

Deep Smarts: Experience-Based Wisdom

A presentation by

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March 16, 2005

Synopsis by Rod Cox

"Throughout your organization are people whose intuition, judgment, and knowledge, both explicit and tacit, are stored in their heads and – depending on the task – in their hands. Their knowledge is essential. They are, relative to others, expert. These are the people with Deep Smarts, and it is not an exaggeration to say that they form the basis of your organizational viability."

The business world of the 1990s is indelibly linked to the spectacular rise and fall of entrepreneurial companies. Leaders of these companies were typically young, highly intelligent, very energetic, technically skilled, and refreshingly unfettered by conventional business bureaucracies. Yet few of their innovative companies survived. In spite of their obvious talents, these leaders lost their shirts when, among other business shifts, their abundant supply of venture capital dried up. Gifted sprinters in an up market, they found themselves unprepared for the demands of a twenty-kilometer down-market race. In case after case, these leaders lacked the tacit knowledge to make it work. Missing were Deep Smarts, among them:

- the necessary experience to comprehend complex systems
- a tacit understanding of the inferences and implications of their marketplace
- an awareness of how seemingly unrelated internal and external forces (shifts in world finances, for instance) can affect a company.

Less than a decade later, leadership issues remain as hot as they were in the 1990s, but for a different reason. With the impending exodus of Baby Boomers from the workforce, what will happen to organizations when the official and unofficial "smarts" walk out the door?

Last month's Management Forum Series presenter, Maryann Billington, discussed the shifts in age demographics which foretell a severe world-wide shortage of talented workers. In this presentation, Leonard and Swap address the implications of a potential shortage of the wise, deep, smart leadership and experience that forms the backbone of successful companies.

Drs. Leonard and Swap are co-authors of *Deep Smarts: How to Cultivate and Transfer Enduring Business Wisdom*, upon which this Executive Forum presentation is based. Dr. Dorothy Leonard is Professor of Business Administration Emerita at Harvard Business School. Her husband, Dr. Leonard Swap, is Professor of Psychology Emeritus at Tufts University where he was also Dean of the College. Their book is based upon extensive multi-year research (much of it in person) at companies of all levels world-wide and as divergent as NASA, Netscape, GE Healthcare, BMW, American Girl, Bank of America, World Bank, Whirlpool, BestBuy, Samsung, and Toyota.

The quotes, figures, and graphics in this synopsis are from their presentation and book. ***Executive Forum encourages you to read the entire book paying particular attention to the excellent Implications for Managers and Keep in Mind sections at the end of each chapter.*** Also take note of the abundant real-life examples which show how Deep Smarts play out in organizations that are familiar – and perhaps similar – to yours.

"We need leaders with high levels of judgment, experience and capability, as we have seen how profoundly even a few individuals lacking such abilities can influence the course of our lives and the lives of our organizations . . . We cannot afford to leave the accumulation of deep smarts to chance and random experience. Rather, we need to be purposeful in our approach."

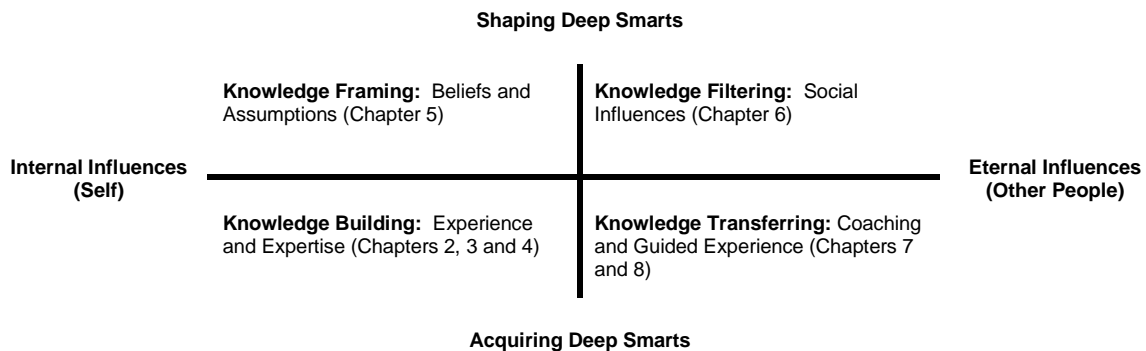
What are Deep Smarts, and Why Do We Care About Them?

"Deep Smarts address a special form of experience-based expertise that . . . is critical for managers to understand and appreciate – for their own benefit as well as that of their organizations. Deep Smarts are a potent form of expertise based on first-hand life experiences, providing insights drawn from tacit knowledge, and shaped by beliefs and social forces.

Deep Smarts are as close as we get to wisdom. They are based on know-how more than know-what – the ability to comprehend complex, interactive relationships and make swift, expert decisions based on that system level comprehension but also the ability, when necessary, to dive into component parts of that system and understand the details. Deep Smarts cannot be attained through formal educations alone – but they can be deliberately nourished and grown and, with dedication, transferred or recreated."

Leaders with Deep Smarts can be identified by their ability:

- to address practical, real-life (often urgent) issues effectively
- to comprehend complex systems (when a change is made in component A, what are the corresponding changes in components B and C?)
- to use a wealth of tacit knowledge – the things that are in our heads but are not easily articulated
- to quickly sort through a repertoire of experiences and perceptions – internal and external influences, acquired and shaped over time – to come up with a nuanced response to the situation at hand



The horizontal axis denotes internal influences (who we are, our upbringing, education and backgrounds) as well as external influences (people whom we admire, our coaches, those we emulate).

The vertical axis denotes the generic processes of knowledge acquisition (personal or vicarious experience) and shaping (beliefs, assumptions and social influences).

Knowledge Building: Acquiring Deep Smarts By Means Of Internal Experience and Expertise

"People learn – create and recreate knowledge – through experience. [Therefore] enticing longtime employees to retire has unintended consequences." When someone leaves, we lose not just technical proficiency, but also their acquired knowledge of key patterns, interactions and relationships.

"The ability to see patterns in a sea of information is a hallmark of Deep Smarts." Key to building this pattern-recognition is experience. Some experiences occur frequently, others less frequently. If experiences are plotted on a bell curve, the experiences in the middle (higher) section of the curve are likely to be common events encountered even by beginners. Deep Smarts may not be as critical for success in this middle area. But the tails of the bell curve – the areas of less common situations and practices – are where people with Deep Smarts are invaluable. This is where their years of practice pay off by making them particularly capable of intuitively recognizing patterns and solutions. (Keep in mind, however, that mindless repetition can develop bad habits. Not every long-term employee has Deep Smarts.)

Knowledge Framing: Shaping Deep Smarts By Means Of Internal Beliefs And Assumptions

Beliefs are important to Deep Smarts. They build up over time as an outcome of life experience and influence by people around us. They are often tacit and unquestioned, and they often are the basis for our decisions and actions. Granted, truth may be relative to our viewpoint, but they *are* part of our Deep Smarts, and they *will* influence our decisions.

Beliefs are core to who we are – our personal identities – and they support much of our behavior. They are highly resistant to social influence. Think of beliefs as *"lenses that refract our view of the world and define what is real – even when "objective" evidence is to the contrary. One person's truth is another's myth. That is, the opposite of a truth is not necessarily a lie, but another truth."*

Because our personal identities are formed in large part by our individual beliefs, our beliefs serve as a filter which influences how we see the world.

Discipline-based beliefs literally affect what someone perceives. Often, we migrate to specific disciplines because our own worldview is supported and reinforced in that discipline. Hence, it heavily influences the nature of our Deep Smarts. For example, BMW designers subscribe to a discipline that believes *"BMW customers love their cars, and in no small part because they are produced with so much intimate, affectionate attention [to the sensations of good design]."*

Organizational beliefs affect what we believe to constitute good strategies and business practices. These often originate in the early days of the organization and become entrenched. As such, they become part of the Deep Smarts of the organization. *"When belief systems are central to the identity of the organization and reinforced by early experience, they can become as strong as ideology – almost a religion. [Alternatively] they can stifle innovation and learning."*

Polaroid, as a case in point, refused to consider digital imaging because their business model rigidly insisted that "customers want a physical print." Polaroid was further hampered by insisting on the high profit margins generated by film; profit margins on digital imaging were predicted to be only half that of film. By the time Polaroid's precipitous drop in market share forced it to reconsider and bring out a digital camera in 1996, it was too late. In 2001, Polaroid filed for Chapter 11 bankruptcy. *"The new and imported knowledge about opportunities in the digital markets failed to fit with the entrenched belief systems about what was a good business model."*

Cultural beliefs include language, behavioral norms and all of those things that give an organization an identity different from any other organization. *"Cultural values affect virtually all individual behaviors and behaviors related to business are no exception."*

Those who seek to transfer Deep Smarts need to be aware of the belief systems involved: those of the people or organization *as well as their own*. When beliefs are very central, they are difficult to change or extinguish. When they are broader, they are more easily transferred.

To facilitate changes in belief systems:

Challenge assumptions. Whirlpool opened a lucrative brand-new market by challenging the assumption that all of its customers were women. After taking a candid look at how home appliances are used, they introduced their Gladiator line of man-targeted appliances. Gladiator includes a refrigerator designed specifically to hold beer in the garage and is expected to generate \$300 million for Whirlpool by 2007.

Change frames. Reconfigure the way people view the work world. *"Convince yourself that the situation represents a new and exciting opportunity, that other team members are vital to its success, then communicate this sense of excitement and interdependence to the team."*

Create counter-experiences. Cross Corporation found that their commitment to quality inadvertently created a quality control ethic that resulted in the rejection of nearly 30% of their finished pens because the pen's appearance wasn't perfect – *under magnification*. Vigorous workforce re-education measures were stymied until a number of workers were invited to view, through a one-way window, customers sorting through a batch of pens.

The customers regularly praised the pens' writing abilities. Not one customer mentioned "flawless appearance." This helped the workers change their assumptions and significantly fewer pens were subsequently rejected. The point is, people are likely to change their core beliefs only when they encounter a stronger belief and perhaps not even then.

Managers who understand the relationship between beliefs and Deep Smarts are better prepared to shift the beliefs that are jamming the operation.

"In the best of all worlds, managers create an environment where beliefs and assumptions are routinely challenged, because dissenting views are almost always useful. Deep Smarts cannot build in a culture that allows no questioning because in such an organization, only top managers are assumed to have relevant experience. Obviously, this cannot be the case. One important managerial skill is the ability to identify assumptions (including one's own) and question them."

Knowledge Filtering: Shaping Deep Smarts By Means Of External Social Influences


Social influences contribute to Deep Smarts, for better or worse. By this, we mean that perceptions – our own or those of others, internal or imported, beneficial or pernicious – can affect how knowledge is seen and used in organizations. Although one person's truth may be another person's myth, the people and the organizations we admire heavily influence our view of reality.

We develop Deep Smarts to some extent by imitating them. Under the best of circumstances, we can build supportive knowledge as a result of influences; we can also transfer Deep Smarts to others by means of social influence.

"The more aware we are of how knowledge is screened and shaped, and the greater choice we exercise on how we ourselves are influenced, the better. . . . Without direct and extensive knowledge transfer, we rarely acquire enough of the smarts we admire to achieve the same level of success as our models."

"Deep Smarts; a potent form of experience-based wisdom."

Social influence carries with it a variety of emphases, influences and packaging.

Varieties of Social Influence on Beliefs and Knowledge				
Increasing influence 				
	Compliance	Conformity	Herd	Tribe
Nature of Influence	Explicit: "Do this because I know more than you do" or "Do this or else."	Explicit: "I know this is wrong, but everyone else is doing it."	Largely explicit: "I don't know what to believe, but everyone else seems to know what to do."	Largely tacit: "This is how my tribe does things, what they believe in. So do I."
Basis of Influence	Direct exercise of power: reward, punishment, expertise.	Indirect Influence: whatever "everyone" is doing. Fear of looking bad, odd, "out of it."	Emotional arousal caused by scarcity or greed.	Desire for belonging, emulation.
Uncertainty Level About What Is Real or Correct	Generally low	Generally low	High	Generally low unless conflicting views of other tribes are made apparent.
Type of Change	Shallow: behavior change. Peripheral beliefs may change; may build receptors	Shallow: behavior change. Peripheral beliefs may change.	Moderate: behavior change. Peripheral and moderately central beliefs may change.	Deep: behavior and central beliefs may change.
Direct Contact Necessary?	Normally, yes. Monitoring of behavior enhances compliance.	Yes. Influence diminishes when not face-to-face.	No. Perception of consensual beliefs is important.	No. Person need not be a member of the tribe to be influenced. Role modeling is possible with no personal contact or interaction.
Countermeasures	<i>If possible, leave the relationship.</i>	<i>Seek allies to reduce conformity pressures.</i>	<i>Counter with other more central beliefs.</i>	<i>Reframe beliefs to align with goals. Seek guided experience for reality check. Draw on other tribes for support.</i>

Note that social influence has light side as well as a dark side. When social influence results in increased understanding, production, profitability and worker satisfaction, we have Harley-Davidson. When social influence results in blind obedience, we have Jonestown.

- **Compliance** – "just doing it" – rarely builds Deep Smarts because it seldom builds receptors; thus, the transfer of beliefs or knowledge is limited.
- **Conformity** or acquiescence doesn't motivate people to understand the issues or seek further experience because the motive for learning comes from outside the individual. In other words, it doesn't require *"commitment from the heart as well as from the brain,"* and is unlikely to build Deep Smarts.
- **Herd** influences – when we get swept up in a general belief that includes emotion as well as reason – includes the aspect of uncertainty about what is true. In this scarcity/greed approach, people may focus on what other people are doing at the expense of allowing for alternatives; decisions made "while galloping along with the herd" are based on shallow Smarts.

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Although herds by nature don't have Deep Smarts, they are an excellent place to develop them. It is much easier to develop knowledge sharing when people ascribe to the same organizational language, goals, practices and disciplines. *[This] has both a good side and a bad side. The bad side . . . is when they are uncertain or confused about the right course of action, people often follow the herd, and herds don't have Deep Smarts. . . . It takes strong leadership to withstand the power of a stampede, much less to stop one."*

- **Tribes** are communities of like-minded individuals. The connection is often very powerful emotionally, leading to acceptance of new behaviors and beliefs. Tribes are excellent for developing and transferring Deep Smarts.

"[Tribe communities] help in the building and transfer of smarts in multiple ways: they help members locate relevant processes rather than reinvent them; they foster creative fusion among experts; and they socialize new members into the belief systems of the group. Perhaps most important, they serve as the focal group for tribal passions – the love of the mission that draws these people together. . . . Participants in tribal communities gain more than knowledge about a given field of practice; they learn know-how. These communities of practice provide the focus necessary for providing the practical, experiential basis for Deep Smarts."

Note that tribes may occur as an *entire organization*, they may occur as a group *within an organization*, or they may occur *outside an organization*. Wherever we create reference models that we want to join, they influence us and define what is possible for us.

Consider the power of alumni networks that throughout our lives may provide us with an identifying framework. And in a more monetary sense, they may also provide a rich connective network of similar-minded people through whom we can tap into career resources.

"The people who work for us generally want to be part of a tribe. . . . The social impulse is wired in." To a certain extent, we can develop Deep Smarts by imitating what individuals, groups or organizations are doing. Benchmarking and best-practices are common ways to show us paths to greater success. However, imitating the practices of an established company may not work if it conflicts with local practice, or if the potential learning occurs in the absence of receptors.

A downside to social influence is that people may simply go through the motions and comply with directives – particularly in the presence of an influential manager – rather than absorb or build Deep Smarts. On the other hand, *"a manager can create a powerful motivating force in a group that is a tribe people want to join and stay with. . . . If you and your colleagues are strong leaders, people will see you as positive role models and try to imitate you. Positive models demonstrate that lofty achievements are possible and create receptors in that they embody at least one visible path to some desirable goal."*

Knowledge Transferring: Acquiring Deep Smarts By Means Of External Coaching And Guided Experience

Let us first establish that transferring Deep Smarts requires coaching techniques more than teaching techniques. Coaches have domain experience to pass along to others. This is important because there are many times when the knowledge needs to be passed on. Specifically, whenever we leave a job, we take with us an immense treasure of knowledge – Deep Smarts often sourced solely in our heads – that is critical to the success of the incoming job holder.

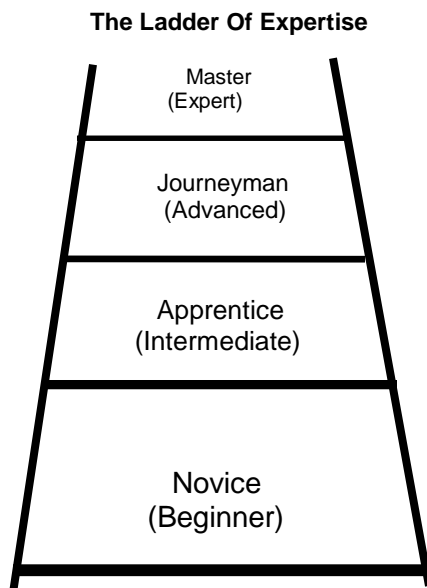
- *"Experts can mentor novices despite a very large gap in knowledge if the experts are willing to coach and the novices can bear having their knowledge gap exposed."*
- *All along the ladder of expertise, people can coach those who are less experienced. They transfer what they have learned so far.*
- *Coaching can help shorten the time to fill some parts of the knowledge gap. . . . A little knowledge is helpful . . . to frame experiences as they unfold."*

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Add to this an understanding that transfer of knowledge requires a skillful and willing coach, and a capable, receptive learner. *"Neuroscientists have known for some time that experience alters the structure of the brain, encoding the new information in specific structures and thereby modifying those structures. The result? Direct experience is more effective in locking in memories that can be retrieved later, and hence is more useful than is vicarious learning."* Thus, the more direct the experience, the greater the Deep Smarts transfer.

Deep Smarts experience gives us something in our memory to which we can link a situation. Said another way, *"information does not become knowledge until it connects with something we already know."*

Coaching requires a level of expertise, to be sure, but it also requires the desire and skill to connect with people who may have little knowledge. Visualize this as a ladder where every person on a rung above that of novice has knowledge valuable to anyone on a lower rung.



"The world is not divided between novices and experts. . . Attaining Deep Smarts takes time as well as effort. . . All of us at some times in our lives assume the role of novice. Most of us spend our professional and personal lives moving up the ladder of expertise."

As a rule of thumb, consider the ten-year rule:

"Although the sheer amount of practice and experience is not a powerful predictor of expertise, the combination of an extended period of concentrated effort coupled with self-reflection has been shown to build expertise in a wide variety of domains. . . Most evidence suggests that it takes at least ten years of concentrated study and practice to become experts as opposed to being merely competent."

Experts behave differently than novices.

- They recognize bear traps because of their pattern-recognition.
- They make decision swiftly because of their expertise.
- They recognize context because of their conditionalized knowledge.
- They extrapolate alternatives because of their experience.
- They make fine distinctions that are indistinguishable to an untrained eye or ear.
- They know what they don't know when they encounter an unusual situation.
- They know when rules don't apply because no two situations are exactly the same.

Differences Between Experts and Novices

	Experts	Novices	Limitations
Speed of Decision-Making	Make decisions swiftly, efficiently, without reviewing basic facts.	Need to review all facts, choose among alternatives.	Over-confident expert may ignore relevant data.
Context	Take context into account: knowledge is "contextualized."	Rely on rules of thumb that minimize context.	Difficult to transfer contextualized knowledge.
Tacit Knowledge (Intuition)	Have extensive tacit knowledge – drives decision making.	Knowledge is largely explicit.	Difficult to access tacit knowledge so transfer is difficult.
Pattern-recognition ability	Have large inventory of patterns drawn from experience. Unflappable.	Limited experience constrains number of patterns.	When no patterns exist, expert may be no better than novice.
Extrapolation	Are able to extrapolate from novel situation to find a solution.	Lack of receptors limits basis for extrapolation.	Mental set: Expert may base solution on inappropriate pattern.
Awareness of knowledge gaps	Know when rules don't apply.	Don't know what they don't know.	Ignorance: Expert may assume expertise where none exists.
Discrimination	Are able to make fine distinctions.	Use of rules of thumb obscures fine distinctions.	Expertise may not transfer if novice lacks receptors.
Analysis	Process faster because of pattern-recognition in head.	Analysis often based on microscopic view.	Pattern may not apply in the case at hand.

A powerful way to convince a well-intended yet over-confident protégé that he still has things to learn is to take him on a field trip. Direct observation is usually a more powerful teacher than indirect recitation.

To develop receptors and increase knowledge transfer:

- Create an alignment (partnership) between the coach and the protégé so that they agree on direction.
- Uncover buried knowledge by using relevant, cogent stories as learning tools.
- Transfer tacit knowledge by being open, observable and inclusive, and by creating experience opportunities where the knowledge can be relearned or recreated.
- Develop cognitive knowledge by using the protégé's current level (pre-existing stock) of understanding as a starting point.
- Take advantage of the apprentices and journeymen. Sometimes the gap on the Ladder of Expertise between expert and novice is too great to bridge.
- Create incentives for the coach-to-coach and remove dis-incentives.

Applications: What Does This Mean For You and Your Organization?

1. As mentioned before, Deep Smarts are an essential part of core capabilities, the engine of your organization. Since our culture encourages sink-or-swim "you figure it out" job transitions, critical (often

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tacit) knowledge now resting in the minds of soon-to-retire workers is in danger of being lost. *"Younger workers can be trained, but experience is irreplaceable."* (Lt. Col. Alex Findlay)

Recognize that transferring Deep Smarts is difficult:

- Your organization may not see a need
- It takes time and energy
- It may require a new language
- It may slow production-oriented activities
- People may resist if they perceive that they'll have less personal value

2. Information becomes knowledge when it connects with what we know; i.e., with our experiences with events, data, objects and people. Without these receptors, information remains just information, not knowledge or smarts. As the old saying goes, "a lecture is where the notes of the professor go to the notes of the students without passing through the heads of either." Some methods of knowledge transfer are more effective than others. In order of self-directedness, they are:

Active Learning



- Learning by doing
- Guided experience
 - Guided practice
 - Guided observation
 - Guided experimentation
 - Guided problem-solving
- Socratic questioning (facilitating)
- Stories with a moral
- Rules of thumb
- Directives, presentations and lectures

Passive Learning

Mode	Potential Application In Your Organization
<p>Directives, presentations and lectures require little of the learner except to pay attention and follow orders. Nevertheless, they can be helpful when the knowledge is known but needs practice, or when knowledge is nearly absent and there are no receptors (as a starting point.)</p>	
<p>Rules of thumb – generally reliable rules – may provide useful shortcuts to more contextualized understanding and are useful for transferring information quickly.</p>	
<p>Stories with a moral are likely to be remembered since narratives are more engaging than raw data.</p>	

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Socratic questioning requires the listener to go beyond active listening to come up with answers themselves. This facilitates clarification as well as assumption challenges.	
Guided observation includes learning from modeled action (watching and shadowing) and by challenging assumptions and beliefs (mind-stretching). <i>"Guiding someone to observe behaviors to which they would not normally be exposed creates an opportunity for confronting assumptions and previously unquestioned beliefs."</i>	
Guided problem solving has a major advantage in that the coach and the protégé are working jointly on the problem. Thus, the engaged protégé learns how to approach the problem.	
Guided experimentation focuses on identifying potential options for action.	

The several modes of guided experience are particularly effective in developing and transferring Deep Smarts, especially when used in an atmosphere of deliberate practice that includes identifying the particular skills that need practice, encouraging reflection and providing positive feedback. Guided experience also coaches the novice into another area of Deep Smarts: know-who. People with Deep Smarts seldom know all the answers so they draw upon their knowledge of who has them.

3. How do you plan to develop Deep Smarts in your managers?

- Where do the Deep Smarts lie – and where are the knowledge gaps?
- Who are your experts and knowledge coaches?
- How can you design projects to be dual purpose: getting the project done and coaching the protégés?
- How will you initiate tomorrow's leaders into the business of building and transferring Deep Smarts?

4. How do you plan to develop Deep Smarts in your individuals and yourself?
 - How can you purposefully build an experience repertoire? ("How can I build patterns of recognition?")
 - Who are your knowledge coaches? (Who are my best potential mentors?")
 - What will it take to insist on experience-based learning in addition to classroom education? ("How can I get experience?")
 - If your career doesn't suit you, what experiments can you plan? ("What am I interested in, and how can I experience it?")

5. What are the threats to losing or failing to nurture Deep Smarts?

6. What beliefs and assumptions shape your Smarts? Which ones should you challenge?

7. What social influences filter your Smarts? Which ones are beneficial and which are dangerous?

"The activities and decision – large and small, planned and serendipitous – of an entire life build Deep Smarts. . . . Seemingly incidental or even trivial decision can aggregate to make large differences in whether and how we progress up the ladder of expertise. . . . Our Deep Smarts develop continuously – at work, in leisure . . . and in morning meetings. The more consciously we design our own experience and that of those individuals we can help move up the ladder of expertise, the deeper the resulting smarts."