TOC Weekly... Videos, Articles, Books and Events

Focus and Leverage

by Bob Sproull

In his book The Goal, Eliyahu Goldratt effectively used a story written in a novel format to walk the reader through the steps necessary to move a manufacturing organization from the traditional manufacturing concepts to a facility managed using the concepts of Drum Buffer-Rope (DBR). This nontraditional approach through logical thinking is masterminded by a character named Jonah. Jonah is able to help Alex Rogo understand the invalid thinking and assumptions being used to manage his plant and the negative consequences associated with that type of thinking. By helping Alex focus his thinking on how the plant is being managed, Jonah helps Alex logically discover a new and better way. And Drum-Buffer-Rope (DBR) is the centerpiece of this process. In this posting I will "borrow" heavily from Appendix 6 from Epiphanized as written by Bruce Nelson.

The intent of this posting is not how to implement DBR, but more the understanding of why system's thinking is so important in any improvement effort and why it is so important to view your organization as a system rather than isolated parts when selecting the focus of your improvement efforts.

The thinking behind DBR is really quite simple, but mostly just logical. Thinking logically is nothing new, but it is not the way most people think. The fundamental view of DBR is to focus on the system as a whole rather than only a single segment of the system—at least until you have clearly identified the constraint. This idea of looking at the global system is a major shift in the way systems have previously been viewed and managed. Prior to global-systems thinking, the pervasive point of view was (and still is) that any systems improvement, at any location, would improve the overall system. The idea being that the sum total of several isolated improvements would somehow equal an improvement to the overall system. But such is not the case. The effects of employing the "shotgun" approach to systems management can cause a series of devastating systemic effects.

A system can be defined as a sequence of steps or processes that are linked together to produce something as an end result. With that definition in mind, it's easy to understand how virtually everything can be linked to some kind of a system. Engineering organizations have systems, banks have systems and grocery stores have systems. Almost anything you can think of is the product of a system. By design, a system can be as small and unique as two processes linked together, where the output of one process becomes the input for the next process. Or systems can be very complex, with many processes linked together, maybe even hundreds or more. Just because a system is complex does not mean it can't be improved—it just means it's complex, and that's OK. Even in a system as simple as two linked processes, one of those two processes will constrain the other. It's just the nature of how things work. If a systems constraint did not exist, then the system should, at least theoretically, be able to produce at infinite capacity. But infinite capacity is not a level that is ever achieved from a system. All systems are restricted, at some point in time, by some type of output limitation. This limitation is usually determined by the presence of some kind of system-capacity limit. No matter how good the system is, there is still only so much it can do. Sooner or later whatever kind of system is being analyzed, it is will reach its maximum system capacity and be unable to produce more. If higher system outputs are required beyond the current capacity, then the system must be changed.

For years, if not decades, people and organizations have dedicated considerable time and effort to remove variation from systems. The utopian goal is to remove as much variation as possible from the system. No matter how much planning is employed, no matter how much effort is extended, variation will still exist! If you were asked how long it takes you to get to work

every day, your response might be something like, "about thirty minutes." The instant you answer with the word about, you have introduced variation into the system. You know that historically speaking, some days you get to work in twenty-five minutes and yet others days it can take thirty-five or forty minutes. In your "get to work" system, things can happen that will either speed up the process or slow it down.

Variation exists in everything, especially within a system. You understand that some processes will produce at a faster or slower rate than others, and this is the premise behind variation. Because of variation, the output from a system will not be linear, but rather it will operate within a range that changes. This variable range is known as statistical fluctuation and it exists in every system. It's important to understand that you cannot make variation go away. The theory and practice of Six Sigma has pioneered the race to variation reduction. But even with the most valiant efforts of time and money, not all variation can be removed. You can reduce the amount and severity of variation, but it will still exist. Once you understand that variation is a constant variable in any system, it's easier to understand that at some point you will reach the minimum variation that is controllable in the system and any efforts to reduce variation beyond that point are fruitless. Perhaps, instead of spending so much time and effort on techniques to remove variation, the focus should really be on techniques to manage variation.

When viewing a system through the eyes of DBR, it becomes quickly apparent that improving every step in the process is not required, nor will the sum total of all of those discrete system improvements equal an improved overall system. When conducting a full systems analysis, with the intent of implementing DBR, an important consideration to know and understand is the location of the system constraint, or slowest operation. In Goldratt's Five Focusing Steps, this is Step 1—Find the constraint. Once you know where the slowest operation resides, you now have the information necessary to know where to focus your attention within the system. Why is it important to understand where the slowest operation is? Because this is the location that controls and determines the output for your entire system. In essence, the entire system will produce no faster than the slowest operation can produce. (The system can produce less, but it won't produce more.).

With the constraining operation identified, you have collectively quarantined the "drum" beat for your system. Knowing the drumbeat is of strategic importance to implement and gain any system improvements. The drum provides you with the necessary information of knowing where to focus your improvement efforts.

Historically, many organizations can and do conduct many improvement projects on a yearly basis. The mantra seems to be that every organization and every process should strive for improvement. The thought is that each organization is improving at some level of frequency to make the whole system better. However, the sum of many efforts does not always equal what is good for the whole. The problem with this type of thinking is it is a totally unfocused shotgun approach to solve the problem. In effect, it presents an improvement policy that states: if I select a wide enough range, then I should hit the target, or at least come close to the target. When you take the shotgun approach you might hit everything a little bit, but miss the full impact required to make real change and improvements. If your shotgun approach includes trying to improve non-constraints, and most do, then the system as a whole gains nothing! The improvement of non-constraints in isolation of the entire system, without a comprehensive analysis, is just a way of dealing with symptoms and not the real issue (constraint).

Without the ability and the accurate information necessary to focus on the real issues, the disease goes merrily on. Improvement of non-constraints is a noble gesture, but one that yields little, if any, real improvements. Every process within a system does not need to be improved at the same time! Some system processes are more important than others. Without knowing where your constraint resides, your efforts to improve will be unfocused and consequently worthless, serving only to consume large amounts of money, resources, and time.

So there you have it.....the concept of system's improvement versus uncontrolled localized improvement. We can't emphasize enough just how important it is to view the entire system when trying to decide where improvements should be focused. I want to thank Bruce for his valuable insights.

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