Part II: Synthesis of Concepts from the Complexity Sciences

The Wisdom of Crowds

There has been a lot of research done recently on the principles of decision making and the capacity of individual experts in comparison with groups. The 2002 book by James Surowiecki entitled, naturally, "The Wisdom of Crowds," provides an excellent overview of current thinking in this area. During the pre-workshop conference call led by Michael Mauboussin of Legg Mason, a number of key ideas were discussed, and during the workshop itself Norman Johnson summarized many of these.

How many people listened to Michael Mauboussin's conference call?

Let's first review what you heard.

You have heard that the utility of experts is being eroded. A study about pundits showed that those on TV are the least accurate about their predictions.

Certain systems benefit from expertise – no question, but others do not. What makes them different? When expertise fails, what are the options?

Where are computers or expert systems best? Where are experts best? Where are crowds best?

Michael described some concepts from the book "Wisdom of Crowds" the conditions for success in collectives: diversity, an aggregation mechanism, and incentives.

He then gave three examples showing when collective intelligence (the wisdom of the crowds) can be optimal:

1) Discovering what you know is there, but it's hidden. He called this the needle in the hay stack problem.

2) The second is the state prediction problem, like guessing the number of jelly beans in the jar.

3) The third is the future prediction problem, like guessing the winners of the academy awards. Michael studied his the performance of his students at Columbia and found that the group was usually better than any individual. But that's not helpful to know when to use what resources.

Michael suggested that different types of problems require different types of resources. He divided the problems by: rule based with many options or rule based with limited options or probabilistic with limited options or probabilistic with many options. And then he backed these up with numbers on accuracy of experts and how much they agreed.

What is insightful is to look at his listing of expert agreement for each of these types of problems. Where there is low expert agreement that there is also low expert accuracy. If you get a lot of different answers to your questions then there is a possibility that other decision making options might be better – particularly collective intelligence.

Someone on the teleconference asked the great question: What about a crowd of experts? The answer is that for complex problems, a crowd of experts does worse than a crowd of mixed ability folks.

Here's a fun example of where "experts" don't agree: How did we get here? Was it be evolution, intelligent design, or creation? This is something that everyone has a strong opinion about and there are experts in each area.

Again, we'll see that diversity actually helps answer this question. Interestingly it appears that the reason for the controversy is that even scientists have a blind side around diversity that makes it difficult to explain the real miracles in nature – like the evolution of the eye: How do cells at a distance coordinate to simultaneously form a lens and imaging?