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LOGICAL INNOVATION

When most people speak of innovation or creativity, they think of some ability that is mysterious and ephemeral, a capability that some people have and others don't, and that lies beyond the bounds of logic and rationality, something almost magical. We disagree. We think that innovation is a supremely logical act. And that being logical, it is something you can turn on when and where and how you want it. We think that creativity is a force that you can control and engineer to do just what you want it to do. We have developed a process of logical innovation that you can use every day and we'd like to show it to you.

What is an innovation? It is the combination of elements that have not been combined before, to perform a specific function. It is a new way of doing something, better than the previous way. It is the association of ideas to produce a new idea. It is taking the available information and drawing a new conclusion from it. It is moving ahead, through the consolidation of disparate ideas to create an intellectual product that is more efficient, beautiful, and functional. It is putting something good where there was less or nothing before. Some prefer the word "creativity" while others are more comfortable with "innovation." We think the two terms are interchangeable. Some feel that the word "innovation" implies controlled step-by-step increments of newness, while "creativity" suggests a major surge forward. Same thing, only differing in perceived magnitude and importance. We will use the term "innovation" because it seems more practical and gets away from the mystical properties too often associated with the word "creativity."

When people speak of innovation and creativity they invariably mention people like Leonardo da Vinci, Mozart, Thomas A. Edison, and a host of others who are considered geniuses for their creations and inventions. We feel that these giants are out of our league. We only refer to innovation in the commercial and managerial worlds, innovation of the garden variety, attainable by common non-geniuses like ourselves. We think our ideas could be extended quite validly to these outer realms of art and music, but we'll leave that task to someone else who knows a lot more than we do.

We do know something about Thomas Edison, however. He didn't do it all by himself. He had a large laboratory, filled with talented people who conducted experiments for him under his direction. He had an idea about an electric light. He talked it over with some of his people and they decided on what they would have to know to make a successful design, things about vacuums, sealants, resistance wires, and much more. They tried different solutions, compared results, and tried some more. Finally they were able to pull all their findings together, and voila! There was the light! He got the credit, as he should, but they all made contributions, without which there would have been no light.

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We think that da Vinci, Mozart, and Edison were blessed with minds that made lightning-fast associations between ideas — da Vinci in the world of light, color, and form, Mozart in the world of sound and rhythm, and Edison in the world of energy and materials. But we don't think that any of them could have done so much, so well, if they had not been stimulated, informed, and reinforced by other people. We think that all three of them would have agreed with the model of logical innovative thinking we will show you in a moment.

No one knows everything there is to know, no matter how much of a genius he or she is. Everyone has to learn, from infancy on up, bringing in knowledge from the outside. It can't come from any other place, can it? Ideas are not ephemeral, pixie-like packages of information floating in the air. Knowledge for any individual comes from experience, whether that be from books, lectures, incidents that have been observed, or face-to-face encounters. And each person then has to categorize and catalog and remember it. As the storehouse of knowledge grows, so do the possibilities of associations between the items tucked away in the recesses of the brain. Combinations are formed and more complex associations are filed away. As you know more, you can do more with what you know.

The genius of Edison was that he could see possibilities that others did not, like the possibility of an electric light. But the possibilities were not the invention. The invention, the finished product, was the result of sifting through vast bodies of information to find combinations of ideas that could be translated into reality, into an entity that would work in the practical world. And that's where the contributions of his people came in. Some of them knew things that he didn't, had made observations and had experiences that he did not. Edison was a sponge for information and he evidently didn't forget anything. But his sources went beyond what he had personally experienced. His talent was that he could gather it all in, combine it with what he himself knew, and from there produce a glass-and-wire dingus that would chase away the darkness when you pushed the switch.

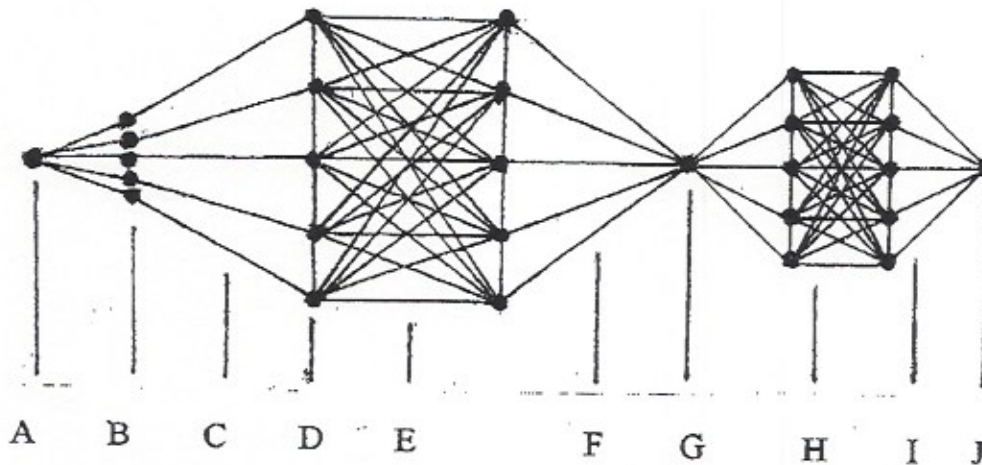
We know less about da Vinci, except that he worked at being innovative. He didn't just daydream and wait for inspiration to hit him. He drew diagrams and sketches from different perspectives, and made models. He tried different approaches before he was satisfied. The notebooks he left tell us that. He had lots of friends and admirers. We think he talked about his ideas and that he took in ideas from the outside whenever he could. His mind was an absolute marvel, but he didn't spin out his ideas in a vacuum, anymore than Edison did. These two men, four hundred years apart, went through very much the same motions to assure their creativity.

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The Logic of Innovation

The logic of innovation is simple. First you must have a vision or idea of what you want to create, a target. Then you gather scraps and pieces of information about the target area, the ingredients from which innovation will eventually come. Innovation now becomes possible when you make an association that hadn't existed before between ideas, putting A+B+C+D together to produce a new constellation. To do this, you had to reach out to find new ideas you could associate with the ones you already had. Then you had to consolidate and place them into juxtaposition so you and others could see how they combined to produce a novel conception to accomplish a specific, given end.

Finally, you will have to test the new conception against the requirements you have previously set to see how well it will do its job. If it fits, you will have an innovative solution. If it doesn't, then it's back to the drawing board to find still other new ideas and bits of information that will make it successful. Here, in diagrammatic form is our model of innovation:



Let's illustrate our model of innovative thinking by a case involving one of the largest chemical companies of America. The manager we worked with was the head of sales for one of its major divisions. He had been instructed by his superiors to find at least one new application for their proprietary aerosol propellant. This, of course, would expand their total sales. He agreed to follow the strategy we describe below.

At (A) this manager had his vision of improvement and set an objective or target for innovation. The objective he defined was "a major new application for our aerosol propellant."

At (B) he realized he needed inputs from his people in the field who had first-hand information about customer needs. He invited ten sales and marketing experts in the

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product line to join him in the search for a new application.

At (C) he brought these people together, opening up and expanding the search beyond his own knowledge. He described the problem to them, and asked them to help him set the requirements or criteria for the new applications. He further restricted the target area to "household applications." They discussed the characteristics of an aerosol and agreed that its unique properties were to "fill a space" or "coat a surface." The specific requirements of the application were thus stated as "a household application which will fill a space or coat a surface." The eleven participants now all understood the requirements in exactly the same way, and agreed that their search would be to find applications that would satisfy those criteria and no others.

At (D), focusing on these specific requirements or key factors, the participants further broadened the scope of the search by bringing out their various observations, experiences, insights, and ideas about what an application of this sort might be. All were now thinking and talking about the same thing, and their combined intelligence and knowledge was focused upon finding the same answer, a household aerosol application that would fill a space or coat a surface.

At (E), they interchanged their funds of information, freely and fully. One idea built upon another and each suggestion seemed to stimulate a new one. Novel combinations and associations were made. In a matter of minutes, a number of new product suggestions were put forth, some radical and whimsical, some practical and promising.

At (F), the logical, rational analysis of the suggestions began. "Would that really work? Would our customers buy that?" The field of suggestions now began to contract and narrow down as critical thought was focused on each. The emphasis was on finding gaps and major weaknesses. Some were discarded as improbable and beyond hope, while others were tightened up to become real possibilities.

At (G), there were twenty new product suggestions considered as viable candidates. All showed promise, but some seemed stronger than others. All showed minor weaknesses or potential problems in their use. Now the emphasis shifted to how they could be improved and made even better. Once again, the field of information was expanded to bring ideas out as to how they might be further fine-tuned and improved.

At (H) the free interchange of information and ideas occurred. Potential problems were identified and discussed, and weaknesses were assessed. As before, one idea built upon another and every suggestion stimulated a new one. Ways to remedy weaknesses, and avoid or correct potential problems, were put forth. New combinations and associations emerged.

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At (I), the logical, rational analysis of these remaining suggestions began. Weak areas were strengthened and possible problems of implementation were addressed, some being prevented, others avoided or diminished in severity. Again, the field of suggestions was contracted and narrowed down.

At (J), the group recommended thirteen new product applications to the manager. Of these, eleven were subsequently put into production and two were dropped for technical reasons. One suggested product application was a runaway success, leading a number of competitors to ask, "Now, why didn't we think of that?"

The manager had hoped for one, possibly two new applications. He got eleven that went into production, and one which became an outstanding winner. Why? Because he directed all of the intelligence and experience of ten well informed people and himself toward a specific problem. He had all their brain power focused on the same question at the same time. In that way, he brought all that he and they knew into play, for the same purpose. He converted what eleven people knew and held in memory into one super-brain that went far beyond what he or any other one individual could possibly demonstrate. And the result of that super-brain was a series of new ideas and new innovations.

That manager CREATED innovation by the process he followed. He brought the best sources of information he knew into contact with one another. He presented the problem they jointly faced clearly and in specific terms. He then expanded the search for an answer by encouraging divergent thinking, opening up the search for information. Next, he engineered a full interchange of all that his sources knew, so that each participant knew, in the end, everything about the problem that all of them in combination knew. Then he drew upon the combined critical faculties of all of them to narrow down and apply their judgment, through convergent thinking, to the selection of the most fitting product suggestions. Finally, he applied divergent and convergent thinking again, opening up the search, then narrowing it down, to fine-tune and strengthen the suggestions. The end result was the best debugged conclusion that these eleven best-informed people, thinking and working together, could create.

The secret of the Logical Innovation Process is its structure and discipline. The manager had ten other well-informed minds focused on the same question at the same time. All other matters were set aside. The full attention of all eleven participants was concentrated on the same specific issue. The target was specific, "in a household, a space to be filled or a surface to be coated." This was a tangible, reality objective to think about. Any ideas that any of them might express would be relevant to the issue and immediately understood by the others. There was no waste mental motion. The manager had engineered the most efficient thinking session possible. One relevant idea led to another, and a shared understanding of the problem grew rapidly, and an equally shared

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understanding of its possible solutions also grew. Eleven brains, memories, funds of experience, and understanding of the problem became one through the free interchange of all that they knew. Of course they came up with new applications. They couldn't help but discover something new. Their shared super-brain assured it. What if the manager had said, "We have to come up with a new product of some kind or other?" Probably nothing would have happened. Certainly, they wouldn't have come up with as many good possibilities as they did.

"It's too complicated and it'll take too much time," is what some will say. But that simply isn't so. The entire process took just five hours, and that included two coffee breaks. The process of Logical Innovation doesn't take long, because it focuses all attention on a specific target and demands only one mode of thinking at a time. It is the most efficient use of multiple human resources we have ever seen. Consider how such a meeting of eleven experts might have gone had there been no such structure. You've been in enough meetings that wandered all over the map to be able to picture that. There would have been no agreed-upon, debugged action at the end of five hours, even without coffee breaks.

Innovation demands structure and the free interchange of information, in the way shown by the model. If you want creativity and innovation, provide the structure and you'll have it. If you don't provide the structure of Logical Innovation, you won't get it. You can engineer innovation by following the model. So, to guarantee innovation, let your people learn the model themselves. Then you and they can work and think together to come up with new and better solutions, every time you want that to happen.

When And How

When do you use the Logical Innovation model? Every time you make a decision. The only variation should be "how much?" If you are faced with a little decision, where you already know a great deal about it, you should at least pause and ask yourself, "Do I really have all the information I need? Should I check with someone else? Could someone else have an idea that would be worth listening to?" If you think you are safe with the understanding of the problem you have and don't need the inputs of anyone else, you should take a moment to rack your brain to see if there are additional associations you can make that weren't obvious when you first heard of it. This is forcing yourself into divergent thinking, expanding your view of the problem as much as you can. Sometimes, you will find that you knew more than you thought you did. The same should be true when you consider your conclusions. Force yourself to spend a little time in convergent thinking. "Think before you leap" is an old saying but it's absolutely true. Divergent and convergent thinking, opening up and closing down your search for alternatives, applies to the individual as well as to the group.

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When the problem is big and complex, it is almost certain that there are things you don't know, or aren't sure of, that should enter into your thinking before you make a decision. "When in doubt...", you should pull someone else's thinking into the equation. What can you lose? Nothing, compared to what you would gain if you found just one little critical fact that would make a difference. Opening up the search for an answer is the smartest thing you can do. It is much more comfortable than having to find an excuse for why the decision fell apart or didn't produce the results you and others thought it should. The posture you might assume of the reliant, strong individual who doesn't need any help for anyone, isn't nearly as attractive to the rest of the world as the reputation for being right almost all of the time.

How to use the model? There are special, simple techniques that go with each step in the Logical Innovation Process. These are learned as part of the process. If you can specify what it is that you want to improve or create, and set a target for innovation, the application of Qualitative Factor Analysis will separate the target into those important elements or characteristics which are to be maximized. The experience and knowledge of your informed participants will provide plenty of alternatives from which to choose. The best ones can then be combined into a new solution. Fine-tuning will remove the unintended consequences and sharpen the solution. What you will have in the end is a new, debugged action which accomplishes more of what you want and avoids what you don't want.

One client wanted a better sales method, used the model and reduced the cost of sales by three million dollars a year. Another followed the model to devise an improved organization structure and reduced overhead by fifty percent. Another reduced the cost of a computer cable rack from \$4.75 to \$.85 per unit. Still another used the model to redesign a complex electronic part and reduced the cost from \$11.90 to \$3.65. Designate a target for improvement, apply the model, and create something new and better. Others have done it, and so can you. The key to success is disciplined thinking, following a logical process, and then doing it!

That is Logical Innovation, the combination of the best information with the best thinking process to create something better. Those of us who have lived for a long time are amazed at how far we have come, how much different management is than it was only twenty or thirty years ago. We realize that progress has occurred through an infinite number of tiny steps forward, some of which were accidental and some deliberate and planned, the result of rational thought. "If you could only bottle that and sell it," we said, "You could do wonders. The world would be yours." Well, now you can. You can engineer Logical Innovation, and apply it and control it, whenever and however you want. From a fantasy wish of a few years ago, innovation and creativity have now become a reality tool for any manager to use to guarantee progress and improvement. Learn it, use it, and enjoy being out in front of the pack.