

Chronicles & Parables
of the Theory of Constraints

**CHRONICLES
AND PARABLES**

OF THE THEORY OF CONSTRAINTS

Redux

LUÍS CRISTOVÃO



CLT VALUEBASED PUBLISHING

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I also extend my gratitude to Dr. Eliyahu M. Goldratt (Eli Goldratt) the creator of the Theory of Constraints.

To my family for their constant support.

This book was mostly done during the COVID-19 pandemic, and I would like to dedicate it to all those who lost their lives during those challenging times.

But I especially dedicate it to Filomena Almeida, a dear friend and an outstanding professional in Quality Consulting in Portugal, which worked with me since 1993 and sadly passed away in late 2021. She was one of the first people to directly support my efforts to implement the Theory of Constraints (ToC) in Portugal. May her memory be cherished.

About this English version of the book

This book is a translation from European Portuguese. While Portuguese from Portugal that is the same language across Portugal and Brazil, usage and expressions vary by country – much as English varies between the UK, the US and other regions. Some passages translate easily, others require adaptation not always very easy. Language is a living system and that reality shaped this endeavor.

Therefore, this edition is a Redux - both a translation but at the same time a new and fresh look and some new chronicles, some upgraded parables for the English reader. Stage 7 is perhaps the most compelling example. Attempting to adapt MarcelRebelDeSouzix Tale from crazy “Anthiquos” Portuguese to crazy also “Anthiquos” English became a Tale in itself.

These stories in some point intersect with the Theory of Constraints (ToC) ,which, as once written is,

“Simply the best way to manage and improve in a simple and therefore radical way, the complex systems in which we live and operate.”

www.leanpub.com/chroniclesparablesoftheoryofconstraintsredux

THE CAUSE "THINGS" HAVE



PROLOGUE

This "Essay" was inspired by posts and texts published on LinkedIn, to introduce the Theory of Constraints (ToC) within the MBA ToC that I developed with the invaluable help of CLT. Of course this was only one of several inputs stating the obvious, as Lapalisse would say (see Stage 8), because it would make little sense to simply reproduce what was posted on LinkedIn.

I have always hated copying and prefer to draw inspiration to create something more, even if it is slightly different, progress requires it.

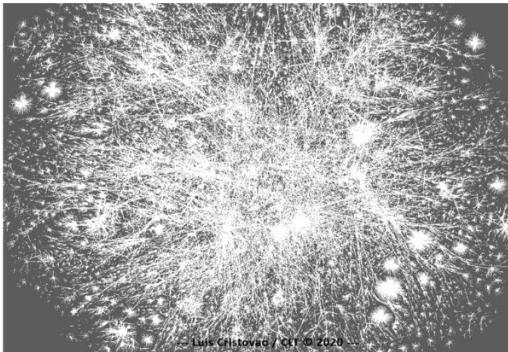
The overall tone of the book is light-hearted, without ever losing seriousness. Explanations use simple, often down-to-earth language, sometimes close to slang, at other times some technical formality is necessary – otherwise that crowd of experts, would tear me apart!

This book is special to me because it is the first authored alone (rather than a co-author, as in seven other works listed in the Bibliography). It is organized in "Stages" because stepwise progress help us work and understand better. BUT... as ToC teaches us, we must keep the objective in mind - more generally, what drives us – so we keep moving even when entropy and inertia start appearing on the path

The best approach was not obvious at first, the more thinking the fewer conclusions. Even reflection needs the right weight and measure.

Then, out of nowhere, an epiphany to be more erudite, I said to myself, "Eh pá" ⁽¹⁾, you've been on LinkedIn for several years, publishing, opining, casting those so-called 'pearls of wisdom.' Doesn't that form a solid foundation for writing about ToC, given that more than 80% of the time you talk about it, directly or indirectly?... And at the seventh minute... enlightenment struck, and the challenge was accepted.

(1)- The unpretentious and slangy introduction of the word 'pá' is quite interesting: it captures a significant slice of the Portuguese from Portugal vocabulary and often becomes a friendly jab from our Brazilian friends - 'oh, pá, for this,' 'pá, for that,' 'you're good, pá,' and so on. They should take care, though, because they have plenty of quirks too: calling everyone 'cara' ('face'), using 'atacadista' (wholesaler, which in Portuguese, sounds like "attacker"), 'varejo' (retail, while 'varejeira' refers to a "pesky fly"), and 'demanda' ("demand" with an - a). The list of expressions that sound absurd, curious, simply nonsensical or odd across variants could go on. Still, we are one language family—and language is a dynamic creature.



STAGE 1

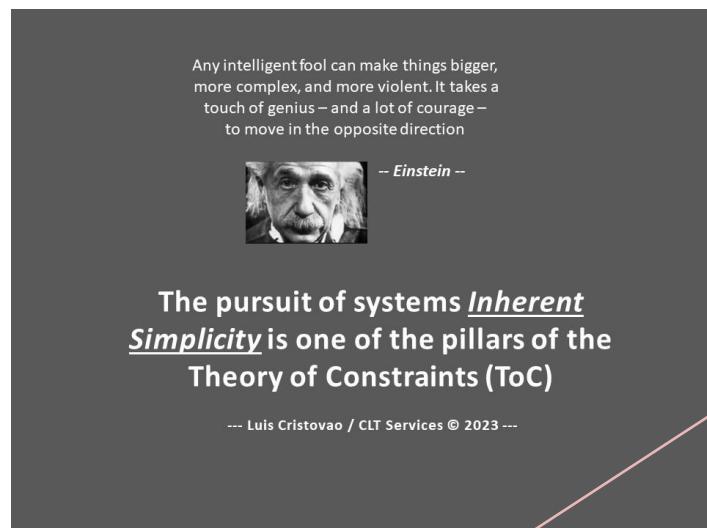


Figure 1.1 - Simplicity and Einstein

Baby-Boom, the dotnet genius

We could say that children are the beginning of life, being a child means being at the start of 'being'... but there are people nowadays who don't agree with that, some today expect kids to excel even before they are born... no less! We are currently during the peak of stupidity, of corporate folly, and institutionalized youth worship amplifies the illusion that younger automatically means better. Don't you believe it?



Figure 1.2 – Baby-Boom

To have FOCUS

ToC is arguably the most focused of all management methodologies and holds that,

'Focus is doing what should be done... and not doing what shouldn't be done.

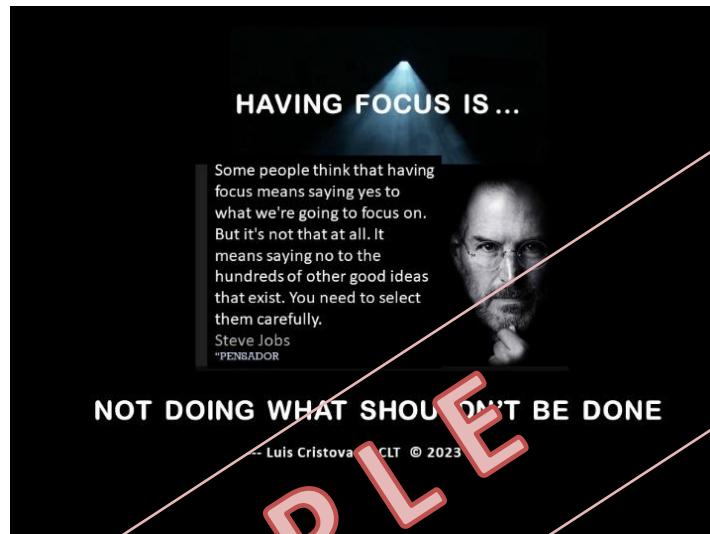
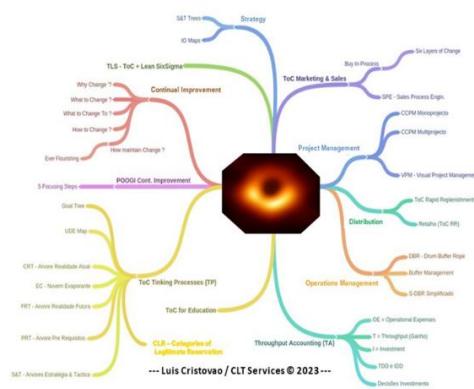


Figure 4 - Having focus

Usually, "not doing what shouldn't be done" is precisely the most challenging aspect to achieve in practice. A simple way to illustrate this statement is to think of a process that outputs a product or a service. To focus, ensure that all areas outside the constraint, the so-called non-constraints (which are most of the steps in the process), are subordinated and synchronized to the constraint pace.

Maximizing the output or the efficiency of non-constraints just because they can run faster than the constraint will only waste time, accumulate stocks, creating chaos, and reduce overall efficiency of the system. Instead, subordinate to and synchronize with the constraint to protect flow and throughput.



STAGE 2

Constraints in ToC are “**those elements that prevent a system from approaching its final objective, its ultimate goal.**” These are systemic constraints that effectively control the system, its flow, and thus serve as powerful leverage points for improving organizational performance. The following figures (Figures 2.1 to 2.5) illustrate this idea, with cosmic distances and proportions preserved!

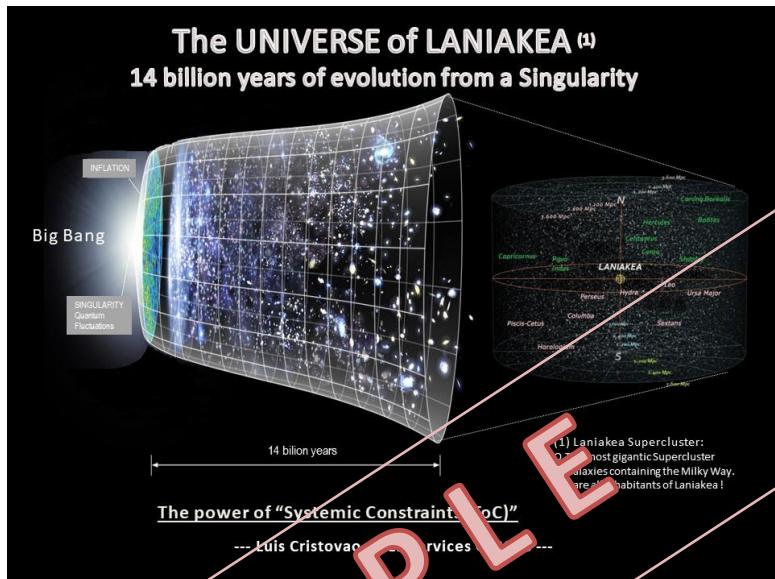


Figure 2.1 - Laniakea Supercluster

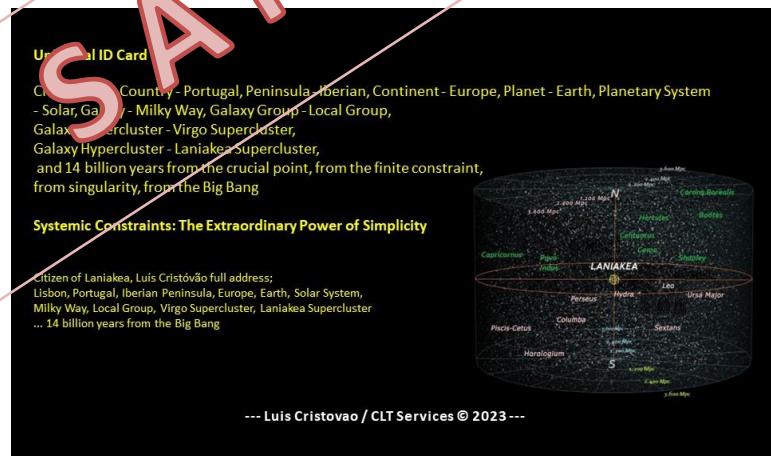
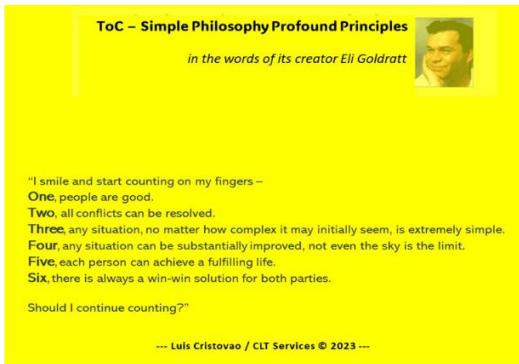


Figure 2.2 - Universal ID Card



STAGE 3

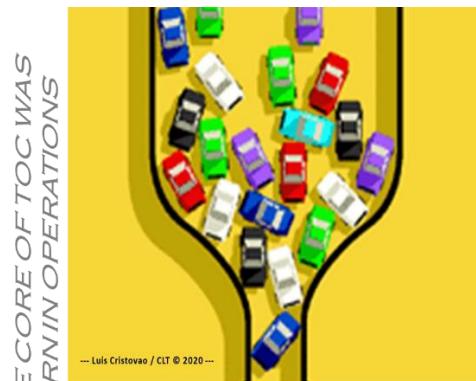
The Theory of Constraints (ToC) is inseparable from the thinking of its creator, Eli Goldratt, who succinctly expressed his thoughts in his final book 'The Choice,' as he shared what was in his heart about the principles of ToC (Figure 3.1).



Figure 3.1 - Counting, One, Two, Three, ..., Six

These principles represent the four fundamental TOC pillars:

- **Inherent Simplicity:** Even in highly complex systems, the number of true root causes is surprisingly small. TOC teaches that sustainable improvement is possible by identifying and acting on these key constraints—the “leverage points”—making change focused, practical and impactful.
- **Every conflict should be removed:** Most conflicts, whether operational or strategic, arise from hidden, often outdated assumptions. TOC advocates for challenging and surfacing these assumptions to resolve conflicts and create win-win solutions instead of compromises, driving continuous improvement.
- **People are Good:** TOC is built on the belief that people naturally want to do well and contribute. Rather than blaming individuals when results are lacking, the emphasis is on rethinking processes and policies. This mindset fosters trust, learning, collaborative spirit and empowerment.
- **Never say I know:** Continuous learning and intellectual humility are essential. TOC urges us never to assume we know it all - since new knowledge, perspectives, and solutions can emerge. As Goldratt said, “not even the sky is the limit.”



STAGE 4

The Goal

'The Goal' is the iconic book by Eli Goldratt that laid the foundation for the Theory of Constraints in 1984. The story unfolds in a production plant facing the dilemma of closing its doors. The plant manager, Alex Rogo, has three months to turn things around - improve or shut down. This work is an essential management bestseller, but when it was written, no publisher wanted to publish it.

They told Goldratt that they didn't know which shelf to put it on. If he wanted to write a novel, they would support it; if he wanted to write a book on production improvement, they would support that too. But, a novel about production like The Goal - was out of the question: they didn't know what to do with it!

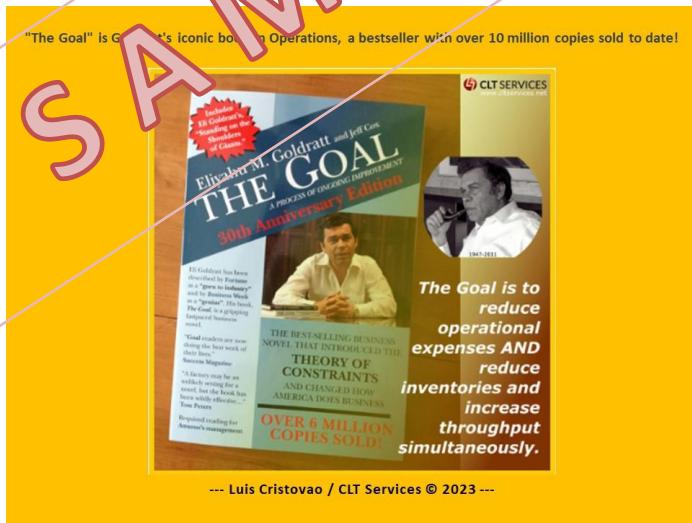


Figure 4.1 - Cover of the book The Goal

The Goal in 30 Pages + The Goal Revisited

One way to approach The Goal is in with a quick, relaxed read, hence the release of 'The Goal in 30 Pages'.

"The Goal in 30 Pages" is the a Portuguese language summary of The Goal.

The idea for this book was proposed to me by Joel-Henry Grossard, a French ToC expert who captured the book's core concept and create 30 pages summary for busy readers who lack time for the full 400-page original.

It conveys the essence of the book in under an hour, capturing its essential message. The out-of-the-box idea was compelling enough to adapt it to Portuguese.

With 'The Goal Revisited,' Grossard's second idea, you get an annotated 60-pages summary that, condenses the 400-page best seller and outlines the radical improvement concepts foundational to 'The Goal,' applicable to all types of organizations.

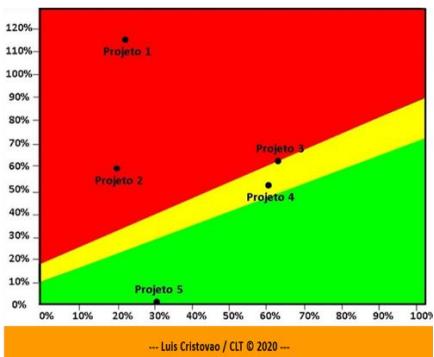
In short, one or two concise books provide quick, comprehensive summaries and explanations tailored for busy readers.



Figure 4.2 - The Goal in 30 Pages and The Goal Revisited (see Bibliography)
(<https://leanpub.com/ametaem30paginas>) e (<https://leanpub.com/metarevisitada>)

Following the concepts introduced in The Goal, Goldratt extended the application of its improvement ideas to areas beyond production. Applying the ToC framework to marketing and sales and to project management led him write two additional books (Figure 4.3) that also become bestsellers each breaking barrires in its field.

ME...PROJECT, YOU PROJECT
AND WHAT DO YOU DO?



STAGE 5

Inhibitors of Project Execution: in SCOPE, TIME, and BUDGET

The Web that inhibits the Execution of PROJECTS on Time, within Budget and Scope



Figure 5.1 - The Inhibitory Web of Projects

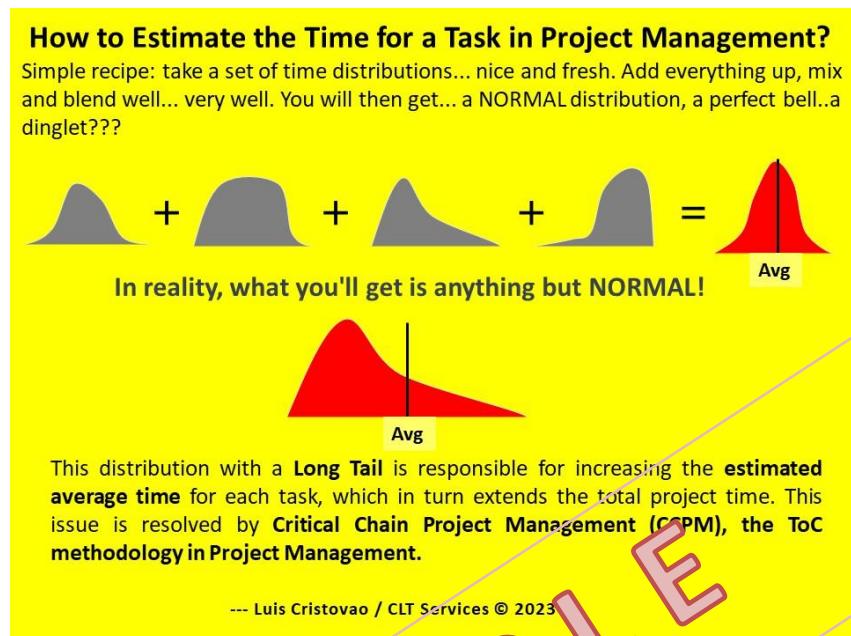


Figure 5.2 - Biased Time Estimates

Projects and the Student Syndrome

Once upon a time, there was a clever boy named Joe in college. He would always mocked others who studied hard ignored the warnings, left everything to the last minute and always scraped by. Until one day, the exam material, blindsided him studying all day before made a royal mess.

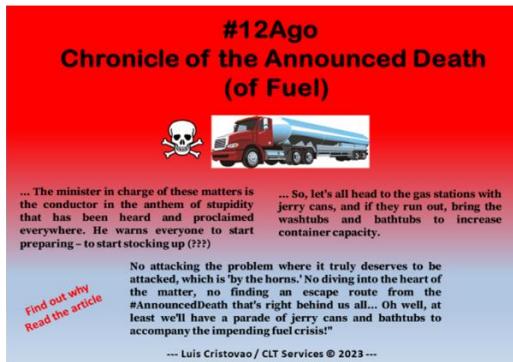
His head got so muddled there was no room for more, and what stuck was fuzzy at best... Our Joe, a clever boy, and a good friend of mine, from then on he never forgot: that the failure had a name - Student Syndrome!

Just like Joe's all-nighters, projects suffer from Student Syndrome: starting as late as possible, burning up safety margins, which causes the load applied to these tasks to require extraordinary effort and stress levels to finish on time.

This student-like behavior that resides in all of us (or at least in most of us) the old saying still bites..."Don't leave for tomorrow what you can do today".

One way to overcome the harmful effect of the Student Syndrome in projects is by using Critical Chain Project Management (CCPM), ToC's methodology to plan, track and deliver on time and within budget .

by using pooled buffers instead of padding every task.



STAGE 6

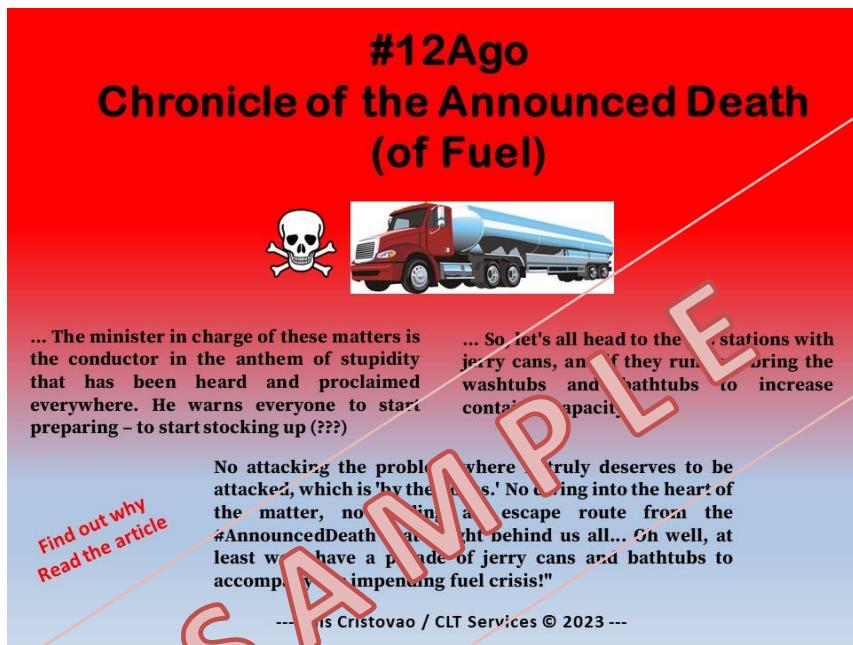
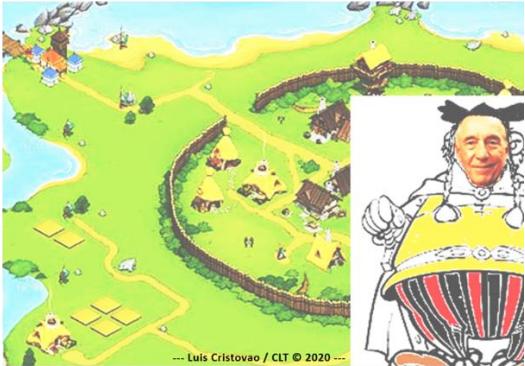


Figure 1.1 - Chronicle of the Announced Death (of fuel)

This is an elections year ⁽⁵⁾ and may monkeys bite me if the vote matters or not! We're on the brink of the 'Announced Death of Fuels' – those fossil fuels at the gas stations, where else? The reason; a pre-announced open-ended strike by the tanker drivers union (SMMP). in a standoff with ANTRAN the transport companies association.

August 12, 2019, is the big day and, judging by recent events, this time it may actually happen. But - surprise, surprise, the root problem is nowhere in the news, no one debates it. There's no real negotiation talk, all we hear is the pathetic wrangling over "minimum services". Will that be 20%, 70%, or 300 - 400 gas stations for emergencies ?

(5) – in October 2019, Portugal held parliamentary elections to form a new government for the country.



STAGE 7

Developing Portugal

When I started the posts on LinkedIn about ToC, one of the points I aimed to explore was the so-called Thinking Processes (TP), introduced in Stage 3. The TP is the generalization of ToC for complex systems or simply for systems that are not related to production. Typically, in the late '80s, when we talked about ToC, we were focused on identifying bottlenecks, and this process was very visual in companies. In production, finding bottlenecks is relatively easy; you just need to look for the stockpiles!

But I'm digressing, and I'll explain how the analysis you're about to see came about. If ToC applies to systems as we know, and if Portugal is a complex system, why not apply ToC, particularly the Thinking Processes, to Portugal?

This is how Developing Portugal was born – an analysis that isn't complete (nor could it be), but one that took me far enough to know I was on the right track and had touched on the nerve center, the heart of the matter. This doesn't mean that the analysis can't be deepened, adapted, and updated; I provided enough clues to grasp this country and elevate it to another dimension. Yes, that's right, because from here on, we're dealing with really deep paradigms in people's minds.

And the first is, why on earth does Portugal need an Objective? When I say Portugal, I mean any other country or nation if you prefer. And it was from this point that everything began...

The analysis was carried out in four steps.

Analysis of a Complex System - Application of ToC to PORTUGAL

1st Step - What is PORTUGAL's FOCUS?

- Its GOAL!

2nd Step - PORTUGAL ALREADY HAS A GOAL! NOW WHAT?

- From the Goal to the Seven Critical Success Factors!

3rd Step - DEVELOPING PORTUGAL: A Goal and 7 Critical Success Factors!

- From the Goal and the 7 CSFs to the 27 Necessary Conditions!

4th Step - PORTUGAL - The path! Resolving the conundrum!

- From the core problem to the Solution!

1st Step - What is PORTUGAL's FOCUS?

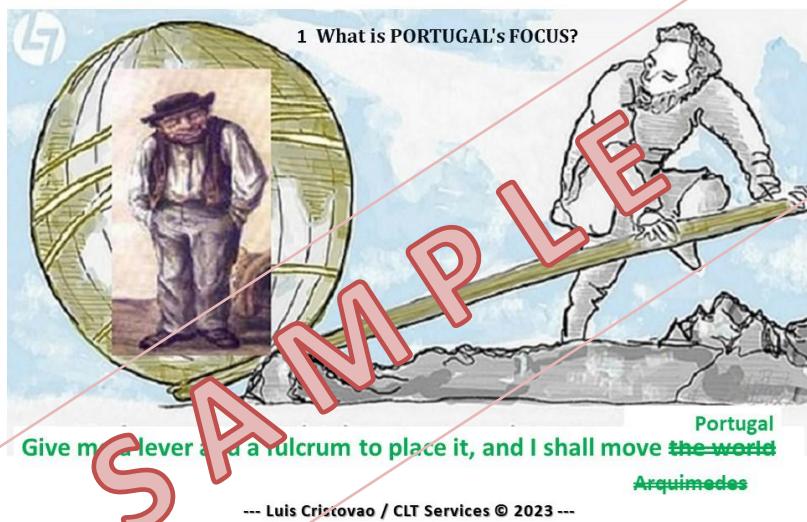


Figure 7.1 - Developing Portugal - What is the Focus? ⁽⁶⁾

Who nowadays hasn't heard of doing things right the first time? This was a lesson we learned from the Quality gurus, Juran and Deming, who changed the course of Japan and the Western world. But quickly, the notion of doing things well and right the first time became widespread and lost its initial meaning.

(6) - In Fig.7.1 within the world globe that Archimedes is moving, the image of the average Portuguese person - known as "Zé Povinho" (or "average Joe" in English - is represented. This character was developed and immortalized by the Rafael Bordalo Pinheiro, who, "lived from 1846 to 1905. He was a Portuguese artist, caricaturist, and potter, known for his satirical cartoons and the creation of various iconic characters, including "Zé Povinho." His work had a significant impact on Portuguese culture and society during the late 19th and early 20th centuries. "Zé Povinho is so important to the Portuguese that when they see his image, they are looking at the image of the Portuguese people! The image is of course a cartoon of Portugal and "the Portuguese, who are not a people that normally laughs at itself" but there are exceptions, and Zé Povinho is one of them.

AND HERE I GIVE YOU
MORE TO THINK ABOUT...

Be radical and disruptive in your organization,
use the power of your system's constraint

No improvement $(1,00)^{365} = 1,00$

Continuous improvement +1% per day $(1,01)^{365} = 37,78$

Continuous improvement (+1%) + add just ONE day of Radical improvement (+30%)**
 $(1,01)^{364} \times 1,30 = 48,63$

... and if there are 7 days (1 week) of Disruptive improvements?
 $(1,01)^{358} \times (1,30)^7 = 221,12$

** - do you consider +30% to be Radical or Disruptive?

--- Luis Cristovao / CLT Services © 2023 ---

STAGE 8

Disruptive and Radical Improvement is increasingly necessary nowadays, and continuous improvement alone is not enough as shown by the numbers. The utilization and management of constraints allow organizations to achieve the radical performance leaps they require!

Be radical and disruptive in your organization,
use the power of your system's constraint

No improvement $(1,00)^{365} = 1,00$

Continuous improvement +1% per day $(1,01)^{365} = 37,78$

Continuous improvement (+1%) + add just ONE day of Radical improvement (+30%)**
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... and if there are 7 days (1 week) of Disruptive improvements?
 $(1,01)^{358} \times (1,30)^7 = 221,12$

** - do you consider +30% to be Radical or Disruptive?

--- Luis Cristovao / CLT Services © 2023 ---

Figure 8.1 – Disruptive mathematics

I believe that continuous or sustained improvement can be an asset within companies and is certainly by far the most widely followed model. I refer to this model, which relies on the motivation of people, perhaps as its greatest strength... 'grain by grain fills the hen's belly', meaning that by making incremental progress, we eventually achieve our goals.

However, this model shouldn't be the sole (or almost sole) method of improvement to consider or provide as guidance to organizations in a very chaotic and demanding world, a VUCA world (Volatility, Uncertainty, Complexity, Ambiguity – Fig. 8.2). We are talking about systemic improvement, where it's crucial to consider systemic constraints in order to achieve radical performance leaps.

EURO 2016 - The "TUGA CLOUD" ⁽¹⁴⁾

Don't be fooled by advancing from the round of 16, TO THE FINAL, IT WAS, it is always tough, even MUCH tougher, IT WILL END, the unbearable and now famous saying "MATA-MATA" (kill-kill) of Scolari (famous brazilian coach of a previous Portuguese team or "Mister")⁽¹⁵⁾

"Mister" Fernando Santos (actual coach), I wouldn't want to be in your shoes, as you have to continue to resolve a conflict, and if you could achieve that, IN THE LAST FINAL, game after game, final after final, then the TUGA Team will triumph in EURO 2016 against all odds, even against the French media who despise our playing style, SAID WE WEREN'T GOOD, AND NOW WE'RE ON THEIR TAIL.

What is the conflict, the dilemma at the heart of our team that threatens everything? It could put everything at risk in the blink of an eye? The three goals against Hungary, the victory in extra time against Croatia, the penalty shootout victory against Poland are just a few examples of that.

Don't take me as pretentious; I'm just another armchair manager, one of the 10 million or so in Portugal, but when it comes to systems, in the analysis of complex systems, that's where I believe I can add something. Now, this is precisely what I propose to you: a simple analysis of a complex system, which is a football team, the TUGA team, during the Euro 2016 tournament, with all the pressures starting from the people behind, the pressure from other teams trying to overshadow us, the biting criticisms, etc.

Our goal is to have a triumphant TUGA team in Euro 2016, now that we're in the final, having progressed through the rounds from the round of 16 to the quarterfinals to the semi-finals. We've achieved a triumph already, being among the top 2 teams! A unique winning case (a passport to the final phase) with only draws... only us! But to have a triumphant team in Euro 2016, two crucial conditions must exist, because without them... goodbye triumph!

First, we need to have a group, a team, that must have great cohesion among the players, as this forms the foundation of an excellent team. Second, we need to encourage the individual talents of our players, which is so precious at this moment, a true goldmine in the context of the European Championship.

However, to have a highly cohesive group, we must focus on the performance of the entire team. On the other hand, to encourage individual talent, we need to focus on the performance of a few stars – CR7 (Cristiano Ronaldo), Quaresma, Nani, Renato Sanches, Rui Patrício, Eder...

In other words, on one hand, we need to enhance the performance of the entire team, but on the other hand, we need to elevate the performance of a few stars. Can't you see the conflict (see Figure 8.8)? The conflict between the entire team and a few stars?

(14) - This article was an experiment by the author, who as "armchair manager" apply ToC and the conflict resolution diagram, during the 2016 European Football Championship. It was adapted along the way until the victory of the glorious National Portuguese Team usually called TUGA (from PortUGAL).

(15) - The term "Mister" became popular years ago when Portuguese players didn't speak much English, and since "Mister" literally means "Sir," every coach - local or foreign - got dubbed "Mister" by the squad in a popular way.



STAGE 9

We all aspire a better and Sustainable World, but today sustainability has been a buzzword that carries its weight in good things but also in an array of assumptions that are at minimum not without suspicion regarding their related benefits. For many years I've followed the environmental ⁽²¹⁾ debate and climate in particular ,mostly in a distant position.

My personal research of these matters has been deep and I've read and seen lots of testimonials from politicians to scientists, passing through curious people like me, media people and journalists. I believe that, due to importance of climate in our lives, all positions must be respected and held in perspective.

There's a supposed major consensus in the scientific community on climate matters, some talk about 97% of scientists who defend UN positions, namely through its climate arm, the IPCC (Intergovernmental Panel on Climate Change). This is far, very far, from saying there's no discussion because only 3% disagree. Nobody knows if that 3% might hold some common sense and knowledge necessary to elevate the climate debate into a truly open subject for all scientific and public communities.

Digging deeper it's easy to see there's a real tribe of 'climate followers' and a smaller but growing tribe of 'climate deniers'. This isn't good for science because the theme is highly politicized, and so many good arguments get lost in bad politics rather than good science. The investment in climate science has been heavily subsidized (since Clinton/Gore mandates in the US) to try to demonstrating that the 97% tribe was right and the opposite wasn't , that's why many reputed and outstanding scientists only express their opinions...after retirement .

⁽²¹⁾ - The author had been responsible for environmental positions as Director in the Food Industry for nearly 25 years , so things like pollution, reduction targets for energy and water consumption, recycling materials and environmental practices - some years ago known as Sustainability - are very familiar to

him. He was one of the first people in Portugal to take companies to a high degree of voluntary environmental compliance using international standards like ISO 14001. Finally, as a Chemical Engineer he has some knowledge of what we can call the 'chemistry of life' - which is, by the way, the 'chemistry of carbon'. This article is like the entire book - a mere expression of the author- but he tried to gather facts more than simple opinions or theories as he call them. If theories don't reflect the actual data or have many holes ... then a new or modified theory should be developed to explain the inconsistencies. But it seems that on climate change the emotional level is very high, and so people prefer to attack each other instead of talking and using logical arguments.

The author tried to use, as a ToC practitioner, cause and effect logic and bring one things ToC teaches: we must try to see the wrong assumptions in any argument if we want to refuse or replace it. That's what he did in the following text.

Climate Change is An Oxymoron

Everyone talks about 'Climate Change'; in fact, a few years ago, it was referred to as Global Warming. However, due to the Earth warming in some areas and cooling in others, this confused scientists and even more so the people for whom the message should be clear. Hence, the evolution to the famous and current term 'Climate Change'.

This is an oxymoron because this expression inherently contradicts itself. Climate itself is already a combination of changes, not something static that is now suddenly changing, as the expression implies. The truth is that climate, first and foremost, doesn't exist as a singular entity. According to scientists, there are many climates, some independent from each other, but with influences between them at times. It's a complex macro-system, a system of systems, where each regional or local climate, even microclimates, is a subsystem of the larger global or global system it belongs to.

But what's the issue with climate? The problem is that politicians, gathered under UN/IPCC (Intergovernmental Panel on Climate Change) auspices, after many years of debates and reports, declared that we are in an era where changes caused by human activity - particularly on the environment and climate, are so severe that, according to UN Secretary-General, Engineer António Guterres himself, '...we have reached a point of no return with dire consequences for the human species and consequently for future generations – our children, grandchildren, and beyond...'.

In other words, due to temperature increase of anthropogenic origin - a term that means originating from human species - which should have been limited to a maximum of 1.5°C above Earth's temperature at the beginning of the industrial era, around 1850, as agreed in the Paris Agreement in 2015, we are already on a trajectory where everyone agrees that achieving this goal is becoming increasingly impossible in the next decades.

But let's break it down. How can Homo Sapiens control the planet's temperature and prevent the ominous 1.5°C threshold from being breached? The idea hinges precisely on the key factor of this issue: the notorious and often misunderstood effect of CO₂ (carbon dioxide)!

This climatic objective is achieved by controlling CO₂ and striving for the equally famous Net Zero (no CO₂ emissions, or a balance between CO₂ emitted and removed from the atmosphere) status, a goal that every conscientious executive includes in their company/organization objectives and annual reports. Not to mention politicians led by Al Gore's example who eagerly want to champion this transformative process on a global scale!

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