10-21-2013

The Science and Psychology of Survival

Thomas Kroll
College of Saint Benedict/Saint John's University, tkroll@csbsju.edu

Follow this and additional works at: https://digitalcommons.csbsju.edu/arboretum_lectures

Part of the Environmental Sciences Commons, Leisure Studies Commons, and the Psychology Commons

Recommended Citation

This Presentation is brought to you for free and open access by DigitalCommons@CSB/SJU. It has been accepted for inclusion in Arboretum Lectures by an authorized administrator of DigitalCommons@CSB/SJU. For more information, please contact digitalcommons@csbsju.edu.
Welcome to Survival


These lessons are applicable whether you are lost in a wilderness, caught in a bad snowstorm on I-94, or trying to figure out where your hostel is 2 am.
Most people live in low-risk environments designed specifically so that consequences of inattention are trivial.

But if we take that attitude into the wild—or into any risky area of life, love, or business—the cost can be high.

Nature does not adjust to our level of skill!
The emotional system (from the Latin verb *emovered*, “to move away,”) works powerfully and quickly to motivate behavior.

Fear is a normal, natural, and desirable emotion.
It is not a lack of fear that separates elite performers from the rest of us.

They are afraid too, but they are not overwhelmed by it.

Confronted with a changing environment, they rapidly adapt.

All people experience the emotion of fear. **Survivors** balance fear with action sooner.

**Tip:** HUMOR HELPS!
Your brain is wired to receive and process sensory signals in 2 ways.

1) Neocortex does the analysis and conscious decisions. (Reasoned response)

2) Amygdala screens for danger and get signals milliseconds sooner. (Emotional response)

- Reason is slower, deliberate, and open to debate.
- Emotion is quick, unhesitating, and sure of itself – even if it is wrong.
Plato called these emotional reactions the “horse of emotion.”

Reason is the “jockey.”

You need both!

The trick is to get the jockey in charge of the horse as quickly as possible.
MENTAL MODEL

Your brain creates “mental models” for nearly every situation using your experiences, training and education.

These “mental models” provide understanding which can be applied to a future similar situation.

• Manners at a restaurant.
• Driving a car on ice.
• Using a fire extinguisher.
MENTAL MODEL

Your brain automatically seeks the closest mental model it knows to handle a new situation.

What is your mental model for interacting with a cop?

Will it work with a corrupt cop?

What is your mental model for being safe with a fire outdoors?

Will it work for this fire?
NOTE: “You are creating a world that is congruent with your interpretation, even though it may be the wrong world.” — Sociologist Charles Perrow
Training and experience expand your mental model.

A correct mental model allows correct actions to automatically flow from your emotional response.

NOTE: An incorrect mental model allows incorrect automatic emotional reactions.
Planning provides a “future” mental model for the expected event. **Plans are good!**

But most emergencies are by definition not part of a plan. So you need to be able to quickly adapt the plan. Adaptation requires new information to be incorporated.

Survivors recognize when the current plan no longer fits. **Survivors welcome new info!** Survivors adapt the plan to new info.
The Science and Psychology of Survival

Ten Lessons from Deep Survival chosen by T. Kroll
Lesson #1

Prevent a problem.

Analyze risk vs. reward.
When facing a hazard, ask yourself:

What is the reward I am seeking?

What is the most I would pay for it?
Lesson #2

Make a good plan A!
Have a plan B.
Maybe even have a plan C.

But, adaption is important than sticking to the plan.
Be able to let go of Plan A and move to Plan B.

TIP: Prepare well! Plan B is always easier if Plan A included stuff like food, map, jacket, cell phone, and matches.
Psychologists who study survival say that people who are rule followers don’t do as well as those who are of independent mind and spirit.

Why? Because they are more willing to adapt.
“THE PESSIMIST COMPLAINS ABOUT THE WIND; THE OPTIMIST EXPECTS IT TO CHANGE; THE REALIST ADJUSTS THE SAILS.”

WILLIAM A. WARD

A realist adapts.
Lesson #3

The most successful are open to the changing nature of their environment.

They are curious about new information.
Lesson #4

Those that survive do not impose pre-existing patterns on new information, but rather allow new information to reshape their mental models.
The person who has the best chance of handling a situation well is usually the one with the best mental pictures or images of what is actually occurring in the environment.
Watch out:

Researchers point out that people tend to take any information as confirmation of their existing mental models.
Problem to avoid:

Whenever you start looking at your map and saying something like, “Well, that lake could have dried up,” or, “Maybe that old church fell down last year,” a big red light should go off.

You’re trying to make reality conform to your existing mental model rather than seeing what’s there —

You are “bending the map”!
Lesson #5

Update your mental model.

- Learn from training and the experience of yourself and others.
- Be in the moment! Pay attention to new information and add it to your mental model.
MENTAL MODEL

Use the best training, experience, and advice you can find to build a plan and an updated mental model, especially before going into a dangerous situation.
Lesson #6

Discard the hope of rescue so that your brain settles down.
Lesson #7

Do the next right thing.

A small thing done right is a good action.
Break the huge problem into simpler chunks or steps.

Simple directed action is the key to regaining normal psychological functioning.
Lesson #8

Be willing to backtrack if you are lost.
Psychologists who study the behavior of people who get lost report that very few ever backtrack.

And it is so easy to backtrack!

TIP: When going out, look backwards often so it seems familiar.
Panic usually implies tearing around or thrashing through the brush, but in its earlier stages it is less frantic...

it all starts when a person looks about and finds that a supposedly familiar location now appears totally strange, or when they start to realize that it seems to be taking longer to reach a particular place than they had expected.

There is a tendency to hurry to “find the right place.” Maybe it’s just over that little ridge.
You feel lost when reality doesn’t match the plan/mental model.

Five General Stages in Getting Lost

Deny that you’re disoriented; press on with growing urgency.

Realize you’re lost; actions become frantic and unproductive.

Exhausted, you seek some place that matches the mental map you have.

You deteriorate both rationally and emotionally as the above strategy fails to resolve the conflict.

Finally, you run out of options and energy and become resigned to your plight.
Survival tip: By definition, if you accept your current location as your new home, you are not lost.

And then you can spend your energy and emotions surviving in your “new” home while preparing to move back to your “previous” home.
Lesson #9

Think of others, not yourself. People survive best when they try to live for others, such as spouses, children, or other loved ones.
Lesson #10

Surrender to reality. But be positive.

A survivor says:
“I may die. I’ll probably die. But I’m going to keep going anyway.”
TEN TENETS OF SURVIVAL

Lesson #1: Analyze risk vs. reward. Prevent a problem.

Lesson #2: Make a good plan and prepare! But, adaption is important than sticking to the plan. Be able to let go of Plan A and move to Plan B.

Lesson #3: The most successful are open to the changing nature of their environment. They are curious to know what’s up.

Lesson #4: Those that survive do not impose pre-existing patterns on new information, but rather allow new information reshape their mental models.

Lesson #5: Update your mental model. Learn from training and the experience of yourself and others. Be in the moment! Pay attention to new information.

Lesson #6: Discard the hope of rescue so that your brain settles down.

Lesson #7: Do the next right thing. A small thing done right is a good action.

Lesson #8: Be willing to backtrack if you are lost.

Lesson #9: Think of others, not yourself. People survive best when they try to live for others.

Lesson #10: Surrender to reality. But be positive. A survivor says: “I may die. I’ll probably die. But I’m going to keep going anyway.”
Most people are incapable of performing any but the simplest tasks under stress.

Your working memory can only handle 5-8 items at once and is “stressed” when flooded with too many items to process.

Stress erodes the brain’s ability to perceive the full reality.

You see less, hear less, miss more cues from the environment, and make mistakes.
Experience is nothing more than the engine that drives adaptation.

You need to know if your particular experience has produced the sort of adaptation that will contribute to survival in the particular environment you choose.

And when the environment changes, you have to be aware that your own experience might be inappropriate.
Lesson #x

Prevent a problem.

Don’t over-celebrate the summit. You are only halfway to your goal of getting home.
Don’t let down your guard when you are already tired.

You could cause an emergency.

Note: Once you are in an emergency situation, DO celebrate even little achievements.
Planning is a Deep Instinct

Plans are an integral part of survival. Plans are generated as one of the many outputs of the brain as it goes about its business of mapping the body and the environment, along with the events taking place in both, resulting in adaptation.
stranded in big-time wilderness without clothes, matches, water, or food. He had nothing.

All afternoon, Williams worked his way up hills and skied down them, but he couldn’t reorient himself. “There was not much more I could do on skis,” so he left them, kept his poles, and began hiking. As night fell, he propped himself against some trees. “Whenever I’d fall asleep, I’d fall away from the tree,” he said, which kept him awake. He knew if he fell asleep, he’d die. He melted snow in his mouth for water. Periodically, he’d get up and do calisthenics to stay warm. It was bad. But he was doing something about it.

The blizzard continued into the next day. Williams was slogging through snow up to his mid-thighs. He inadvertently crossed a snow-covered stream, and like the man in Jack London’s story, he broke through the surface and filled his boots with water. Then his feet froze solid. He tried to build a fire. “An hour before dark that evening, I gathered kindling and stacked it against a granite rock face.” Williams then crumpled up the money he had in his pocket and struck his ski pole tip against the rock for sparks, but he couldn’t start a fire. He struck it until it broke. He later learned that if he’d been able to make a fire and thaw his feet, they would have had to be amputated.

His second night, the thermometer at Truckee hit 19 degrees below zero, which meant that where Williams found himself, it probably reached 50 below. By all rights, with frozen feet, he should have died. As it was, Williams went into serious hypothermia, shaking uncontrollably, thinking of his family, trying to muster his will to live, and praying: “Dear God, take my feet, don’t worry about that, help me get through this thing.” He had a son back home, and he wanted to see him again.

His wife and son were in Florida on Christmas vacation, where Williams was supposed to meet them a week later, so they didn’t even realize he was missing for a time. When he missed appointments and didn’t check his mail, people knew something was wrong and contacted his wife. She was told by authorities that no
one could survive a night out in such cold dressed as Williams was and that she had better make funeral arrangements and get her finances in order.

At first light on the third day, the blizzard stopped, the sun came out, and Williams doggedly started out again. The sun topped the ridge at 11 A.M., and he leaned against a tree and let it warm him.

An hour later, he heard the snowmobiles, and a little while later he was short-hauled off by helicopter. "When my son heard my voice," Williams told me, "he just started crying, and so did I." Williams still has three toes left. He also has a rare and precious knowledge of the world.

Many factors contributed to Williams's surviving what would have killed most people. He was extremely fit, jogging and roller blading the steep hills of San Francisco. He was a graduate of the Naval Academy and had been a Marine fighter pilot. And he'd had the drive, strength, and character to climb the corporate ladder; he was president and chief executive officer of Premisys Communications, a company with $100 million in annual sales at the time. So, as a spokesman for the hospital that treated Williams put it, "His mental toughness was unreal."

All of that contributed to Williams's survival. But I think the key thing was his son. I believe that Nick Jr. brought his father back, though he might never know it unless his own son does the same for him one day. I couldn't help thinking about Nick Jr. hearing Williams's story over and over and then wondering why his father survived an environment that would have killed most men. Would he believe that his father was more than human? Would he go looking for that right stuff, that hard-soft, willful-flexible adaptability that had kept his father alive?
Lecture Four
Case Study Handout
Page 140-142: Backcountry Blizzard. Apply the seven tenets of survival.

- Which ones did Nick Williams follow?
- Which ones did he miss?
- What do you think was the number one reason he survived?
- Do you think he correctly estimated his risk?
Our plans or ideas of future events are stored in memory just as past events are.

To the brain’s mental model, the future is as real as the past.

You feel lost when reality doesn’t match the plan/mental model.
SEVEN TENETS OF SURVIVAL

Lesson #1: The most successful are open to the changing nature of their environment. They are curious to know what’s up.

Lesson #2: In nature, adaption is important; the plan is not. We must plan. But we must be able to let go of the plan, too.

Lesson #3: Those that survive do not impose pre-existing patterns on new information, but rather allow new information reshape their mental models.

Lesson #4: Be here now—pay attention and keep an up-to-date mental model.

Lesson #5: Be willing to backtrack if you are lost.

Lesson #6: Discard the hope of rescue so that your brain settles down.

Lesson #7: When all else fails think of others, not yourself. People survive best when they try to live for others, such as spouses, children, or other loved ones.
Journal Question Due Friday, Sept 26 by e-mail.

Which of the 7 tenets do you think is most important and why?

75-100 words is fine. Be thoughtful!

500 words is also fine, but it had better be very, very good.
“THE PESSIMIST COMPLAINS ABOUT THE WIND; THE OPTIMIST EXPECTS IT TO CHANGE; THE REALIST ADJUSTS THE SAILS.”

WILLIAM A. WARD
In daily life, people operate on the necessary illusion that they know where they are. Much of the time, they don’t.

The only time most people are not lost to some degree is when they are at home.