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SLAVE TO THE RHYTHM: ADOPT TIME-ORIENTED WORK SYSTEMS. NOW

For flow and high performance, combine time-oriented, lean production approaches with coherent decentralization

BetaCodex Network Associates
Niels Pflaeging

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Dedication

This BetaCodex research paper
is dedicated to the memory of

Ernst Weichselbaum

(13.04.1944 – 27.12.2024),

a pioneer of
Time-Oriented Work Systems

The BetaCodex and rhythm: It's a matter of flow, tempo, groove

Part of the BetaCodex Network's identity is our **pledge to revise the set of principles that make up the BetaCodex whenever new insight demands it** or whenever changes in organizational reality or language dictate an update. During the last major revision of the principles that we undertook in 2018, Silke Hermann and I revised its wording, trying to make all 12 principles more poignant, and we eliminated a principle we considered somewhat bland. In the end, that principle was dropped in favor of a new principle on Rhythm, now at No. 9 (see right). We were so thrilled by the rewrite's result that we went on to publish a more detailed outline of the codex as a booklet. This paper is about rhythm and time orientation.

Several key terms and concepts relate to rhythm in industrial value creation:

- *Flow.* A term we will use a lot in this paper. Indicates barrier-free streams of value creation with a minimum of waiting time and inventories. Not identical with *takt*.
- *Pull.* Another expression of flow that indicates an absence of *push*-like steering from the inside-out, and dominance of demand-steering from orders forward.
- *Heijunka ("levelling").* Distributing types and quantities in production evenly, over a period of time, instead of grouping into batches, in order to minimize inventory, lead time and waste. We return to this concept later in this paper.
- *Single-piece flow.* As applied by Toyota and other lean companies, single-piece flow is an expression of rhythm. There are other rhythmic approaches. *Lean RFS*, for example, uses repetitive, or regular *slotting,* instead of single-piece flow.
- *Takt.* Temporal alignment of sequenced activities: The "slowest" step sets tempo.
- *Iteration*. Not the same as *rhythm*. Iteration, as it is common in agile approaches to software development is one expression of rhythmic value creation, but not all rhythmic value creation uses iterative cycles.

The laws of the BetaCodex

1. *Team autonomy: Connectedness with purpose, not dependency*
2. *Federalization: Integration into cells, not division into silos*
3. *Leaderships: Self-organization, not management*
4. *All-around success: Comprehensive fitness, not mono-maximization*
5. *Transparency: Flow intelligence, not power obstruction*
6. *Market orientation: Relative Targets, not top-down prescription*
7. *Conditional income: Participation, not incentives*
8. *Presence of mind: Preparation, not planned economy*
9. *Rhythm: Tempo & groove, not fiscal-year orientation*
10. *Mastery-based decision: Consequence, not bureaucracy*
11. *Resource discipline: Expedience, not status-orientation*
12. *Flow coordination: Value-creation dynamics, not static allocations*

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Why you should care about Time-Oriented Work Systems: It's a matter of time, cost, quality, survival, progress and joy (I)

Put succinctly: Time orientation is about superior organizational competitiveness in all its facets. Rajan Suri, creator of Quick Response Manufacturing (QRM) highlights the interrelatedness of time orientation and competitiveness – and especially its relevance for economies with high labor cost: *"If you can use QRM methods to reduce your cost by 30% - and many companies have achieved or exceeded this number – then you have effectively wiped out the labor-cost advantage of those other countries. Add to this that domestic production eliminates the costs of shipping from overseas, plus your short response times, and it is impossible for overseas manufacturers to compete on the same terms.* ***You can compete against any manufacturer making products anywhere!"***

Ernst Weichselbaum, inventor of the Weichselbaum System, accentuates the importance of time-orientation as a different way of thinking about organizing: "*The economy has degenerated into a capital compression machine.* ***We need to free the people who are really in charge of developing organizations from their thinking cages.*** *Capacity-, or volume-oriented organizing has had its day. It is philosophically, morally and practically exhausted, expired, bankrupt. My work is one of the ways of replacing these habitual thought patterns with other, better thought patterns by means of provocation."*



*Rajan Suri (*1952)*
QRM creator

*Ian Glenday (*1953)*
Lean RFS creator

Ernst Weichselbaum (1944-2024)
Weichselbaum System creator

Why you should care about Time-Oriented Work Systems: It's a matter of time, cost, quality, survival, progress and joy (II)

Ernst Weichselbaum puts the challenge of making companies time-oriented this way: "*The entire company, from supply to invoicing, including the suppliers, must swing to the same rhythm of customer demand: Because uneven rhythms create losses of friction. When swinging along, inventories are avoided in a great many places – and neither material nor working hours are wasted just because the respective customer may have changing requests, for example. By the way:* ***a 50% reduction in through-put time has the same financial effect as a 50% increase in productivity.***"

Ian Glenday argues that "*by repeating the same pattern of Every Product Every Cycle (EPEC),* ***we generate a phenomenon we have called Economies of Repetition (EOR).*** *EOR works by building on basic traits of human behavior like the learning curve: When people do the same task repeatedly, they naturally get better at it. This isn't about applying improvement tools. It just happens. The benefits of Economies of Repetition are surprisingly rich.*"

In his work since the 1980s, Ernst Weichselbaum discovered that **the ultimate consequence of time orientation in a company is not just a *lean*, but a *swinging* organization:** "*The question Who sets the rhythm when a company swings with the market? is easy to answer: the whole world swings. The earth revolves around the sun every year, the moon revolves around the earth every month and the earth revolves around its own axis every day. The economy also oscillates: everyone is familiar with economic cycles, seasonal influences and recurring fashions. In the household when cooking and as farmers when doing business, we naturally live to the rhythm of life. There we don't insist on 'ideal batch sizes', set-up times and 'economies of scale' either.*"

"When the work is less monotonous, we increase the total amount of smiles."
Ernst Weichselbaum

"In QRM, the driver is time. Everything is driven by looking at time in the whole system. If you squeeze time, you get improvement in all your metrics."
Rajan Suri

"Repeating weekly plans created routines that gave people a structure, pattern, and stability, all things that they liked and, coincidentally, also helped to improve performance. This new phenomenon focused on the people, not the machines. We called it Economies of Repetition."
Ian Glenday

"Time is not money, time is a whole lot of money."
Rajan Suri

Time-Oriented Work Systems in practice: A look at the world's most famous case of a 'rhythmic' company

We are talking about the case of Toyota, of course. It's the most notoriously and most widely commented management case in history, and certainly the most significant case from the realm of *Time-Oriented Work Systems,* as well as *Lean.* In the 1980s, Toyota was called "the Japanese miracle", and for good reason. By now, the case is so well-sustained it could be called ancient: Since the 1950s, the company has put time-orientation to work through its famed operating model called Toyota Production System, TPS, which has been the origin of much of *total quality, lean* and *agile*.

Toyota has proven the applicability of its system all around the world, and the model's resilience even in times of severe crisis, e.g. during the 2008/09 tsunami shock. Some key characteristics of Toyota's stance on time-orientation are:

- *Rhythm* achieved through temporal alignment of sequenced activities *(takt)*, combined with the concept of *single-piece flow:* All connected production processes in a line are timed around its longest-duration process step.
- *Kanban* as a system of visual identification, or signaling, developed by Taiichi Ohno in the 1950s. Kanban systems produce consumption-based pull, through steering of parts and material, and control of inventories, in alignment of the actual flow of work.
- *Multi-skilling* to scale adaptability, accountability and system-wide improvement.
- *Kaizen* instead of reaching targets, as a system of continuous improvement by everyone, while striving for simplification and elimination of waste.
- *Just-In-Time* and *Pull production* as concepts of synchronization and improving the flow of material, including suppliers.



Taiichi Ohno (1912-1990)
Kanban creator, architect of the Toyota Production System

To set up an industrial company for time-orientation, rhythm and flow are always the foundation

When, in the 1940s, production engineer Taiichi Ohno (pictured below), set out to reshape Toyota's production into to what is now commonly referred to as *TPS* or *Lean Manufacturing*, he did not start off with the now-famous *single-piece-flow*. Instead, he and his peers had to discover how to break large production batches down to ever-smaller batches, by reducing changeover times, testing different takes on shop floor arrangement, and reorganizing the work processes. **It took Ohno-San (as he was referred to within Toyota), his teams and sites a full three decades to arrive at single-piece flow (or: *batches of one*) and to integrate most of their process steps into the *kanban*, including much of their suppliers' processes.**

Today, it is hard to imagine a consistent, company-wide transformation effort to proceed over a 30-year time-span – unwaveringly and largely uninterrupted, from process to process, from site to site, from country to country.

Who would have that kind of patience? Who would endure long enough to carry such a marathon through? Fortunately, there is no need for us to answer these questions: We are free to stand on the shoulders of practitioner-giants like Ohno and John Shook at Toyota, and mindful articulators like Daniel Jones and James Womack, or Jeffrey Liker. To achieve rhythm and flow in industrial companies fast, we have Deming and BetaCodex theory at our disposal, and a bunch of BetaCodex social technologies.

Crucially, outstanding practitioners and inventors **Ernst Weichselbaum, Ian Glenday and Rajan Suri idealized a trio of *Time-Oriented Work Systems* approaches in the 1980s and 1990s** that allow companies to escape lean agony and the *tools for toolheads* trap. In this paper, we will talk about the Big Three *Time-Oriented Work Systems* approaches and their potential for industry and manufacturing companies of all kinds.



Taiichi Ohno (1912-1990)

It may appear that 'Lean' failed, by and large. It did not. With hindsight, it's wiser to conclude it was rarely attempted

Why didn't more companies follow Toyota's lead and get system-wide, coherent lean or flow systems in place? The problem is that while Toyota (and some other firms) showcased *a solution* to rhythmic flow organization, the path to *install* such systems was less obvious. Toyota itself was forthcoming about its TPS system, but the company was never great at describing exactly *how* they got where they were. This is a common denominator among BetaCodex pioneers. It took decades for practitioners like Ohno and Shook, for consultants and academics to produce proper codifications and interpretations of TPS and lean principles, and to make recommendations for transformation beyond *"It will take a very long time, and it will be very hard work, even if you stick to all the principles."*

Cohesive, practical transformation approaches remained utopian until recently. Worse: Consistent lean approaches and even "partial solutions" remained hard to grasp for most, even for industrial firms willing to mimic Toyota. One reason is that, to achieve *batches of one* (which have been a reality at Toyota for decades) will forever remain elusive in many industries and types of production like:

- **High-volume production** – which is common in *process industries* and *Fast-Moving Consumer Goods* industries. Think food, pharmaceuticals and toilet paper.
- **High-Mix-Low-Volume industries** or Mass Customization. Think machine-building, furniture-making or medical devices production.

In both kinds of industrial settings, single-piece flow is impossible to achieve. This caused much shoulder shrugging and frustration, back in the 1980s and 1990s, when pretty much everybody in the West looked to Toyota for answers to the competitive crisis in industry. In the face of global competition, patience wore thin within the production and lean management communities. Instead of doing what Ohno did, dedicating 30 years and hard work to finding their own ways to produce a consistently lean system, most production experts and companies turned to lean *tools* and *solutions,* instead.

"Lean RFS is by no means a total application of Lean thinking, concepts, tools and techniques. What it does more than anything else is help people in companies realize the root cause of their fire-fighting – batch logic – and provide guidance on how to create stability [through leveling], which is the very foundation of the Toyota Production System."
Ian Glenday

"Working hours are when there is work to be done. Thanks to the daily portion, every day becomes a season."
Ernst Weichselbaum

"The first thing you need to know about QRM is that it is here to stay. The reason is simple: Modern society and technology have produced impatient consumers."
Rajan Suri

What we have come to call ‘lean‘ wasn’t lean at all, as it failed to be ‘transformational‘, pretty much entirely

Moving forward with tools and solutions, instead of taking the path of system-wide change turned out to be a cardinal mistake. In the short run, however, the quest for silver bullets created a string of fads. Mechanistic patchwork approaches rose to dominance in the lean management movement around the time of W. Edwards Deming’s death, in 1993, at least outside of Japan. Some of the fads, tools and quick fixes in the lean arena turned into genuine *hits* and into industries, brands and communities in their own right: Take *Kaizen*, *Six Sigma,* the so-called *Theory of Constraints,* or, more recently, *Toyota Kata.*

Worse: **Tools and dabbling became synonymous with lean** in the minds of business owners, managers, practitioners, consultants and academics alike. Bar systemic attempts and “system-wide changes” of the kind that Toyota undertook, the piecemeal approaches around lean were bound to fail, to fall short of expectations, or to fizzle away quickly. The tendency to “sell out” devastated large parts of the lean camp. To this day, the movement hasn’t recovered.

A few individuals and companies insisted on identifying suitable lean approaches capable of achieving flow:. Approaches that are sufficiently systemic to amount to more than dabbling. It is here where *Time-Oriented Work Systems* for industry come into play. What makes the “Big Three” approaches we will talk about in this paper different is that they are not put in place within Alpha, or command-and-control systems, but that they are full-fledged *alternatives* to Alpha. They are not fixes, but Beta systems designed for manufacturing sites, industrial production and industrial firms overall. In short: The Big Three, like TPS, are ways to overcome Alpha systems in favor of Beta systems. Overcoming the system is required to get adoption done: **Starting from a logic of batches, steering, and functional division, an organization cannot optimize its way to rhythm and flow.**

“People find flow logic counter-intuitive, because it flies in the face of conventional wisdom. Not surprisingly, given that batch logic seems intuitively right, flow logic receives little if any attention.”
Ian Glenday

“Overcoming the system has become a part of everyday life.”
Ernst Weichselbaum

“Current accounting methods only allocate costs during the time in which something is happening. Idle time seems to be for free – but that is not true. If you remove idle time, A lot of existing activities become superfluous. However, it is difficult to provide hard evidence for that beforehand.”
Rajan Suri

“Problem-solver is a dirty word. What is more important: problem solving or problem avoidance?”
Ernst Weichselbaum

Moving away from centralized steering to rhythm and flow requires 'overcoming the system'. Optimization does not suffice!



Relation to beliefs	Beliefs (principles) can remain unchanged, which can make it seem fast, straight-forward, simple and doable at first	Beliefs must change ("be overcome") so that consistent action becomes possible, which can make it seem slow, hard, risky and bold at first
Main drivers	Works with Facts, Fear, Force	Requires people to Relate, Repeat, Reframe
Characteristics	Can be imposed; lends itself to change management and sloppy approaches; can result in actionism/inconsistency, and lack of addressing need for market changes	Cannot be imposed; requires appropriate authorization by a sponsor and chosen agency; improvement potential potentially much higher; suited for coherent, principled approaches
Variants	Improvement, optimization, kaizen, process management, reorganizations, new tools	Organizational hygiene, Interventions on the system ("flips") that promote a distinct set of principles
Downsides	You may end up optimizing the wrong things; risk of dabbling, experimenting, quick fixes	Authorization may be hard to obtain; Sponsor must really, really want the different kind of system

In manufacturing, overcoming batch logic is a necessary part of getting to rhythm and flow

Let's talk about an enemy of time orientation first: Batch production. Batch production, or the grouping of products, with each batch going through the production process together. **Batch production is a form of internal steering – which is a bad idea in complex (and thus dynamic) markets.** See our white paper Organize for Complexity. Flow processes, on the other hand, are a way of leaving steering to the market, and having teams within the organization responding intelligently through "sense and respond", allowing for *pull* to take hold. In complexity, this is both effective and will liberate people's masteries and potential.

To put this into practice in High-Mix-Low-Volume production or mass customization, the Weichselbaum System uses the concept of the *daily portion*. Ernst Weichselbaum explains: "*The biggest challenge is to throw out that assumption about 'efficient production', which is that producing large quantities is more efficient than small quantities or even one-off production. This assumption means that the customer must wait longer than is necessary.* ***Plus: the larger or the more unnatural the batches, the more complicated the work scheduling and preparation.*** *The 'new batch size' in a time-oriented approach, on the other hand, is typically one day's orders [of varied products] – what we call the daily portion. With such small batch sizes, big investments in complicated IT systems are no longer necessary; work preparation becomes simple and can take place daily, instead of consuming weeks. Planning can be eliminated entirely. Machines must be adapted to the optimum case of a 'batch size of one'. To achieve this, minimizing set-up times is crucial."*

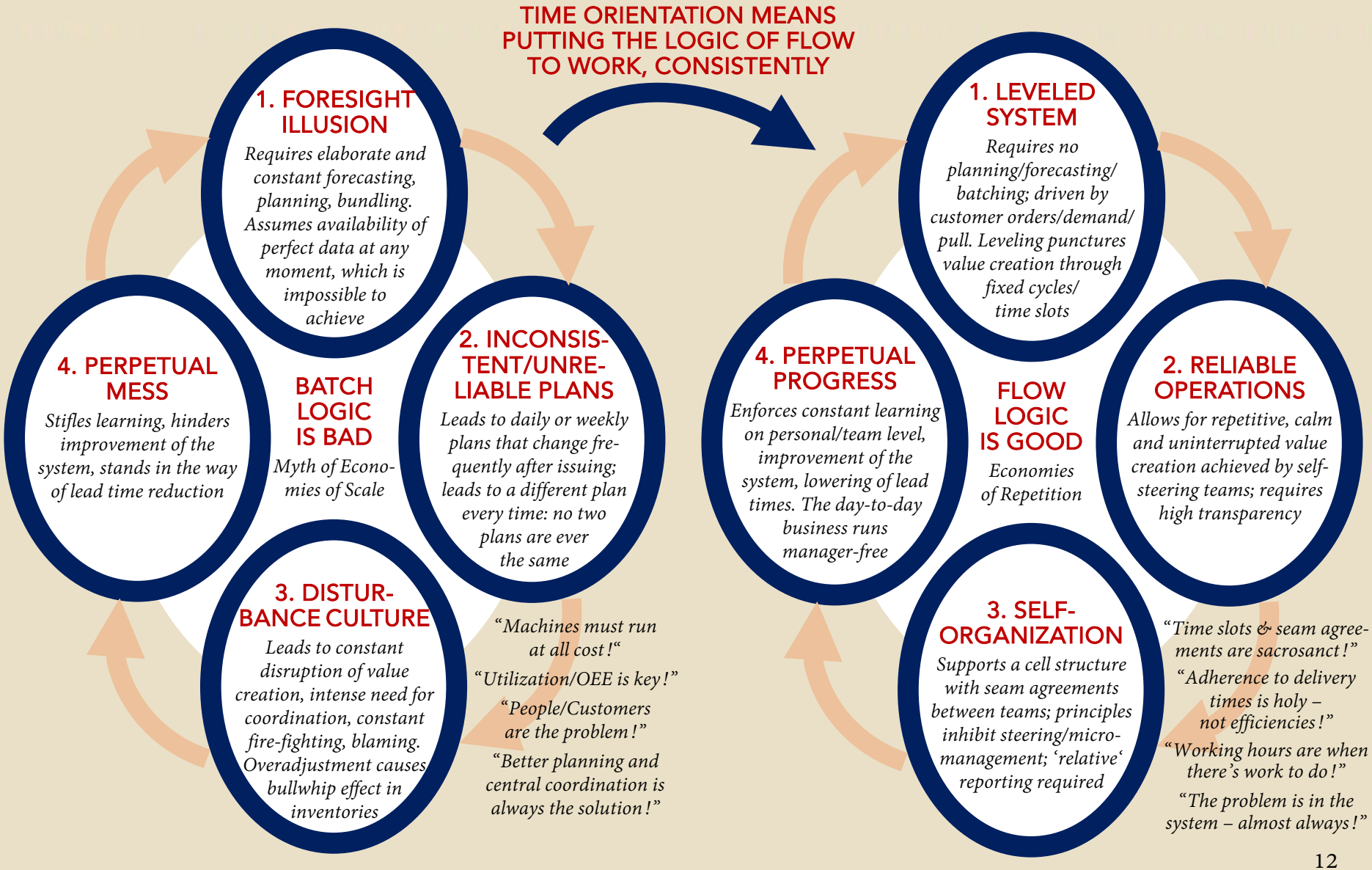
"Doing something different each week and then changing it when there is basically no significant change in demand is not responsiveness. It is madness brought about by the way batch logic works. Real responsiveness is being able to detect when actual demand goes outside of the predicted and normal levels of its sales variability."
Ian Glenday

"Letting things flow is better than grouping them. A large order is nothing more than five smaller ones with coincidentally the same delivery address."
Ernst Weichselbaum

"Having an opinion about what's coming is valuable. Steering is not."
Ernst Weichselbaum

"In time orientation, capacity is not scheduled (a.k.a. 'flexible'). Instead, capacity is designed as a system."
Ernst Weichselbaum

From batch logic to flow logic



In industrial settings, time-orientation is the prerequisite for consistent self-organization and decentralization (I)

If batches, steering and capacity orientation are bad ideas, then what does a time-oriented system look like, exactly? For industrial organizations, this means adopting time-oriented approaches and their underlying philosophy. Toyota adopted a time-oriented philosophy in its own way, inventing kanban in the process and arriving at single-piece-flow. Other companies adopted the Big Three approaches and arrived at rather different incarnations of time-oriented philosophy. **The Weichselbaum approach probably goes farthest among the Big Three in being adamant that capacity cannot just swing, but that it *must* swing both upwards and downwards, if a production process is to be lastingly robust**.

A few companies are lucky enough to thrive in their markets with a single product – everybody else must offer a huge range of products and variants. In the age of individual customer requirements and an exploding number of variants or models, it is much more customer-oriented and – viewed across an entire company – much more cost-effective to produce small quantities quickly than to produce large quantities slowly. This is why time-oriented organization is equally applicable to large volume production and low volume production. After all, serving market complexity is a greater good than 'machine utilization'. A shift in philosophy is long over-due: From the neurotic anxiety of reducing complexity through steering to the peace of mind created by a system designed for today's market complexity.

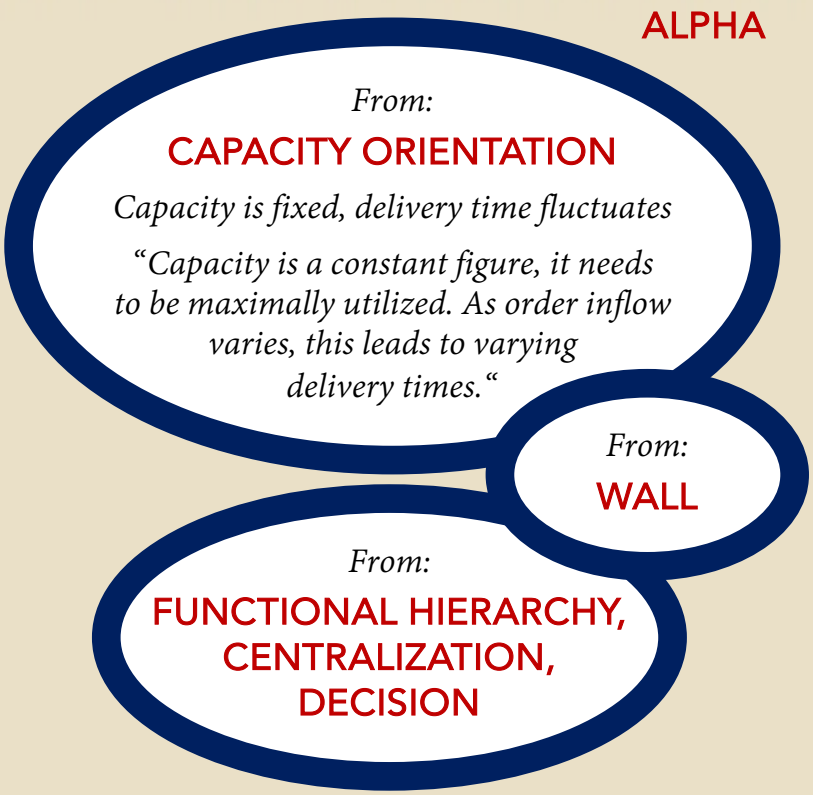
Time orientation is a different kind of organizational philosophy.
It also uses a different kind of language, as you will see on the next page.

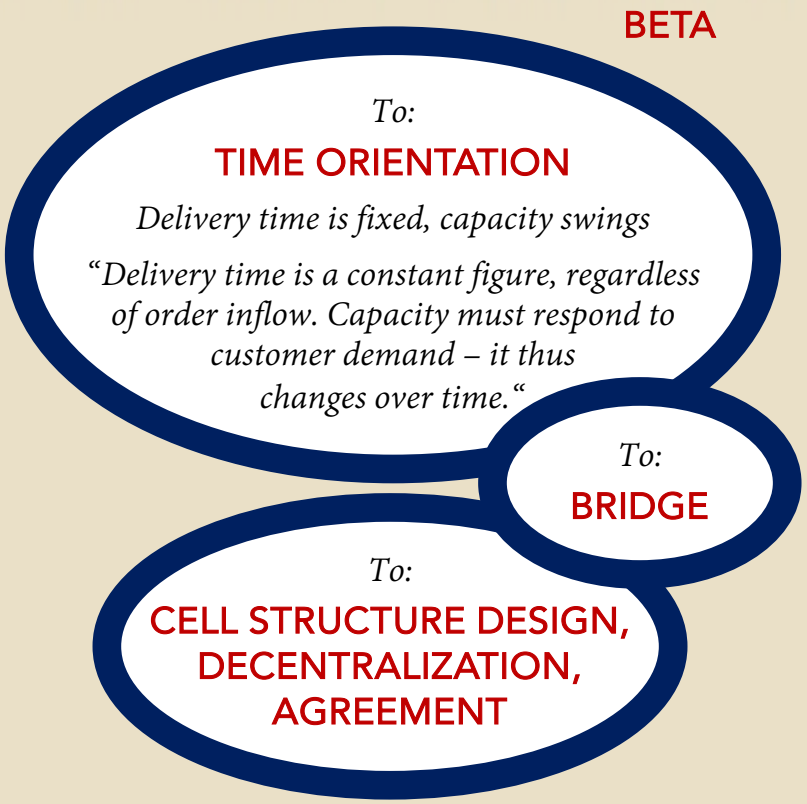
"Time-orientation is a connector, not a divider. A bridge, not a wall. Time orientation is a prerequisite for organizational networks and self-organization."
Ernst Weichselbaum

"Where exceptions reign, no robust system can ever emerge."
Ernst Weichselbaum

"In complexity, solutions must be sufficiently fuzzy to be useful."
Ernst Weichselbaum

In industrial settings, time-orientation is the prerequisite for consistent self-organization and decentralization (II)





Thinking & language related to volumes:

Batch size, series, capacity utilization, optimum production size, set-up times, economies of scale, mergers & acquisitions, market share, minimum stock, warehouse utilization, product mix, fulfill objectives, scheduling and production planning

Thinking & language related to time:

Daily portion, (adherence to) slots, fixed lead time, fixed delivery time, optimum time, flow, rhythm, drumbeat, groove, fit, 'the day's work is done', white space, speed, desired date, anticipatory coordination. agreed handovers, punctuality, seam agreements between teams

The Big Three rhythmic lean approaches: How they stand out – why they are inevitable

In this paper, we will focus on the "Big Three" time-oriented work system approaches that, in addition to Toyota's powerful take on single-piece flow, allow to realize time-orientation in all kinds of industries. The three approaches go by the names of **Lean Repetitive Flexible Supply (Lean RFS),** the **Weichselbaum System** and **Quick Response Manufacturing (QRM).**

It is hard to appreciate the difference between the Big Three and other useful concepts related to time-oriented production systems, like *Kanban* or *CONWIP*, if we fail to acknowledge the difference between *Optimizing the System* and *Overcoming the System.* Put differently: In a sea of lean optimization with tools and solutions, **the Big Three stand out in enabling, and in fact re*inforcing* systemic transformation.**

- *They allow for fast adoption within days or weeks (*not months or years), and, once adopted, provide sheer endless improvement potential
- *None of them requires large investments in IT or automation* – to the contrary. They may require small investments to improve settings or to acquire smaller machinery.
- *They are systemic, whole-systems approaches* that supplant Alpha systems of manufacturing, and affect all parts of an organization, including organizational structure and power dynamics: They require top management authorization.
- *They have proven their worth and practicality,* having each been adopted for at least three decades, within at least dozens of companies.
- *They link philosophic principles and practices* and are thus capable of producing "coherent" systems of organizing that are potentially long-lasting like Toyota's.
- *They allow to systematically eliminate waste* (like production planning and steering), reduce lead times, improve learning, and reduce functional division.

"It's be a struggle to get the whole company engaged, for example, getting the finance department to understand how Lean RFS could lead to a different and better way of product costing; getting the purchasing people to appreciate how RFS could lead to a truly cooperative and mutually beneficial relationship with suppliers; and last, but by no means least, getting marketing and sales to see how they could use this to benefit of customers and consumers – as well as increase market share and margins – in short, to beat their competitors."
Ian Glenday

"We can be punctual forever, but we cannot grow forever."
Ernst Weichselbaum

"It's better to design punctuality than to manage delays."
Ernst Weichselbaum

The Big Three rhythmic lean approaches: An overview over similarities and differences

	Lean Repetitive Flexible Supply (Lean RFS)	The Weichselbaum System	Quick Response Manufacturing (QRM)
Other names	RFS, FRS	Swinging Production	POLCA
Creator/origin	Ian Glenday, UK	Ernst Weichselbaum, Austria	Rajan Suri, USA
Suitability	High-volume production or mix of high-volume and lower-volume products. Examples: Fast-Moving Consumer Goods, pharma	High-Mix-Low-Volume production (LMLV) and custom production. Examples: furniture, medical devices, apparel	High-Mix-Low-Volume production (LMLV) and custom production. Examples: medical devices, mechanical engineering
Key strengths	- highly pragmatic and coherent - widely used since 2000s - winner of 2 Shingo awards - 2 insightful books in English	- philosophically potent, coherent - widely used since 1990s - pragmatic application - 1 insightful book in German	- conceptually strong, coherent - widely used since 1990s - International QRM community - 3 insightful books in English
Primary focus	*Leveling production (heijunka)* by running high-volume products in a fixed, repetitive schedule to create flow and stability	Time-orientation: *Time-boxing product delivery* and production steps; *letting capacity swing* according to demand	Time-orientation: *Reducing lead times* across the entire organization, preserving spare capacity and creating autonomous teams
Selected specialties	Accentuates slotting and reliability; method of clustering of product categories *(sieving)*	Accentuates time-boxed delivery and punctuality; *swinging* capacity; *seam agreements* between teams	Accentuates whole-company applicability; *POLCA* approach to material flow control
Approach to implementation	Properly authorized, deployment can begin within days or after a single 5-day workshop, with little further external support needed	Properly authorized, deployment can begin within days: can be started after 1-day introduction and during joint work sessions	Recommended approach includes trainings, pilots and roll-out. Properly authorized can be accelerated w/OpenSpace Beta

Every lean effort should have at least one of the Big Three rhythmic lean approaches at its heart, or it's just 'lean dabbling'

For transformational potential and impact, any lean effort should be based on at least one of the Big Three approaches. Even in industries where single-piece flow, Toyota-style, is attainable, it is rarely feasible to move straight to a production process with batches of one. In these cases, the intermittent solution of a Big Three approach will also be indicated.

The Big Three are clear on what principles to apply and, to a certain degree, on what to remove. What the Big Three approaches have in common is that they are based on clear principles that will initially seem counter-intuitive but become easily understood upon reflection. All this is indicative of the transformational potential of Time-Oriented Work Systems. Ernst Weichselbaum explains the potential of the system he developed this way: "*There is a fundamental difference between the Weichselbaum System and the Toyota system. Toyota primarily has an improvement, or optimization focus. Our system primarily has an overcoming focus. Even in the phase of overcoming, optimization can exist at the same time or in the next moment.*"

Ian Glenday puts it this way: ***"The foundation of Lean is flow logic and leveled production, yet it seems that few people or companies focus on these vita aspects of Lean.*** *Why? In our experience, it's because these aspects are not really understood. But it is these very aspects of Lean that provide the stability required to achieve sustainable continuous improvement. We have found that eliminating waste is an outcome of implementing flow logic and leveled production. It is a natural result, rather than the prime focus of attention. Like any jigsaw, one should start with the corner pieces followed by the straight edges – flow logic and leveled production – and only then put in the center pieces. These are the tools and techniques most people associate with 'doing lean'."*

"If we don't put up any resistance to the flow towards customer demand, then value creation can swing."
Ernst Weichselbaum

"If you need to steer, then you have yourself to blame. Set up the company well, don't steer it!"
Ernst Weichselbaum

"From the perspective of the old, the new is always wrong. In the old way of thinking, nothing truly new is possible."
Ernst Weichselbaum

Exploiting the full potential of time-orientation: Combine it with decentralization, or federalization

It is no coincidence that the Big Three approaches were articulated or popularized between the late 1980s and the 2000s. They were responses to the forces of over-simplification and underdelivering in the growing field of lean manufacturing. The Big Three offered more systemic takes on Lean, arguing for whole-company application of time-orientation, to create true and lasting, lean-based competitive advantage:

- **QRM.** Rajan Suri writes: "*QRM is not just a shop floor approach, it is applied throughout the enterprise. This includes material planning and control, purchasing and supply chain, quoting, order processing and new product development. QRM provides a single, unifying approach for the entire enterprise.*"
- **Lean RFS.** Ian Glenday argues for a connecting element he describes as policy deployment: "*The objective is to have every function in the organization achieve a step change in performance – and they can, with Lean RFS. These improvements need to be aligned, which is where policy deployment comes in, to ensure that the ultimate objectives are achieved: simultaneous improvements in market share, profit margins, employee motivation, and customer satisfaction. This is a tall order, but it is one that we will demonstrate can be done. Stopping corporate firefighting by moving from batch to flow logic in manufacturing is just the first step.*"
- **Weichselbaum System.** Ernst Weichselbaum adds: "*A company organized according to time orientation does not actually sell products, but robust processes. Companies that work with time-oriented business management can advertise with guaranteed delivery times: Every order is delivered with a fixed delivery time of X days. 9 days for windows, kitchens, washbasins, furniture, etc. One day for dental technology. 2 days for fire doors. 5 days for lighting. 15 days for custom-made large cranes.*

Our understanding is that time-orientation and coherent decentralization should go hand in hand. The two philosophies are not just a good fit: They reinforce each other.

"Our organizations are not designed to manage time. Organizational structures, accounting systems, and reward systems are based on managing scale and cost. A legacy of scale/cost-based management systems, and the greatest enemy of QRM efforts, is the functional organization with specialized departments."
Rajan Suri

"In time-based organizing, group multi-skilled staff capable of completing all tasks required to serve a given market segment."
Rajan Suri

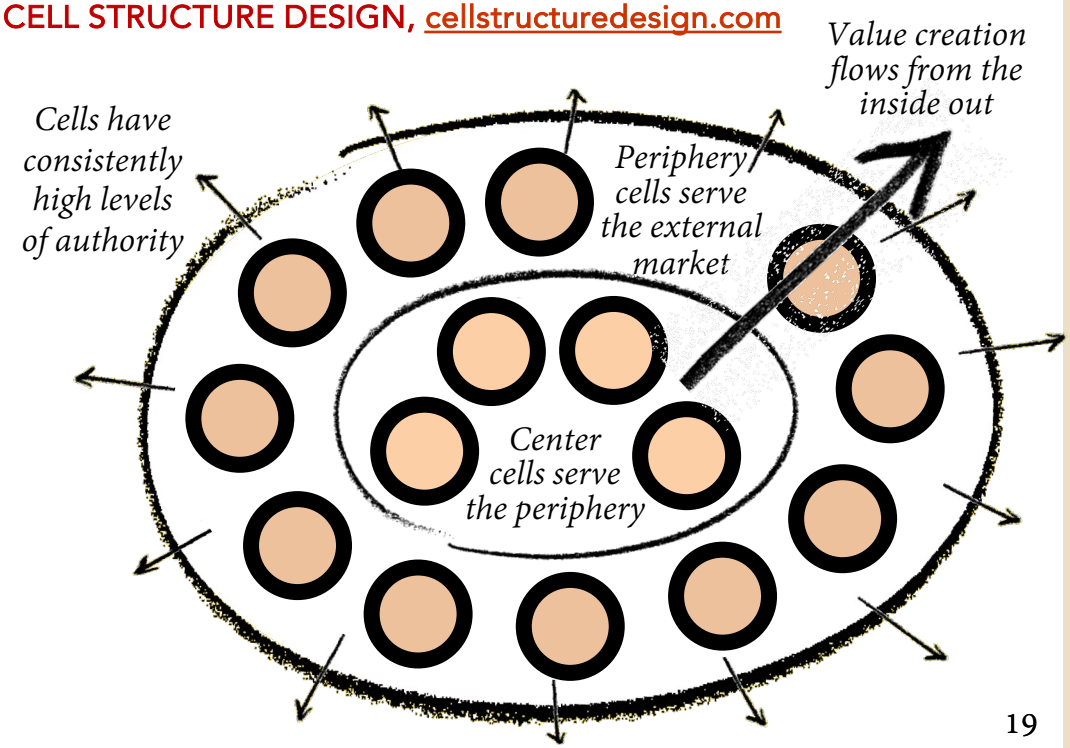
"The thread that connects teams among each other is what we call a seam agreement. Teams have the right to develop an entrepreneurial spirit. Seam agreements ensure autonomy."
Ernst Weichselbaum

Exploiting the full potential of time-orientation: Rhythm requires a functionally integrated, decentralized structure (I)

Time-Oriented Work Systems do not sit well with functionally divided and centrally steered "Alpha" structures. In fact, all time-oriented approaches must overcome functional division, embrace functional integration and eliminate steering, as top-down coordination would inhibit self-steered team effectiveness, rhythm and flow. An illustrative example is the case of Bayer Bitterfeld: The company first initiated work with Lean RFS, but couldn't get far with it in the siloed, highly departmental structure. It was only when Lean RFS was combined with a Cell Structure Design for its 500 people, in 2024/2025, that flow organization could be applied to full effect. Let's look closer at how The Big Three address the matter of organizational structure.

- **QRM.** The 2nd of the four QRM core concepts, *Creating the right organizational structure,* says: "*QRM transforms traditional functional departments into an organization consisting of QRM Cells. Although the cell concept has been known for some time, QRM Cells are more flexible, more holistic, and apply outside the shop floor too (for example, in office operations).*" And: "*QRM cells are teams of dedicated, multifunctional resources. The people in the QRM cells are cross-trained and have full responsibility of all the operations in the cell.*" This is fully in line with BetaCodex principles, also in terms of wording.
- **Weichselbaum System.** Ernst Weichselbaum explains the concept of cells and seam agreements (interfaces) like this: "*A better approach*

CELL STRUCTURE DESIGN, cellstructuredesign.com



Exploiting the full potential of time-orientation: Rhythm requires a functionally integrated, decentralized structure (II)

is this: each team is responsible for its own quality. 'No supervisor is allowed to meddle with us. If someone can talk us into it, we can't be responsible.' Only then can teams experience themselves as entrepreneurs. Between the seam agreements, the team is automatically responsible for itself. This level of maturity must be achieved. Only if the company views all teams as 'firms within the firm' and provides them with the necessary authority will these teams actually take on responsibility. Companies must be prepared to consistently and fully implement the idea of the 'team as a fractal of the company'. And: *"By combining several functions and activities that were previously connected in series, a process of performance is created that can be transferred to the responsibility of a team of employees. Commitment to performance at the seam agreements with other teams enables them to be independent and autonomous in the way they provide the service."*

In short, the Weichselbaum System and QRM are very explicit about how to develop company-wide structural setups in accordance with time-based cellular team structure – more so than Lean RFS. **Cell Structure Design complements all three Time-Oriented Work Systems approaches in two different ways, at least:** Firstly, Cell Structure Design is a lot more specific about *the distinction between cells in the periphery and cells in the center* – a distinction that the Big Three lack, by and large. Secondly: Cell Structure Design offers a fully developed concept of *market-like interactions*, and simple internal pricing mechanisms that allow all cells – those in the periphery and the center – to get full-fledged P&L statements, with income from the external market or from cells in the periphery. This is a powerful addition to the notions of *seam agreements* in the Weichselbaum System which features a basic P&L concept. And it adds further layers of clarity and transparency to QRM systems, which try to achieve alignment between cells through flow of materials *(POLCA)* and the lead-time indicator *Manufacturing Critical-path Time MCT*.

"A cell is not a mini-replica of your existing [functionally divided] operations. When planning a cell, rethink everything you do to make it more amenable to cell operations. Battle conventional product costing approaches and notions of efficiency to implement solutions that maintain cell integrity."
Rajan Suri

"Set up day-to-day business so that it can be carried out manager-free."
Ernst Weichselbaum

"Enforcement is a declaration of war: it only succeeds at the expense of others."
Ernst Weichselbaum

"Each performance unit is the fractal of an overall performance."
Ernst Weichselbaum

Exploiting the full potential of time-orientation: Relative performance systems enable rhythm, company-wide (I)

The Big Three are somewhat less detailed about specific for time-oriented performance systems. Which is understandable, given that the concepts were developed to solve problems of industrial manufacturing and flow production – with the performance management aspects of these systems taking something of a back seat. Implicitly, however, BetaCodex principles around performance systems shine through in all three approaches. Different aspects of Relative Targets, the BetaCodex socio-tech covering performance systems (see principles below), are implicitly addressed in the Big Three concepts.

- **Weichselbaum System.** Ernst Weichselbaum warns about simplistic notions of target-setting: *"There are people who confuse abstraction with reality – they tend to believe in numbers and dictate goals. But you can't create the motif with the photo: The motif is always there before the photo. You might think: 'I want to become richer.' 'I want to have lower costs.' 'I want to have more market share.' 'I want to see more motivation among my employees.' These are neither goals nor achievements: They are desired effects. The management shortcut is: if I turn desirable effects into goals, then something will happen. If I demand effects, I can provoke action. That is the logic of target agreements: Desires lead to action lead to evaluation. But what use is evaluation? When I talk to someone, I need to understand the patterns, not the artefacts! Only when we agree on actions can we expect effects."*

10 PRINCIPLES OF RELATIVE TARGETS, relativetargets.com

1. *Measure actual performance at the organizational level and the team level only – instead of setting fixed targets for individuals, departments, products, layers, silos*
2. *Actual-actual comparisons for self-control within all teams – instead of plan-actual variance analysis for external steering and control by bosses*
3. *Constant preparation involving everyone – instead of calendar-based planning done by the few*
4. *Sporty, playful competition among internal teams – instead of rivalry between individuals*
5. *Discourse about identity and forging of agreements – instead of strategy-setting and decisions made by managers*
6. *Control through social density, principles and high-performance standards – instead of rules, values and intrusive micro-management*
7. *Open books, Fast Close, "everyone sees the same numbers at all times" – instead of obfuscation, numbers games and "figures on a need-to-know basis, only"*
8. *Team P&Ls and few, relative trend indicators – instead of numerous, previously fixed data points*
9. *Market-like, outside-in resource coordination – instead of planned allocations from the top*
10. *Relative, fair base salaries, plus profit sharing – instead of minimized salaries, plus bonuses*

Exploiting the full potential of time-orientation: Relative performance systems enable rhythm, company-wide (II)

- **QRM.** Rajan Suri warns of the use of fixed targets and indicators for steering: *"In order to support the mind-set change from cost-based to time-based thinking, you will also need to rethink your performance measures. […] Traditional approaches based on measures of utilization, efficiency, purchasing cost and other traditional metrics result in Response Time Spirals with increasing lead time and other dysfunctional behavior."* Suri also highlights the distortive effects of overhead cost allocations, which are eliminated in a Cell Structure Design with a Relative Targets system.
- **Learn RFS.** Ian Glenday writes: *"We often find that a company's KPIs only focus on the results rather than the processes that determine the results."*

Relative Targets is not detached from decentralization. Instead, it complements decentralization and Cell Structure Design, in that it specifies how to design *performance systems for federative network structures* with power and responsibility in the periphery, while providing the highest levels of transparency. **What's crucial about Relative Targets is that the approach also specifies what performance practices and tools *not* to deploy that are common in command-and-control systems** – like planning, fixed targets, budgeting, and incentive systems) – in order to get to rhythm and time-orientation.

Companies that want to adopt Time-Oriented Work Systems will find it easier to get all their teams and interactions in sync with the Big Three, if they adopt the set of 10 Relative Targets principles right away (see principles the previous page), thus creating performance systems coherent with flow and rhythm. The patterns we identified in the adoption of Relative Targets will prove helpful in doing so.

"What could possibly be wrong with emphasizing on-time delivery performance? While on-time perfor.-mance is desirable as an outcome, the emphasis on it as a performance measure is dysfunctional. Instead of helping to reduce [lead time, every-body], tends to pad their planned or quoted lead times so that their on-time deliveries look good."
Rajan Suri

"Never turn effects [like growth or profit] into goals! Because only actions are relevant goals. And you should articulate expected effects."
Ernst Weichselbaum

"Measure and reward reduction in total lead time and make this the main performance measure. Scrap all other traditional measures of efficiency and utilization."
Rajan Suri

Get transformation done: Time-orientation isn't common yet. A new take on organizational development could change this

As outlined earlier, *lean* got a bad rap, and for a reason: Lean usually fell short of being transformational and instead promoted tools and solutions for mere optimization. Consequently, lean under-delivered, especially when compared to the highly coherent systems that pioneers like Toyota created. Transformational lean, or *lean-that-deserves-the-name,* on the other hand, has appeared unattainable to most companies: it triggers thinking in the line of "*We tried tools and optimization, and it took us years to achieve little – so how can much bigger, systemic change take less than decades?"* Questions abound around *Overcoming the System*: How do we involve people early-on, so that they take lean into their own hands? How do we make transformation fast enough, so that we can achieve visible results quickly and our efforts can be sustained?

We identified a popular misconception about change work as the root cause that has limited, or in fact blocked impact of lean initiatives and transformation, and which made "overcoming the system" near impossible. We call this common stance on change work **Fixation on Acceptance.** It is based on the flawed idea that we must first achieve acceptance, or unity around purpose and means, before we can move into action. This mode of thinking reliably fails to deliver results, as it is opposed to the realities of power, authority and social dynamics in organizations. Most change management techniques – including participation, trainings, change communication and advisory are based on this flawed conception of change within social groups, however. The result is that change initiative turn out to be exhaustive, slow, burdensome and low-impact. The alternative approach that works theoretically and practically is based on the realization that authorized work on the transformation itself will bring about identification, conviction and agency. We call this **Chosen Agency.** Ohno and Toyota opted for Chosen Agency, and all democratic societies rely upon it.

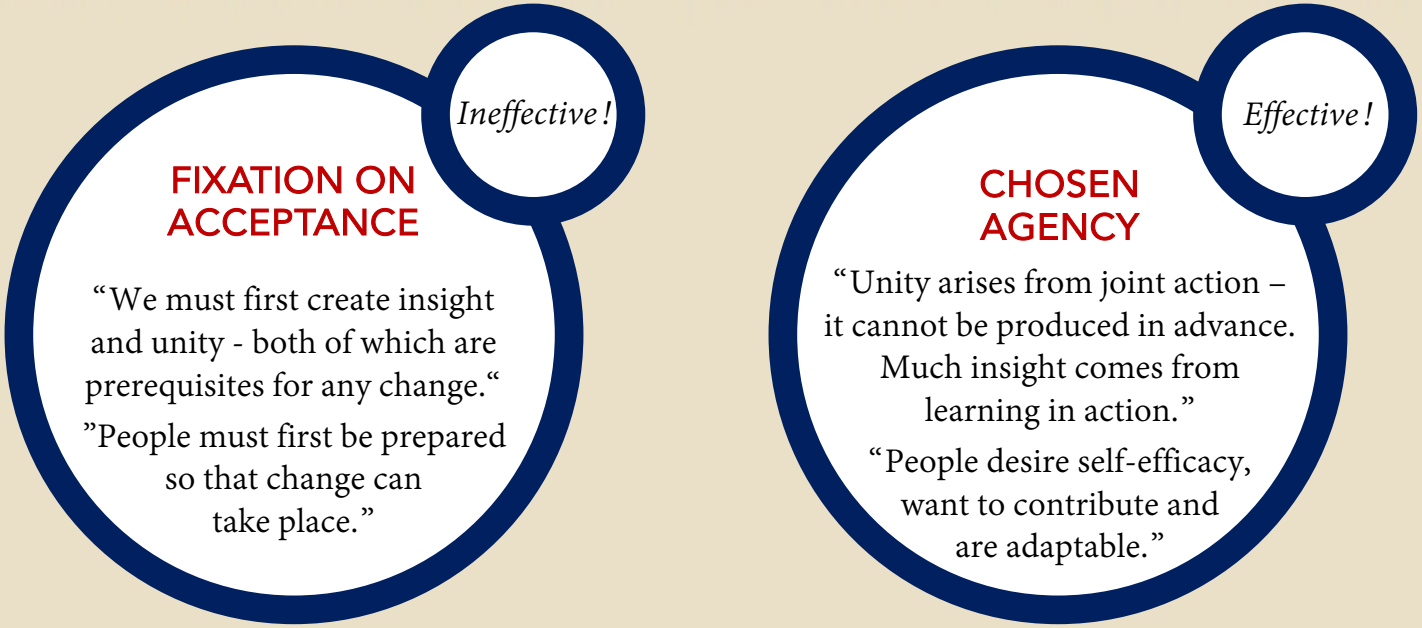
"Nothing can replace the will of the entrepreneur."
Ernst Weichselbaum

"There is a world of difference between applying lean tools in a function to being an enterprise that functions lean."
Ian Glenday

"Lead time reduction cannot be done as a tactic. To significantly impact lead times firms must change their traditional ways of operating and redesign organizational structures. This means QRM has to be an organizational strategy led by top management."
Rajan Suri

"If you need to decide, then you don't know what you really want. Beginning consists exclusively of beginning."
Ernst Weichselbaum

Get transformation done: Most attempts at lean fail before they get started, as they are rooted in a Fixation on Acceptance



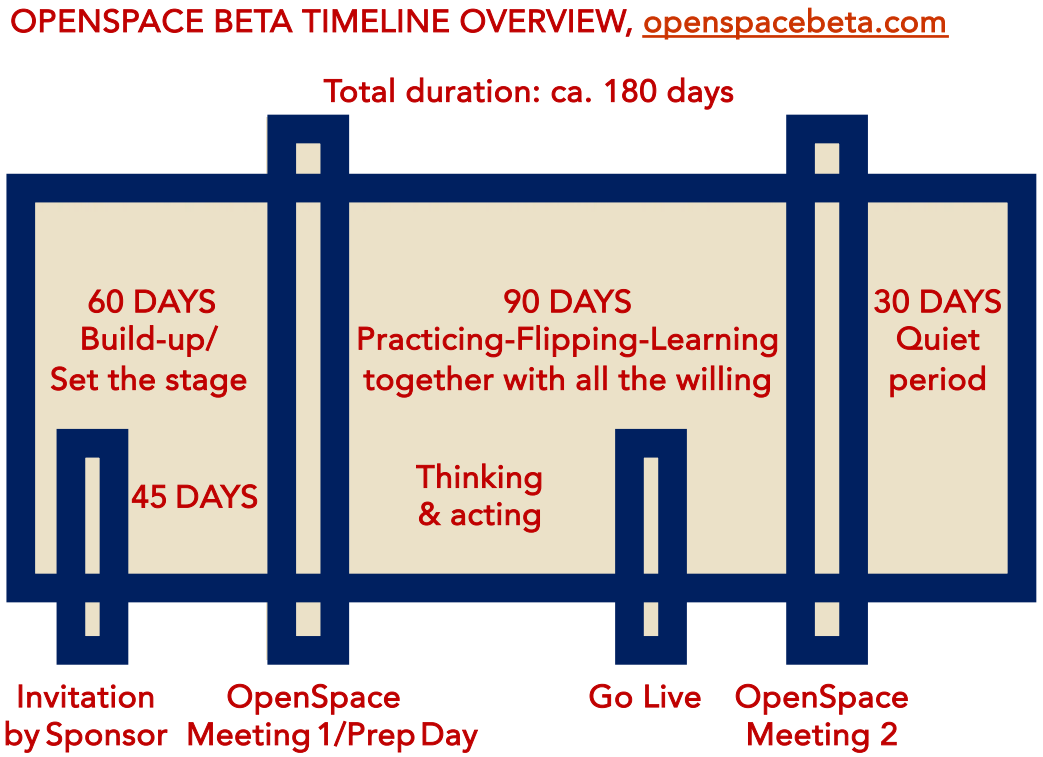
BELIEFS		
ATTRIBUTES	Convince "them", enforce later if necessary, get started when "those who matter" all agree System design is a matter for the few: politicians, experts, change agents, those with "the right level of maturity" Those who "drive change" feel superior (often unconsciously), but at the same time slip into self-overload. Those who are unwilling find it easy to stop progress	Must be authorized by a person ("Sponsor") who really, really wants "it" Everyone deserves to work on the system and take responsibility for the common good. Specialists are occasionally needed Invitation leads to self-identification of those who want the new. Acceptance of the invitation leads to immediate action - and thus to social dynamics that generate change

Get transformation done: Time-orientation can become a reality within weeks. Not within years, however

Since 2018, there has been an answer to the question of how to make the transformation from steered to rhythmic happen within weeks or months, covering all parts of an organization and everybody at once – regardless of an organization's scale. **There is no need anymore to spend 30 years on discovery and realization to reach everyone, the way that Taiichi Ohno and Toyota had to do it.** The secrets to Very Fast Organizational Transformation lie in authorization and invitation by a Sponsor, in time-boxing the process, in a relentless focus on working the system (not people) and in applying a different set of principles that incorporate lean value creation and a decentralized organization structure.

I once witnessed Ernst Weichselbaum starting to put his system in place in a firm of 60 people, during the first day of his consulting assignment: He and the owner-CEO would ask people to join the clarification and decision-making process in the meeting room where they ran the workshop, whenever needed. Such an approach is extremely elegant and can be highly effective, though it may not *scale* too well. It also likely requires an owner-manager to be the Sponsor, and for that person to be in the room during the whole redesign process (apart from a masterly consultant).

A more scalable approach to fast, reliable transformation within weeks is the OpenSpace Beta social technology (visualized on the right), which is open source and free to use.



Get transformation done: The move to a time-oriented system requires overcoming conventional notions of change, too

In OpenSpace Beta, transformation work is **undertaken *together with all the willing, all at once, as a whole system*. While the business runs without interruption**. For this, invitation to all by a Sponsor (for engagement and clarity) and time-boxing (for robustness and swiftness) are key. The transformation work itself can be undertaken in a few months, because the work is done together by so many people, and within a setting that's bound by a coherent set principles, which should include principles of Time-Based Work Systems, such as the BetaCodex.

Ernst Weichselbaum explains a key aspect of swift organizational transformation that deserves the name: "*New things can be recognized by the fact that new terms are needed to describe them. New words for new times.* ***It is only by combining the new with new words that lasting shifts in the constants of thinking occur!*** *Developing new patterns of thought, speech and behavior works by making the principles or the constants of thought visible in thought, speech and action. When people learn new words, they change their behaviors and become accustomed to new patterns of thought. The development of language in the company is an achievement of managers, in particular. They bear a great deal of responsibility for the language in use.*"

This kind of fundamental shift in thinking and interactions must be brought about fast. The notion that it could or should (!) take years or decades, or that it might be introduced to a system through labs and experiments is absurd, since people within the organization are supposed to meet, collaborate and work together on a day-to-day basis. **Organizational transformation needs to be brought about swiftly, for the sake of whole-system change.** And it must at once include all players, if new principles, new thinking and new practices are expected to stick and create an impact.

"Democracy in the workplace alone will not guarantee a successful company. The democratic workplace must be designed with a viable business goal in mind. [Time-orientation] offers just such a focused and highly viable goal, one that is ideally suited to the team-based democratic organization, and one that can launch us into the twenty-first century where our workplace and societal goals can be more equal than they ever were."
Rajan Suri

"The better is better than the best."
Ernst Weichselbaum

"Recognize that the biggest obstacle to successful implementation of [time-orientation] is not technology, but mind-set."
Rajan Suri

Conclusion: Time-orientation is key to sustainably superior competitiveness. It's feasible to get there reliably and fast

The potential of the Big Three is vast: In a complex world, time-orientation and rhythm, not volume-orientation or batch production, should be the standard way of organizing industrial companies. With the Big Three lean approaches, time-orientation is now available in all kinds of producing industries, such as Fast-Moving Consumer Goods, in High-Mix-Low-Volume production and custom production.

With these approaches, adopting time-orientation and rhythm has become far more straight-forward than it was in Taiichi Ohno's time:

- We can combine the Big Three concepts with decentralization and Cell Structure Design – for fitting organizational structures and coherent decentralization. Conversely, Cell Structure Design was already influenced by the Weichselbaum System, adopting the concept of seam agreements.
- We can complement rhythmic value-creation with Relative Targets performance systems that provide relevant information for improvement, transparency around results, and consistent market-orientation in all teams of an organization.
- And we can bring about the necessary transformation process in a time-boxed fashion, within just weeks or months, through OpenSpace Beta.

For companies in industries of all kinds, time-orientation is the only way forward, if they want to achieve sustainably competitive high performance. Note that two of the Big Three were created in Europe, which could mean that the center of lean progress has shifted. I will leave the last words in this paper to Ernst Weichselbaum: *"Our natural reaction upon encountering organizational fads and buzzwords should be: 'I don't deal with that. I'd rather work on value creation. And on the constants of thought: Because structures of thought find their expression in organizational structures.'"*

"The reason for embarking on the QRM journey is that it leads to a company with a secure future."
Rajan Suri

"Authority is not a property of individuals but is generated through interaction between at least two people. Authority comes from agreement."
Ernst Weichselbaum

"If you want to change the world, start with the patterns in your head. Because there, nobody is standing in your way."
Ernst Weichselbaum

Sources and recommended reading

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Glenday, Ian/Sayer, Rick (2013): *Lean RFS (Repetitive Flexible Supply): Putting the pieces together*

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Suri, Rajan (1998): *Quick Response Manufacturing: A companywide approach to reducing lead times*

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Weichselbaum, Ernst/Pflaeging, Niels (ed.) (2020): *In jedem Unternehmen steckt ein besseres (German only)*

Other related books

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Ohno, Taiichi (2013): *Workplace Management: Special 100th birthday edition*

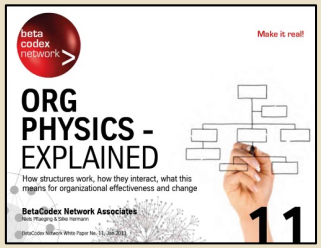
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Pflaeging, Niels (2023): *Organize for Complexity: How to get life back into work to build the high-performance organization*

Pflaeging, Niels/Hermann, Silke (2023): *The laws of the BetaCodex*

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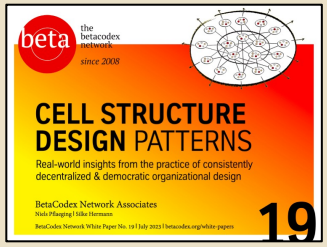
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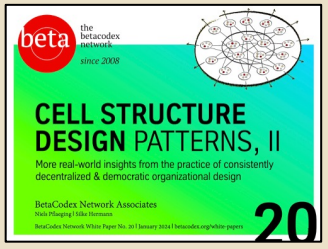
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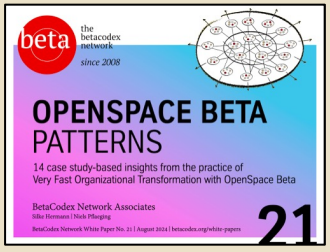
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Cell Structure Design Patterns I, 2023



Cell Structure Design Patterns II, 2024



OpenSpace Beta Patterns, 2024

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The Lean RFS concept overview poster

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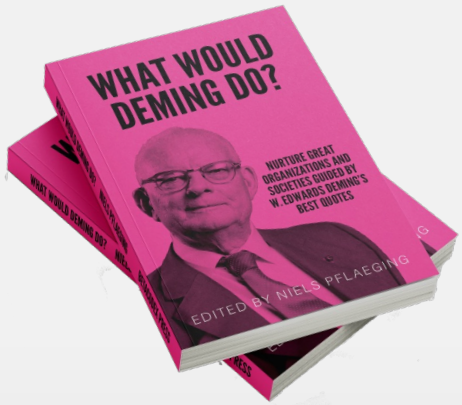


Lean Repetitive Flexible Supply:
Concept overview

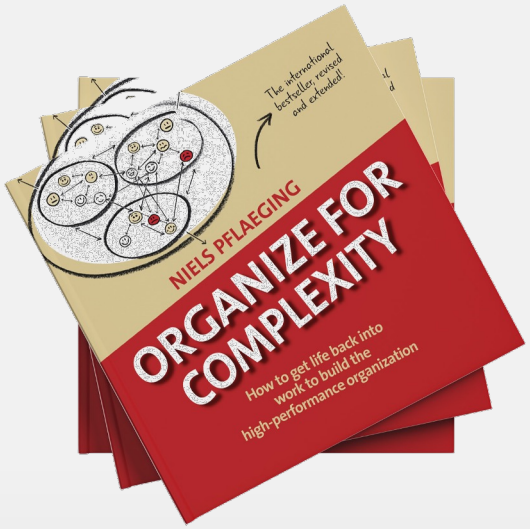
The most important Lean RFS concepts on one page.
Developed by Ian Glenday. Design: Red42.
A1 format, folded to A4.
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Related books by BetaCodex Press



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Paper concept, design and photo coloring: Niels Pflaeging

Disclosure: No A.I. was used in the process of writing this paper, except for literature research purposes.

The title of this paper pays homage to the Grace Jones hit song *Slave to the Rhythm* from 1985. Check out the song and album of the same name, plus newer recordings of the song by producer Trevor Horn from 2019 and 2023.

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