Does Your Project Have a Pulse? [1, 2]

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Abstract: Are your projects vibrant and alive—a breeding ground for innovation and creative thinking? Or, are they better described as *zombie projects*—brain-dead creatures that plod along but are devoid of life and vitality? And more to the point, does it really matter one way or another, assuming the job gets done? The author of this paper defends the position that creativity and innovation are essential in contemporary projects, despite the fact that they create special challenges for project leaders—especially those who take comfort in routines and highly-scripted plans. Distilling lessons learned from his research, the author offers a set of principles for seeding creativity and innovation by creating a project environment that fosters a *healthy* curiosity on the part of individuals and project teams. The paper ends with a valedictory challenge to project leaders to become *curiosity-curators* for their projects.

Few would argue with the assertion that a healthy curiosity is a good thing, but not everyone agrees on what constitutes a *healthy* curiosity. As a case in point, consider an experiment that a young man who would later become one of the history's greatest scientists and mathematicians conducted on himself.

When he was a student at Cambridge University in the 1660s, Isaac Newton was curious about the nature of light and color. While some of his contemporaries speculated that color is an inherent property of the light itself, there were others who argued that the perception of color is due to the optical characteristics of the eye. To satisfy his *curiosity*—in other words, to bridge the gap between what he knew and didn't know—Newton used himself as a guinea pig. Newton took a narrow, pointed object called a "bodkin" and inserted it beneath his lower eyelid and under his eye in order to test how changing the pressure on the back of his eye (with the aid of the bodkin) would affect his perception of color. The following illustration is an excerpt taken from one of Newton's notebooks. It documents how he carried out this rather risky and cringe-inducing experiment.

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Though it's questionable whether or not the outcome of this experiment succeeded in answering the original question to young Newton's satisfaction, it's clear that he was willing to take greater personal risks than most of us would engage in to satisfy his curiosity. Newton's curiosity was intense, but in this case, not so *healthy*.

The Color of Wonder: Perceptual Curiosity

The innate urge to fill the gap between what we know and don't know is called *perceptual curiosity*, since it often involves observation or other forms of sensual perception. Perceptual curiosity was the force that compelled Newton to conduct his risky eye experiment—to act on the urge of his curiosity to bridge the gap between what he knew and didn't know about the optics of light and color—to experience, with his own senses, how manipulating the pressure on his eyeball with the bodkin affected his personal perception of light and color.

Perceptual curiosity is what compels us to seek *novelty* and also explore *outliers*. Often these outliers go unnoticed, or they're simply written off because they are outside the norm. But, to a scientist, an analyst, a problem solver, or a project leader who understands the importance of paying attention to anomalies, outliers are the source of considerable curiosity. In the words of the Nobel Prize winning physicist, Richard Feynman, "The thing that doesn't fit is the thing that is most interesting." And when the "thing that doesn't fit" captures our attention, curiosity kicks in by asking—explicitly or implicitly—the "Why?" or "Why Not? questions that impel us to seek answers. In essence, what this describes is a three stage Observe-Wonder-Act process—a process that for most of us plays out many times a day, often in rapid order and without conscious awareness that this process is in play. And, because this process runs in the background, opportunities for taking action, when action is required, may be overlooked (i.e., not Observed), or else deemed insignificant (i.e., fail to generate Wonder). Consequently, any high-minded discussion about the need to innovate or to capitalize

on opportunities—both of which involve Action, the third stage in the process—is meaningless if we fail to nurture observation skills and/or if we unwittingly discourage curiosity, perhaps through policies, norms, or a question-suppressing culture.

The Color of Wonder: Epistemic Curiosity

There is another form of curiosity, called *epistemic curiosity*, that satisfies a fundamental *need* that's hardwired into our brains from birth—specifically, the desire to learn and discover, to explore the unknown. Metaphorically, the latter is like a torch that shines light on areas of the unknown wherein reside the "things we don't know that we don't know"—in other words, the unknown unknowns. The line between *perceptual curiosity* and *epistemic curiosity* is not always distinct—in fact, they may overlap in some circumstances. In the realm of science, these two types of curiosity—perceptual versus epistemic—are, respectively, what distinguish *applied research* from *basic research*. Also, in the process improvement realm, they distinguish the search for incremental improvements from the quest to fundamentally overhaul or re-engineer processes.

Epistemic curiosity often leads to profound discoveries, sometimes by asking simple questions that no one has previously considered. An interesting example of this involves an alloy called NITINOL. In January 1961, the lab managers at the Naval Ordnance Laboratory (NOL) in White Oak, Maryland gathered to review the progress being made in ongoing projects, one of which involved research into materials that could withstand the physical stresses that missile nose cones experience during reentry into earth's atmosphere. Of the materials that the metallurgist William Beuhler tested, one in particular stood out because it exhibited considerably more resistance to fatigue, impact, and heat compared to the other alloys he had tested. Beuhler gave it the name NITINOL – an acronym reflecting its composition and the place where he carried out his research: Nickel (Ni) + Titanium (Ti) + Naval Ordnance Laboratory (NOL). In preparation for the lab managers' meeting, Beuhler prepared a long, thin strip of NITINOL and folded it in a zigzag shape so that the managers could examine its physical characteristics while the presentation was underway. As the sample was passed around the table the managers were able to manipulate the sample to see first hand that the alloy indeed possessed remarkable stress-fatigue tolerance. But after it was handed to Dr. David Muzzey, one of the technical directors, that's when a previously unknown characteristic of NITINOL was discovered. Muzzey was *curious* to know how the zigzagged sheet of NITINOL would react to heat. Since he was a pipe smoker, Muzzey took his pipe lighter and passed the flame under the NITINOL sample. To his astonishment, indeed, the astonishment of all, the sheet elongated and returned to its flat, pre-folded shape—furthermore, it remained that way after the flame was removed. It was as though the creases had been neatly ironed out. What Muzzey had discovered by acting on his curiosity was later attributed to a shape-memory property that NITINOL possesses due to two crystalline forms it assumes at differing temperatures. Ironically, it's this previously unknown shape-memory property, coupled with the fact that it resists deformation when it is maintained above its shape-memory temperature, that gives it practical value today—for example, in fabricating shape-resilient stents that are used to keep arteries from constricting.

The Color of Wonder: Empathic Curiosity

Empathic curiosity is at play anytime we are concerned about the way in which a certain action or condition affects (or might affect) someone else emotionally. Tacitly, *empathic curiosity* it is embedded in such questions as, “How will the team respond if I bring in an outside project manager?” or “How does this client feel about our corporate culture?”

When it comes to human factors, the importance of a well-honed sense of *empathic curiosity* cannot be overstated. It is vital to teamwork, leadership, customer relations, branding, diplomacy, negotiations, and staff retention, to name a few. It may even have bearing our clients' perception of the product we are developing or the service we are providing. If, for instance, I think you are *insensitive* to me and my reality, I may not buy your product (or accept your project proposal), regardless of how well it satisfies my technical specifications.

Observational skills work in conjunction with sensitivity and empathy—whether the latter is natural or conditioned—to produce a healthy *empathic curiosity*. Of course, there is also a potential downside to empathic curiosity, say for instance, if our concern for what others think becomes a detriment to our own mental health or to the welfare of the mission at hand. So, as ironic as it may sound, *empathic curiosity* requires a measure of clear-headed emotional detachment in order to be effective. And, it's because of the delicate blend of the factors cited above that project leaders who are up to the task are a rare breed.

Aiding and Abetting Curiosity

Since curiosity is a natural phenomenon—an instinct we are born with—unless it has been killed by negative conditioning, the task of aiding and abetting curiosity is largely one of removing impediments, removing road blocks to inquisitiveness and *wonder*.

Undoubtedly, the biggest impediments to curiosity are fear and apathy. While the *apathy component* is often characterized as a lack of intellectual curiosity, the *fear component* hides behind a variety of masks, many that have noble-sounding labels, such as avoiding risk, minding my own business, not rocking the boat, staying focused, etc. But, an even more insidious enemy of curiosity is *blind conformance*—getting stuck in a rut, becoming comfortable with the status quo, becoming wedded to a process or methodology, accepting working assumptions as established facts.

Perhaps it's needless to say, but any attempt to nurture curiosity within an organization or project environment requires keen awareness of these curiosity-killers—many of which will be specific to the organization or project. And this needs to be followed by actions on the part of the leaders to prevent these nefarious factors from aborting curiosity before it arises. If, for instance, your progress review meetings do not carve out time for sharing ideas—not just problems and results—a golden opportunity may be missed for team members to benefit from others' ideas and perhaps apply the Observe-Wonder-Act process to their own domain of the project. It turns out that knowledge

sharing is often a critical factor in nurturing curiosity—it can open our eyes to *unknown-unknowns* by shining light on possibilities that we have been blind to.

Why Curiosity Matters in Projects

First it's important to acknowledge the fact that *unrestrained* curiosity is not necessarily a good thing, at least not in a project environment where individuals have a specific job to do in order to stay on track and meet deadlines. Unless the project involves *pure research,* the kind where serendipity is essential, rabbit-trails can be a costly distraction.

But, with that said, projects that suffer from *Curiosity Deficit Disorder* (my term) are akin to zombies. They may look alive, they may even plod along methodically like a machine, but basically they are lifeless … they have no pulse, no vitality. Zombie-projects may succeed on some level, but not without untoward consequences: burnout, turnover, morale problems, mental fatigue, absenteeism - not to mention the lack of innovation and follow-on ideas that are incubated in an environment where curiosity is nurtured.

Zombie projects have a *life-cycle*, but unlike curiosity-rich projects, they have no *life*. Why so? For the simple reason that curiosity is quite literally a mental stimulant - an action-energizer and memory-enhancer. Recent research has shown that curiosity triggers a release of the pleasure-inducing neurotransmitter, dopamine. Furthermore, the circumstances surrounding the incident that gives rise to curiosity are also enhanced. In other words, both the incident *and* the accompanying circumstances are vividly imprinted in the brain. This experience is akin to the lasting memory that many people have of the circumstances surrounding a life-changing incident, such as 9-11.

In nutshell, the project environment that encourages curiosity is a breeding ground for innovation, for creative thinking, for idea sharing … and also, enthusiastic and energized project teams. Of course, it can have a downside as well, but that's where the skills of a capable project leader are brought to bear—to serve as a curiosity role model, to create an environment where curiosity is encouraged, and to establish boundaries that avoid sidetracks and unwelcome interference in the affairs of others.

Lessons Learned from Curiosity Exemplars

In the annals of history it's possible to identify numerous individuals that would fit the description of creative or innovative. But, if we were to make a list of those who are noted for having an *insatiable* curiosity, this list would be considerably shorter. Why? Perhaps because of the fact that creativity and innovation are both demonstrable and observable, whereas, curiosity is often intangible. If this is so, it's easy to see why curiosity has long been undervalued—why curiosity exemplars are seldom featured (or even mentioned) as role models in popular business bio books.

With that said, there are a couple of notable curiosity standouts: the life of one of these individuals bridged from the 15th century and into the early 16th century; the other lived and died in the 20th century. Their names, respectively, are Leonardo da Vinci and

Richard Feynman. Both individuals—Leonardo da Vinci and Richard Feynman—have been described as “Renaissance Men,” however, Leonardo is the only one of the two who lived in the so-called Renaissance Era. Furthermore, both of these individuals are difficult to categorize, for the simple reason that their insatiable curiosity drew them into areas far beyond their principal occupation: artist, in Leonardo's case, and physicist, in Feynman's case. On the other hand, it could be argued (accurately, I believe) that their excursions into “outside” fields were connected to their principal line of work in ways that others might not recognize or appreciate. Leonardo, for instance, dissected cadavers and studied intricate details of their anatomy, mainly because he was interested in how these details would manifest themselves in the faces and other external features of the characters he painted.

Though it's not in the scope of this paper to delve into an in-depth analysis of these complex individuals, here is a distilled list of 10 curiosity-enhancing suggestions that are predicated on what we know about these two curiosity exemplars:

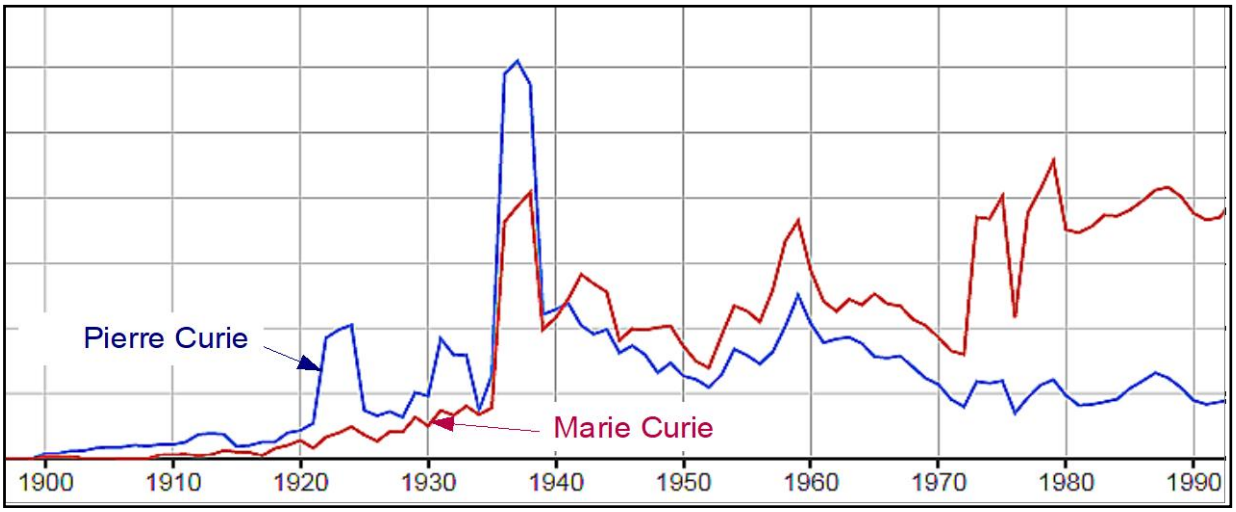
1. Hone your observation skills—pay attention to “the things that don't fit”
2. Practice and learn to master the art of inquiry—specifically, articulating and asking high-value questions that yield information-rich insights
3. Challenge assumptions, especially any critical assumptions that could have a major impact if they were later proved to be false
4. Listen to others' opinions, but temper them with facts and empirical evidence
5. Build knowledge-sharing networks—identify experts you can call on to help fill any gaps in your own knowledge or experience
6. Keep written notes of questions you want to find answers to—don't rely on your memory
7. Practice looking at situations from various angles, perspectives, and viewpoints before drawing conclusions
8. Formulate hypotheses, but don't become wedded to them—don't become emotionally, intellectually, or professionally attached to unproven theories
9. Expand your horizons—don't allow yourself to become one-dimensional; if, for instance, you are an artist, take an interest in some particular area of science; if you are a scientist, take an interest in the arts
10. Become a mentor to others—working with individuals who are novices in your field can help you find gaps in your own knowledge, perhaps via the unvarnished questions they ask, perhaps by surfacing assumptions you had unwittingly accepted as facts over time

An Extraordinarily Curious Woman

In the previous section I highlighted curiosity-enhancers (and anti-inhibitors) based on what we know about the words and deeds of two men: Leonardo da Vinci and Richard Feynman. And while I still believe these two would top almost any short list of curiosity exemplars, it should be noted that history has not afforded everyone equal opportunity when it comes to exploiting their natural curiosity. In particular, 50% of the world's population—the half consisting of women—has historically had access to fewer curiosity-enhancing resources and opportunities than the other half. Furthermore, many

women have not received the credit they are due for accomplishments that grew out of their deep desire to learn and discover (in other words, for following their curiosity). In this vein, one remarkable woman comes to mind: Marie Curie. She too would be near the top of any short list of curiosity exemplars. While today we are inclined to recognize her greatness, her achievements, and the personal risks she took to go where her curiosity led her, this was not the case in her own time: for far too long her greatness was hidden in the shadow of her husband, Pierre Curie. And while there's no doubt that Pierre was worthy of recognition for his deeds, his accomplishments were matched—indeed, exceeded by Marie. In 1903, they and Henri Becquerel were jointly awarded the Nobel Prize in Physics for their research in radiation. But Pierre died three years later, in 1906. Meanwhile, Marie continued with her research—passionately continuing to follow her curiosity, and also winning a second Nobel Prize in 1911, this time in Chemistry.

Despite her many achievements, the information-arbiters in Marie Curie's lifetime failed to give her the credit she was due. The following chart bears this out. It shows a time plot of the relative percentage of times that each name—Pierre Curie and Marie Curie—appeared in books that were published during a given year. It wasn't until 1942—eight years after her death in 1934—that her name appeared (and continued to appear) more frequently in print than Pierre's ... even though he preceded her in death by 28 years, and despite the fact that her lifetime achievements and awards eclipsed his.



(Source: Google Books Ngram Viewer)

Though this is an anecdotal situation, it represents a general truth that needs to be told. Specifically, anytime in history when curiosity has been systematically suppressed—whether by society norms or institutional gatekeepers—we have no way of knowing if there were individuals who might have been world-class curiosity-exemplar, given the opportunity. Fortunately, in Marie Curie's case, society's blindness to her curiosity did not prevail.

While there's nothing in the List of Ten in the previous section that is inconsistent with what we know about Marie Curie's point of view, thanks to this amazing *curiosity exemplar* I believe we can add an important 11th item to the list that comes from this direct quote:

> *A scientist in his laboratory is not only a technician: he is also a child placed before natural phenomena which impress him like a fairy tale … If I see anything vital around me, it is precisely that spirit of adventure, which seems indestructible and is akin to curiosity.*

To paraphrase this important 11th recommendation, courtesy of Marie Curie ...

> *Curiosity is enhanced by nurturing a sense of adventure, a child-like fascination with the unknown.*

Parting Comments for Curiosity Curators

In a 2015 survey administered by Pricewaterhouse Coopers, more than a 1000 CEOs were asked to name the leadership traits that would become increasingly critical in challenging times. When the results came back and were tabulated, many of the CEOs cited two traits: curiosity and open-mindedness. On closer inspection, it's clear that curiosity and open-mindedness are complementary—in fact, it's doubtful that one can exist without the other, at least in any practical sense. Dogma supplants curiosity when one's mind is closed; and open-mindedness is meaningless if and when intellectual curiosity is suppressed.

Project leaders are like CEOs in the sense that they have an organization to run, and they must do so under conditions of risk and uncertainty. Like their C-Suite counterparts, project leaders (functioning as CEOs of their projects) need to encourage and nurture a healthy curiosity among their team members, because … well, because "challenging times" are the norm, for projects as well as companies. Therefore, along with the other hats they wear, project leaders must also be the *curiosity curators* for their projects. As such, they need to provide forums and/or platforms for hearing and exchanging ideas—not just problem identification and progress reviews. Also, they need to model the skill of asking curiosity-evoking questions. But, they must also ensure time is not wasted on off-mission diversions, and that *meddling* in private or personal matters of others does not occur under the guise of displaying empathic curiosity.

As noted earlier, curiosity is essential to creativity and innovation. But a healthy curiosity can also be instrumental in challenging faulty assumptions, finding ingenious solutions for knotty problems, discovering trends and patterns that are hidden by *silos*, and for building teamwork and relationships that stem from the desire to understand the feelings and outlook of others—to see and feel things from others' perspective.

In addition to all of this, there is another important reason for building and sustaining a curiosity culture—perhaps the most important reason of all. What I am referring to is the

fact that curiosity is a fundamental human need. It is like air to the human spirit—it is an innate drive to learn and discover that is essential to our survival. And people who lose or suppress their natural curiosity—perhaps due to risk-aversion or from being conditioned to not ask questions—are deprived of a fundamental drive that keeps them plugged into the world around them ... that helps them stay energized: physically, emotionally, and intellectually. Consequently, organizations and projects that do not provide opportunities for mentally-active individuals to follow their curiosity will eventually lose their most valuable employees to organizations and projects that do.

But, now that you know, I'm confident you won't let that happen!

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Dr. Lon Roberts is a principal partner with Roberts & Roberts Associates, where he is a speaker, seminar leader, and management consultant. He has held positions with E-Systems/Raytheon, Alliance for Higher Education, and Texas State Technical College. His areas of expertise include data analytics, measurement systems, project leadership, and process reengineering.

Lon has authored numerous articles and four books, and he has been a frequent contributor to Defense AT&L magazine. He earned a Ph.D. from the University of Oklahoma and B.S. and M.S. degrees from Oklahoma State University.

Lon's interest in the phenomenon we call “curiosity” stems from his work as a science educator/entertainer. He routinely conducts science-magic shows for schools, libraries, scouting events, private parties, and corporate events, such as awards ceremonies and retreats.

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