An Interview with Yaniv Dinur
From Theory to Practice - A Few Lessons to Learn

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The subject today — understanding the gap

TOC has developed over the years layer by layer; the concepts of flow being implemented in more and more fields, catching the attention of more and more people globally; bringing more and more growth and stability to all kinds of companies all over the world.

But still we have a mystery...

In so many cases the results of TOC projects are mindboggling (you will see some examples today). But at the same time, other TOC projects around the world do not deliver the expected results. Why?

This gap is created due to the huge difference between Theoretical and Practical TOC.

The core problem is that too many TOC practitioners try to impose a one (TOC) solution fits all approach, and use the theoretical solution as is.

Reality is dynamic and conditions/assumptions change. There is no one solution that fits all. It is important to deeply understand the TOC concepts and know how to make the necessary adjustments to cope with the uniqueness of each challenge. Today I will show how the theoretical MTO solution (as an example) does NOT work in specific MTO environments (although it might at first be considered suitable).
What we will learn today

I will use three examples from past projects to explain some of the solution designs, and why “standard” MTO (that many might consider the correct solution) could not bring the expected results. Additionally, I will try to offer an explanation for the core problem – why these mistakes are happening.

The examples will show -

• Why the standard MTO solution may not work in some assembly plants.
• Why the standard solution may not work in some ETO (Engineering To Order) environments.
• A possible problem when implementing the MTO solution after a Lean (TPS) solution was implemented.
Why the standard MTO solution may not work (Cont.)

- In production DBR environments, when employees in the work centers can work on several orders at the same time (such as in assembly plants), **DBR-Kanban**, aided by a new supporting software solution, is the best method to improve flow and to prevent the human behavioral tendency to be “efficient” (and therefore to multitask), and jeopardize the effectiveness of the overall company.
Why the standard ETO solution may not work in some environments

- In ETO environments, we find from time to time a situation where we have three very different processes in sequence. What may be the problem with such a flow?

- LT overflow in Engineering cascades to Purchasing and eventually to production.
- Loss of market share due to excessive LT’s and quality problems.
- A lot of disharmony between the departments and with top management.
- Cash and Financial problems.
- Root cause – Mis-synchronization.
Why the standard ETO solution may not work (Cont.)

1. Choke the Release (Release Control)
2. Manage the priorities (Flow Control)
3. Deal with CCR’s (Flow Control)
4. Load Control
5. Adjust Production Buffers
6. POOGI – systematically improve flow
Why the standard ETO solution may not work (Cont.)

1. The solution for the Purchasing was more challenging. How can we reduce the Lead time?
2. Do all items have Long Lead Times? Identify the constraint!
3. How can we exploit the constraint?
   1. Do we get Full Kit? How is Full Kit defined?
   2. How fast can we reply to supplier’s enquiries?
   3. The wrong perception of power in Purchasing and its devastating negative effects

Achievements –

1. Overall 45% shorter lead time (from PO to finished goods), exceeding market expectations.
2. Improved DIFOT to 95% plus, due to clear priorities and time buffer management.
3. Revealed excess capacity, which was used to improve productivity.
4. An End to End mindset, where the functions work for each other and not as independent silos
A few words on Buffer Management

• The objective of the Buffers is to shield operations against variability & uncertainty – safety buffers can be of time, inventory, money or resources.

• As too little or too much buffer have their own negative effects, we need a buffer management system.

• But Buffer Management should be done according to reality – a few examples:

  • Time Buffer –
    
  • Inventory buffer –
    
  • CCPM Buffer –
    
  Is this the only way?
A possible problem when implementing Lean (TPS)

- In process lines and companies that use LEAN (TPS) systems, cutting the time-buffer does not bring the desired results; in fact, it can make the situation worse.

- These companies wish to improve their performance, but they share the same wrong assumption (the earlier a production order is released to the floor, the earlier it will be completed).

- Still, they do not suffer from an over-inflated time buffer, and therefore are not pushed right to the wall. How come? The difference can be attributed to the presence of WIP-limiting factors that restrict the amount of material on the floor.

- Two of the main limiting factors, each typical for a distinct type of environment, will be reviewed in this presentation.

Choking is **NOT** always the answer!!!
Limiting factor - flow dependencies:

- The 1st characteristic in a Flow line – NO WIP – flow dependencies dictate takt progress.
- As flow is the number 1 objective, the line’s pace is determined according to the slowest work station at any given moment.
  - Natural variability.
  - Malfunctions.
  - Human reasons.
  - Etc.
- Moreover, the pace is strongly influenced by the tail of the slowest work station, due to the huge interruption generated by any delay in the slowest station. Flow rate (takt time) is aligned to the worst case scenario, thus, the system loses massive potential capacity.
- Any visit by Murphy (at any work station) will STOP the entire line!
  - What can we do in order to get more capacity from this line?
How to identify a bottleneck in flow lines

- Cut the flow line in the middle and add a production (WIP) buffer.
- If the inventory in the buffer increases (the upstream half is faster than the downstream half) cut the downstream half again and add a buffer in the middle.
- According to the behavior of the buffer in the middle of the downstream half (increasing or decreasing) you will identify the slower half (actually the slower quarter). Repeat this method until you identify the bottleneck.
What to do when the bottleneck is known

- The understanding is that if the bottleneck is working, the entire line is working.
- In case of a disturbance in the flow before the bottleneck (Starvation), the WIP buffer will allow the bottleneck (and downstream ops) to continue to work – it will feed the bottleneck, allowing the company to solve the upstream cause of starvation.
- In case of a disturbance to the flow after the bottleneck (Blockage), a space buffer will allow the bottleneck to continue producing allowing the company to solve the downstream blockage while not wasting bottleneck capacity.
- By creating these buffers we have cut the flow line into two less-dependent line segments, each containing fewer work-stations, therefore having fewer flow-dependencies.
- This way the overall pace of the line will increase and we will reveal a lot of capacity to release many more orders.
What limits any organization from taking the correct actions is their **PERSPECTIVE**!

Managers are trained to “look at the problem”, get more understanding on its details, look for more data, getting closer to the noise.

They are diving close to the “problem” instead of going the opposite direction and getting the correct perspective.
Like most of the actions in TOC, one need is to challenge a manager’s intuition, instinct and emotions. The key is to do the opposite from the common belief.

If we have the right **PERSPECTIVE**, we will be able to see the disturbances to flow. We will be able to take actions that increase flow and lift us away from the noise.