Providing 4 Improvements

Based on course

International Supply Change Management Program

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There can be no final destination. Neither space nor time ends. But life always moves towards its goals, not as perfection but as the attraction of an ideal.

Peter Tuft Richardson

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Introduction

Drs Jan Lelie CPIM CPF

Facilitator

LOGI*SENS*

Sparring partner in logistical improvement

mind@work

Group decision process support

> 20 years experience

Please take notes

- Please make readable notes for yourself
- I'll pause or ask me to stop for a few moments
- We'll share copies of the notes

Providing 4 Improvements supplies:

A personal, human being centred,
computer application independent,
pragmatics*) on
intentional logistical improvement
processes

*) Logistics practice (ERP, TQM, JIT, TOC);

Management theory;

Experimental Learning;

The emotional, human mind

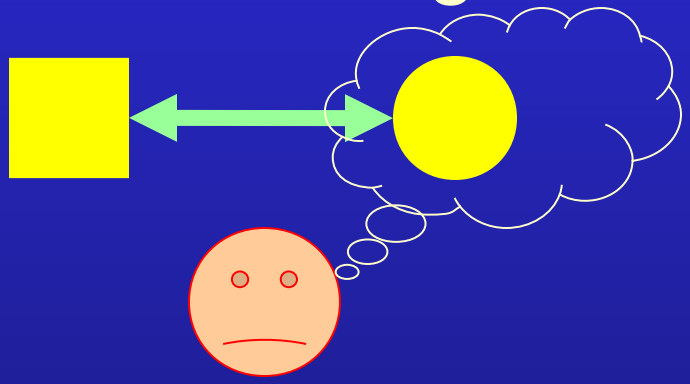
1.1 It is your choice!

You have to understand yourself, because you determine:

- the presenting *problems* and issues
- the possible solutions
- the methods for change and
- you generate the conflicts with the methods and your resolutions of issues!

1.2 A problem

A problem is the difference between expectations and *reality* - usually associated with a negative feeling.



People are submerged in problems,…but what is real?

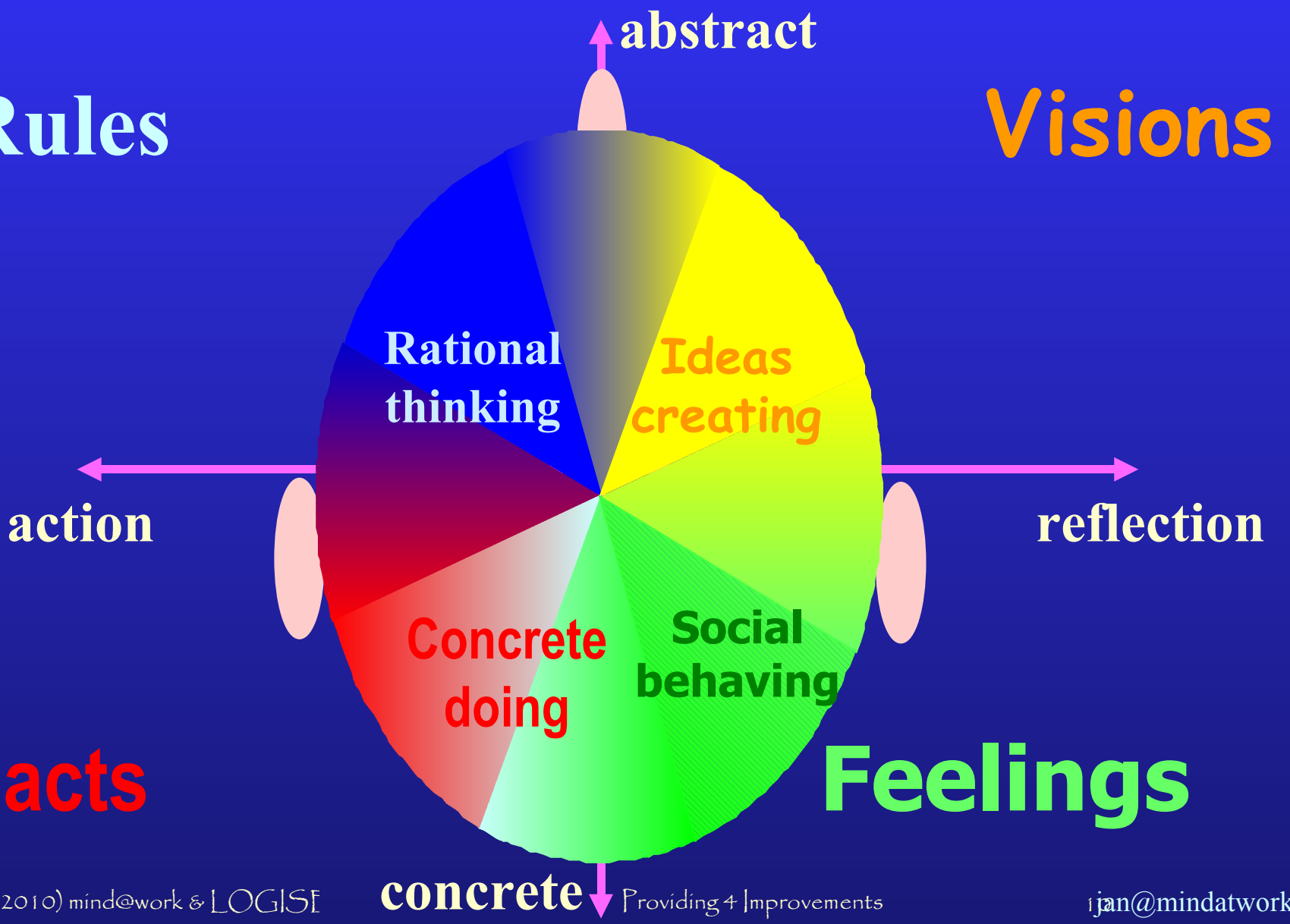
1.3 But what is *real*, reality?

What is real for you?

- Emotions? Feelings? What matters?
- Meaning? Visions? Creations?
- Truths? Policies? Theories?
- Facts? Actions? Material things?

Let's make a map.

1.4 Description using a map

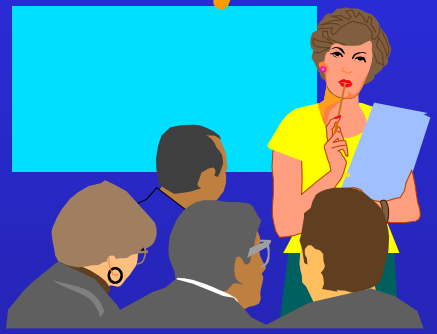


1.5 Map of realities

abstract

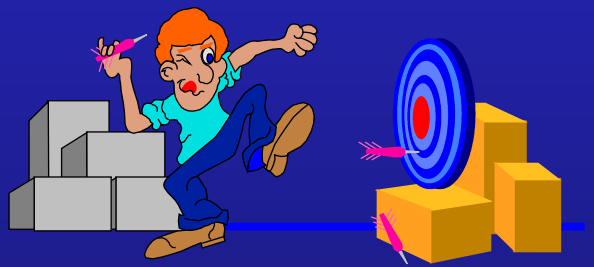
Unitary

Mythical



action

reflection



Sensory

social

concrete

Based on "Creating Paths of Change" (1992) by W. Mc Whinney

1.6 Always combinations

Unitary

Assertive

Inspiring

Mythical

Converting

Analytic

Planning

Persuasive

Sensory

social

1.6 Always combinations

Unitary

Mythical

Entrepreneurial

Facilitating

Evoking

Improving

Sensory

Evaluating

Participating

social

1.6 Roles in Supply Chain Management

Unitary

Top manager

Consultant

Mythical

Middle manager

Developer

Administrator

Buyer

Guru

Marketeer

Sales man

Engineer

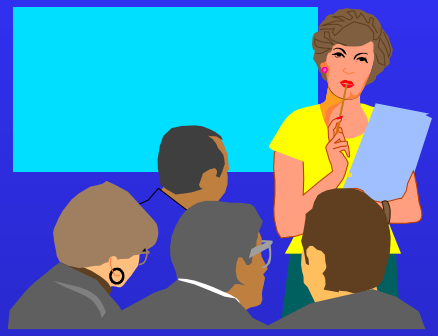
Sensory

Worker, foreman

Scheduler, planner

social

1.7 Four views on change ...

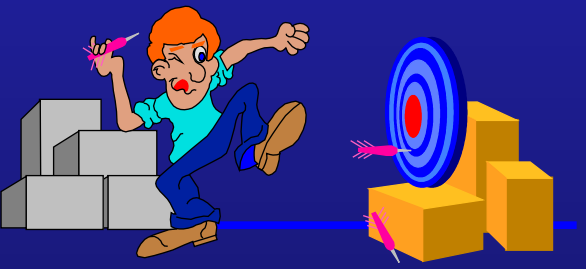


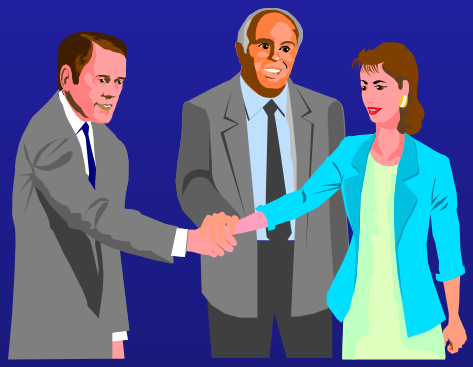
"Only if I want it"

"Explain rules and principles"

"accepting each other"

"Cause and effects"





1.8 Views expresses preferences for:

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2. Inform on implications for SCM

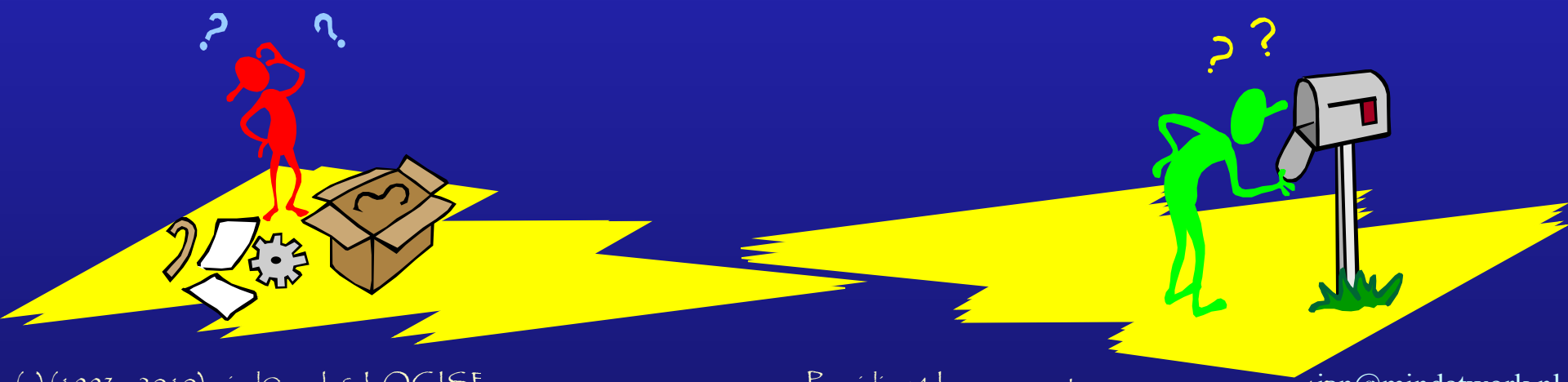
We need more than one map if we are going to imagine solutions.

Barbara Katz Rothman

Genetic Maps and Human Imagination

2.2 Supply Chain Management concerns itself with two questions

1. When is the delivery due? (promised, scheduled, expected)
2. When to start? (procuring, producing, assembling, shipping or delivering)



2.3 Answering these questions requires

Making commitments on expectations

- Requirements, wants, problems, needs

Communicating agreements

- Functions, design, prices and due date

Confiding in rules and principles

- Planning, people, resources, laws

Co-operating to reach mutual goals

- Material products, actions, rescheduling

2.4 A circular process

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2.5 What is logistical problem?

- A problem is the difference between expectations and *reality* - usually associated with a negative feeling.
- Too early? Too much? Too many? Too good? No problemo!
- Too late? Too little? Not enough? Quality lacking?

2.6.1 What causes the problem?

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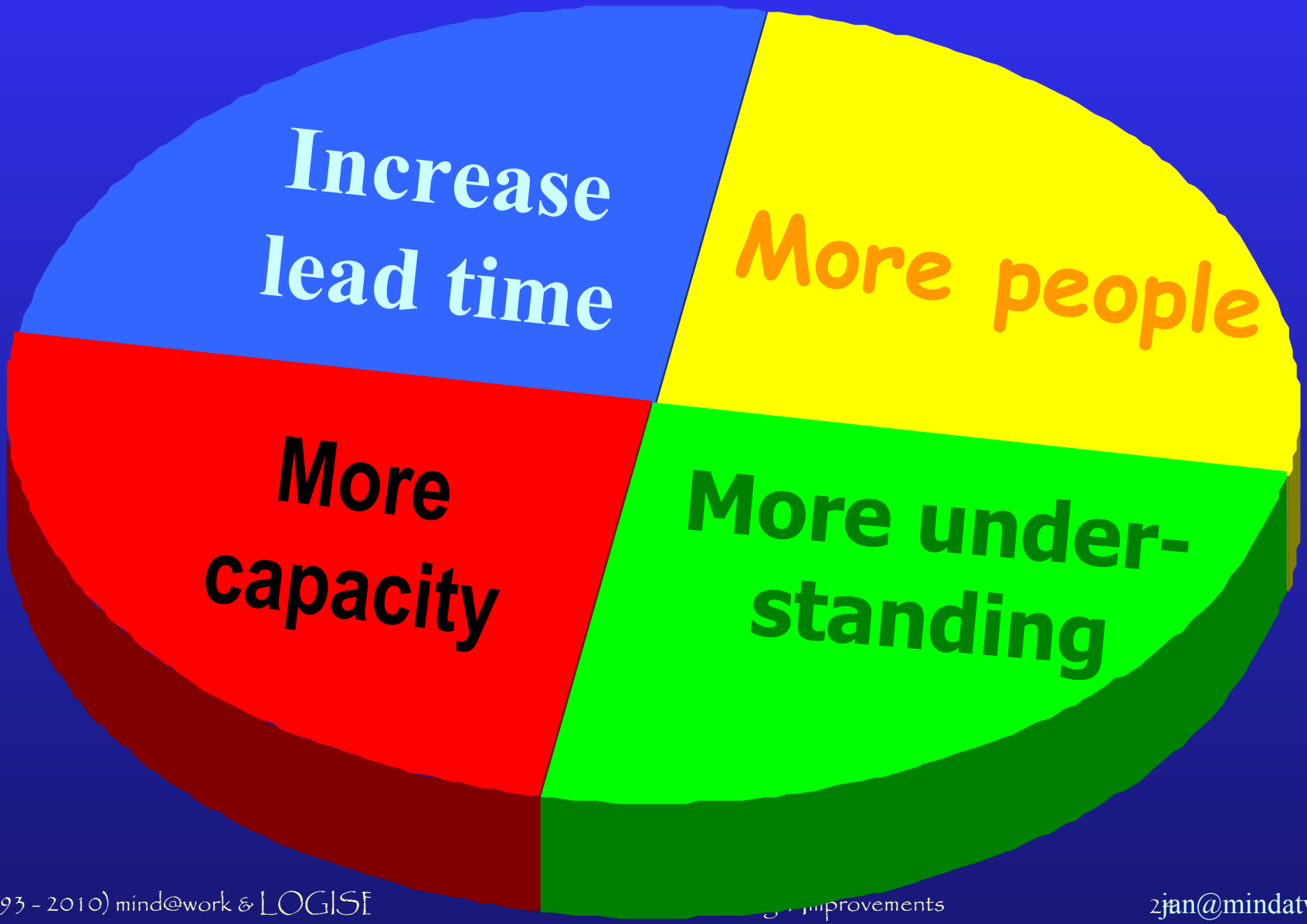
2.6.2 First reaction to problems:



2.6.3 which creates:

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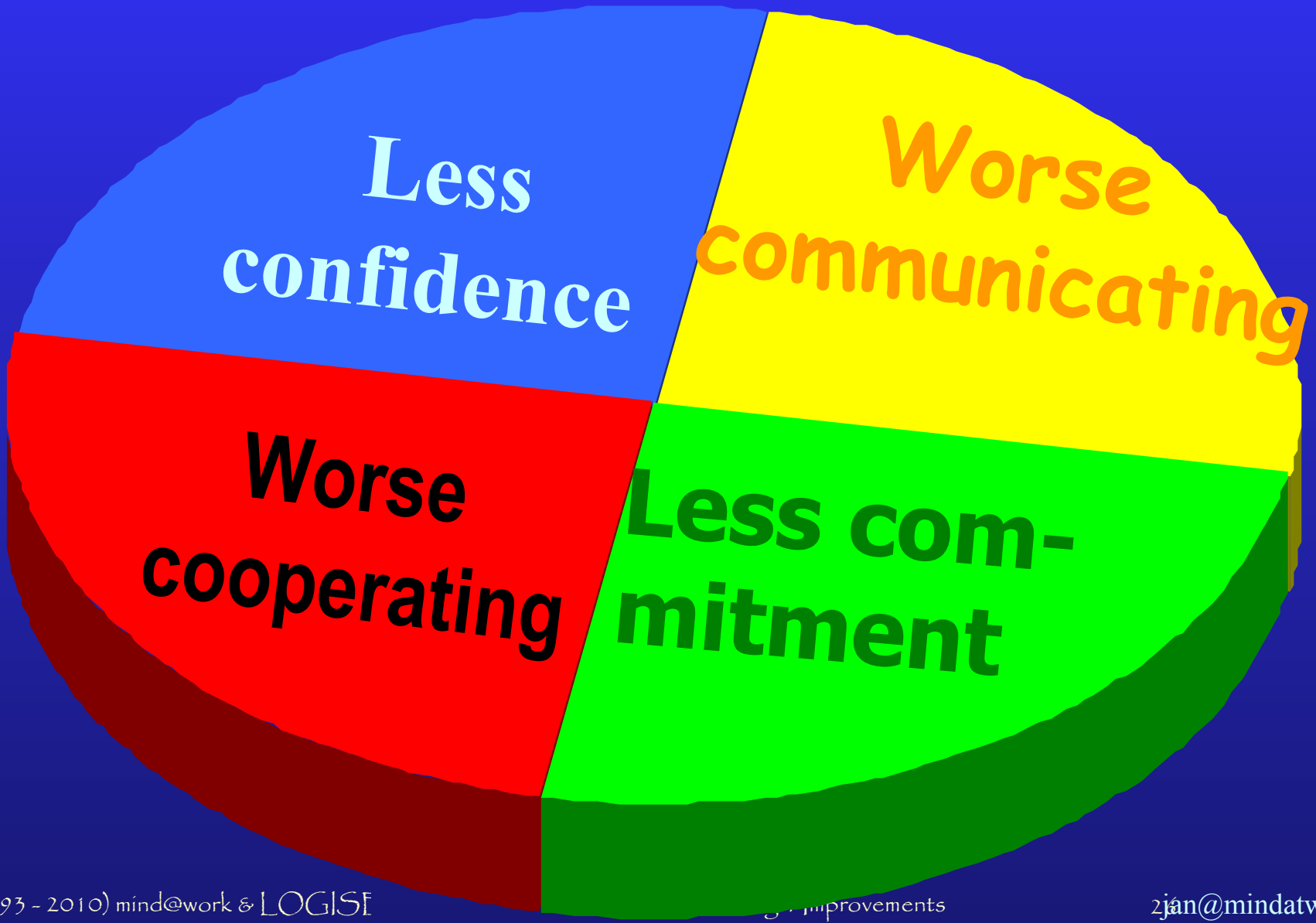
2.6.4 and leads to:



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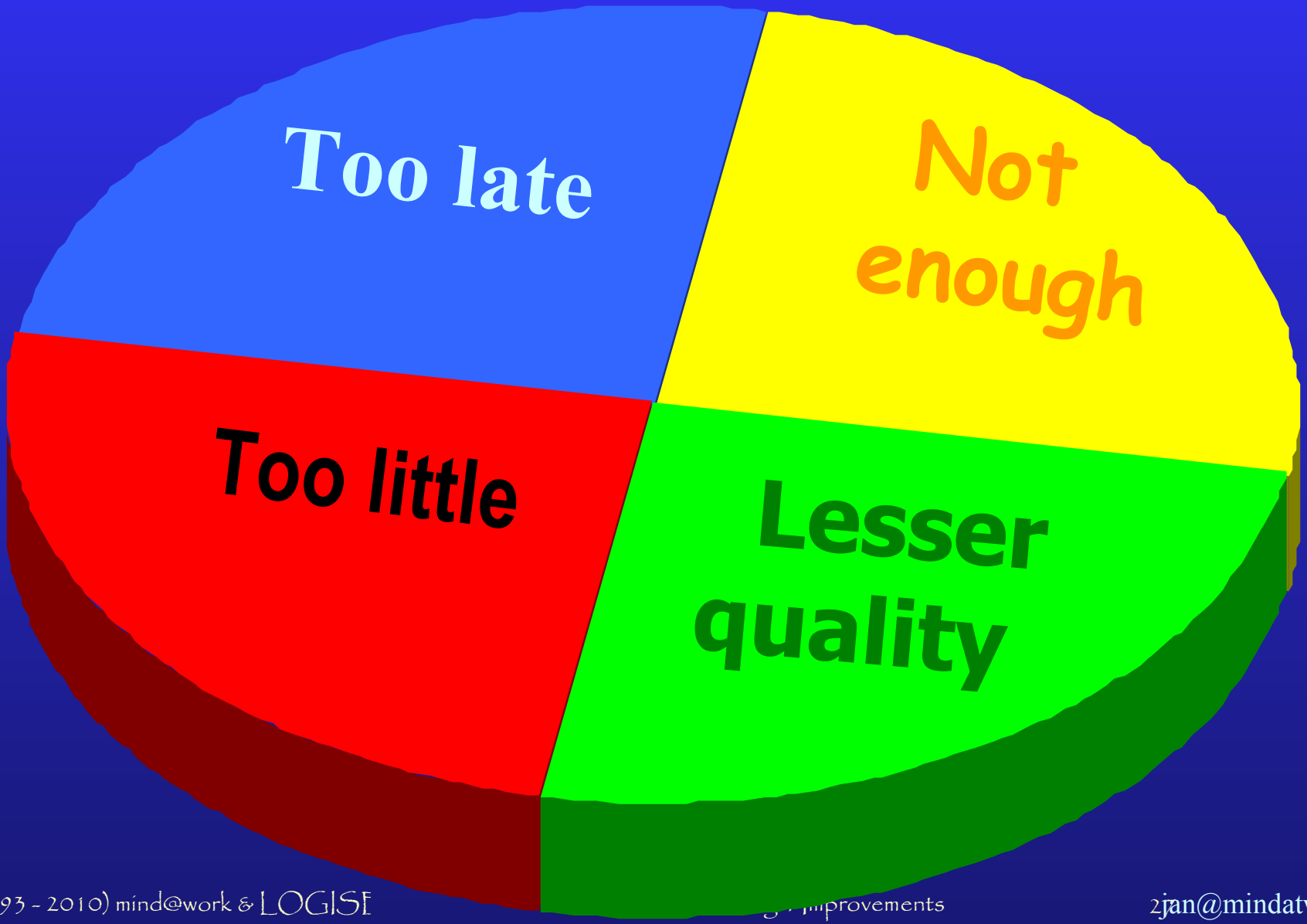
2.6.5 and reinforces the problem.



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2.7 Providing 4 improvements

Problem solving is inherently paradoxical as we frame

- problems consistent with our own reality
- solutions consistent with the problem
- methods consistent with the solution

and can no longer consistently improve

- We're going to look into it more closely

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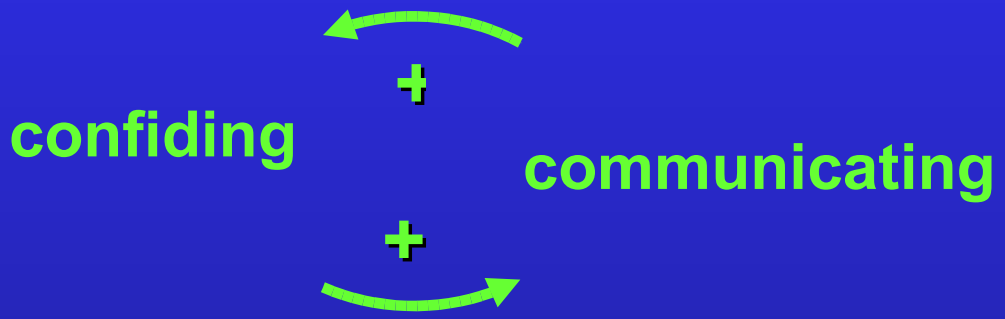
3.1 Learning Logistics

Solutions and problems are one, dynamical system

Improving means shifting the whole system

Solving problems through one method creates problems that cannot be solved by the same method

3.2 Reïnforcing loops



- + = positively coupled: up and up or down and down
- More communication stimulates growth of trust
- Less communication reduces levels of trust (or confidence and commitment and co-operation)

3.2 4-C model - kernel

3.3.2 4-C Model - Confiding

More trust allows for shorter lead times

Shorter lead times brings inventory

Less inventory brings, ... after some time (/ /).... more confidence

3.4.1 Learning Logistics: 4C-model

Based on system archetypes (not treated in this presentation)

Summary model, based on confiding, communicating, co-operating and committing

4C´s = **C**onfiding, **C**ommunicating, **C**o-operating, **C**ommitting

3.4.2 Legend

Confiding = process, so a verb

Lead time = system variable, is a parameter, but not a …

Inventory = system observable, objectively measurable

Indirect (/+/ or /-/) effects explained with system archetypes

Note: parameter versus observable

Parameter

- Inside
- Used explaining system
- Used in info system
- Can be chosen or varied
- Based on assumptions
- Examples: lead times, agreements

Observable

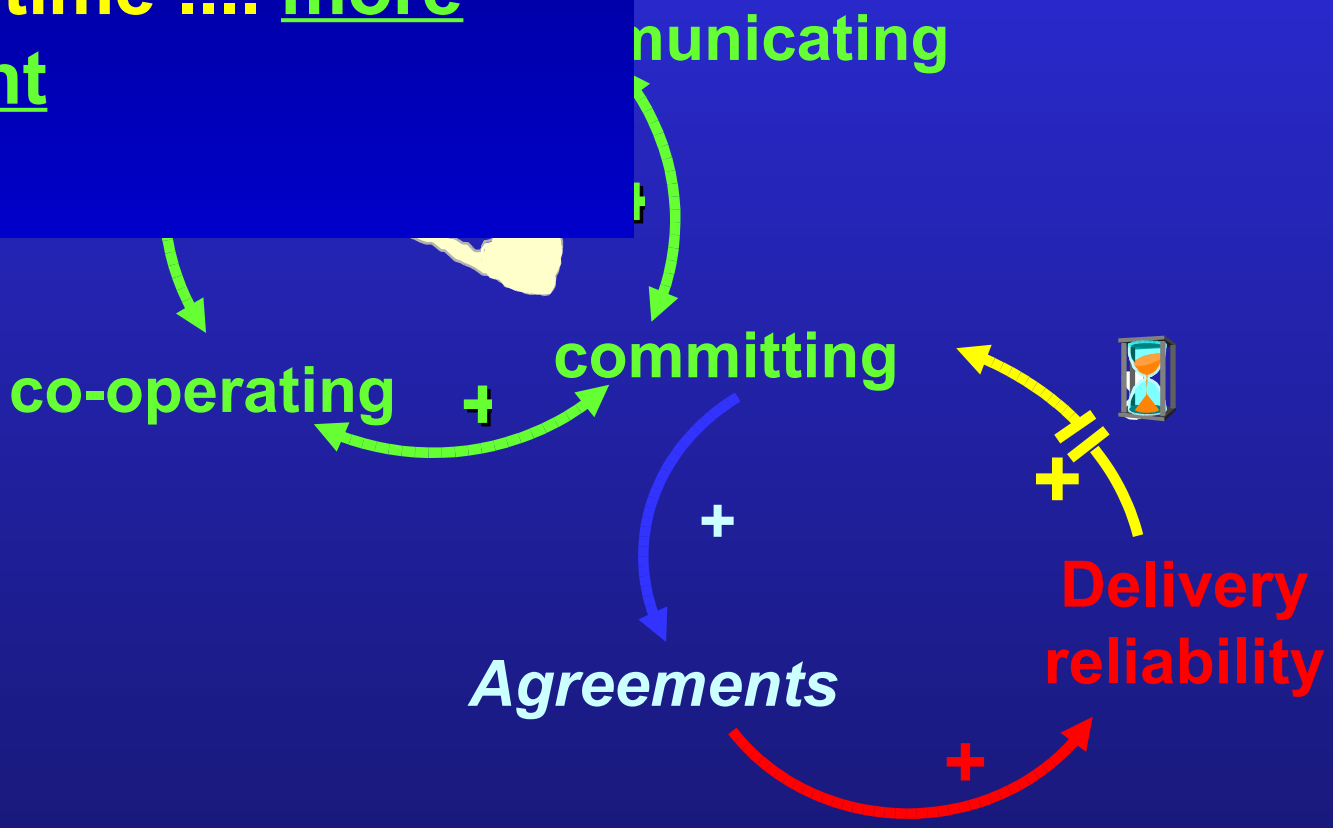
- Outside
- Concrete, measurable even when no knowledge of system
- Varies on choice of parameters
- Examples: inventory, delivery reliability

committing

more commitment allows for better agreements

better agreements brings higher reliability

Higher reliability leads to, ... after some time .... more commitment



3.5.2 4c-model - communicating

Better communicating is about bottleneck capacity

bottleneck management leads to higher throughput

Higher throughput brings, ... after some time .... better communicating

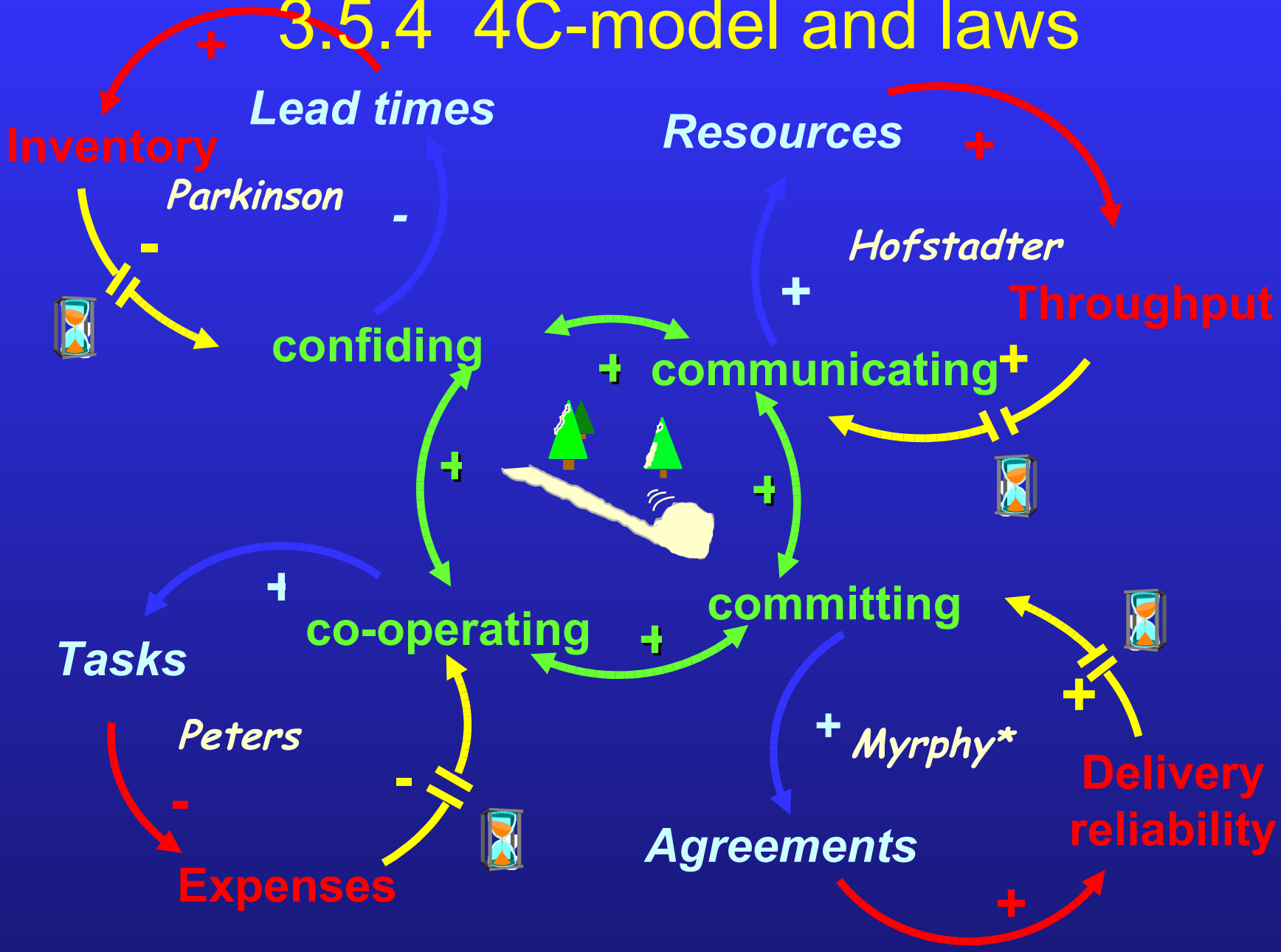
3.5.3 4C-

Better co-opereating means better allocation of tasks

better task allocation leads to less expenses

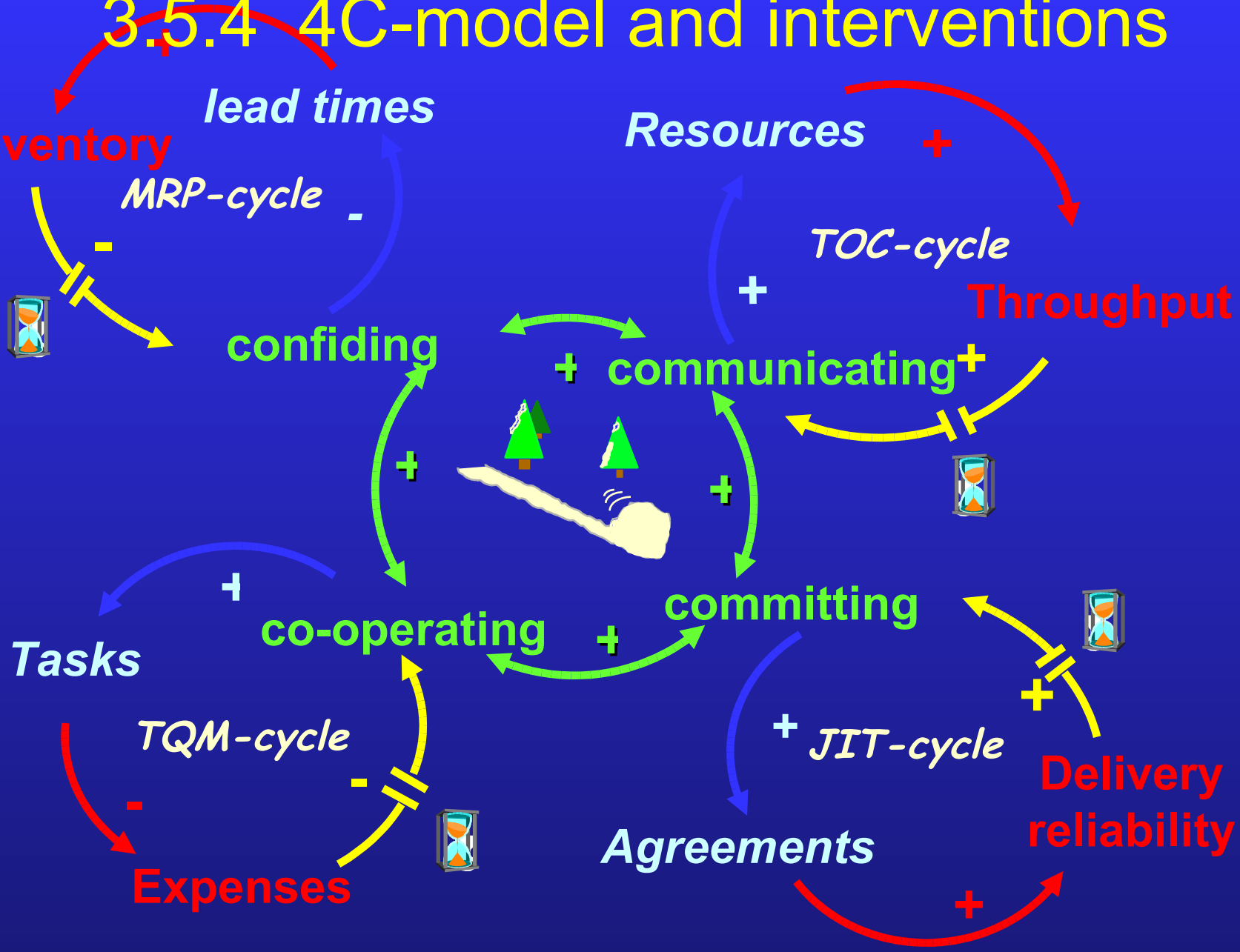
Less expenses improves, ... after some time .... Co-operating

3.5.4 4C-model and laws



* I know, it is a joke on Murphy

3.5.4 4C-model and interventions



3.5.2 4 Improvement methods

- ERP (MRP-II) = Planning
  Inventory management through lead times
- JIT (Just In Time) = Execution
  Manage agreements for delivery reliability
- TOC (Theory of Constraints) = Scheduling
  Capacity management through bottle necks
- TQM (Total Quality) = People
  Process management for results

3.6 Learning Logistics learns:

Base performance indicators for improvements on logistical observables (in this order:)

- ☑ **Delivery reliability (CLIP)**
- ☑ **Inventory turns (TOR = T/I)**
- ☑ **Expenses and efficiency (E/I)**
- ☑ **Return On Investments (ROI = (T-E)/I)**
- ☑ **Innovation speed (T(new)/T)**

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4.1 Case

- High-tech electronics' product; engineer on order/sub-assemble on forecast; Throughput 200 - 300 million guilders a year
- Long lead times, high inventory levels, capacity problems, rapid innovation, high investments, IT-problems, motivation low

4.2 Interventions

after crisis control

- Re-implementation MRP-II system
- JIT for continuos improvement
- OPT (TOC) critical capacities
- TQM to increase yield

4.3 Facilitative intervention techniques

- Meetings brainstorming with cards
- Gaming
- Training and education
- Visits
- Modelling and experimenting proposed solutions
- Consulting “on the floor”

4.4 MRP-II or ERP

- Eliminate slack from ERP system
- Information orientation (browser) replaces transaction orientation (menu-driven)
- Non-standard solutions on basis of standard modules
- Daily scheduling via “sequencing” (see next slide) central

4.4.2 ERP: Sequencing

Planning:

- ✓ planner: sequences highest mix of order lines (!) for a day in order of expected release
- ✓ release order line as late as possible
- ✓ always reschedule not released order lines

Production:

- ✓ factory floor accepts actively
- ✓ process oldest released order line first
- ✓ 1 list, actualised with remarks

4.5 Just in Time

- Kanban size = 1: used in timing release of customer order line
- Order line as late as possible
- Priorities in execution: oldest released order line first (not on due date!)
- New production lay outs
- Delivery reliability: 95%, later 100%

4.6 Theory or Constraints

- "Mixed model"-production line (1 line replaced 4 parallel production lines)
- Everything produced on customer order only, including 20.000 different cables
- Release high mix of orders
- Priorities with problems: oldest released order line first
- Throughput/inventory increased (5 -10 times)

4.7 Total Quality Management

- Reduce expenses
- Reduce “sigma”: zero defects
- New skills, cross-training
- Teams: buyer, engineering, production, store room, planning
- Extensive training in co-operating, gaming
- Integrated quality function on factory floor

4.8 Results

- Accurate data, reliable system
- Delivery reliability 100%
- Inventory Turns: 0,8 2 5 10
- No bottle necks in production
- Mixed Model production lines
- Reduction of inventory, floor space, expenses
- Cross trained people

4.9 Continuous improvement

- Learning Logistics
- Cross training, quality integrated
- Production shifted to other factories by work force
- Mentality to deliver service
- Shift production to low wage countries by factory people
- Rapid innovations, short time to market
- Searching for new markets

4.10 In the end ...

- ⇩ Inventory costs no longer part of factory cost price
- ⇧ m2 - prices higher
- ⇩ Change over costs out of cost price
- ⇩ No reduction quoted lead times
- ⇩ No new markets
- ⇩ Reorganisation
- ⇩ First factory to be closed down

4.12 Conclusions

- Use ERP, TQM, JIT and TOC for logistical improvement
- Do not use longer lead times, more capacity, more people or less quality to solve problems.
- 100% delivery reliability, then lower stocks, less expenses and finally the bottle neck: higher throughput.
- Paradox: success will bring problems

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5.1 Provisions for improvements

"Nobody will talk about Christmas with the turkey"

ipse dicit

5.2 Asbhy's law

- *Law of the requisite variety*
- *"The law of Requisite Variety says that R's capacity as a regulator cannot exceed R's capacity as a channel of communication.".*

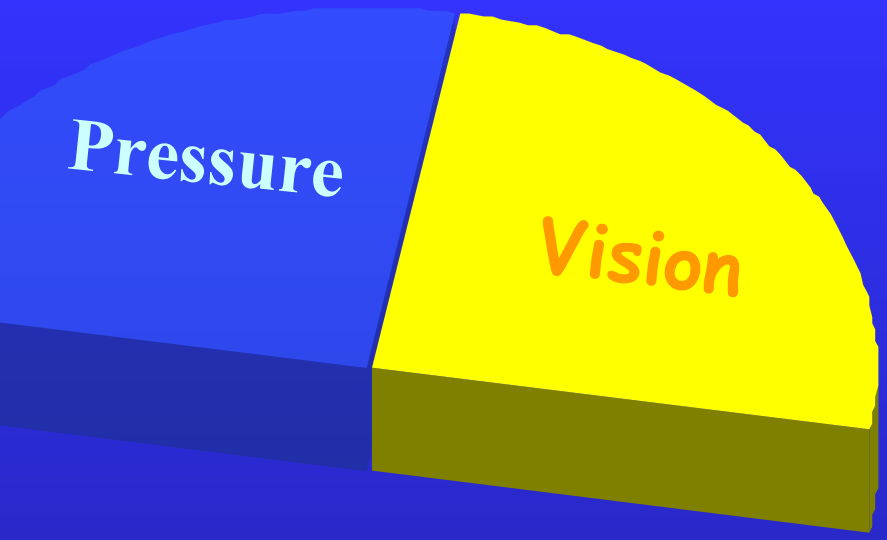
W. Ross Ashby, An Introduction to Cybernetics, Chapman & Hall, London, 1956. Internet (1999): http://pcp.vub.ac.be/books/IntroCyb.pdf

5.3 4 *Requisites* for improvement

Pressure

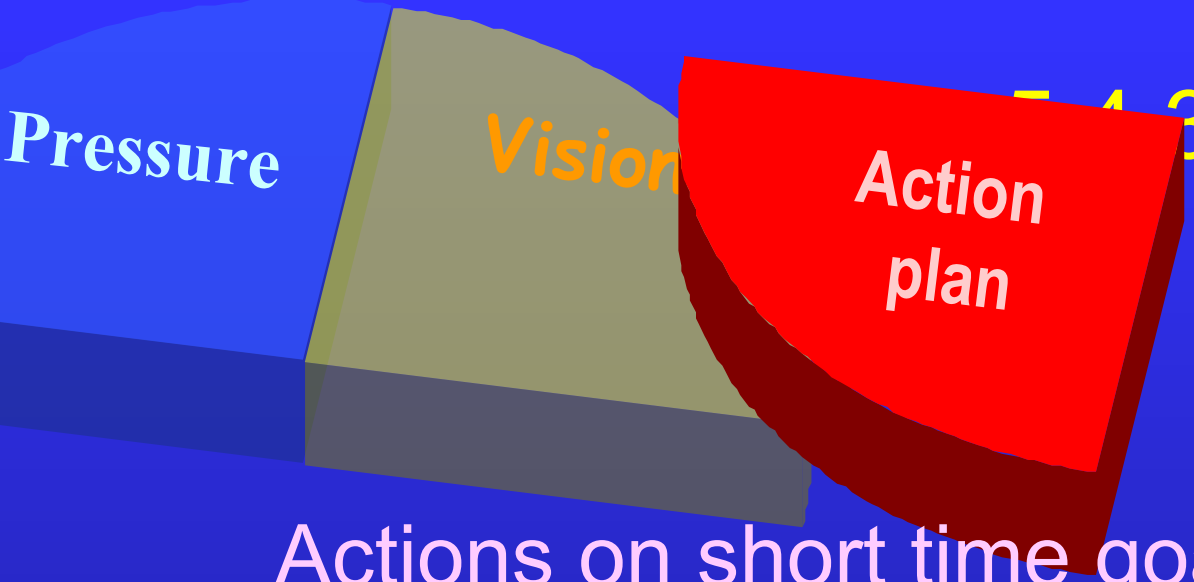
5.4.1 What must ..?

- Results lacking or stay behind
- More of the same doesn't work
- The boss wants it
- Faster information exchange
- Pressure from colleagues, suppliers, customers
- ERP provides pressure



5.4.2 Why will ….?

Orientation on future
New ideas, possibilities
Vision creates images of future
Looking ahead
New systems available
TOC provides vision



5.1.3 How can …?

- Actions on short time goals, improvements and successes
- Action programs for implementation
- Doing things
- Management and control of results
- Technical infrastructure
- Just In Time provides actions

5.4.4 Who may..?

- Accepting changes, taking care
- Intentions
- Involvement of participants
- Empathy for the effects of improvements on others
- Quality improvement provides care

5.4.5 If unprovided for ...

Summary

Four different expressions of self ==> four different approaches to improvement

Reflected in ERP, TOC, JIT and TQM

Four different measurable goals

Providing for effective, intentional improvements requires attention to these four:

Care, vision, pressure and action.