

ORGANIZE FOR COMPLEXITY

How to make work work again. How to break the barrier of command-and-control and create the peak-performance, networked organization

BetaCodex Network Associates

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This paper addresses fundamental questions of interest to business owners, managers, professionals and change agents

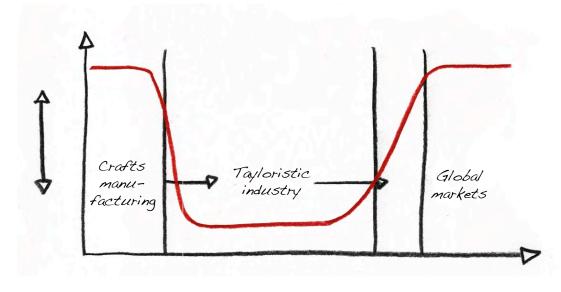
Don't we all ask ourselves questions like:

- How can organizations deal with growing complexity?
- How to adjust a growing organization, without falling into the bureaucracy trap?
- How to become more capable of adapting to new circumstances?
- How to overcome existing barriers to performance, innovation and growth?
- How to become an organization more fit to human beings, and achieve higher engagement?
- How to produce profound change, without hitting the barrier?

In this paper, we argue that in order to address these issues, we must create organizations that are truly robust for complexity, as well as fit for human beings. We also discuss how that can be done. You will learn about concepts that allow to design entire organizations for complexity, regardless of size, age, industry, country or culture.



Part 1. Complexity: it matters to organizations. Big time.



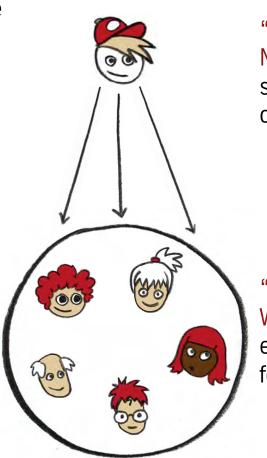
Frederick Taylor's grand idea and how management was invented: The division between thinkers and doers

In 1911, Frederick Taylor published his landmark book The Principles of Scientific Management. He proposed management as a "revolution" that would eliminate the productivity constraints of the industrial-age organization. Taylorism achieved just that. What Taylor pioneered was the idea of dividing an organization between thinking people (managers) and executing people (workers) – thus legitimating the management profession as that of "thinking principals of the non-thinking human resources". Taylor also introduced functional division to shop-floor work.

Taylor's concepts were soon decried as inhumane and non-scientific, his consulting methods as ineffective. But hierarchical/functional division became widely adopted after his death, in 1915, his principles were applied to non-industrial, non-shop-floor work.

Management, as we know it, is not much different fron what Taylor proposed a century ago. In dynamic and complex markets, however, command-and-control turns toxic for both organizational performance and human/social advancement.

We call tayloristic management Alpha.



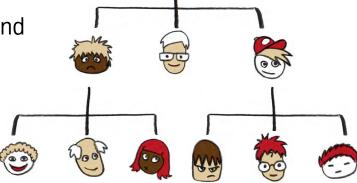
"Thinkers"/
Managers
strategize, steer,
control, decide

"Doers"/
Workers
execute, obey,
follow

The price of simplicity: Tayloristic division causes "managed" organizations to experience three systemic "gaps"

1 The Social Gap

Hierarchical division and topdown control cause an erosion of social/group pressure and dialog, and a bias towards management by numbers and leadership by fear



2 The Functional Gap

Functional division produces a need of managed/imposed coordination through process control, interfaces, planning, rules, standards, hierarchic power etc.

3 The Time Gap

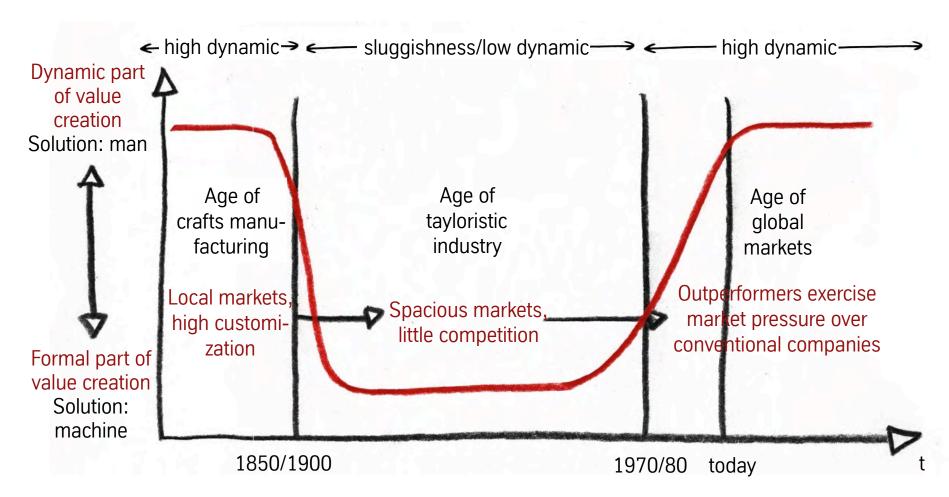
Personal division between thinking thinkers and nonthinking doers causes need for managed/imposed roles, complicated IT, strategy, forecasting, and planning



None of this feels good. None of this is value-creating. The three gaps all lead to waste.

The historical course of market dynamics and the recent rise of highly dynamic and complex markets

We call the graph shown here the "Taylor Bathtub".



The dominance of high dynamics and complexity is neither good nor bad. It's a historical fact.

The difference between the complicated and the complex



- Complicated systems operate in standardized ways. Here, imprecision is diminished, non-objectivity and uncertainty are reduced as far as possible. Can be described through nonambiguous cause-and-effect chains Are externally controllable.
- Any high-precision machine is complicated: Everything is done to avoid imprecision/to increase precision. A watch, for example, is calibrated to diminish mistakes, uncertainty and illusion. It is configured to supply objective data, certainty and a minimum of illusion.
- Complex systems have presence or participation of living creatures. They are living systems - that's why they may change at any moment. Such systems are only externally observable – not controllable.
- A complex systems' behavior is nonpredictable. Here, it's natural that there is a level of error, uncertainty and illusion that is much higher than in complicated systems.

A complex system may possess elements that can operate in standardized ways, but their interaction would be constantly changing, in discontinuous ways

Consequences of complexity: The importance of mastery for problem-solving

The only "thing" capable of effectively dealing with complexity is human beings. What matters in complexity, thus, as far as problem-solving is concerned, is neither tools, nor standardization, nor rules, nor structures, nor processes – all those things that used to serve us well in the industrial age and its dull markets.

In complexity, the question isn't how to solve a problem, but who can do it.

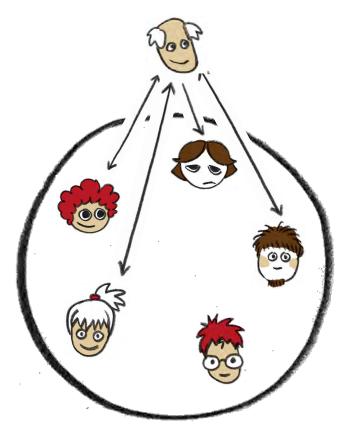
What matters now, thus, is skilful people, or people with mastery.

People with ideas.

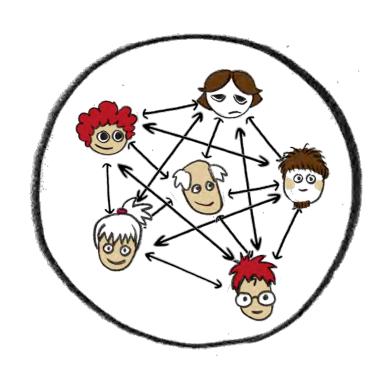
Problem-solving in a life-less system is about instruction. Problem-solving in a living system is about communication.



The improvement paradox: In complexity, working on separate parts doesn't improve the whole. It actually damages the whole



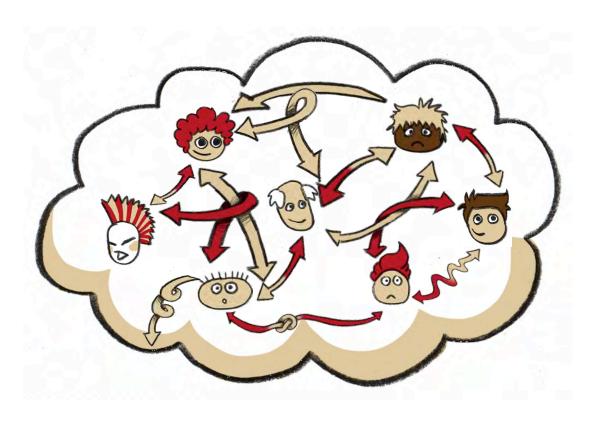
Working on individual parts of the system does not improve the functioning of the whole: Because in a system, it is not so much the parts that matter, but their fit.



What really improves a system as a whole is working not on the parts itself, but on the interactions between the parts. You might call this attitude "leadership".

Systems are not improved by tinkering with the parts, but by working on their interactions.

Part 2. People and work



Human nature at work - McGregor's critical distinction. Ask yourself: which theory describes me, and people around me?



Theory X Theory Y



Attitude

People dislike work, | People need to work and want to take an intefind it boring, and will avoid it if they can rest in it. Under right conditions, they can enjoy it

Direction

People must be forced or bribed | People will direct themselves

to make the right effort | towards a target that they accept

Responsibility

accept responsibility, (which they avoid) under the right conditions

People would rather be directed than | **People will seek and accept responsibility**,

Motivation

People are motivated mainly by money | Under the right conditions, people are motivaand fears about their job security | **ted** by the desire to realize their own potential

Creativity

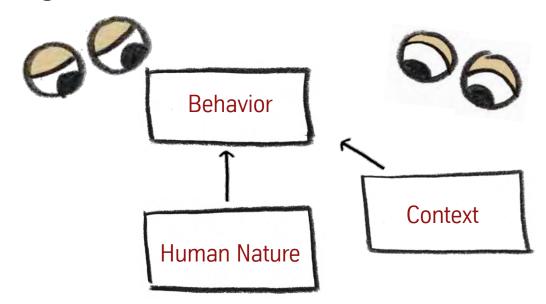
when it comes to getting round rules

Most people have little creativity - except | Creativity and ingenuity are widely distributed and grossly underused

Source: Douglas McGregor, 'The Human Side of Enterprise', 1960

Human nature at work: McGregor's critical distinction

Asked which theory about human nature – X or Y – describes us, everyone immediately knows: "I am a Theory Y sort of person!" When asked about other people, however, the answer is usually not as clear cut. Haven't we all experienced Theory X people many times in our lives? At work? In our organizations?



Douglas McGregor, in his seminal work from 1960, distinguished between two images of human nature, of which only one is "true", in that it holds up to science and available theory. The other one, Theory X, is nothing more than a prejudice that we have about other people. There are two reason why this theory, besides being a superstition, is commonplace. Firstly, it reflects common thinking from our pre-democratic, pre-enlightenment past. Secondly, while observing other people's behavior, we tend to make conclusions about their human nature – frequently ignoring behavior-shaping context.

This matters. Because assumptions we have in our minds about other people shape our behavior, and the way we tend to design and run organizations: if you believe in the existence of Theory X humans, then command-and-control systems design will follow. In order to build complexity-robust organizations, a shared view of human nature is needed.

The nature of motivation and why leaders cannot motivate

People are driven by motives. It is safe to say that everyone carries all kinds of motives, to a certain degree. Everyone thus is a "carrier of motives", or "intrinsically motivated". The specific levels or the dominance of different motives, however, vary greatly among individuals.

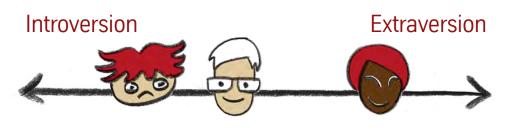
What this means for organizations, or employers, is: they cannot motivate. Because motivation *is*. The main thing that organizations can do to stimulate performance is facilitating options for connection between individuals and the organization, through purpose and work. We call the phenomenon, when an individual connects itself voluntarily to work and an organization, connectedness.

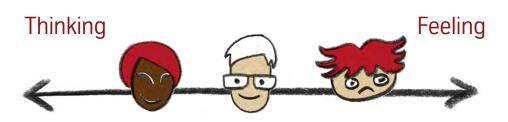
Unfortunately, belief in the myth of motivational power of leadership is still widespread. Truth is: because of motivation's intrinsic nature, leaders, through their behavior, can only de-motivate.

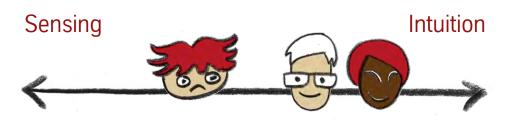


Appreciating behavioral distinctiveness: People and preferences

An individual's behavior is also strongly influenced by preferences. The concept of "preferences" was introduced by Carl G. Jung in his pioneering work "Psychological Types".







Attitude. Jung differentiated types firstly according to their general attitude: Attitude describes people's way of reacting more to outer or inner experiences.

Decision-making "functions". 'Heady' individuals, who prefer to make decisions by thinking things through, rationally using the 'thinking function'. 'Heart' people prefer to evaluate and make decisions subjectively using the 'feeling' function.

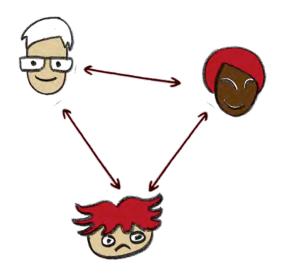
Perceiving "functions". We view the world using a combination of 'sensing' to record the sensory details, and 'intuition' to see patterns, make connections and interpret meaning.

Making use of distinctiveness in preference to deal with complexity

There is great variety of behavior within the three categories of preferences, depending on which position on each of the three bi-polar scales the person's behavior is plotted. The majority of people will not be extreme, demonstrating a close balance – as such they can be more difficult to read.

Every person has the ability to use either side of the bi-polar scales, although we will all have preferences for one side more than the other – most of the time.

When people with different preferences work together, they can compliment each other.



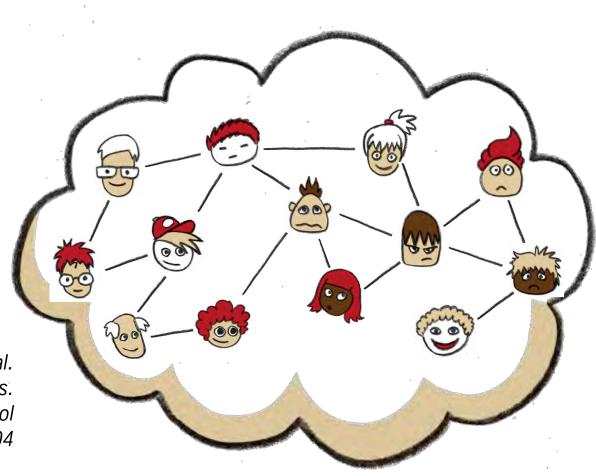
In complexity, distinctiveness in motivations and preferences can be an asset – or a liability

Individual competence vs. collective competence

"We learned that individual expertise did not distinguish people as high performers. What distinguished high performers were larger and more diversified personal networks."

"Engineers are roughly five times more likely to turn to a person for information as to an impersonal source such as a database."

Cross, Rob et.al.
The Hidden Power of Social Networks.
Boston: Harvard Business School
Press, 2004



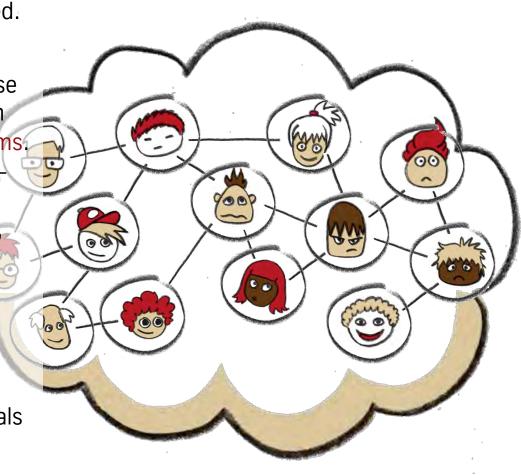
Most organizations are obsessed with individual performance. But individual performance is actually a myth

Individual performance is not just overrated. It simply doesn't exist, in organizations.

Why? Because value, or results, never arise from individual action, but from interaction between various individuals, or within teams. A sales person only does part of the sale – the other parts are being done by people who may call themselves back office staff, production and procurement staff,

accountants and HR professionals.

Because interdependency is in organizations, trying to define individual targets, or to measure individual performance, leads to deception. Appraisals of individual performance can only have a de-spiriting and de-motivating effect on people and damage team spirit.



People communicate & connect in wildly different manners. About the "archetypes" of communicators

Hubs

draw information and broadcast it

Gatekeepers

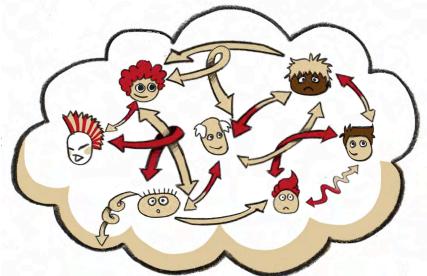
carefully manage information flow

Pulsetakers

great observers of people

Karen Stephenson, Quantum Theory of Trust.

Harlow: Pearson Education Ltd, 2005



Connectors exchange information with many people

Mavens invest more time in people

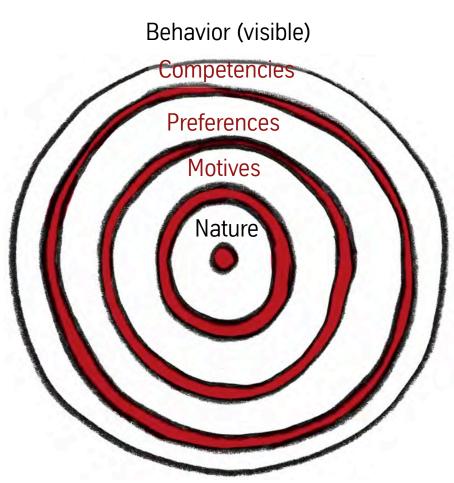
Salesmen masters of interpersonal communication

Malcolm Gladwell, The Tipping Point.

Boston: Back Bay Books, 2002

It is not important which of these concepts is "true" or "better": There is potential in making use of social patterns and these varied ways of acting. Make use of them, or ignore them at your peril!

What makes people complex: putting it all together

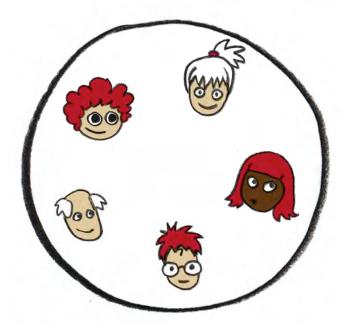


An individual's behavior is shaped by motives, preferences and competencies. Motives as personal characteristics are quite stable over time – they describe how important certain goals are for the individual. Preferences, by contrast, can partly evolve during the course of a lifetime - depending on environment, challenges and personal goals. Motives and preferences, combined, influence our interest to acquire certain competencies: There are abilities that are present or that can be learned. Competencies, thus, are directly related to learning.

As we saw, only behavior is easily and readily observable. It is still quite easy to describe an individual's competencies. With a little more effort yet, preferences can be mapped and described. Proper identification of someone's motives require even more effort and delicacy. Human nature

cannot be observed at all: it is a matter of conviction, or part of the social theories that we hold. Problem is: observing behavior seduces us to (mis)judge others' competencies, motives, or even their nature. An organization fit for complexity requires more reflection!

Part 3.
Self-organizing teams and the networked organization:
From the old design principles to new, and better ones

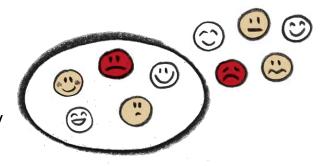


Forming teams

"The idea of "chunking": a group of items is perceived as a single "chunk". The chunk's boundary is a little like a cell membrane or a national border. It establishes a separate identity for the cluster within. According to context, one may wish to ignore the chunk's internal structure or take it into account."

Hofstadter/Douglas. Gödel, Escher, Bach. New York: Basic Books, 1979

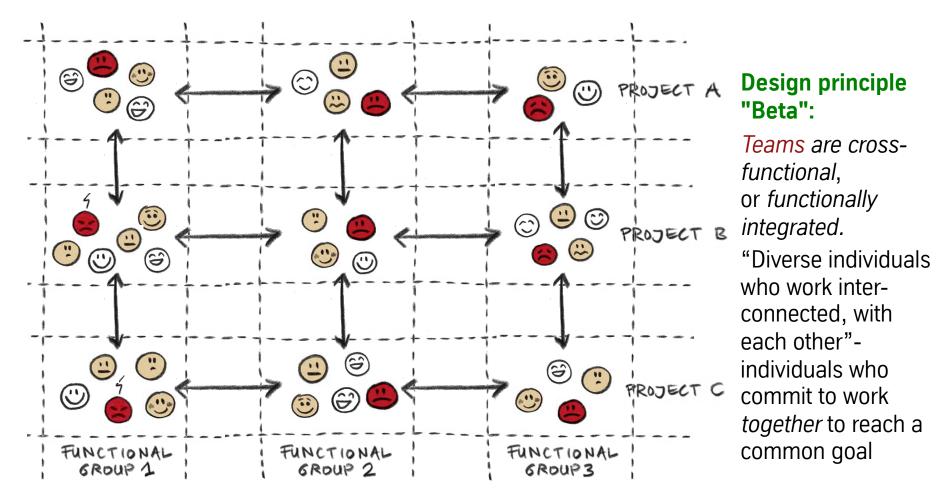
We call the individual chunk a cell, and its boundary the cell membrane.



We call the cluster of cells (the system), a cell-structure network.

We call the system's boundary or membrane the sphere of activity.

Organizing the work: Common forms of team segmentation – and where the difference lies



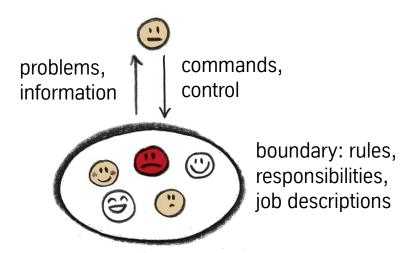
Design principle "Alpha":

Groups are uni-functional, or functionally divided. "Similar Individuals who work next to each other, in parallel", eventually competing against each other

Top-down command-and-control versus self-organization

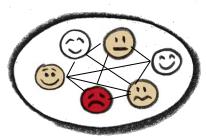
Design principle "Alpha":

Control through bosses. Information flows up, commands flow down. Top-down decision-making. Use of rules for containment.



Design principle "Beta":

Self-regulation within the team. Control through peer pressure and transparency. Principles and shared responsibility.



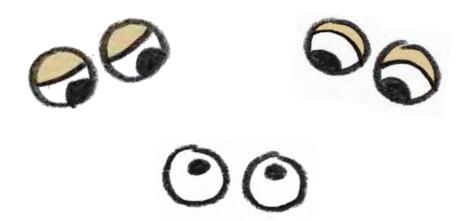
radical transparency, social density, group pressure

boundary: values, principles, roles, shared objectives

Self-organization is not the "right" term: Better would be: Socially dense market-organization.

Making use of social pressure

- 1. Let people identify with a small group.
- 2. Give them shared responsibility for shared goals.
- 3. Make all information open and transparent to the team.
- 4. Make performance information comparable across teams.

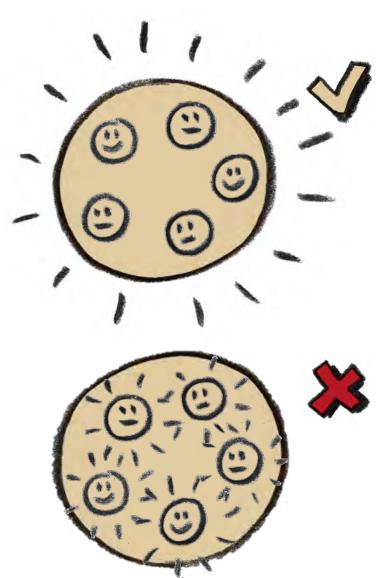


Social pressure, used right: far more powerful than hierarchy, no damaging side-effects.

Self-organization must be team-based

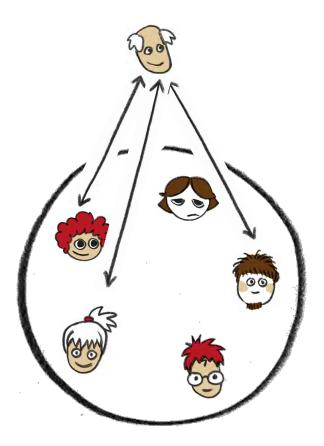
Ultimately, organizing for complexity and self-organization is always about empowering teams...

... not about empowering individuals

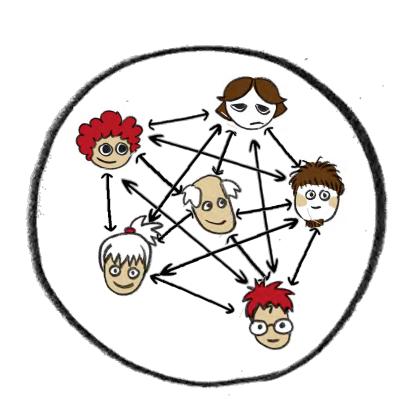


The empowerment movement of the 1990's also missed this point.

A seeming paradox: Giving up power and decentralizing decision-making back to teams actually increases status







> High, or superior performance

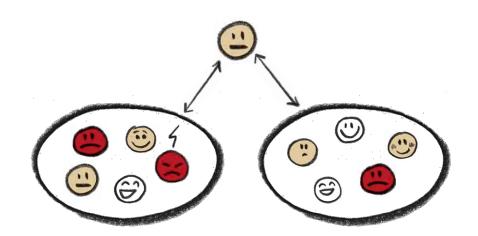
Success is not a zero-sum game.

Communication across teams

Design principle "Alpha":

Coordination/communication through a manager, usually combined with functional division; taylorism

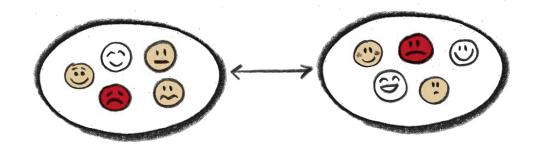
> Sufficient in dull markets



Design principle "Beta":

not through a manager, but laterally

> Superior in complex markets



Centralized coordination is a luxury organizations in complex markets cannot afford.

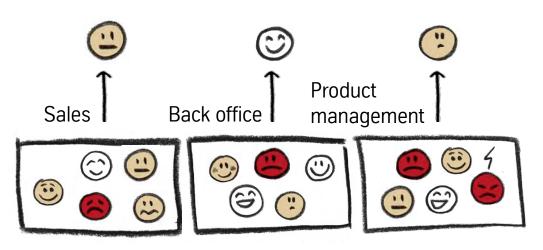
The difference between a "department" and a "cell"

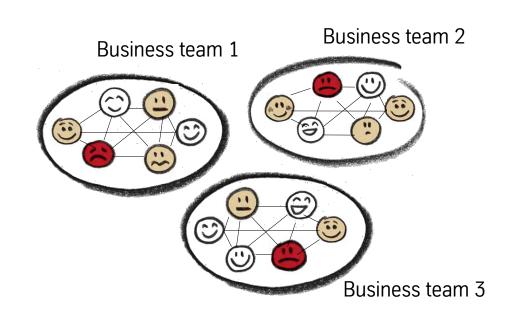
Design principle "Alpha":

A department implies functional differentiation and thus the grouping of functional specialists - marketers with marketers, sales people with sales people, etc., all of which have to be coordinated horizontally. Business processes cross different departments. Result: groups of people working in parallel, not teams

Design principle "Beta":

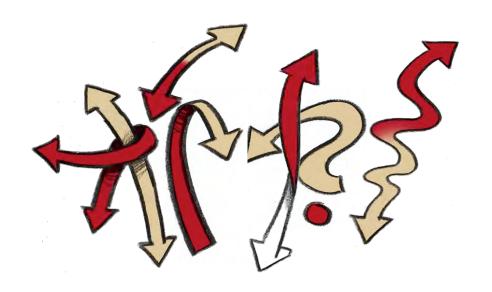
A cell implies functional integration, or cross-functional teams. Coordination occurs laterally, among peers.
Business processes flow within teams.
Result: actual teams of people working for and with each other



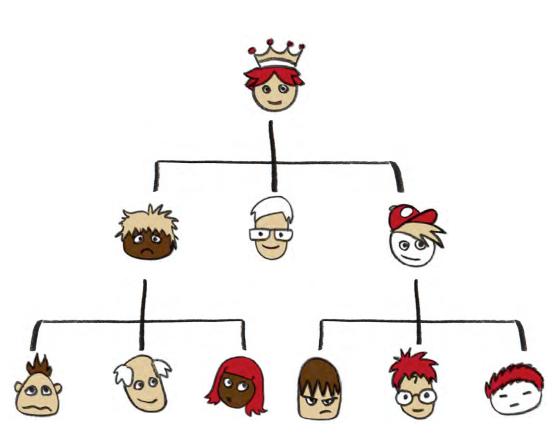


Complex markets require decentralization, combined with market-like coordination.

Part 4. Organizations as systems: How to design for complexity



The dominant mindset turned into a problem: To imagine organizations as pyramids is a misguided metaphor



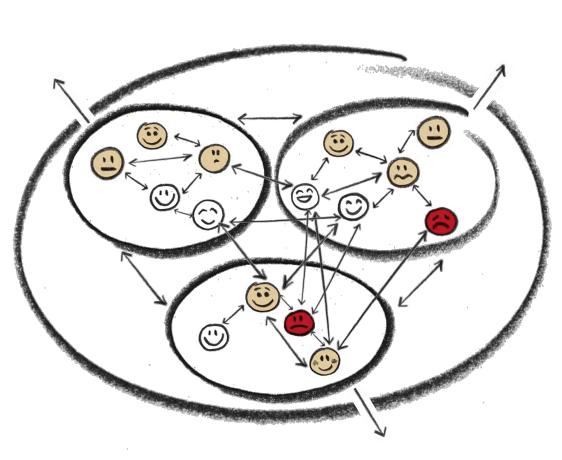
Design principle "Alpha":

The organization as a bureaucratic hierarchy, steered by managers who are always in control

Managers commanding/controlling a pyramid of "followers" from above is not a smart way to organize. Most of us sense that, intuitively: Our experience from practice contradicts that this can actually work.

This remains, however, the dominant mindset in companies, since the development of management theory about a century ago. When we speak of "management", we usually refer to techniques, tools and models aimed at improving, optimizing, or fixing organizations as command-and-control pyramids.

A better metaphor: The organization as a multi-layered network



Design principle "Beta":

The organization as an interconnected, living network, steered by market forces. Nobody is in control. Everybody is in charge.

A smarter and more useful way to look at organizations is to see them as a network. This is not only more aligned with science than the mechanistic "pyramid" dogma, but it is also by far closer to reality, and in several ways.

Because organizations are in fact:

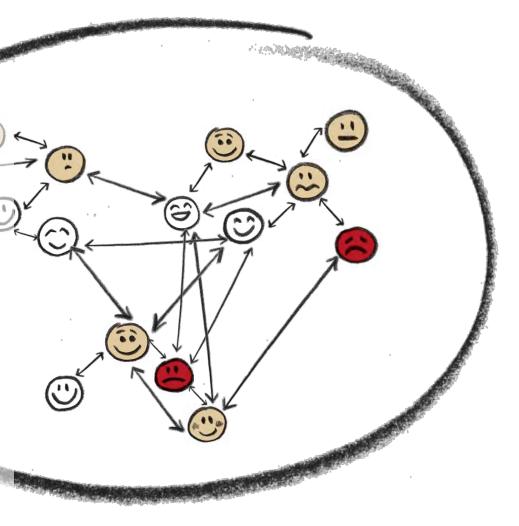
- Networks of individuals (through Informal Structure) and
- Networks of value-creating teams (through Value Creation Structure).

Let's take a closer look at these concepts.

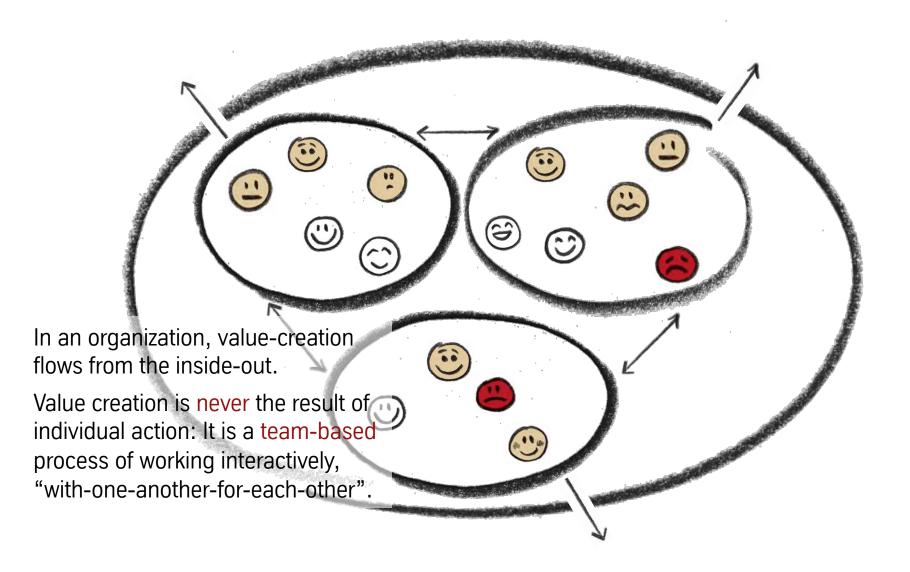
The workplace is networked: The organization's informal structure. Based on individual relationships

Informal Structures emerge out of human interaction. In any social group. Informal Structure by itself is neither good, nor bad. It simply is.

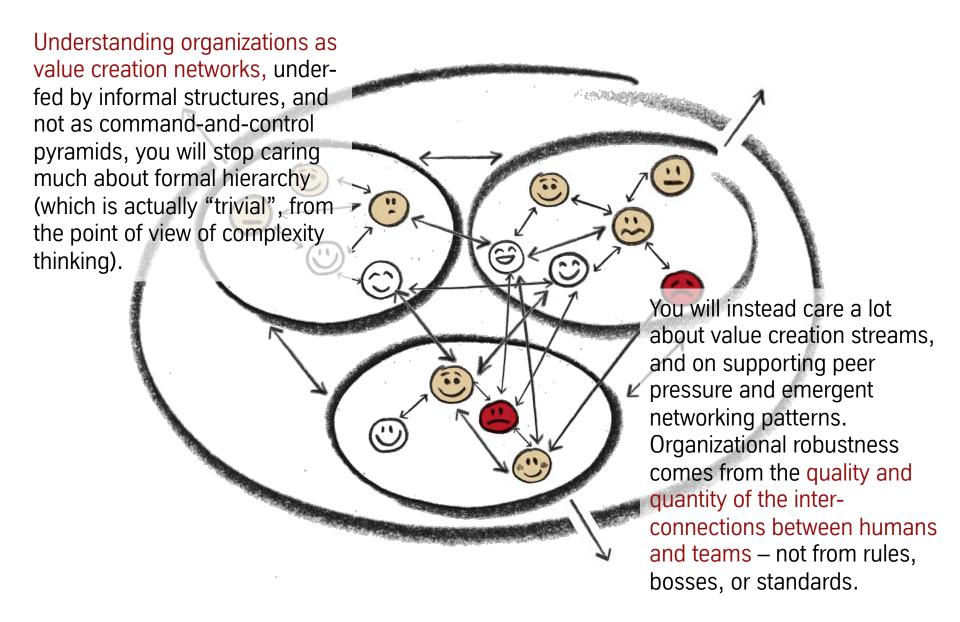
Most social phenomena arise from informal structure:
Gossip. Networking.
Socializing. Politics. Group think. Conspiracies. Factions, coalitions & clans. Resistance to change. Response to crises. Peer pressure.
Solidarity. Bullying. You name it. Fact is: Informal structures are powerful.



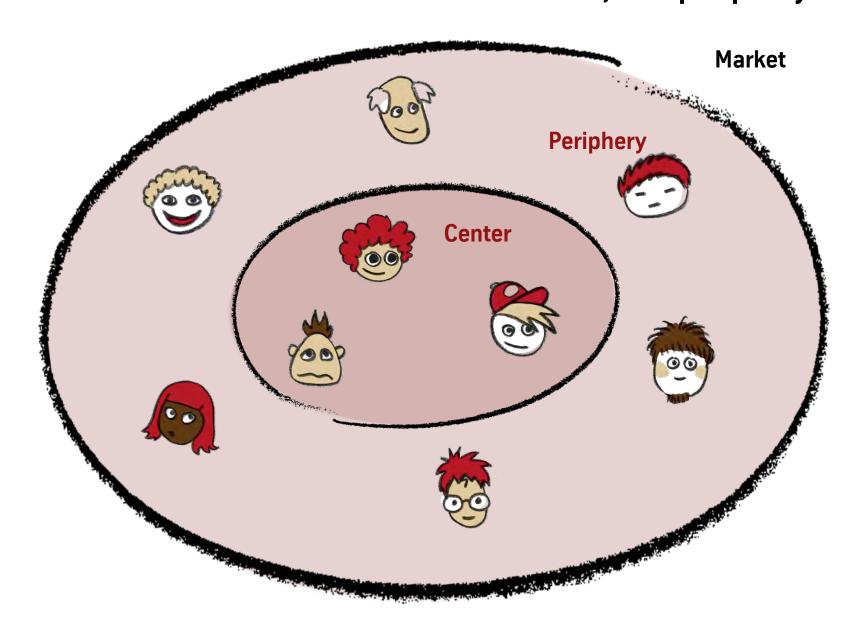
The workplace is networked: The organization's value creation structure, based on team interaction



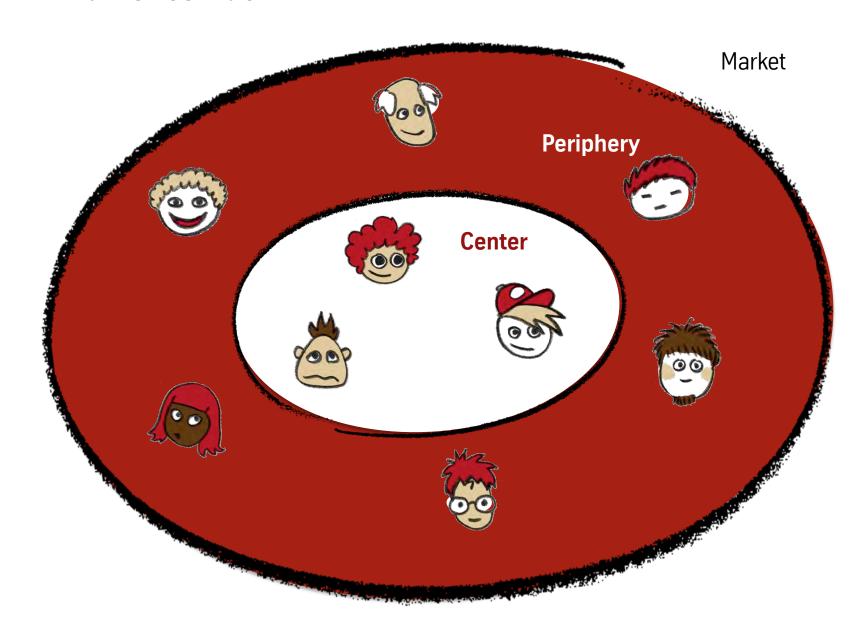
The workplace is doubly networked: Putting together informal and value creation structures



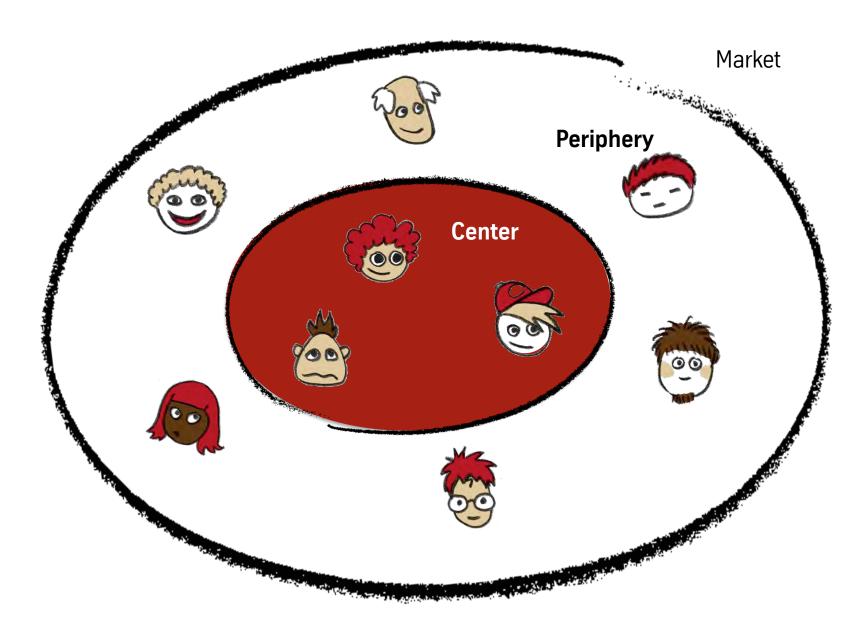
To gain a better understanding of value creation, it is helpful to understand the distinction between center, and periphery



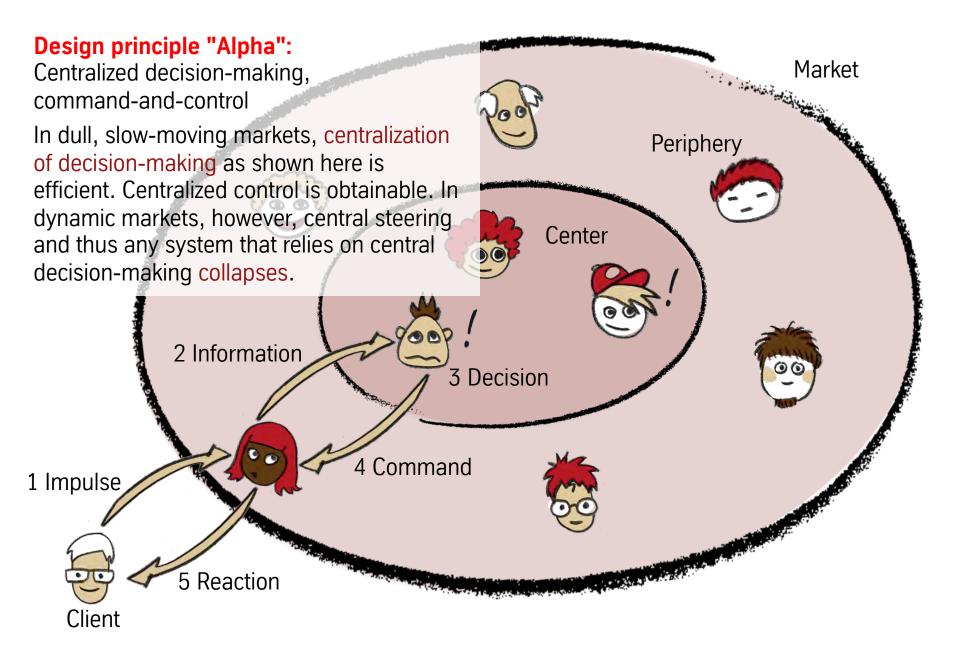
The periphery: the only part of the organization with market contact



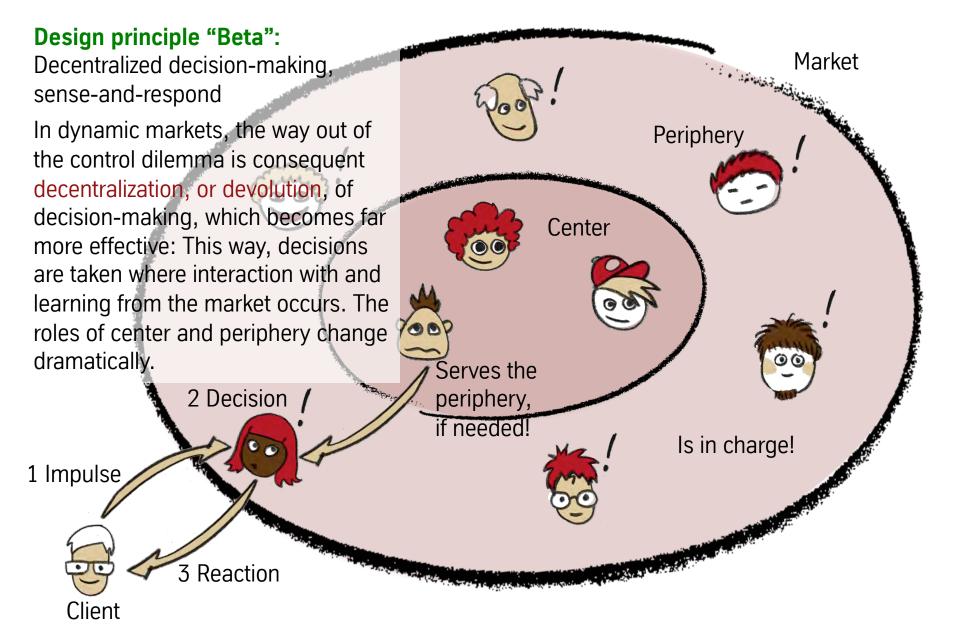
The center: no direct market contact. The periphery isolates the center from the market



Centralized decision-making (command-and-control) in a system



Solving the complexity dilemma, through decentralization



Part 5.
How to transform your organization into a complexity-robust network and how to turn "Beta" into the dominant mindset

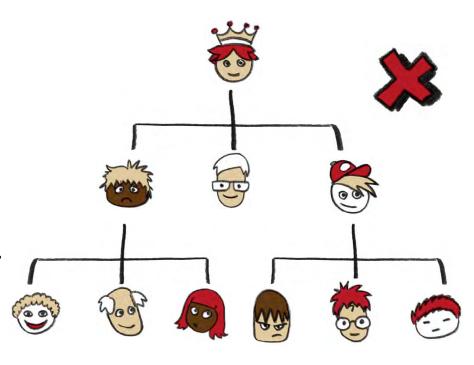
Designing an organization as a decentralized network

To turn your organization into a decentralized cell-structure, or to build a new organization as such a network, one must understand the elements, or building blocks, of such a design.

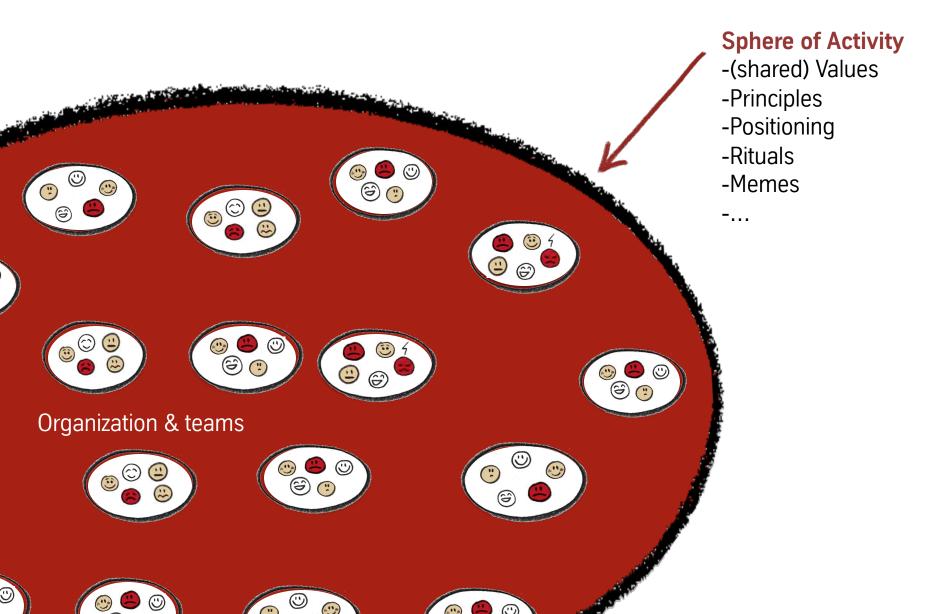
Four elements are necessary:

- a boundary, or sphere of activity
- network cells (with a distinction between central and peripheral cells)
- connecting strings between network cells, and, finally,
- market pull connections with the external market

No line structures. No functions. No departments. No shared services. No divisions. No centralized staff. This is a different, and far more effective way of defining structure, in complexity.

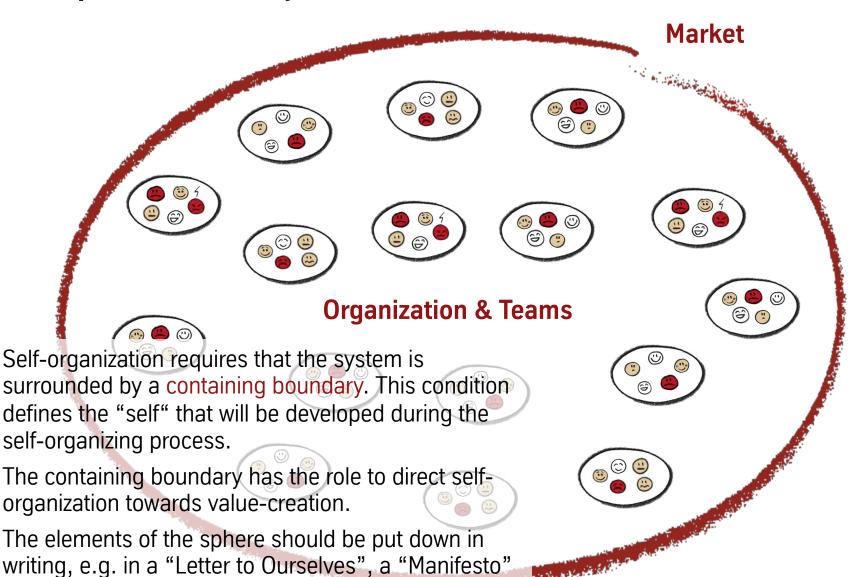


Identity and the sphere of activity

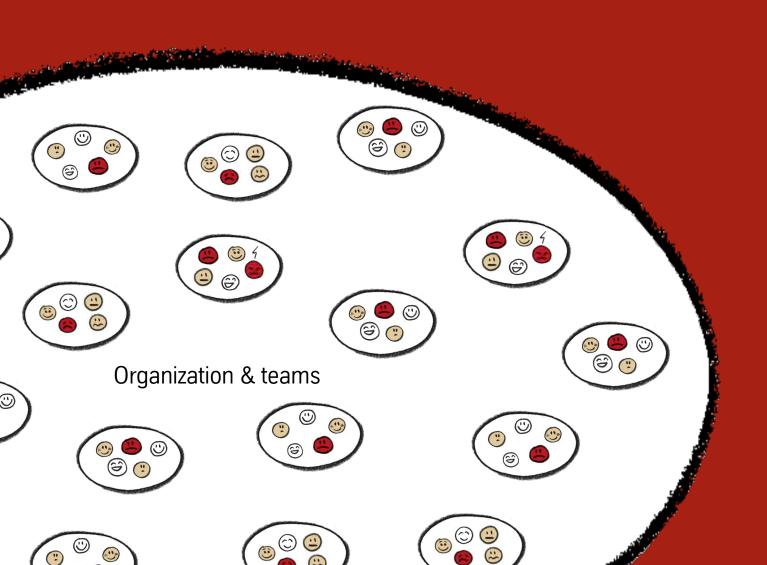


The sphere of activity

or a "Culture Book".



The market and its components

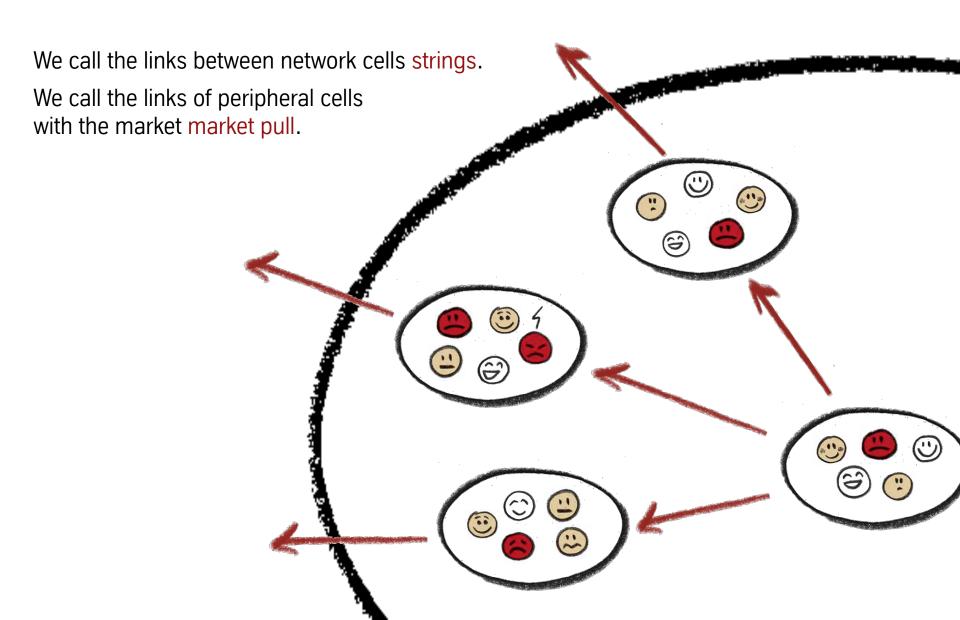


Market

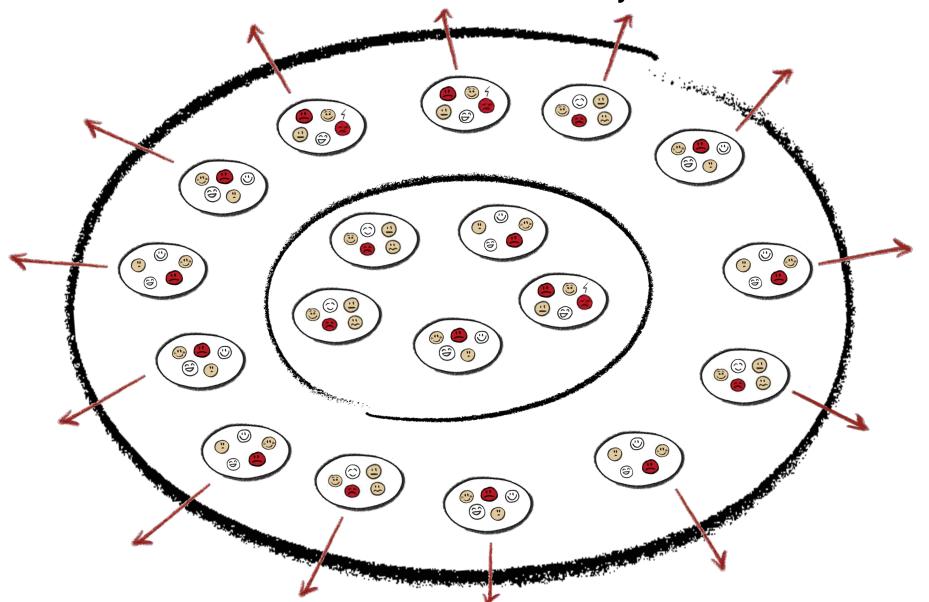
- Customers
- Owners
- Banks
- Society
- Competitors
- Unions
- ...

Value-creation flows from the inside out. Market-pull does the steering. Market Periphery Center A cell-structure network gains stability and resilience not through hierarchical power relationships, or through "resistance to pressure", but through the "pull" that comes from the external market, and from the complex human relationships it nourishes internally. Market dynamics do the steering. Sounds simple? It is.

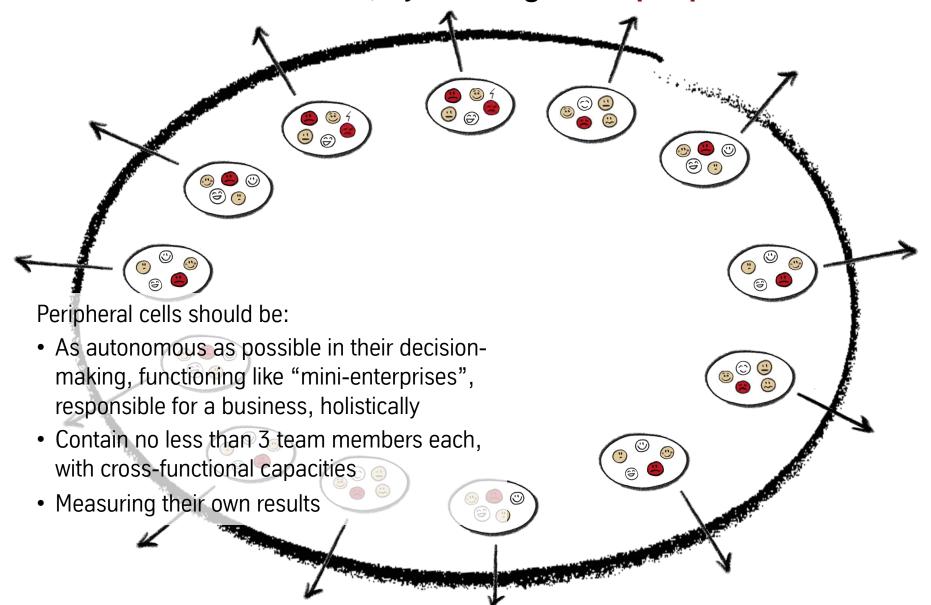
From value-creating teams to value-creating network



Market pull: Only peripheral cells have direct links to the market and can thus deliver value externally



Step 1 in drafting your organization as a value-flow network: Start from the outside-in, by thinking about peripheral cells first

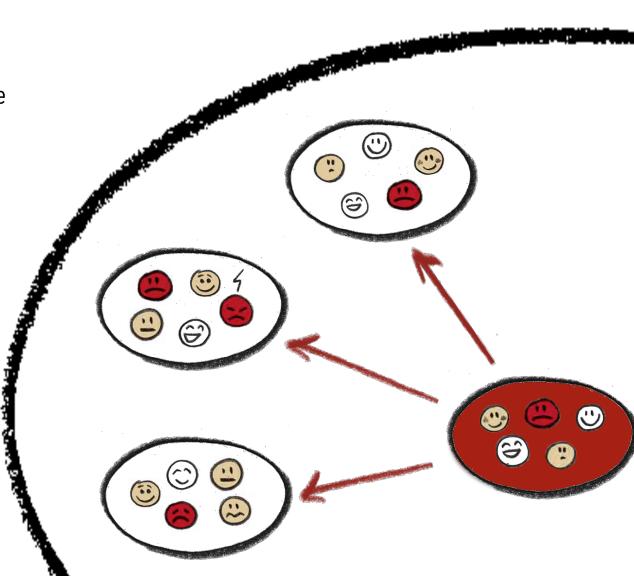


Step 2: Design central cells as internally value-creating supply units

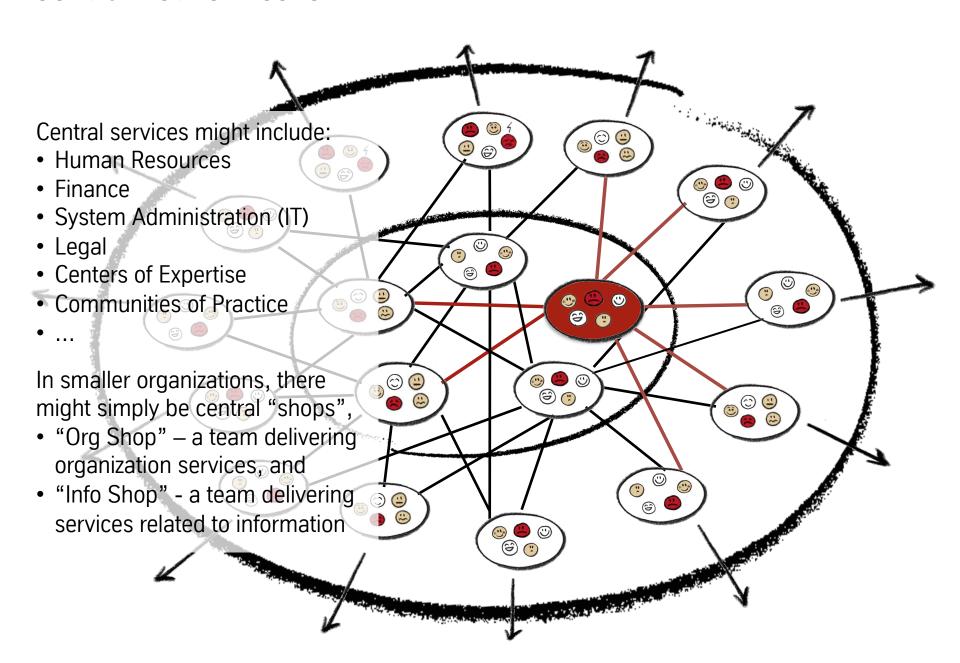
The role of central cells is to deliver value to peripheral teams that these cannot create themselves.

Their role is to serve, not to rule the periphery. It is not to execute power, or control. Ideally, these teams sell their services to peripheral cells through priced transactions, and on an internal market.

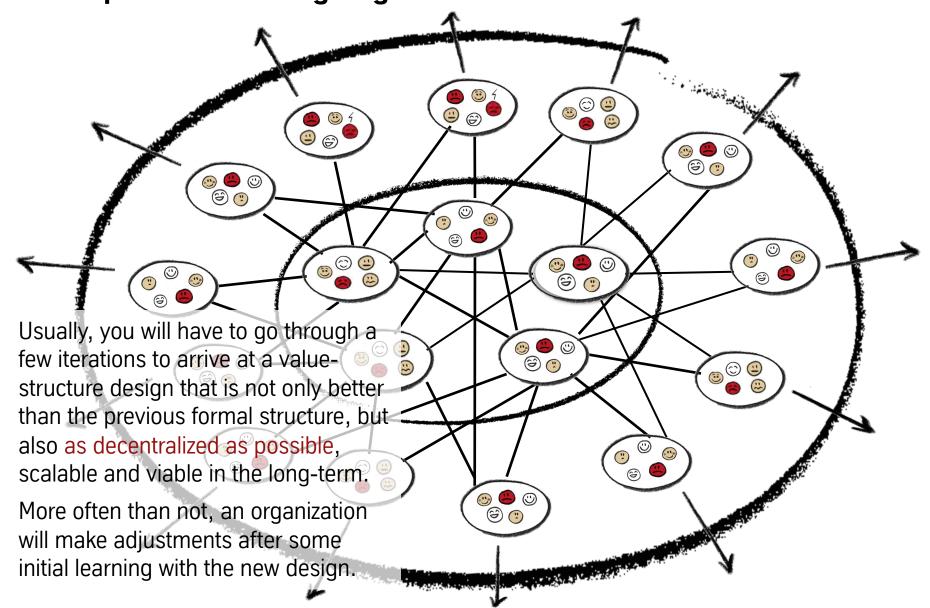
Examples for how to do this exist at companies such as Handelsbanken, dm-drogerie markt, and Morning Star.



Central network cells



Step 3: Iterate – involve many, many people in the process of designing a full network structure



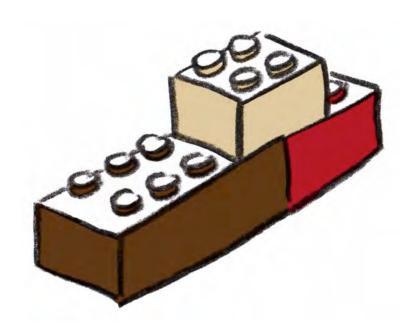
Individuals and "portfolios of roles": A normality in decentralized network structures

In a decentralized network structure, "positions" cease to exist. "Roles" rule. Individuals usually are not confined to one network cell alone, but will act in different cells, filling in different roles in different parts of the network. Consequently, everyone keeps "juggling with roles", all the time.

An example: A person with the official title of "CFO" on the business card would play a role in a central cell when serving other teams of the network, but be part of a peripheral cell when dealing with a bank. The same person might also fulfill additional roles within the organization that might have little or nothing to do with finance.



Part 6. Additional recommendations



Promote a result-based achievement culture

Make team performance visible (results only!), to nurture a team-based "winning culture".

Never, ever, attempt to manage individual performance, though, as individual performance simply does not exist. Stop managing working time or controlling individual behavior - "behaviorism" has been proven wrong a long time ago!

What works, instead: The most adaptive and successful organizations focus on nurturing a culture that highlights the importance of "fun, while winning in the marketplace." You cannot have that controlling individual's behavior.



Promote self-development and mastery

You cannot and need not develop people. People can do that on their own. An organization, however, can create and should create conditions and forums for self-development, and it can also take care that leaders get out of the way by not trying to control or contain self-development.

Individual mastery is the only viable problem-solving mechanism in complexity.

We usually tend to overrate talent, and underrate systematic, disciplined learning. We tend to overrate class-room training, and underrate learning that is integrated into the actual work life. We tend to overrate formal instruction and underrate inspirational interaction, informal networking and communities of practice.

Training budgets only serve for control – not for learning. So scrap them and make learning resources available to those who learn, on demand.



Cultivate principles, not rules

Simple/few principles > Complex behavior Complicated/many rules > Stupid behavior

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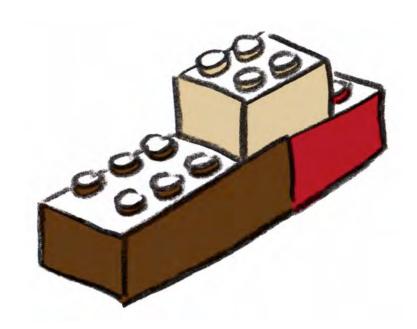
DON'T DO EVIL.

Focus leadership work on the system. Not on individual people.

Self-organization in complex systems is natural. With a containing boundary and external markets in place, that should provide for the steering.

Leadership, thus, has to be work focused on improving the system, on making the market palpable inside the organization through transparency and dialogue, and on allowing for self-organization and social pressure to function.

Work on the system, not the people.



Practice radical transparency

Information is to entrepreneurial responsibility what oxygen is to the human body.

In an organization, without fast and easy access to information – including that on team performance and financial results or the organization – teams and individuals will be walking around in darkness. Transparency is like turning the light on.

Transparency makes ambition, a healthy spirit of competitiveness, and group or peer pressure, possible.

Having "open books" is part of that. If you find yourself thinking about possible "dangers" of opening the books, then you probably haven't thought the topic through, yet. Then it's time to do that, now.



Make targets, measures and compensation "relative"

Alpha

In dynamic markets, prognosis becomes impossible. Planning turns into a futile, if not dangerous ritual. In knowledge-intensive work, dangling carrots in front of people not only fails to work, it actually de-motivates people, strangles engagement and team spirit.

Direction through targets, measuring of performance, and compensation systems have to consider complexity and the nature of human motivation. Let purpose drive behavior, not numbers or manipulative and

controlling processes.

Transparency & Improvement
Peer team comparisons
Comparisons w/previous periods
Dialogue & dissent
Pay by market value
Result sharing

Fixed & individual targets
Management by Objectives
Budgets & Plans
Performance appraisals
Pay by Position
Pay for Performance
Incentives & Bonuses

. . .

A sum-up: Apply the full set of 12 laws of the BetaCodex - a set of design principles for complexity-robust organization

Law		Beta	Alpha
§1	Freedom to act	Connectedness	not Dependency
§2	Responsibility	Cells	not Departments
§3	Governance	Leadership	not Management
§4	Performance climate	Result culture	not Duty fulfillment
§5	Success	Fit	not Maximization
§6	Transparency	Intelligence flow	not Power accumulation
§7	Orientation	Relative Targets	not Top-down prescription
§8	Recognition	Sharing	not Incentives
§9	Mental presence	Preparedness	not Planning
§10	Decision-making	Consequence	not Bureaucracy
§11	Resource usage	Purpose-driven	not Status-oriented
§12	Coordination	Market dynamics	not Commands

More reading and resources

For more about organizational structures, see our white paper no. 11.

For more about cell-structure design: see our white papers no. 8, 9 and 11.

For more about "relative" performance management: see our white paper no. 10.

For more about problem-solving in complexity, see our white paper no. 7.

For more about the BetaCodex, see our white papers no. 5 and 6.

All papers can be accessed from this page: www.betacodex.org/papers

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Translations of this paper in French, Dutch, Spanish and Portuguese are available.

We welcome your suggestions to improve future versions of this paper.

Thanks to Pia Steinmann, who crafted all the illustrations used in this paper, and to Jurgen Appelo, whose drawings originally inspired it.



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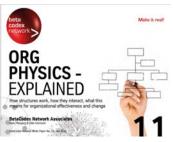




















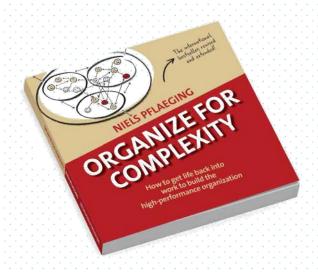




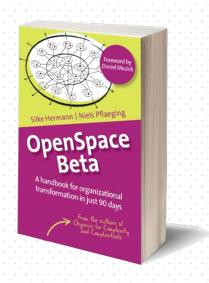




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