

BOOK

Why Greatness Cannot Be Planned: The Myth of the Objective

AUTHORS

Kenneth O. Stanley and Joel Lehman

PUBLISHER

Springer

PUBLICATION DATE

May 2015

SYNOPSIS [From the publisher]

Why does modern life revolve around objectives? From how science is funded, to improving how children are educated -- and nearly everything in-between -- our society has become obsessed with a seductive illusion: that greatness results from doggedly measuring improvement in the relentless pursuit of an ambitious goal. In *Why Greatness Cannot Be Planned*, Stanley and Lehman begin with a surprising scientific discovery in artificial intelligence that leads ultimately to the conclusion that the objective obsession has gone too far. They make the case that great achievement can't be bottled up into mechanical metrics; that innovation is not driven by narrowly focused heroic effort; and that we would be wiser (and the outcomes better) if instead we whole-heartedly embraced serendipitous discovery and playful creativity.

“Objectives are well and good when they are sufficiently modest, but things get a lot more complicated when they’re more ambitious. In fact, objectives actually become *obstacles* towards more exciting achievements, like those involving discovery, creativity, invention, or innovation – or even achieving true happiness. In other words (and here is the paradox), the greatest achievements become *less likely* when they are made objectives. Not only that, but this paradox leads to a very strange conclusion – if the paradox is really true then the best way to achieve greatness, the truest path to “blue sky” discovery or to fulfill boundless ambition, is to have *no objective at all.*”

“So even though vacuum tubes are a key stepping stone on the road to computers, few if any could see it coming. In fact, if you were alive in 1750 with the objective of building some kind of computer, you’d never think of inventing a vacuum tube first. Even *after* vacuum tubes were first discovered, no one would realize their application to computation for over 100 years. The problem is that *the stepping stone does not resemble the final product.* Vacuum tubes on their own just don’t make people think about computers. But strangely enough, as history would have it vacuum tubes are right next to computers in the great room of all possible inventions – once you’ve got vacuum tubes you’re very close to having computers, if only you could see the connection. The problem is, who would think of that in advance? The arrangement, or *structure*, of this search space is completely unpredictable.”

“The objective culture around us is not natural anyway. How many children do you know who formulate an objective before they go out to play? How many great scientists really formulated a hypothesis *before* their great idea? Do you ever tell yourself that you can’t do something because it’s not *justified* by a clear purpose?”

“Life is what happens to you while you're busy making other plans.” John Lennon

“Sometimes things work out the way we intended. Sometimes you study accounting and become an accountant. Or maybe you play basketball as a kid and make it onto the varsity team. But the great successes, the ones that come crashing out of nowhere and shake up the system, they don’t usually follow this kind of script. You don’t enroll in Superstar 101 to become a superstar. There’s no magic formula for changing the world. In other words, the greatest victories are not written into the initial plans. They happen despite the plans.”

“In some cases, the seed of greatness is planted long before it blossoms. Harland David “Colonel” Sanders cooked for his family as a six-year old after his father’s death, but would not make a living out of it until he was 40. In between, he tried his luck at piloting a steamboat, selling insurance, and even farming. But the opportunity for success didn’t arrive until he owned a gas station, where he began cooking chicken for his customers [21]. No one could have predicted that such a winding road of careers would eventually lead to Kentucky Fried Chicken, but one thing is clear: Harland Sanders had no problem catching the winds of serendipity – he exhibited a willingness to switch his direction throughout his early life – and it paid off.”

“But there’s a deeper value to such endeavors than just the endeavors themselves: They reflect that we don’t know which stepping stones might lead to something interesting. These are people who are willing to commit their lives to stepping stones that most of us would entirely ignore, which is good for all of us. Because no one knows the stepping stones that lead to the greatest discoveries, the last thing we want to do is stop people from exploring stepping stones that we ourselves choose to ignore – who knows what they will find?”

"I will not follow where the path may lead, but I will go where there is no path, and I will leave a trail." Muriel Strode, from the poem *Wind-Wafted Wild Flowers*, 1903

“Consider for example the game of chess: There are many moves that seem promising (such as capturing a piece) that later actually lead to trouble because of subtle unforeseen implications. As tricky as that makes chess, the world we live in is far more complicated than even that, so deception is going to be everywhere. The moral is that we can’t expect to achieve anything great without overcoming some level of deception. And any problem without deception is trivial, because the stepping stones to solve it would be obvious. Clearly that is not the case for our most ambitious objectives, because we have yet to solve them. That’s why deception is so universal.”

“One way to see this “moral of diversity” is to imagine betting on horses at a race track. Because even the best horses don’t win every race, it might be better to play it safe by betting on a few horses (which gives you a diversity of possible paths to winning) rather than only on the one you most expect to win. If we think about novelty search in this way – just as a way to keep more options open – then we wouldn’t have to give up on objectives entirely. Instead, all we’d need to do if we’re actively pursuing an objective is keep around a variety of alternative stepping stones, just to be safe.”

“Search is at its most awesome when it has no unified objective. Just look at natural evolution, at human innovation, at Picbreeder, or at novelty search. These are not all the same process, and some are more grandiose than others, but they do share the single unifying theme that they have no objective. Novelty search in particular highlights the risk of overconfidence in objectives. And as we begin to liberate ourselves from their grip, many things will change about the way we see the world. The next two chapters explore the implications of this new way of thinking for how we run our society. Under the new light of innovation without objectives, many once-familiar principles will never be the same.”

"You show me anything that depicts institutional progress in America: school test scores, crime stats, arrest reports, anything that a politician can run on, anything that someone can get a promotion on. And as soon as you invent

that statistical category, fifty people in that institution will be at work trying to figure out a way to make it look as if progress is occurring when actually none is." David Simon

"Campbell's law, which is well known in the social sciences [58]: "The more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor."

"A more poisonous and extreme form of Campbell's law is the problem of *perverse incentives*. Strangely, sometimes rewards or measures chosen to make things better actually make them far worse. For example, when India was under British rule, the British government tried to exterminate poisonous snakes by paying citizens for every dead snake they handed over. But it didn't work out the way it was intended: Instead it led to citizens literally breeding cobras just to kill them for the bounty. Ultimately, the number of venomous snakes in India actually *increase*."

"In the field's early days, many focused on the promise of concrete measurements to increase productivity and software quality. An influential book written in 1982 by Tom DeMarco exemplifies this movement, which can be characterized by its most famous quote: "You can't control what you can't measure." Over 35 years later, DeMarco published an article revealing that his viewpoint had reversed over time: While "the book's deep message seems to be, metrics are good, more would be better, and most would be best," it turns out that they "must be used with careful moderation." With more complex software, composed of millions of lines of code and countless interacting parts, simple metrics become uninformative. In the same article, DeMarco writes that although metrics allow for control, strict control is only important or appropriate when working on a project with little chance of major impact – in other words, measurements are great when you have a modest goal, but lose their value when applied naively to ambitious undertakings."

"However, imposing uniformity also inflicts more subtle wounds, because beyond having no inherent benefits, it also undermines making *future* discoveries. Enforcing uniform standards means *converging* to a single standard. It means extinguishing the diversity of alternative standards that individual schools or states might currently be exploring. As a result, it becomes more likely that future standards and tests will be limited to tweaks of the imposed status quo – because it is the only one applied and explored by teachers in their classrooms."

"There does happen to be one group of innovators who already at some level grasp the myth of the objective. For *artists and designers*, the concept behind an idea is often more important than the goal (if there even is a goal). Art is more often about creative exploration than about satisfying a particular concrete objective. Ask an artist and he'll say it's better to follow inspiration's winding trail than to set out with the objective of painting the next Mona Lisa.

"Of course, when art and design collide, such as in architecture, objectives do sometimes play a role. The roof has to keep the rain out. The foundation must be stable. It turns out there's an interesting parallel here between these kinds of "objectives" and the constraints on organisms in natural evolution. Every organism in nature must live long enough to survive and reproduce. But there are a multitude of divergent ways to meet this "objective," reflected in the vast diversity of life on Earth. From tulips to trees to tarantulas, life is creative within its constraints. So in a similar way, rain-proof roofs and stable foundations in architecture are more like *constraints* on creativity than typical objectives that are pursued for their own sake. Just as all organisms must reproduce, so in architecture must the building be functional and safe. Innovation in these worlds usually means finding new ways to respect the same old constraints that were present from the beginning."