

Bottleneck Theory or Theory Of Constraints



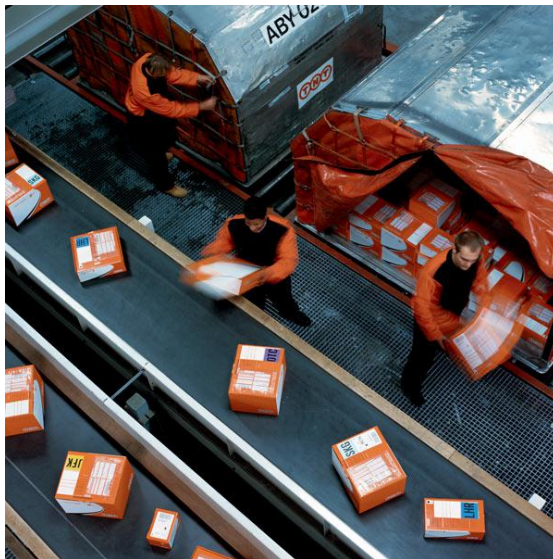
What is a bottle-neck? How can we treat it?
Hessel Visser (info@hesselvisser.nl)

The Bottleneck illustrated



Agenda

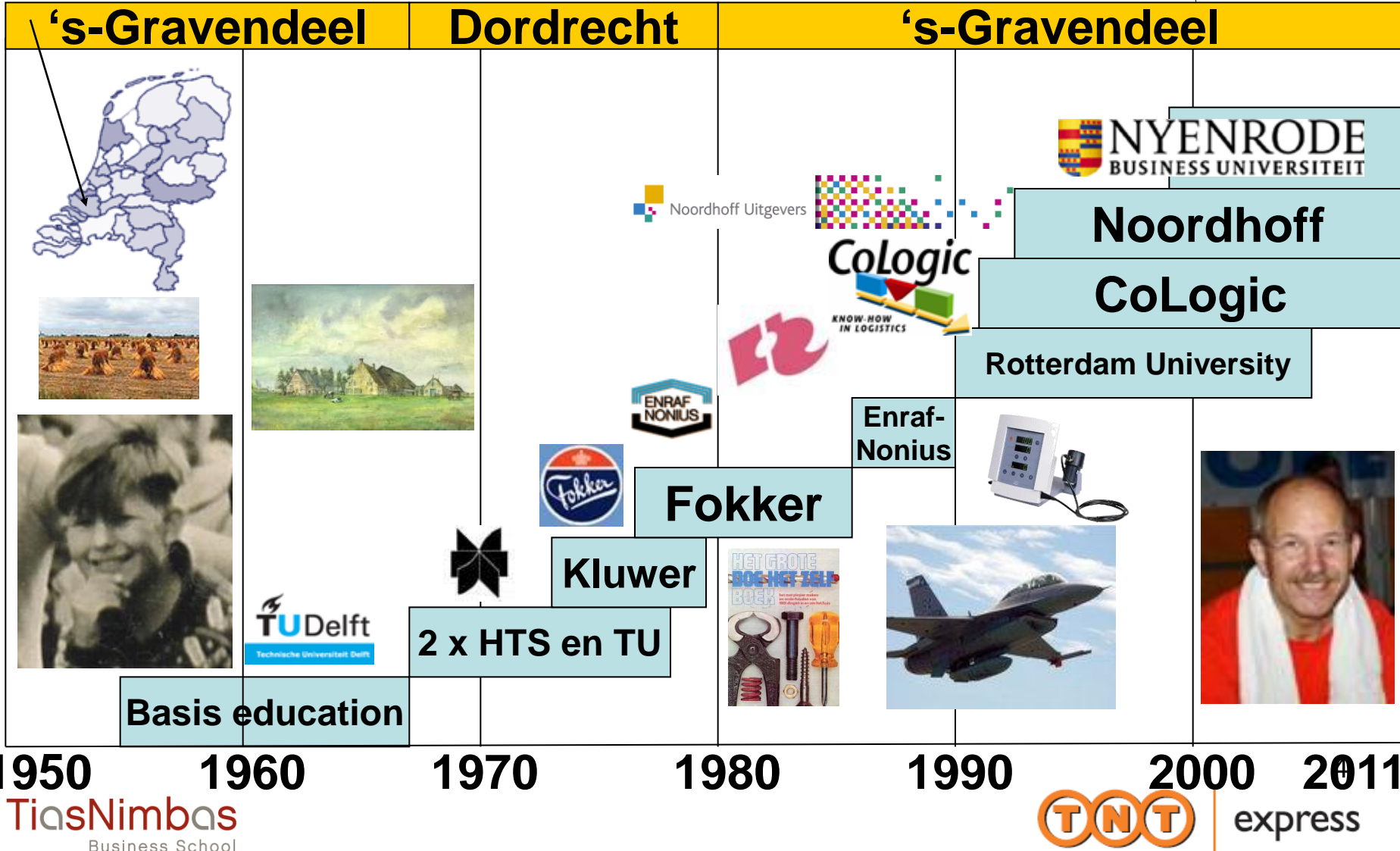
- Introduction
- Video “The Goal”
- Discussion



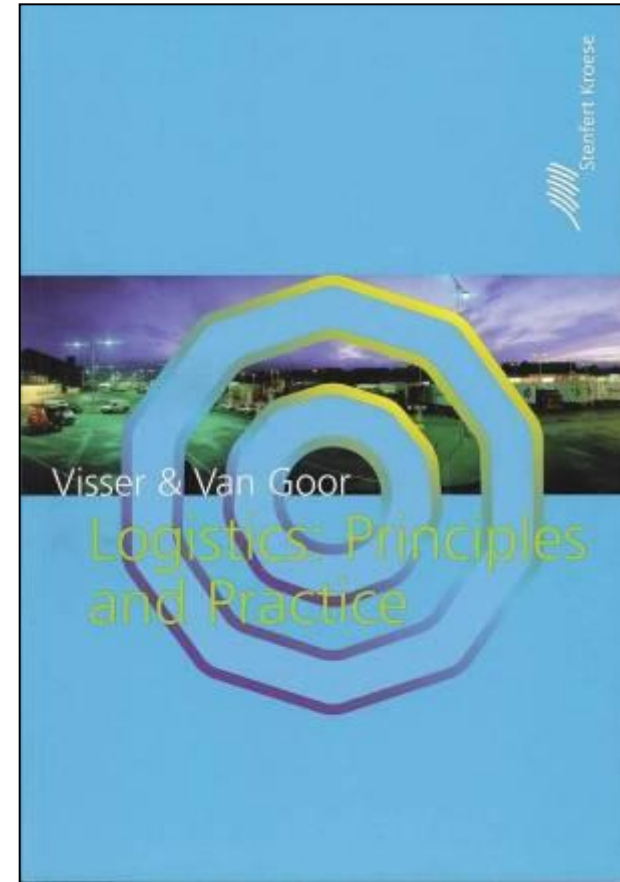
Or/And



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Published Books about Logistics sold over 120.000 copies



www.logistiek.noordhoff.nl



Who are my customers?

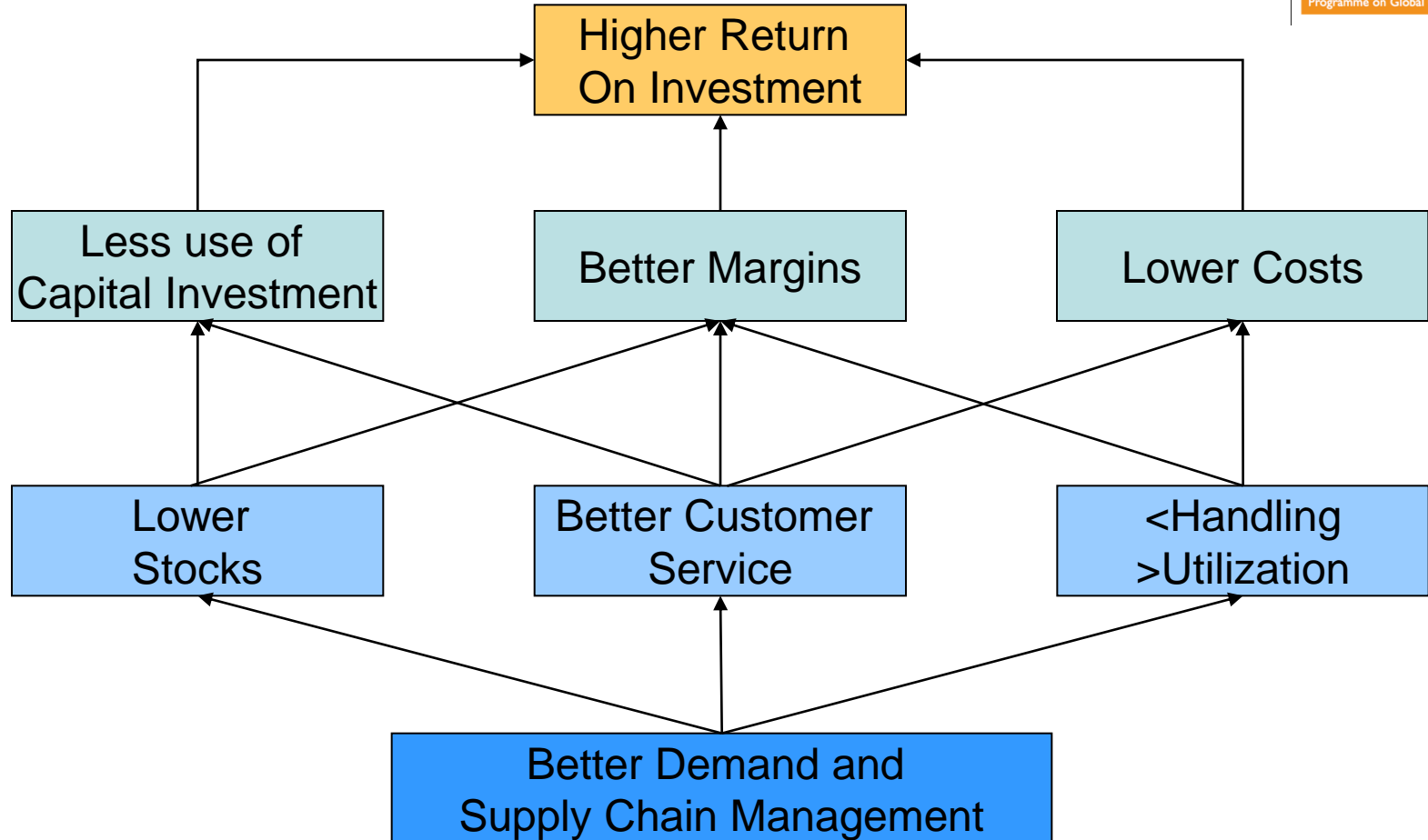


PEBITDA

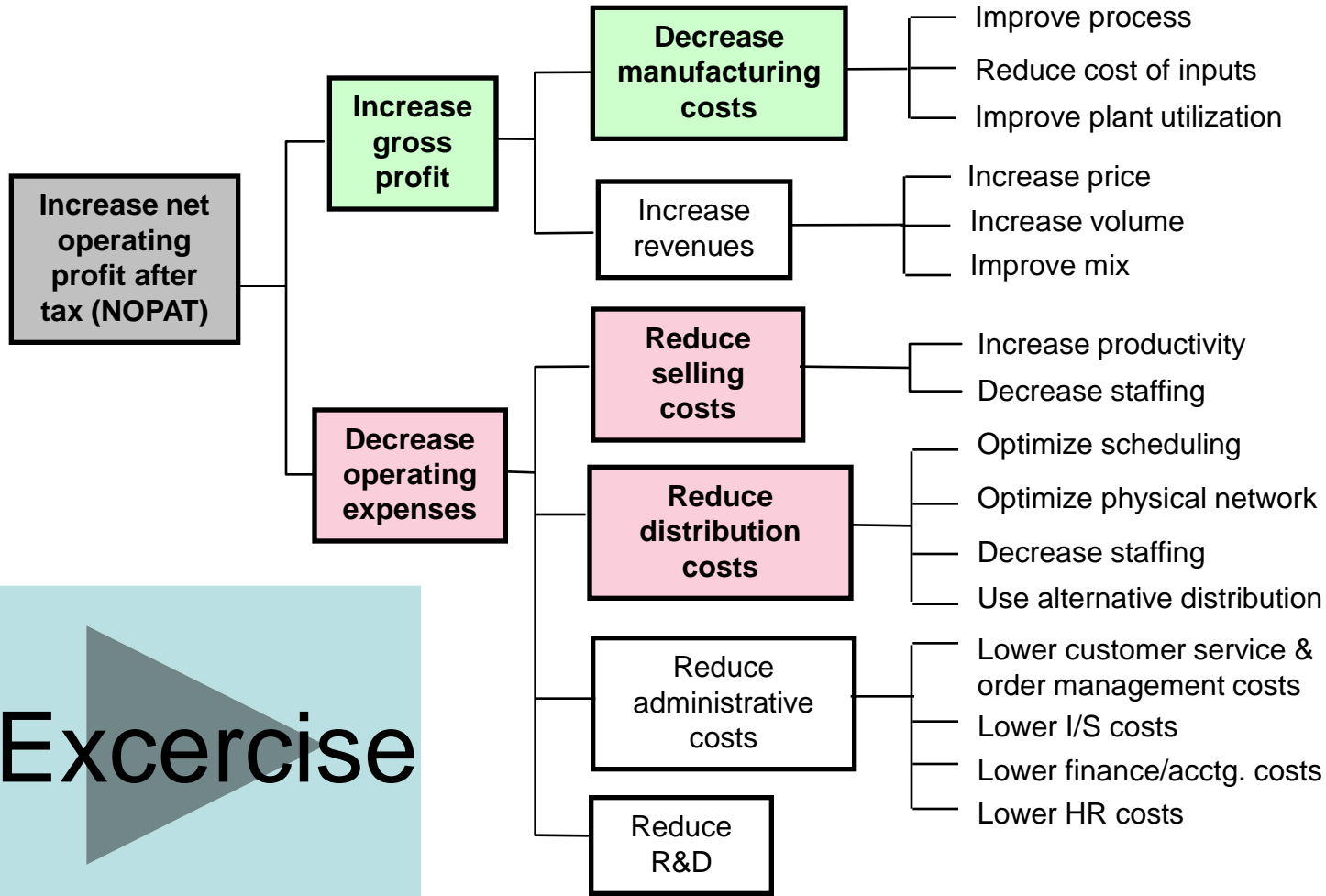
- **P**roprietors
- **E**arnings
- **B**efore
- **I**nterest,
- **T**ax,
- **D**epreciation and
- **A**mortisation



PEBITDA



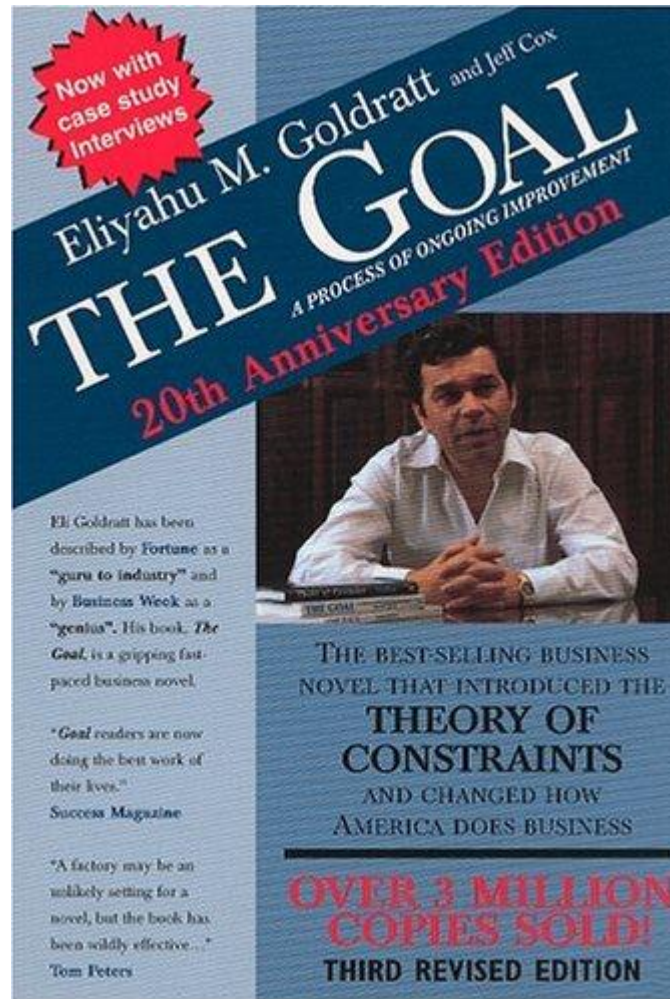
SCM Goal: Improve business processes to Increase Revenue & Decrease Costs:



Supply Chain Management

Excercise

Who has read this book?



My education as a Jonah



Avraham Y. Goldratt Institute

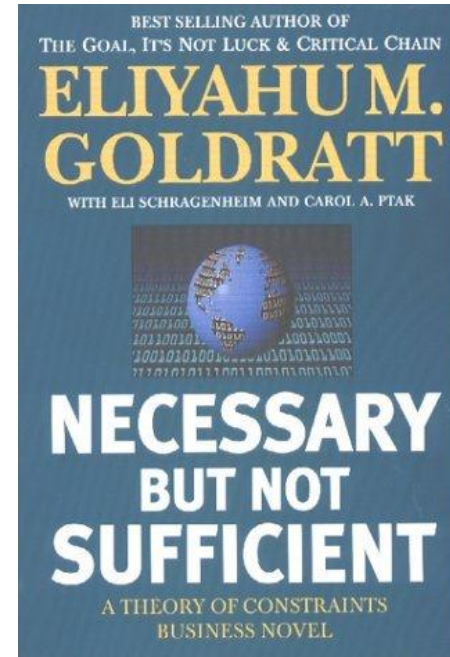
To: Hessel Visser

30/10. 4000 d'avis par
'ajal' islar kuni 'islat'
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Goldratt
Goldratt

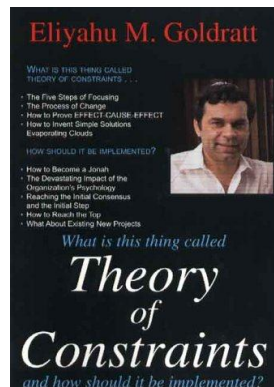
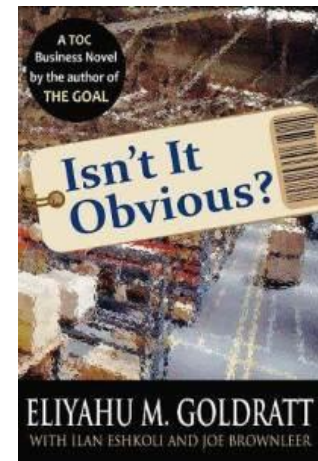
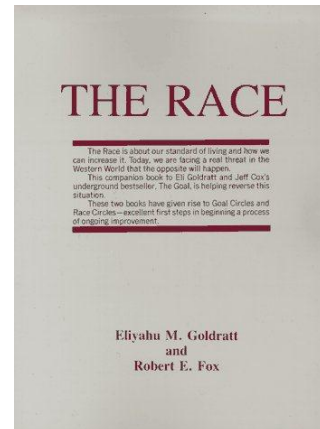
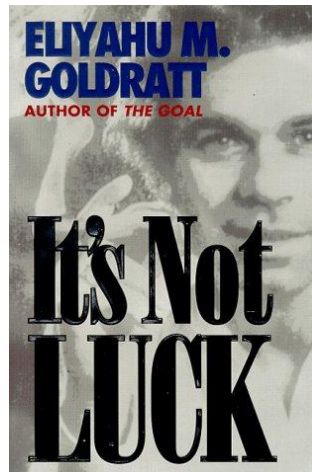
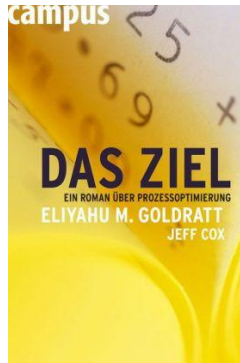
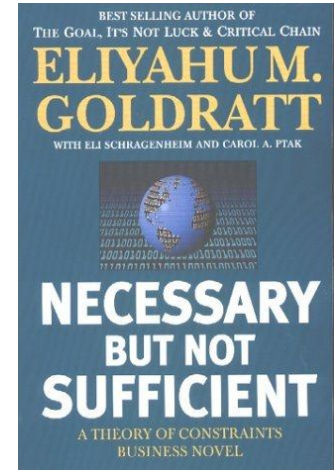
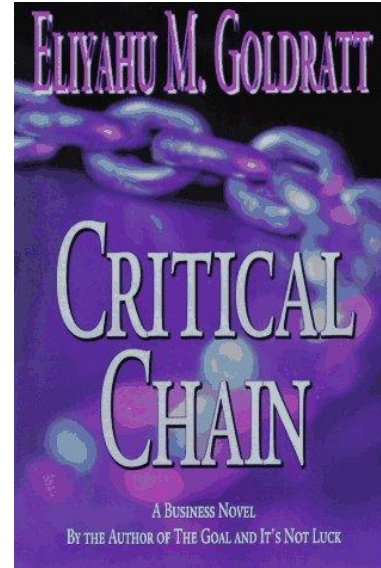
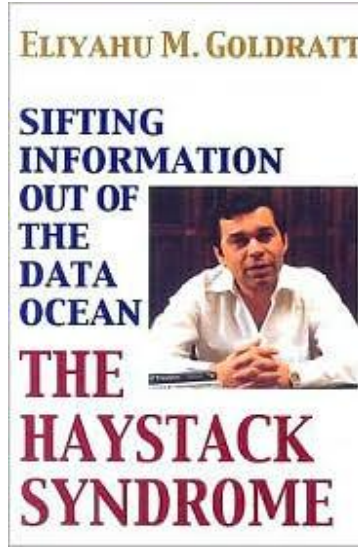
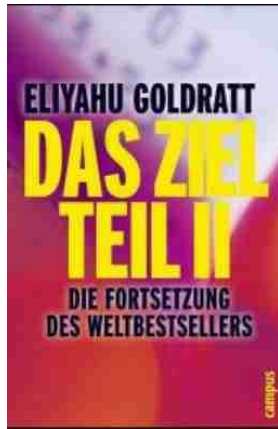
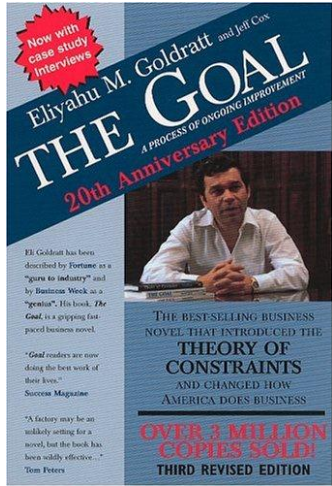


The three Authors of his last book



Eli Goldratt, Carol Ptak and Eli Schragenheim

The Books by Eli Goldratt

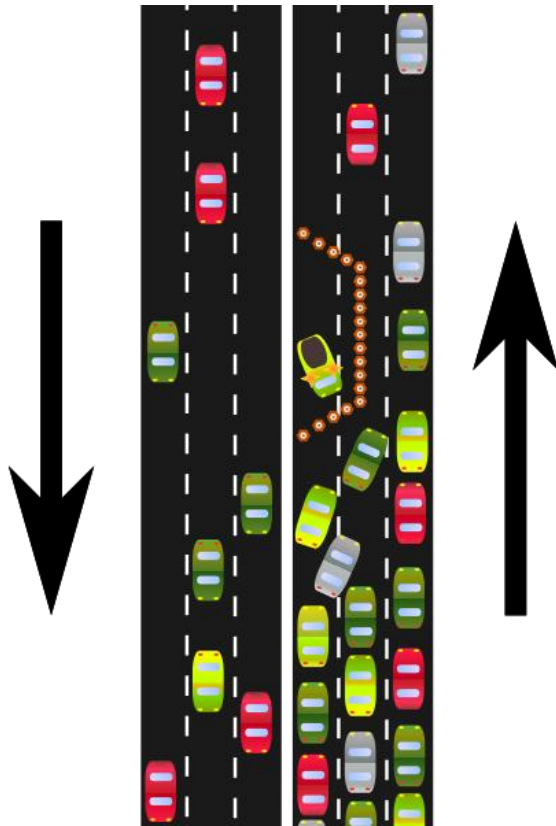


His message to me

To: Hessel Visser
The best known
translation is:
Training is only
for four-footed
objects

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Training is only for four-footed objects

Where do we have bottlenecks?



What is the goal of the enterprise?

Better Customer Service?

Larger Market Share?

Lower Cost?

High Quality?

Survival?



Make **real** MONEY in the present as well as in the future



Win the race



The goal: To make money

Bottom line measurements:

1. Generate profit (Absolute)
2. Return on Investment (Relative)
3. Cash Flow (Survival)



Operational measures

1. Throughput

The rate at which the system generates money through sales

2. Inventory

All the money the system invests in purchasing things the system intends to sell

3. Operating Expense

All the money the system spends in turning inventory into throughput

Improvements

How do they help the total system?



1. Profit
2. ROI
3. Cash



operational measurements

financial measurements

Constraints

Performance of a system is always restricted.

A constraint (or bottleneck) restricts the throughput of an organization.

Constraints

Market constraints

Capacity constraints

Financial constraints

Material constraints

Policy constraints

Bottleneck-management

1. **Identify** the system's constraint(s)
2. **Exploit** the system's constraint's
3. **Subordinate** everything else to the above decision
4. **Elevate** the system's constraint(s)
5. If a constraint has been broken: **Go back** to step 1

Do not allow inertia to cause a system's constraint.

Bottleneck-management

- Release and process material according to the schedule determined by the plant constraints (Drum)
- Do not release material in order to supply work to workers
- Concentrate protection for critical capacities
- Inventories in the right place on the right time gives the highest protection
- Inventories on any place are destructive

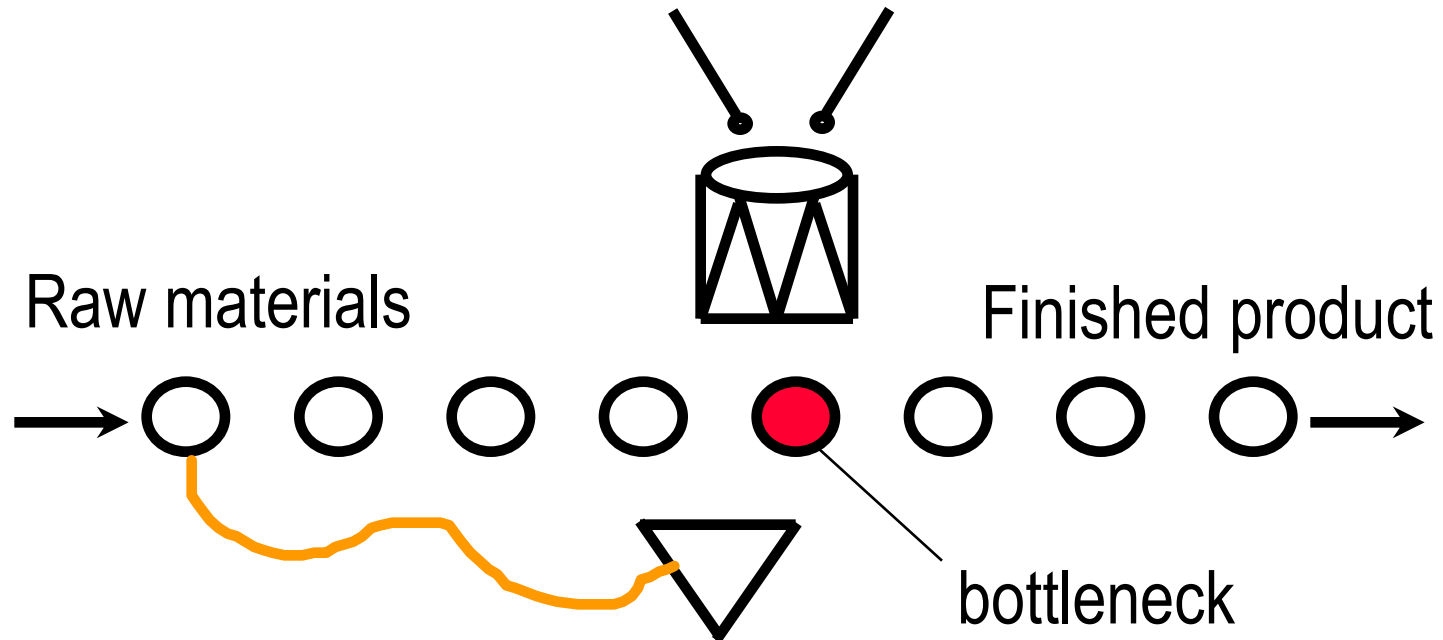
Bottleneck/non-bottleneck concept

The bottleneck is that capacity source, of which the capacity is smaller than the needed capacity according to the market needs.

A non-bottleneck has (some) over capacity.

Make the non-bottlenecks dependent on the bottlenecks.

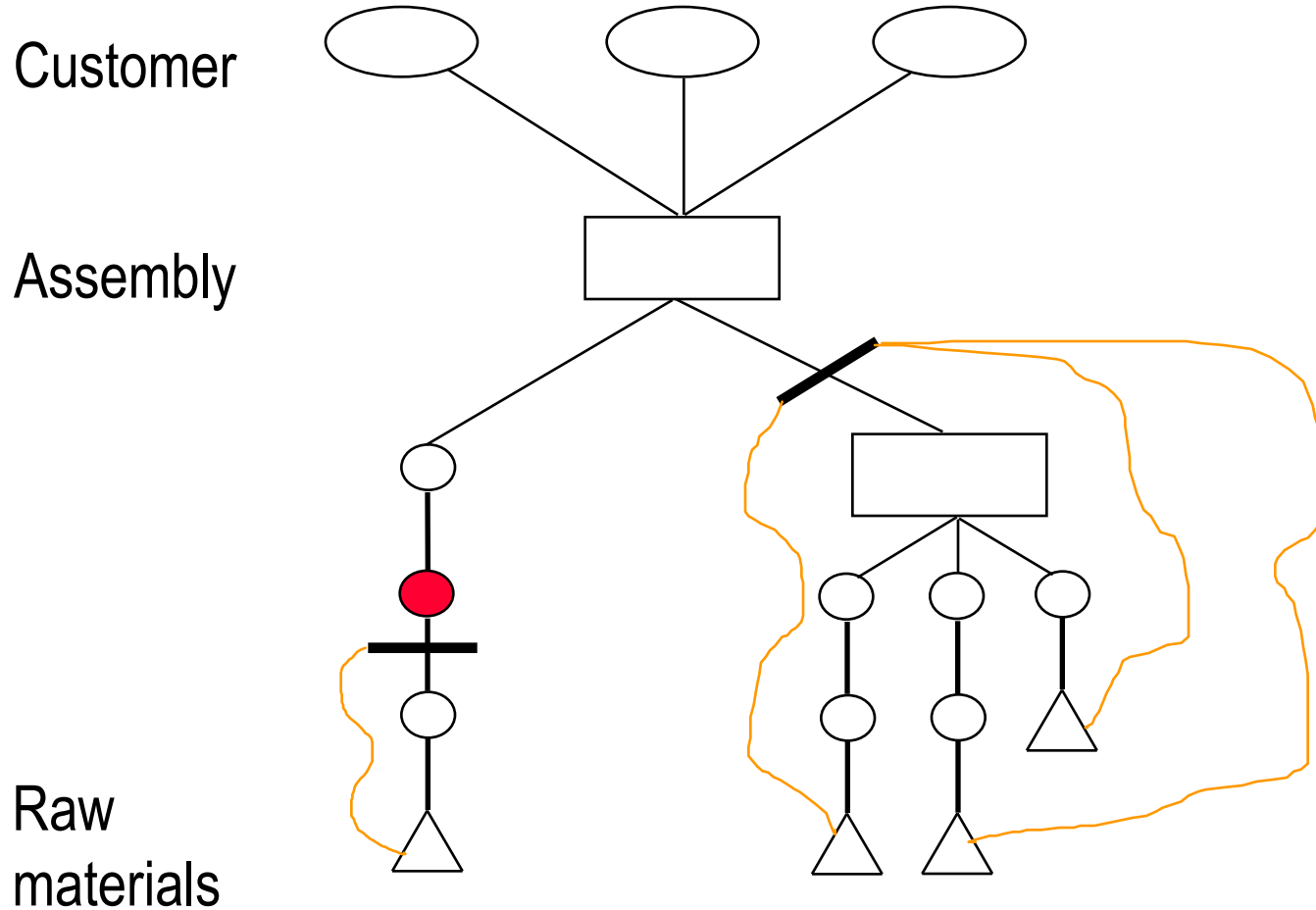
Drum-Buffer-Rope concept



A rope connects the first operation with a time buffer.

Time buffer = inventory

Bottleneck concept



Theory of Constraints

Global rules:

- Balance flow not capacity
- The level of utilization of a non-bottleneck is not determined by its own potential, but by some other constraint in the system
- Utilization and activation of a resource are not synonymous
- An hour lost at a bottleneck is an hour lost for the total system
- An hour saved at a non-bottleneck is just a mirage

Theory of Constraints

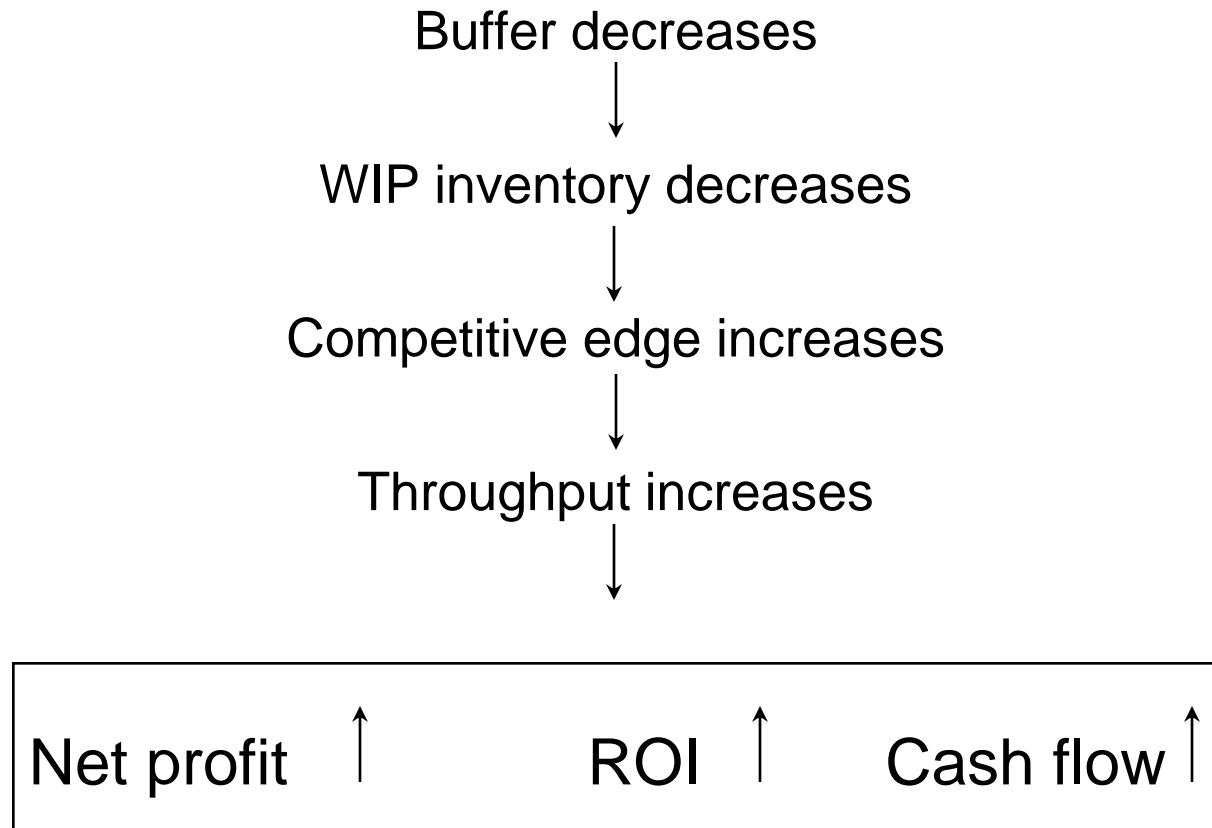


Global rules (cont'd):

- Bottlenecks govern both throughput and inventories
- The transfer batch may not and many times should not be equal to the process batch
- The process batch should be variable, not fixed
- Schedules should be established by looking at all constraints **simultaneously**. Lead times are the result of a schedule and cannot be predetermined

Theory of Constraints

Focusing improvements:

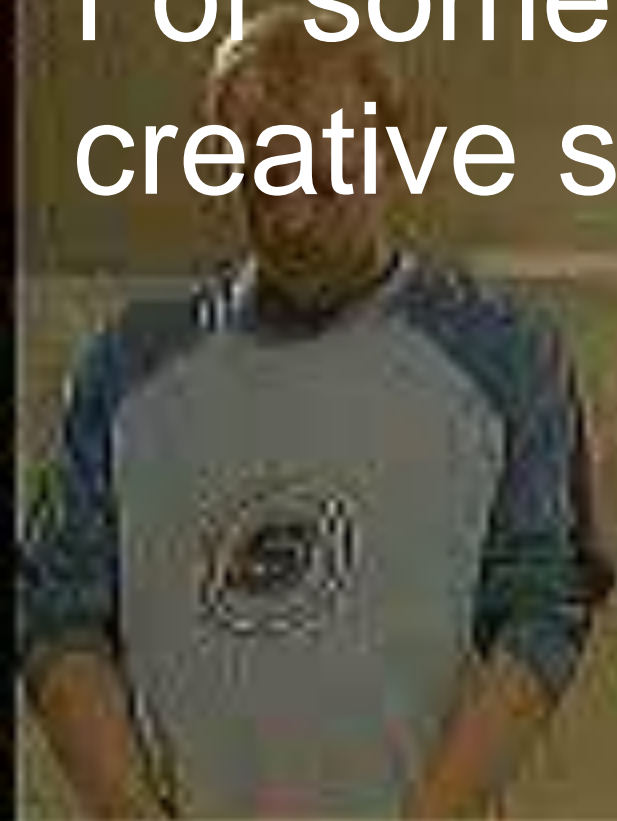


Continuous improvements:



Is there is a finish line?

For some bottlenecks there are creative solutions?





Discussion



- Form breakout groups consisting of six people.
- Discuss the following questions in your group.
- Write down your answers and ideas on flip-overs. Be creative, a picture tells more than 1000 words.
- The answers will be discussed during poster presentations.

Discussion questions

1. Is there a problem in your organization, which can be compared with the robots in the video?
 - Do you sell more because of the ‘robots’?
 - Do the ‘robots’ decrease the production costs?
 - Did the stock decrease because of the ‘robots’?



Discussion questions



2. In which ways are the people in your organization concentrated on independent parts and not on the organization as a whole? How are you able to change the situation?
3. Do you have arrears (**delays**) in your department? In what activities? Why?

Discussion questions

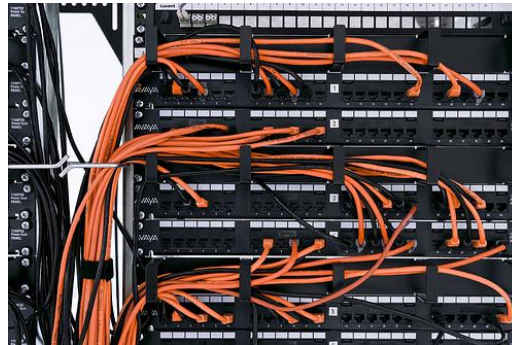
4. In the video Jonah defines a bottleneck as: “a resource which has less capacity than required. A bottleneck defines the capacity of the total plant.”

Define and describe a bottleneck in your department or in your organization.



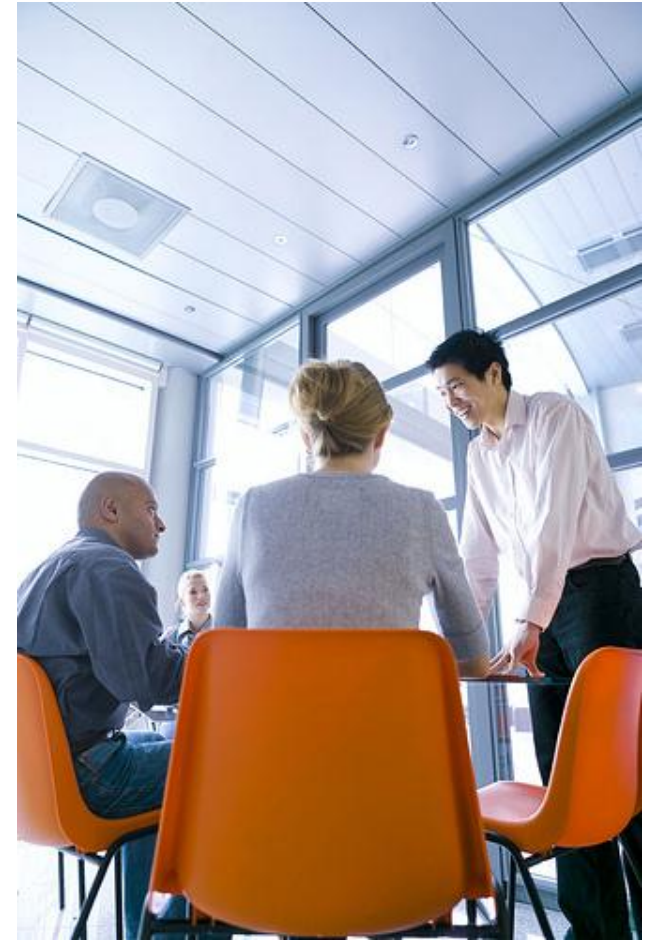
Discussion questions

5. How are you, your department or your organization able to make a bottleneck run faster or extend the capacity of the bottleneck?
6. Explain: Why is an hour lost at a bottleneck an hour lost for the entire organization?

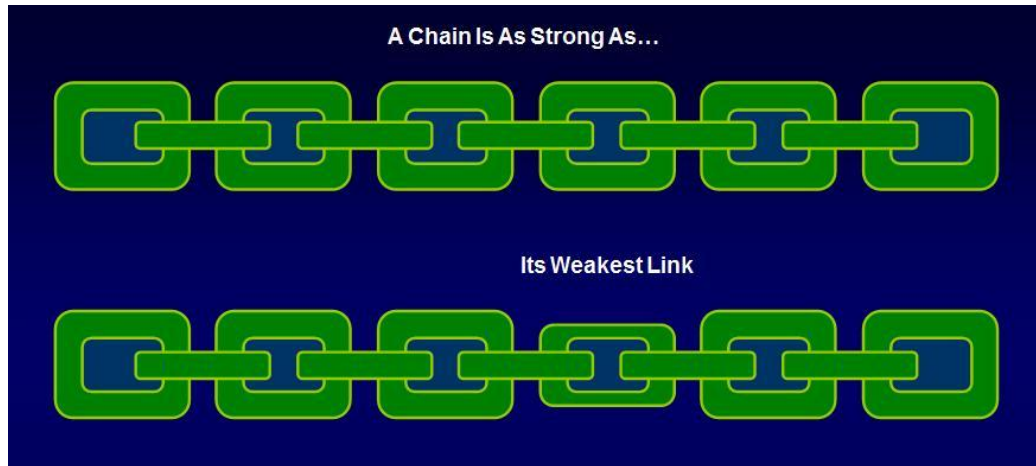


Discussion questions

7. Why did the decrease of the order quantity and the slow down of production decrease the costs and why is hidden capacity freed? How can you apply this given to your organization?
8. What is the goal of your organization?
9. What is your personal goal?



Continuous improvements: There is no finish line!



It 's all about common sense



solve the
bottleneck
problem !!

sure *we can*

