


SupplyChainDigest™

Dr. Eli Goldratt – Unplugged

This is part one of SCDigest editor Dan Gilmore's interview with Dr. Eli Goldratt, father of the Theory of Constraints, and author of "The Goal" and several other influential books on business and supply chain topics. "The Goal," first published in 1984, is a novel that tells the tale of plant manager Alex Rogo, who factory is a disaster and on the verge of being shut. With the help of a Goldratt-like consultant named Jonah, he turns things around by focusing on eliminating a series of bottlenecks (constraints) that are barriers to efficiency and service.

Gilmore: What are the key concepts behind the Theory of Constraints?

Goldratt: There are two pillars to the Theory of Constraints. One is the starting assumption of all the hard sciences, which is that in all real-life systems there is inherent simplicity. If you can just find that inherent simplicity, you can manage, control and improve the system.

The other pillar is "that people are not stupid."

Gilmore: (after a pause): I was waiting for some further explanation of that second point (laughter).

Goldratt: Have you ever heard the concept "people resist change?" And that the bigger the change, the more the resistance? Doesn't this in essence say that people are stupid?

Let's do a "for instance." If someone comes up and suggests a change that is good for you, do you automatically resist it?

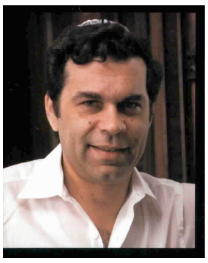
So, if I say you will resist the change just because it is change, I am actually saying you are not very bright. People certainly do, however, resist change that they have a reason to believe will hurt them.

Gilmore: Yes, or they lack enough information to know.

Goldratt: No – they believe the change is likely to hurt them.

Sometimes they are wrong because of a lack of information, but usually they are right!

Most changes might be right for the company, but are not right for the majority of people from whom they are asking for collaboration. So no wonder there is a lot of resistance.



Dr. Eli Goldratt

Gilmore: There is a certain logic there, no question.

Goldratt: Because of that, it means the emphasis of change must be on win-win-win for all of the parties which you need to collaborate.

Gilmore: Well, that sounds great in theory, but for example if you have to do a restructuring…

Goldratt: What you are saying is that you don't think it's feasible, and what I have tried to demonstrate in my books and hundreds of projects is that it is always possible – always.

Let's take your restructuring example, where a lot of people will get hurt. This means the solution is wrong! There must be a better way that will get you what you want, but will be a win-win.

Gilmore: That would be great, if it is true.

Goldratt: Have you read any of my books?

Gilmore: Just "The Goal"

Goldratt: Did what was said in that book seem true, even simple? Common sense?

Gilmore: Yes…

Goldratt: Do you want a bigger proof that it is possible? Let's say there is a manufacturing plant, where everything is against it. It's on the verge of collapse, it looks impossible to do anything in the time of three months, which is all the time there is to fix it.

Nevertheless, it is ***so*** possible, providing you find the simplicity, and be careful to look for win-win solutions.

The problem is that the win-win solution is usually blocked by erroneous assumptions, and that's why it's hard to find it. But when you find it, it's obvious, because your own reaction and that of everyone else is "Isn't that obvious. Why didn't we see it before?"

Gilmore: I'd still like a more concrete example…

Goldratt: "The Goal" is an example, my other books are examples, because each one of them are based on things that really happened.

The real-life validation we have had from the books and our own consulting is huge. One time a top executive from a U.S. company wrote to me and said, "Dr. Goldratt, your book is no longer a novel any more, it is a documentary! Because I've done

what you propose in the books, and I've achieved all the results. The only difference between what's in "The Goal" and our story is that my wife didn't come back yet!" [The main character in the novel, Alex Rogo, also has some marital issues.]

Everyone who attempts it achieves the results. Every one. It's amazing.

Gilmore: "The Goal" is really plant/manufacturing focused, and many people associate the Theory of Constraints as dealing largely with production issues. How do we tie this all together, both the factory and the larger company issues and opportunities?

Goldratt: Bottlenecks are just a prime example of inherent simplicity. If you are looking at a system, what makes it complex is that if you are touching one place, it has a ramification in other places.

In other words, it is the cause and effect relationships that make it seem so complicated. This means that if you realize that the fewer the number of points you have to touch to impact the whole system, it actually has fewer degrees of freedom.

The more complex the system is, the less the degrees of freedom, which means that if you can find the few elements that if you touch them then they impact the whole system, you've found the key elements of the system.

Since they control the entire system, they are the constraints of the system, and therefore also the levers. If you can figure out what they key constraints of the system are, and what are the cause and effect relationships between these constraints and the rest of the system, now you have the key!

However, what you have to be able to do in order to successfully change the system is to look to the other pillar and recognize that only a win-win solution can be implemented. And in terms of all the options that exist, there is always at least one win-win solution. The key is described in my second book, which in most places is called "The Goal II." Now, Alex isn't a plant manager but a vice president, involved not just in production but supply chain, marketing, sales, etc. Still, the same concepts are demonstrated. How do you find the controlling factors, and create win-win? How do you unearth the false assumptions that lead you to believe that the only way out is a compromise, which means someone will lose?

Then, usually there is so much resistance that even if you can implement what you intended, it will be so diluted that most of the results will be lost.

Gilmore: The results of many company initiatives and strategies illustrate that point.

Goldratt: Illustrate it beautifully.

Gilmore: It seems to me that originally the Theory of Constraints had a theme that for any system at a given point in time, there was a single constraint. Is that notion evolving?

Goldratt: It depends on how you define a system. For me, in most companies a system is a one-directional flow, and therefore in most companies you have only one

constraint. In conglomerates, there can be more than one constraint but this is because there is more than one system.

But the fact that in a system there is one constraint that makes it simple.

Gilmore: I talk with lots of supply chain executives, and right now for many of them there is a strong focus on simplifying their supply chains…

Goldratt: Good grief! OK, there are two different definitions of complexity. The mere fact that both exist serve to confuse everything.

One definition is that the more data elements needed to define the system, the more complex it is. So, if you can describe the system in five pages, that's a simple system. If you have to take a hundred pages, that's complex. In this regard every company and process is amazingly complex. Even in a small company, how many pages would it take to describe how to make every part, how to work with suppliers, manage channels, etc.?

So, if it is enormously complex and we try to simplify it, there's not much point. It would be a million complexities minus two or three. We haven't done a thing.

But there is another definition of complexity, which is the degrees of freedom of the system. If the system has even five degrees of freedom, that is very complex to manage. If we have only one degree of freedom, that is so easy.

The problem is that people look at simplifying the system not by reducing its degrees of freedom, but by the first definition, which is a total waste of time.

Gilmore: Let's get back to a supply chain example.

Goldratt: In the past decade, all we hear about is supply chain, supply chain, supply chain. Before that, there wasn't a peep about it. So let's analyze this for a second. Consider that product lifecycles are shrinking rapidly in almost every area, but especially electronics. As product lifecycles shrink, we hit the first huge barrier, because the lifecycle of products in the market is shorter than the time to develop the product.

Gilmore: This is true often in the apparel industry as well, and I suspect an increasing number of others.

Goldratt: Correct! Suppose I have an excellent company and a winning product. If your development time is longer than the lifetime of the product, it means there will always be a window of time when the competition has a better product than you. So, you will lose.

As a result companies spend an awful lot of effort to reduce the development time. But it hasn't worked very well. So they think there is only one way out - if we can't shrink the development time, than you have to have more than one wave of development on-going. But that's very difficult to do. First, it's very expensive. Then companies have to learn how to build cement walls between the teams, because if they talk with each other, nothing will ever be finished. But there are a few companies that have managed it.

Many haven't. The best example is probably Digital Computer. It was ultimately killed by this problem. But still today, most companies in this situation have more than one team developing the same types of products, because that is the only way to effectively shrink the lead time of new product introduction.

Gilmore: There are supply chain factors as well.

Goldratt: Yes, in the electronics and other markets, as the product lifecycles keep shrinking, they are often now also equal or shorter than the supply chain lead time.

If you make electronics and need a custom chip built, it will take 6, 7 or 8 months from the time you order to the time the first unit goes out the door with that chip in it. Longer than the product lifecycle. Now I order this component, and before I can even ship the product, there is a newer, better version of the component. So what do I have to do? I have to reduce the price or I can't sell it at all.

So now if I am in the channel I will eventually demand higher margins, or maybe even consignment inventory to protect against this. As a result, you see top companies with great technology losing their pants! All because the supply chain time exceeds the market cycle time.

So everyone is also trying to shrink the time of the supply chain. But the joke is they are always trying to do it in production, when they don't realize that 80% of supply chain time for many is in the wholesalers and the retailers. And they aren't doing a thing about that. In PCs of course, Dell is an exception.

So, we aren't looking at what the constraint of the system really is, which in this case may be how inventory flows thru the channel. We have to look at how we exploit and subordinate that. Instead, we get all this mumbo jumbo about "simplicity" here, "simplicity" there.

Gilmore: OK, we started out with one of the two pillars being "people are not stupid." But this makes it sounds like maybe we don't have especially bright people out there, when we know there are.

Goldratt: We all act according to patterns and inertia. And it's very hard to get out from under that, because it seems we have to recalculate everything. When you show them how it can be done, the reaction is usually "That's not realistic," or "But we're different."

But I'll tell you, most companies if they follow these principles in four years can have net profits equal to their current sales.

Our Interview with Dr. Goldratt will continue in two weeks.

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