror neurons"; just the sound of a particular action in the dark can stimulate them. In macaques, mirror neurons reside in the part of the brain that processes sensory information and emotions. Additional studies proved mirror neurons in humans to be even more numerous, widespread, and robust than in monkeys.

In 2005, human brain imaging studies performed by Marco Iacoboni, a neuroscientist and professor at UCLA, established the connection between mirror neurons and empathic response. While mirror neurons responded moderately in subjects watching a hand grasp a coffee cup, substantial neural firing took place when the action was part of a social scene—a table set for a party or a messy table in need of clearing. "The mirror neurons are not just encoding the actions, but going deeper," said Iacoboni. "They seem to respond to emotions or intentions, as well." Researchers suspect that mirror neurons also play a major role, not only in the evolution of empathy, but also in imitative learning and social understanding as well.

Wired for Empathy

Before the discovery of mirror neurons, psychologists believed that we simply theorized other's intentions; now research posits that a biological mechanism is involved. "Our empathic resonance is grounded in the experience of our acting body and the emotions associated with specific movements," said Iacoboni, "as when I observe a circus performer on a hanging wire; I feel I am inside his body."

V.S. Ramachandran, UCSD neuroscience professor and author of the four-volume *Encyclopedia of the Brain*, makes an even bolder claim, stating that the discovery of mirror neurons—which he terms "Gandhi neurons"—is

the underreported story of the decade: "They will do for psychology what DNA did for biology: they will provide a unifying framework and help explain a host of mental abilities that have hitherto remained mysterious and inaccessible to experiments."

Ramachandran's lab investigates the interplay of mirror neurons and the distinctly human achievements of abstraction, symbolism, and language. Mirror neurons may drive our ability to make and understand metaphor and may explain the evolution of the self. According to Ramachandran, neural mirrors create a reinforcing loop between self-awareness and other-awareness: "an autocatalytic cascade that culminated in the fully human sense of self. You say you are being 'self-conscious' when you really mean being conscious of someone else being conscious of you."

Mindfulness for a Change

So, how can this knowledge about mirror neurons help us overcome the negative affects of our mental models? First, knowing that we may be wired for communal meaning-making strengthens the case for practices and tools that bring people together to openly express their individual experiences and perspectives. These include methods that support shared visioning, group learning, scenario planning, dialogue, and non-hierarchical decision-making.

Second, in *The Fifth Discipline* and *The Fifth Discipline Fieldbook*, Peter Senge and his coauthors address ways we can air out unproductive mental models on an individual level. These include recognizing when we jump to conclusions rather than maintain an observational stance, and being vigilant of contradictions between what we say we believe and what we actually do. The ladder of inference, balancing advocacy and inquiry, and the left-hand column are just some of the ways in which we can improve communication and open ourselves to different perspectives.

Finally, beyond empathy and rigorous self-examination, simply being more mindful helps us identify and adjust our working mental models. Mindfulness is placing one's full attention on what is happening in and around oneself from moment to moment. While bringing our chattering brain to stillness is a challenge, regular practice can help us get there (see "Mindfulness 101"). When freed from the impulse to integrate our experience of the here and now with the past, the future, arising emotions, and the continual self-talk, we can achieve a state of clarity and start to see the world in new ways.

Some corporations have already begun to bring mindfulness techniques into the workplace, including Apple Computers, Toyota, Volvo, General Motors, and IBM. They report reduced turnover and healthcare costs, improved job satisfaction and performance, and a rise in empathy and teamwork. With the recent advances in the science of mirror neurons, it appears our biology supports these practices typical of authentic learning organizations. ◘

Ann Butler, M.Ed, is a freelance writer in Massachusetts where she writes about science, nature, and teaching. She has been a regular contributor to *The Boston Globe* and other publications.

MINDFULNESS 101

- Bring mind and body to stillness
- Focus on the breath
- Allow the here and now to take all your attention
- Receive these sensations without judgment
- Be an objective observer of any thoughts and emotions which arise
- Neither grasp nor push away the experience

HUMBLE Guidelines for Uncertain Times by Ginny Wiley

When the going gets tough, the tough think systems. Here are some HUMBLE guidelines for responding with confidence to conditions of dynamic uncertainty. Print them and post them in your workspace as a sustaining daily reference.

H—How did we get into this predicament?
How do we learn from what has happened so that we don't make the same mistakes again? How do we summon the courage to step up to the plate and take personal and organizational responsibility for the consequences of our actions?

It's easy to think of us vs. them, Main Street vs. Wall Street, the haves vs. the have nots. As systems thinkers, however, we know that we are all part of the system. We need to move from blame to accountability, to recognize the role many of us played in this debacle by not asking questions earlier. We knew that housing prices couldn't rise forever; we knew that unsecured lending was risky; we knew that if it seemed too good to be true it probably was!

U—Unintended consequences
As we move forward, we will challenge decisions by looking for unintended consequences before we act (Fixes that Fail).

What are the unintended consequences of bailing out (or not bailing out) a financial institution or an auto maker or providing relief for untenable mortgages? What are the unintended consequences to organizations of layoffs, or delays in capital investment, or the elimination of all training? On a personal level, what are the unintended consequences of liquidating assets, cashing in a 401K, or putting off medical care?

M—Mental models
Let's challenge all of our mental models! Give some thought to a specific situation from the vantage point of three or four different stakeholders. When we think we have it tough, can we imagine the impact of this situation on those who had far fewer resources to begin with?

B—Balancing loops
Remember that reinforcing loops cannot go on forever, be they vicious or virtuous. Think about possible balancing loops that are (or will be) at play as the situation seems to be getting worse. For example, as housing prices fall there will be some good deals on houses; with stock prices down investing in a retirement plan will buy you more shares which eventually (remember time delays) should result in more value. Consider scenarios for the impact of different balancing loops.

L—Long- versus short-term solutions
Short-term solutions tend to relieve pain or stress, but are frequently needed and applied at the event level. Ultimately we need to address the long-term issues.

Think about the Shifting the Burden archetype. Short-term solutions are fine (and often necessary) but not at the expense of the long-term solution. Ask the question: What might be the unintended consequence of the short-term "fix" that could seriously undermine actions needed to implement the long-term (fundamental) decision?

E—Easy answers usually lead back in….
Easy/comfortable answers and actions usually only provide symptomatic relief. Remember the Albert Einstein quote: "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." We need to think systemically.

Ginny Wiley is the former president of Pegasus Communications.

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John Seely Brown, *BusinessWeek* columnist, independent co-chairman of the Deloitte Center for Edge Innovation, and former director of Xerox's Palo Alto Research Center

Peter Senge, author of *The Fifth Discipline*, co-author of *The Necessary Revolution*, and founding chair of SoL, the Society for Organizational Learning

Linda Booth Sweeney, systems educator and author of *Connected Wisdom: Living Stories about Living Systems* and *The Systems Thinking Playbook*

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FROM THE FIELD

2009 Japan Prize Honors Dennis Meadows

Dennis Meadows, Ph.D., Professor Emeritus of Systems Policy, University of New Hampshire, has been awarded the 2009 Japan Prize for his pioneering work on sustainability using system dynamics. The Japan Prize, one of the world's most prestigious awards in science and technology, "is awarded to people from all parts of the world whose original and outstanding achievements in science and technology are recognized as having advanced the frontiers of knowledge and served the cause of peace and prosperity for mankind."

Dennis is recognized for leading the research team that used economic theory and simulation modeling to project the impact of human activity on the Earth. This research was published in 1972 as *The Limits to Growth*. Over 30 years and in the face of much skepticism, Dennis and his colleagues continued to show that there are certain constraints on the planet's physical capacity—including resources, environment, soil, and so on—and if populations and economies were allowed to continue growing without restraint, humanity would face a crisis.

Each Japan Prize laureate receives a certificate of merit, a commemorative medal, and a cash award of 50 million yen ($550,000). The presentation ceremony will be held in the presence of the Emperor and Empress and other dignitaries in Tokyo in April. For more information, go to http://www.japanprize.jp/data/jstf/2009jpnews41_e.pdf

Dennis Meadows shares his learnings in *Growth on a Finite Planet,* a 50-minute video presentation. For more details, **click here**.

LEARNING QUOTES

"Change will not come if we wait for some other person or some other time. We are the ones we've been waiting for. We are the change that we seek."

—Barack Obama

"In the course of fighting the present fire, we must not abandon our efforts to create the fire-resistant structure of the future."

—Randy Kehler

"Change happens by listening and then starting a dialogue with the people who are doing something you don't believe is right."

—Jane Goodall

For information about reading and using causal loop diagrams, go to www.pegasuscom.com/cld.html.

THE SYSTEMS THINKER®

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THE SYSTEMS THINKER® (ISSN 1050-2726) is published 10 times a year by Pegasus Communications, Inc. Signed articles represent the opinions of the authors and not necessarily those of the editors. The list price is $189.00 for one year. Site licenses, volume discounts, and back issues are also available.

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