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Learning Organizations Part 4: Mental Models and Cognitive Illusions

by Marilyn Herasymowych MCE

"... even when we are engaged in high-level administration, in the courts, in the hospital, or in the family, we are all prey to certain cognitive illusions. *And* we are deluded in complete innocence, in good faith, not even realizing we are so misled."

— Massimo Piattelli-Palmarini,
Inevitable Illusions (1994)

A couple of months ago, Henry, Deborah, and I were driving through the town of Beaumont. As we passed through the town, we encountered a series of unusual stop signs at each intersection. The stop signs were huge, with a small 4-WAY sign below each one. Henry, who was driving, stopped at each sign.

The opposing traffic stopped as well. But when we reached the last sign in the series, none of us could figure out why the opposing car was only slowing down and not stopping. After all, it was a 4-WAY stop. **Wrong!!!** Although we were not aware of it, we were suffering from a cognitive illusion. This was **not** a 4-WAY stop; it was a 2-WAY stop sign at a major highway. Even though there was exactly the same giant stop sign at this intersection, there was no smaller 4-WAY sign below it. None of us realized this. I even recall asking Henry why he was waiting, since it was his turn to go.

What happened? With each stop sign in the series, we built up a pattern of assumptions. These assumptions ultimately led to a bias in our thinking. Such biases are called *cognitive illusions*. The cognitive illusion occurred when we believed that the last stop sign was the same as the others. Massimo Piattelli-Palmarini, author of **Inevitable Illusions**, calls these illusions *mental tunnels*. In this case, the mental tunnel was that those giant stop signs were all 4-WAY stop signs. Because the last stop sign was the same size as the

others, this reinforced our belief that this was another 4-WAY stop. Even though this was incorrect, we believed in our *mental tunnel*.

There are several intriguing parts to this puzzle. One piece of interesting information about this last stop sign is that this intersection is considered a *killer intersection*. There have been many accidents and deaths at this intersection. Could this be why the other car on the highway slowed down at this intersection? Did the car slowing down reinforce our incorrect assumptions? All three of us believed that the other car was slowing down to stop at yet another 4-WAY stop sign. This illusion could have been fatal, had Henry not questioned what he saw. The other car did not stop.

I began to think about the accidents that have occurred at this intersection. **Could most of the accidents have occurred as a result of a driver, at this same stop sign, experiencing the same cognitive illusion that we did?**

There is yet another piece of the puzzle. According to Piattelli-Palmarini's definition of cognitive illusions, even though we now know that this last stop sign is not a 4-WAY stop sign, **we will probably**

experience the same cognitive illusion the next time we pass through Beaumont. The illusion will still exhibit itself; however, we will be more aware of it.

What impact do cognitive illusions have on your everyday world of work and life? You make decisions based on your belief in the validity of the cognitive illusions that you experience, regardless of whether your belief is right or wrong. These cognitive illusions occur everywhere: in the boardroom, in the coffee room, at a conference, and on the shop floor. What makes these illusions so dangerous is that you believe in them so much that you would lay money on their validity.

Although Peter Senge does not talk about cognitive illusions in his books, his second discipline, **Mental Models**, does state how difficult mental models are to recognize and to change. According to the research, our psyches contain even more deeply embedded cognitive illusions.

However, there is hope. Piattelli-Palmarini's premise is that we can guard against these cognitive Illusions **only** if we can recognize them.

Chapter 7 of his book describes the *seven deadly sins* of falling prey to cognitive illusions:

1. **Overconfidence:** Our unwavering belief that we are right prevents us from questioning.
2. **Magical thinking:** Even when we know something is not true, we still believe that it is.

3. **Predictability in hindsight:** "It turns out that with hindsight we all honestly think we could have predicted what happened, as long as we know, or think we know, that it actually did happen" (p. 124).

4. **Anchoring:** "Consciously or unconsciously, we always remain anchored to our original opinion, and we correct that view only by starting from that same opinion" (p. 127).

5. **Ease of representation:** We continue to operate from a set of generalizations, even when these generalizations don't fit the situation at all.

6. **Probability blindness:** You may believe that the numbers 1, 2, 3, 4, 5, and 6 have less chance of winning the **649** than a more random number. However, 1, 2, 3, 4, 5, and 6 have exactly the same chance of winning as any other series of numbers.

7. **Reconsideration under suitable scripts:** "... a plausible and well-told story can lead us to hold as *objectively* probable events that, just minutes before, we would have considered totally improbable" (p.135).

One last thing: if you are saying to yourself that you do not suffer from these cognitive illusions, then you are committing the first deadly sin of *overconfidence*. If you are saying that this is not supported by research, then you are committing the second deadly sin of *magical thinking*. If you are saying that you won't suffer from these cognitive illusions now that you know about them, then you are

committing the third deadly sin of *predictability in hindsight*. Be careful; these cognitive illusions are slippery. They sneak up on you when you least expect them, and when you are least aware of them. In their extreme, cognitive illusions show up as prejudice. Even when we are aware of our cognitive illusions, we still want to believe in them. It takes courage to question our assumptions.

This article cannot do justice to Piattelli-Palmarini's thesis. You must read his book to gain a more full understanding. Don't be surprised if you come away more confused and frustrated. Remember that he is trying to make you aware of your own cognitive illusions, and these are very hard for many of us to accept.

"It never ceases to surprise me that, more or less 20 years after these illusions were first discovered, and after dozens of books and hundreds of articles have been printed on the subject of cognitive illusions, almost no one except for a select circle of specialists seems to have taken this discovery seriously."

— Massimo Piattelli-Palmarini,
Inevitable Illusions (1994)

MHA Institute Inc.
Unit 248, Suite 205
259 Midpark Way SE
Calgary, Alberta T2X 1M2 Canada

Phone: (403) 257-4597
Fax: (403) 257-4649
E-mail: info@mhainstitute.ca
Web: www.mhainstitute.ca