MINDFUL THINKING

Cognitive Strategies for Adapting in the Age of Uncertainty

By Mihnea Moldoveanu and Ellen Langer

The complexity of today's management environment demands leaders who can think in creative, new ways. ***Mihnea Moldoveanu,*** *assistant professor of Strategic Management at the Rotman School, and* ***Ellen Langer****, professor of Social Psychology at Harvard, argue that a new way of thinking for the New Economy calls not only for new theories, but for new ways of thinking about theories. In this article, they describe cognitive strategies that allow business leaders to see things in a whole new light.*

If the barber shaves only those who do not shave themselves, then who shaves the barber? It cannot be the barber himself, because he only shaves those who do not shave themselves. It cannot be someone else, because the barber shaves all those who do not shave themselves. The logician you call on your cellular phone tells you this is an example of a paradox – a syllogism that leads from true premises to untenable conclusions. What to do? What to think? The solution to the paradox is that no such barber exists. To get to it, however, you have to break out of the bounds of the problem statement, and consider the way in which the problem is stated as the problem to be solved.

Managers are often trapped by their own problem statements. Shifting the way a problem is framed requires seeing it from multiple perspectives.

If we want to train industry-makers, we need to teach the cognitive skills required to formulate new problems to replace old ones. New problem-statements are often based on new ways of seeing, new disciplines and new assumptions.

Unfortunately, business education is divided up into specialties that are individually monopolized by age-old disciplines: finance, operations, economics, accounting, organizational behavior, technology strategy and so forth. When in 'finance' class, the would-be 'industry-makers' solve finance problems; when in 'operations' class, they solve 'operations' problems. But real-world problems often require solving engineering problems in operations scenarios, programming problems in hardware scenarios, and psychological problems in economic scenarios.

What are the cognitive and meta-cognitive skills (ie: the ways in which we think our thoughts and believe our beliefs) required to take control of the New Economy? We will venture to build a case for a new way of thinking about thinking and learning, based on our study of the ways in which people believe their beliefs.

Cognitive commitment to an idea or a theory, we will argue, is not a friend, but an enemy that lures us into the lukewarm waters of various disciplines that strive to keep us there. Getting out of a cognitive commitment, however, is just as difficult as getting out of a bad relationship. New strategies are required to help us win the ensuing mental battles, and new thinking is required to craft these strategies.

Our collective work on individual cognition and learning and the processes by which beliefs get selected, validated or rejected reveals that:

- **Mindsets are sticky:** they are much more easily prevented than cured once they have been 'learned';
- **Mindsets are alive:** they are active, not objects. They stick around because we actively defend them against refutation that disconfirms the theories on which they rest.

This, at least, is what studies of individual and group psychology seem to show. Psychologists often stop here. On the other hand, epistemology (the study of knowledge itself) and the history of science suggest that,

- **Mindsets are provisional:** they can be changed, modified, or discarded when no longer applicable because there is no theory that is ultimately justified. All theories should be regarded as subject to modification, improvement or deletion;
- **Mindsets are not determined by experiences:** the 'cold, hard facts' do not 'determine' any particular theory (although they do shape and guide what we can sensibly and truthfully say). We are ultimately free to choose, defend, or deport our cognitive commitments.

We have set out to map cognitive and meta-cognitive strategies aimed at getting people 'unhooked' from their own ideas, such that they may perceive old problems in new ways, along with new problems that open up whenever we become slightly more responsive to the anomalies that surround us. These strategies are not in any sense 'rules', but rather guides to sequences of cognitive choices – choices among our beliefs, models and theories. They are not meant to contain or constrain cognition, but rather to guide and shape inquiry.

Thinking about Thinking

The new informational and institutional landscape calls for new ways of thinking – and of dealing with complexity, uncertainty and change. Many of the models and theories that are currently being taught in universities rely on a dated metaphysical model of the world: the universe as a giant piece of machinery, whose components are linked by the iron chains of causation. This 'world view' has become ensconced into the ways in which we inquire into the working of people, groups and institutions: we expect law-like regularities to show up everywhere, and discover them even in sequences of events that have been designed to be 'random' so as to fool us, as experiments on gamblers indicate. As Israeli psychologist Arie Kruglanski has shown, experiments on people's responses to randomness and uncertainty demonstrate that we 'find' patterns everywhere, as if motivated to close our minds to ambiguity.

> " To the answer embedded in every question, answer with a question from a different answer."
> — *Gilles Deleuze, French Philosopher*

Although causation is not clearly established as an explanatory device on logical grounds, it is very well established as an explanatory device on psychological grounds. Causal explanations have an air of certainty to them that probabilistic explanations and explanations based on mechanisms lack; and certainty, it turns out, is something we crave.

A new way of thinking for the New Economy calls not only for new theories, but for new ways of thinking about theories, and new meanings as to what constitutes a theory. It calls for new strategies of playing with your own mind, such as:

- **thinking conditionally**, in terms of what various objects *could* be, rather than in terms of what they *are*, of what *could* rather than what *will* happen. Thinking conditionally gives us the freedom to flex the muscles of perception. Experiments carried out by one of us show that presenting information in a conditional fashion leads to better performance on cognitive tasks that require the use of that information in new ways;
- **thinking in terms of particulars,** rather than solely in terms of universal rules and laws, lets us perceive the novel aspect of a situation and produce the adaptive behavior that may be required to successfully deal with it;
- **thinking in terms of intentions rather than causes**, can unfreeze our cognitive commitment to the 'one true picture' of the world that we may be stuck with. Thinking in terms of intentions is at the core of the great discoveries in cognitive and social psychology, which have made us aware of the relationship between the way we want to see the world and the way in which we currently see it;
- **thinking spirally**, in terms of sequences of events that amplify each other, rather than linearly, in terms of causes and effects, lets us break out of the narrow corner of the immediate experience;
- **thinking holistically**, in terms of the characteristics of a system that cannot be analyzed in terms of components and sub-components of that system, can make the escape from narrow analytical corners easy and rewarding;
- **thinking consequentially**, not only in terms of choices and the consequences of those choices, but also in terms of the conse-

quences of choosing to *think* in a particular way. This allows us to examine the effects of our beliefs on our own ability to act decisively and successfully;

•thinking in parallel, carrying forward multiple possible models of the world rather than discarding all but the 'one true model' – lets us form multiple perspectives of the same phenomenon;

•thinking like a detective, by treating all theories, models and prescriptions as hypotheses to be tested through our actions rather than conclusory statements of 'truth' to be followed unquestioningly;

•thinking recursively, not only about the relation between 'data' and 'theory' or between 'model' and 'object', but also about the ways in which we think about the links between theory and data, or model and object.

Thinking Interactively

We reason about each other all of the time, but very rarely reason *with* each other. We think interpersonally, but rarely think interactively. We often make attributions and generalize from very few instances to construct entire schemas into which our experiences neatly fit. But, we do not stop to ask: 'what if everyone else is also using the same schemas?'

Social psychologists have pointed out for a long time that interpersonal reasoning is based on a set of metaphors and schemas that help us organize our experiences and take swift action. We are quick to categorize others at work as 'gamesmen', 'schmoozers', 'political animals', 'leaders', 'followers' and 'sycophants'. That means, however, that others may see *us* as gamesmen or schmoozers as well.

Far less attention, has been paid to the ways in which people think about what other people think, about what other people *think* they think, and so forth. Yet, this form of interpersonal mindfulness is critical to our being able to successfully engage in even the most trivial coordination tasks, such as keeping an appointment for a meeting (we think that the other thinks we will make it), telling a plausible falsehood (we think the other thinks that we are telling the truth, and that they think we think they think we are telling the truth, otherwise we would give ourselves away by a nervous twitch). Most social reasoning, in fact, is interactive – even though we may not be directly conscious of it. Becoming conscious of the structures of interactive reasoning that we use can make us more successful players of the social games, sub-games and super-games that often characterize organizational life.

"We see things not as they are, but as we are."
— The Talmud

Thinking Dialectically

Dialectical thinking plays various ideas and theories off each other without seeking to establish any one of them with absolute certainty. While goal-oriented thinking seeks certainty and often shuns questioning, dialectical thinking puts forth ideas with an eye to challenging or refuting them using other ideas or theories. When choices must be made between alternative points of view, it is with an understanding that these choices are never absolutely justified.

While it may seem that such playful thinking can only be suitably engaged in by poets and philosophers, it is nevertheless highly useful as a practical tool for decision-makers in complex environments, where 'certainty' is costly, as the financier and philanthropist George Soros has recently argued.

Significant barriers must be overcome in order to bring dialectical thinking into the business education process. Quite often in the classroom of the professional school, 'the right answer' consists of merely articulating how a case study fits under a general principle (a model or a theory). 'Cracking the case' means, quite often 'applying the rules' that appear on page 'xyz' of a textbook. This pedagogical device efficiently solves the immediate problems of the teacher and the taught, such as producing a course that is easy to grade and whose successful completion depends on at least showing up. But it is unlikely that it builds the skills necessary to formulate or re-formulate the problems that will be encountered in business life. A manager's predicament does not come packaged as a case study, and definitely not as a case that has been tailored for the theory it is aiming to illustrate.

Invoking Scripts

What principles and immovable concepts are to individual minds, scripts are to interpersonal relations, as the work of American psychologist Bob Abelson has shown. The teacher teaches. In his own mind, he has cognitive jurisdiction over the subject matter. His 'script' calls for him to be correct all of the time, for the student to be 'incapable of giving the right answer' some or most of the time.

In the teacher's script, the student is in the classroom to learn, to be evaluated, and to fail at least some of the time. Otherwise, there would not be much that the teacher could teach the student. Forced grading curves reinforce the teacher script. They legislate, *ex ante* that most students must get a grade that is less than the 'top' grade in the class.

Having figured out the teacher's 'script', the student proceeds to 'play' it by producing behavior targeted at reinforcing the script in order to achieve optimum results. The student's script calls for behavior that is designed to produce not necessarily the greatest amount of knowledge, but the most favorable impression on the teacher. These two goals are not always (if ever) identical. The student realizes that the 'teacher must teach'. She also realizes that the quickest way to a teacher's heart (and to good grades) is to 'play the game' of repeating back to the teacher what the latter has presented as 'knowledge' to the classroom.

The student counts on the fact that the teacher is too self-deceived to see through the student's strategy of 'appeasement'. With every action that the student takes, she reinforces the teacher's 'teachers must teach' script. With every reward and punishment that the teacher metes out to students, he reinforces the 'teacher is stupid enough to be flattered' script that the student has. The result is a mutually reinforcing spiral of actions that jointly perpetuate the two scripts.

Dialectical thinking helps break us out of these self-defeating psychological dynamics. It focuses on empirical facts as challenges to theories and on theories as challenges to known interpretations of empirical observations. 'Cognitive jurisdiction' breaks down, and the 'one continued on page 39

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right answer' axiom no longer anchors the dynamic of mutual attribution of stupidity between those who speak and those who (may only pretend to) listen.

When the purpose of the classroom becomes the implicit training of dialectical thinking rather than the explicit imprinting of particular models, the very theories that once supplied the 'right answers' on which whole grading schemes were based become the subject of scrutiny. Sure, finance theory makes some interesting predictions about the relationship between risk and return in various markets, but how does it square with the gamut of empirical findings showing that most people fail to be 'rational', by the same norms of rationality that are often pre-supposed in order to make sense of empirical findings regarding people's trading behavior? Sure, traditional industrial economics has explained a wealth of patterns relating market structure, firm behavior and firm profits in various industries, but what if each of the firms' managers in a market starts thinking about what all of the other firms' managers are thinking, about what all of the other managers are thinking the firms' own managers are thinking, and so forth?'

When we think dialectically, we actively strive to construct counterexamples and empirical disconfirmations of our theories, as well as relevant alternative explanations of our empirical findings. We go for facts in order to provide limiting cases of our theories, and for theories in order to undermine our own certainty in the 'fact-hood' of our facts. In the process, we become free from both 'facts' and 'theories', not in the sense that we can ignore them, but in the sense that we are free to criticize, re-interpret and eventually discard them.

We suspect that dialectical thinking can be stimulated by engaging one's own tasks playfully, and treating them like 'play' rather than 'work'. As Harvard research has shown, engaging in a task where performance depends on acuity and sensitivity to anomaly as 'play' rather than 'work' leads to better performance on that task. Moreover, cognitive commitments – like many physiological ailments – are very difficult to reverse, but they are easy to prevent. Recent work conducted by one of us has shown that presenting information in a conditional way ('x could be thought of as y') rather than an absolute way ('x is y') significantly improves performance on tasks where success depends on innovative uses of an object.

By Way of Conclusion

In complex, fast paced environments, 'letting our ideas die in our stead' – as the philosopher Karl Popper has put it – is an art that we should try to become more proficient at. 'Seeing clearly' and 'being open to novelty' depend on not holding any of our beliefs too closely. The development of the cognitive and metacognitive skills that allow us to integrate theory and observation; ideas from different schools of thought; and intuitions coming from different minds is a new discipline, which brings together insights from psychology, economics, philosophy, sociology and anthropology to shed insight on the ways in which we believe our beliefs. It is one worth building up and fashioning into tools that can transform our psychological processes.

'May you live in interesting times' – an old Chinese curse goes. Well, we do. And, it's not a curse. RM

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