Flow Thinking

The Principles behind the Practices of Kanban, Lean Software Development, LeanUX and Lean Startup

PRAXIS*flow*

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Please ask questions via the mobile app!

Engage

PRAXIS*flow*

APPROVED KANBAN TRAINER BY DAVID J. ANDERSON

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Carnegie Mellon Design

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What are the differences between the Agility demonstrated in these images?

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The most important, and indeed the truly unique, contribution of management in the 20th century was the fifty-fold increase in the productivity of the manual worker in manufacturing.

The most important contribution management needs to make in the 21st century is similarly to increase the production of knowledge work and knowledge workers.

ADAM SMITH, L.L.D.

Edinburgh, Published by Adam Black & William Tait.

AN

INQUIRY

INTO THE

NATURE AND CAUSES

OF THE

WEALTH OF NATIONS.

By ADAM SMITH, LL. D.

WITH A LIFE OF THE AUTHOR,
AN INTRODUCTORY DISCOURSE, NOTES, AND
SUPPLEMENTAL DISSERTATIONS.

By J. R. M^cCULLOCH, Esq.
PROFESSOR OF POLITICAL ECONOMY IN THE UNIVERSITY OF LONDON.

IN FOUR VOLUMES.
VOL. I.

EDINBURGH:
PRINTED FOR ADAM BLACK, AND WILLIAM TAIT;
AND LONGMAN, REES, ORME, BROWN, AND GREEN,
LONDON.

M.DCCC.XXVIII.

The Division of Labour

To take and example the
trade of the pin-maker

One man draws out the wire,
another straights it, a third cuts it

I have seen a small manufactory... make...
forty-eight thousand pins in a day...

One man draws out the wire,
another straights it, a third cuts it

DRAW OUT WIRE → STRAIGHT → CUT → POINT → GRIND

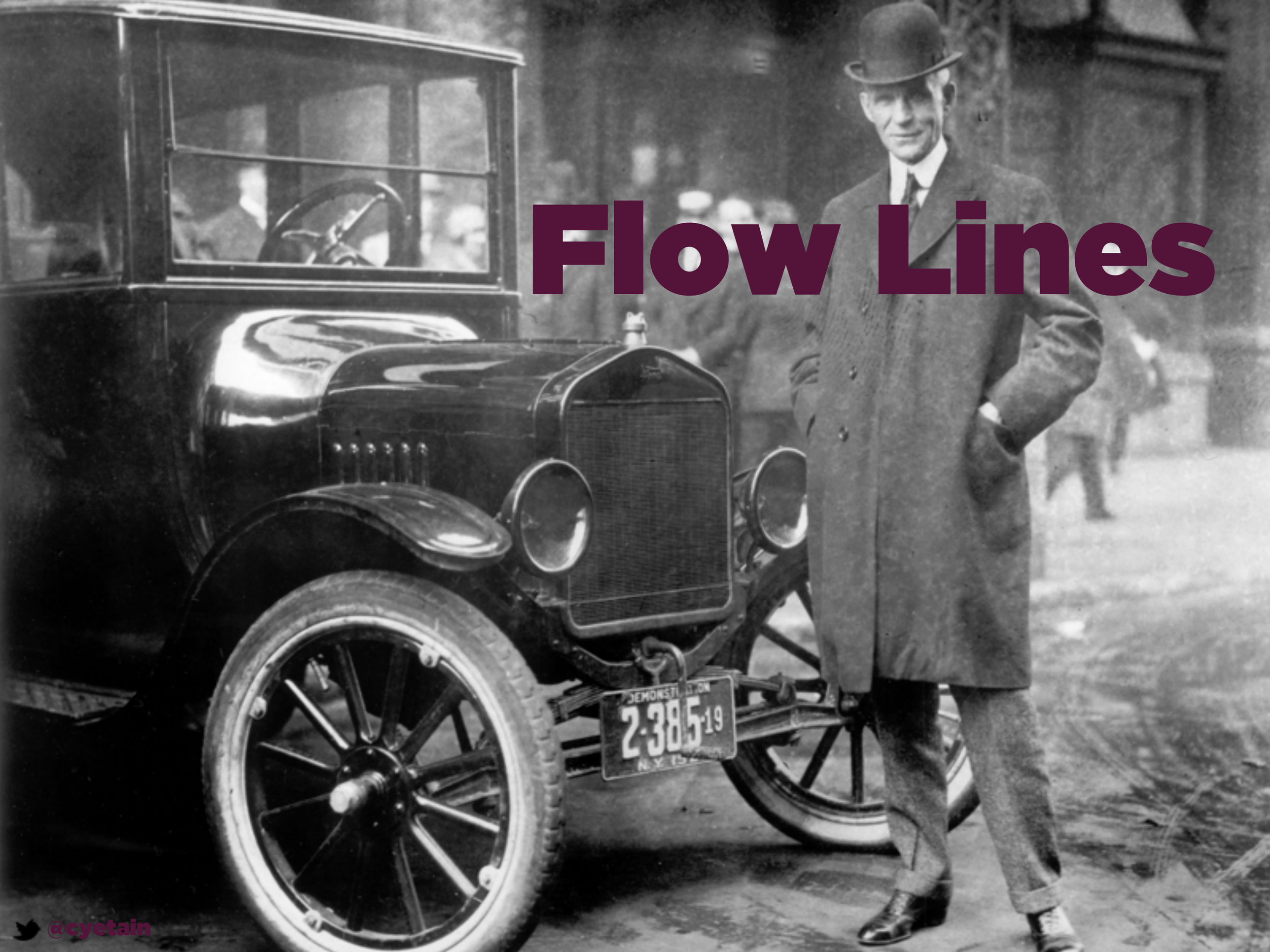
a fourth points it, a fifth grinds it
at the top for receiving the head

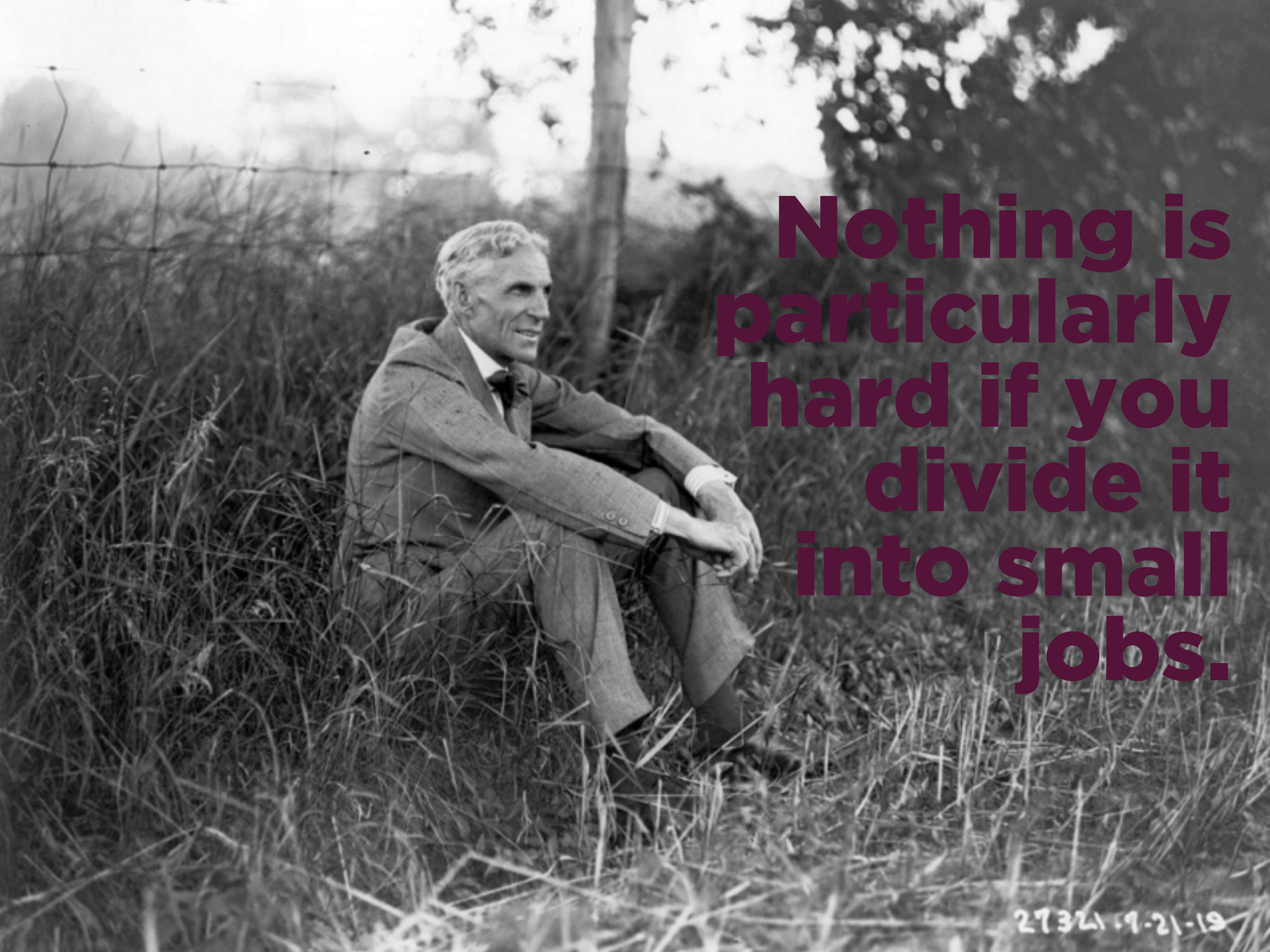

Gantt

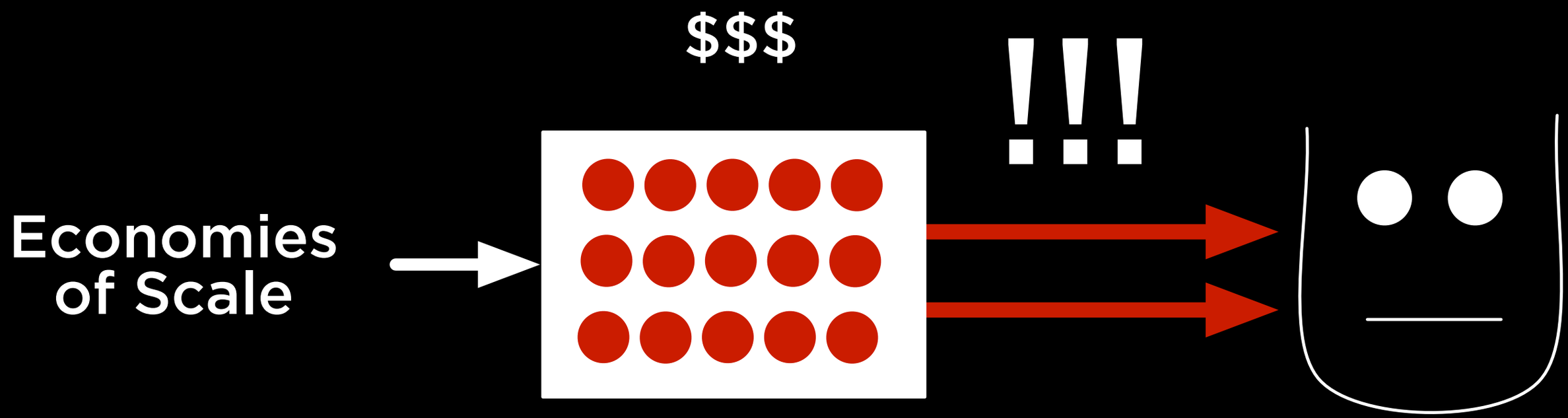

Taylor


Gilbreth

Flow Lines




Nothing is particularly hard if you divide it into small jobs.
27324 9-21-19



PUSH

All we are doing is looking at the timeline

from the moment the customer gives us an order

Order

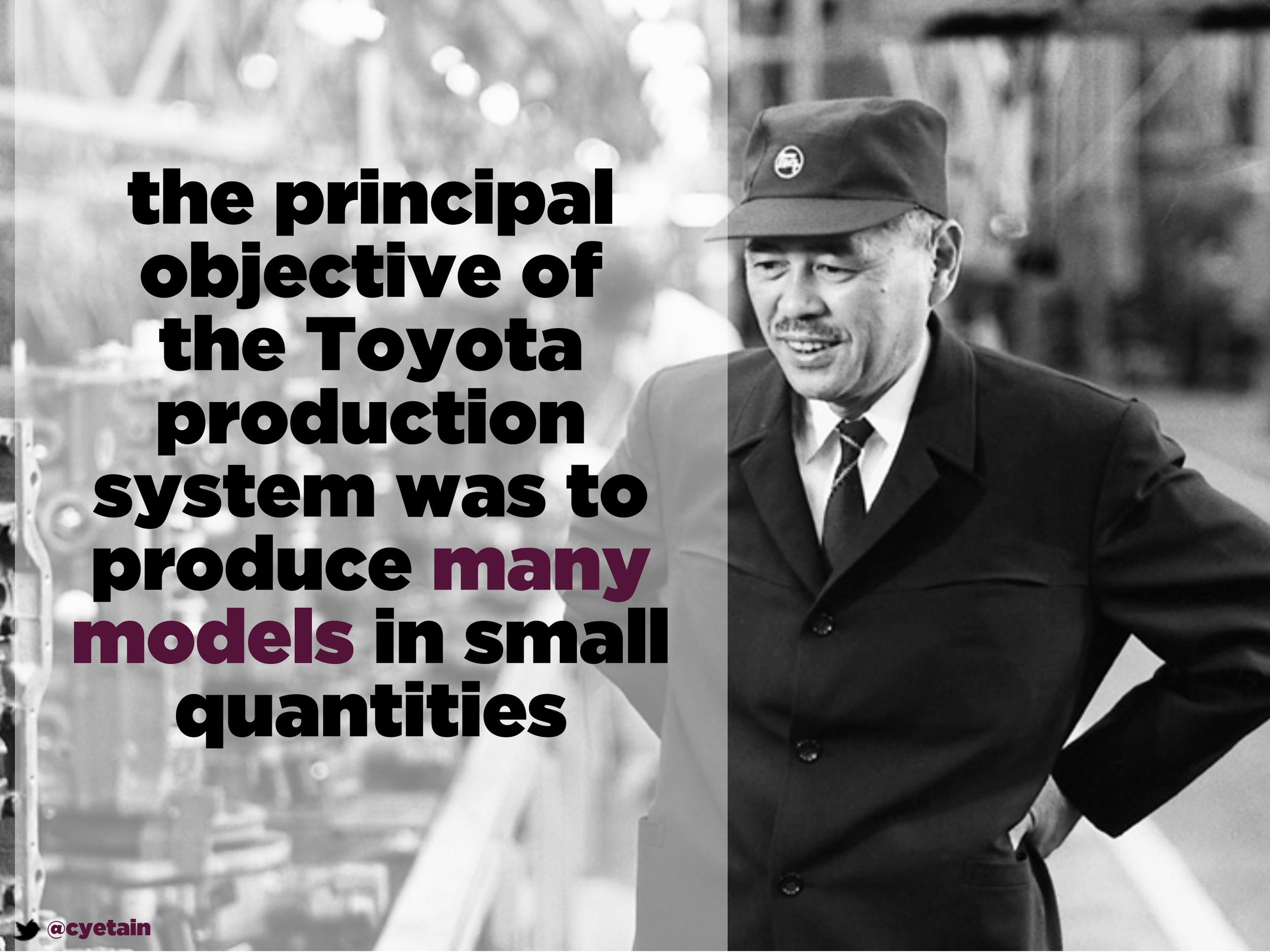
Cash

Time Line

(reduce by removing non-value-added wastes)

to the point we collect the cash

and we are reducing that time line by removing the non-value-added wastes



the principal objective of the Toyota production system was to produce many models in small quantities

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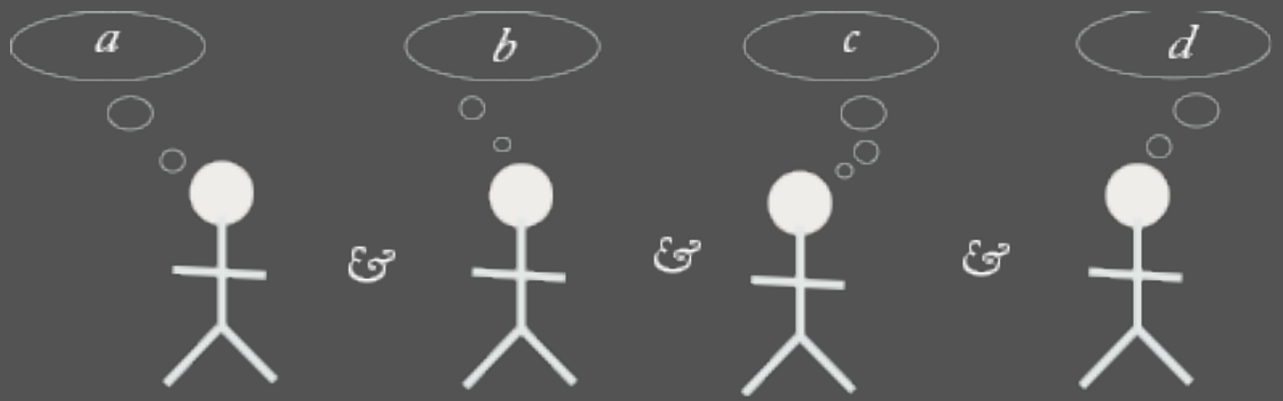
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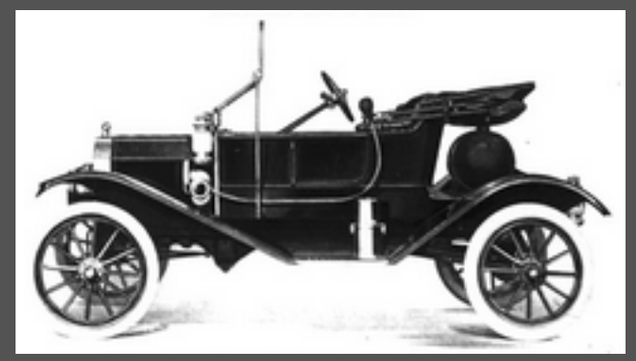

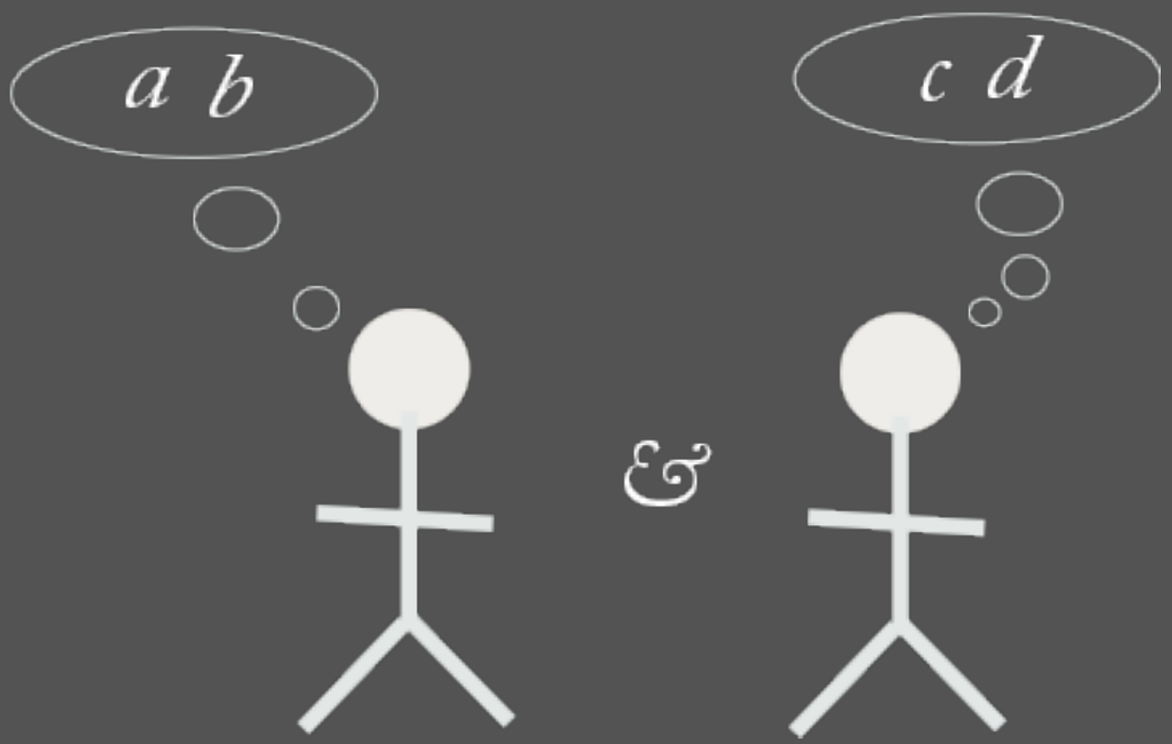
a b
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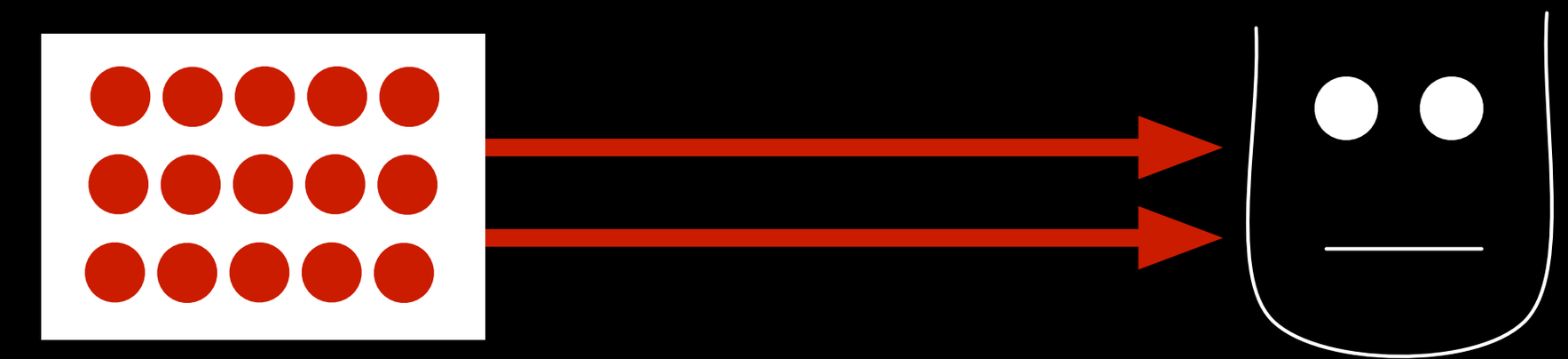
PUSH



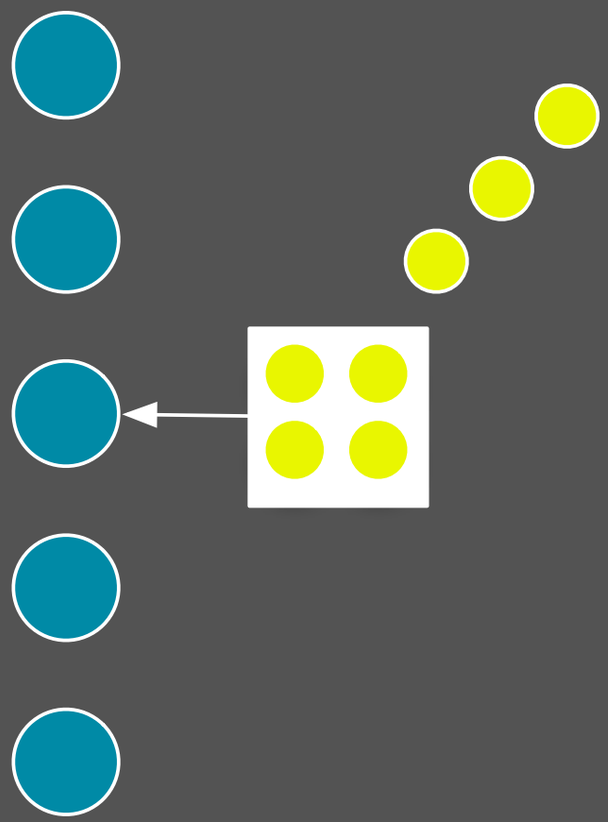
PULL

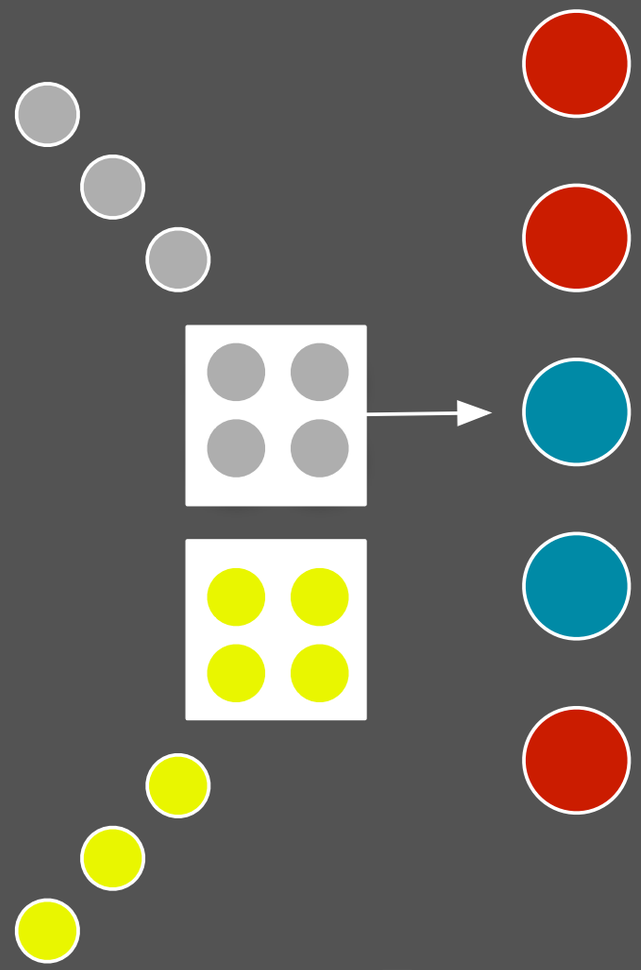
Smith

Division of Labor

Ford

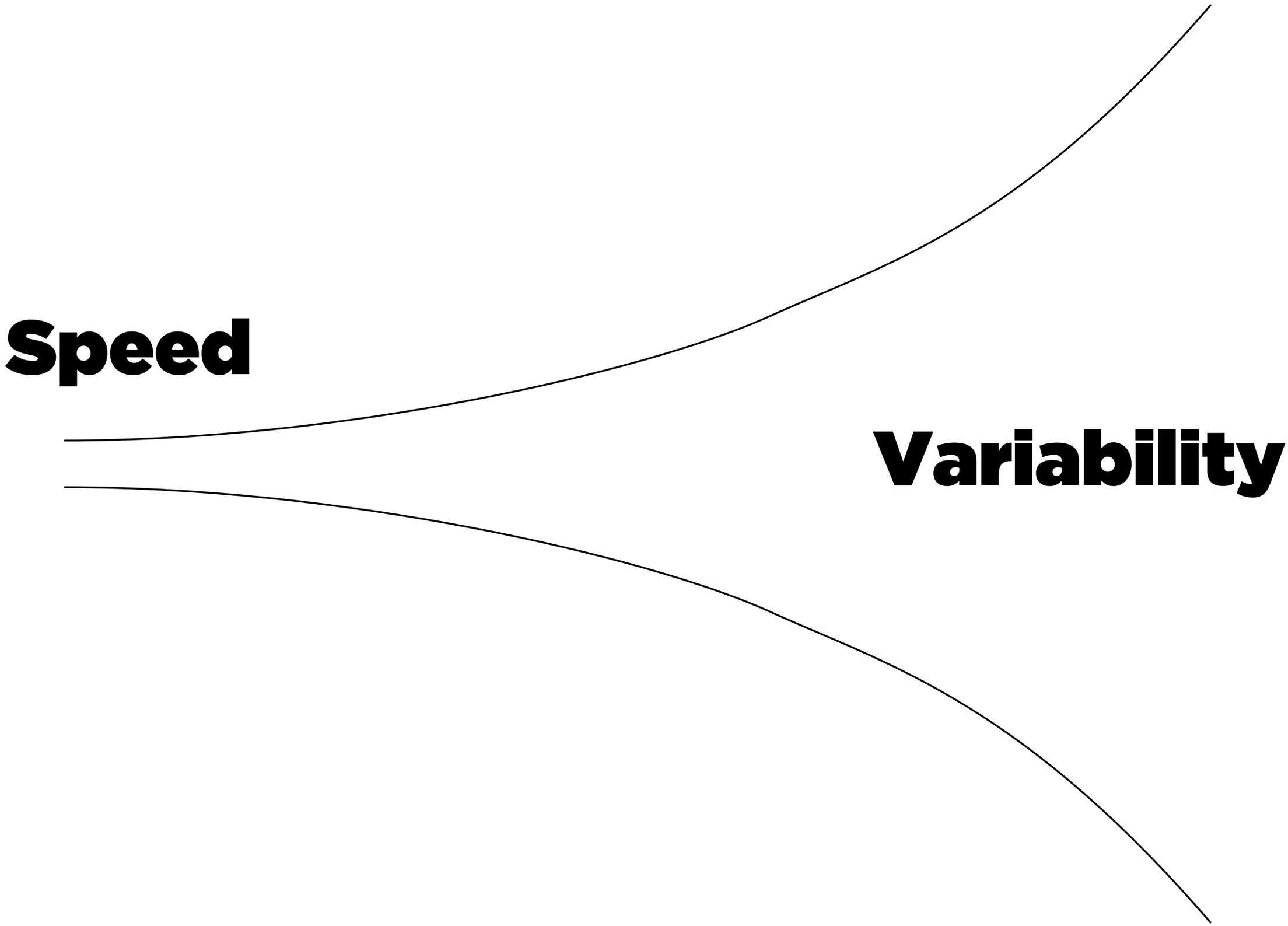
Flow Lines





Ohno

Toyota Production System


Speed
Variability

Experts

Generalist

Well Defined Output

Ambiguous Output

FLOW

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Flow Efficiency

How long does it take to deliver a piece of work?

How long did we actually spend working on it?

Typical organizations take *10* to *20* times longer to deliver something than they actually spent working on it

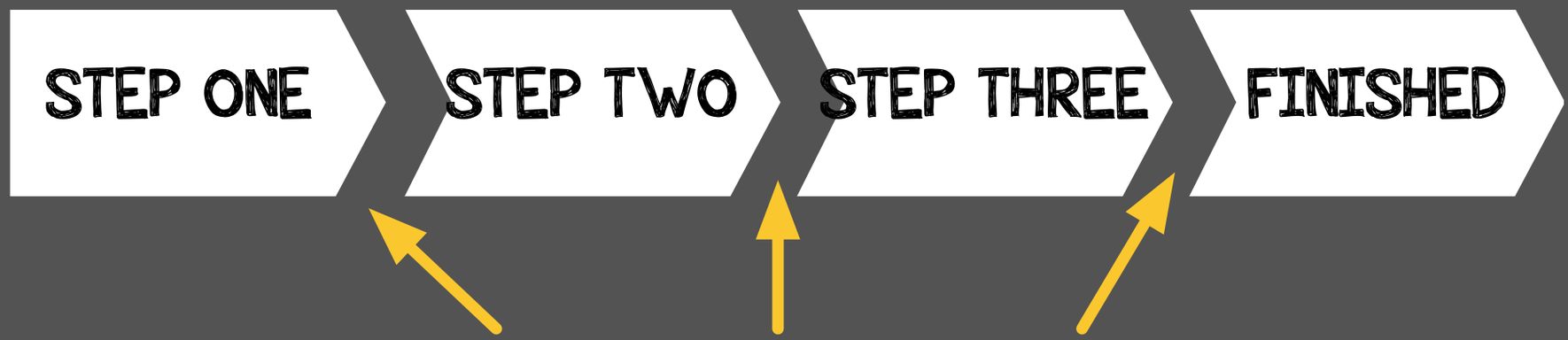
Hakan Forss

Resource Efficiency

Process Efficiency

between 5-15% of Cycle Time

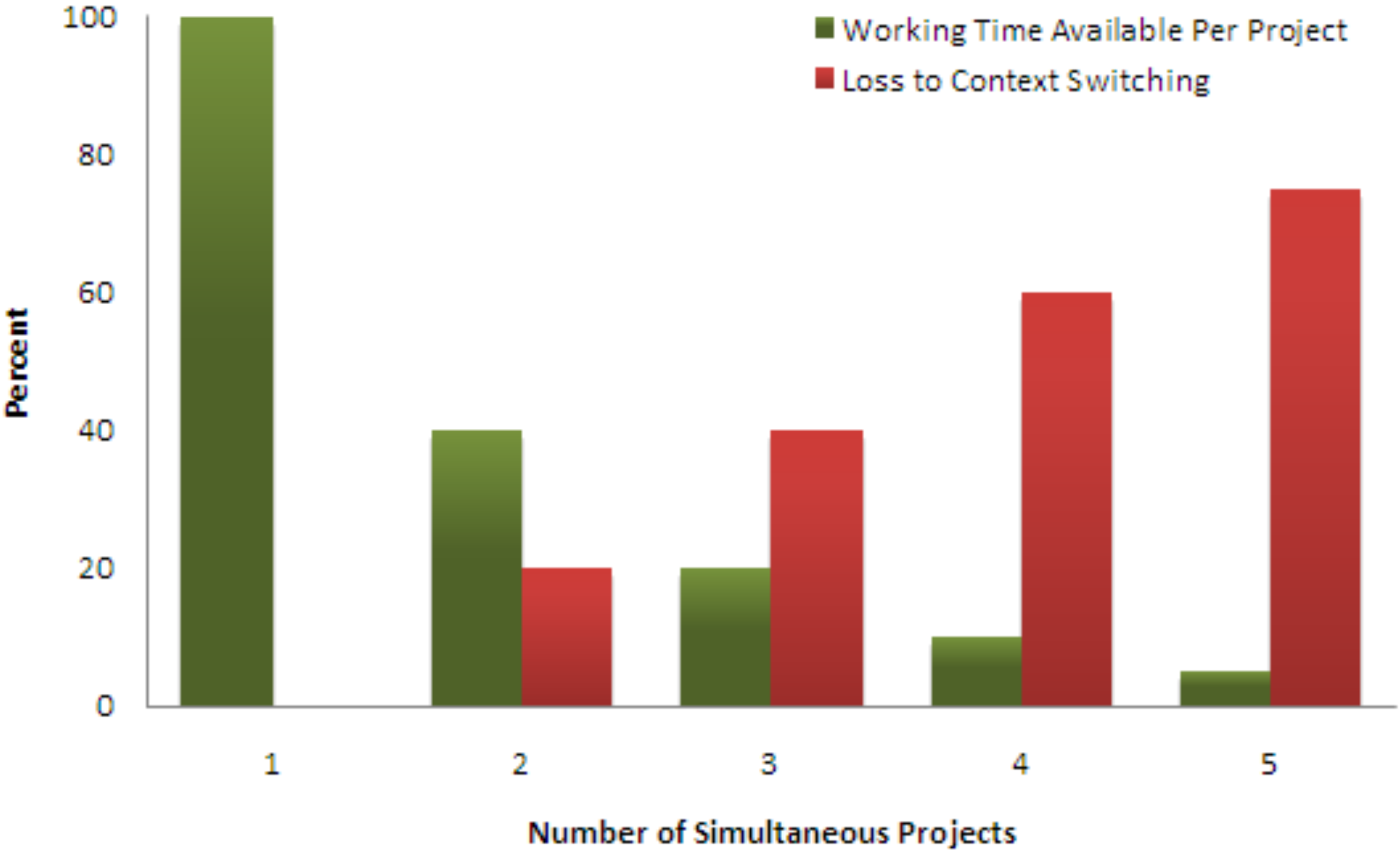
Flow Efficiency

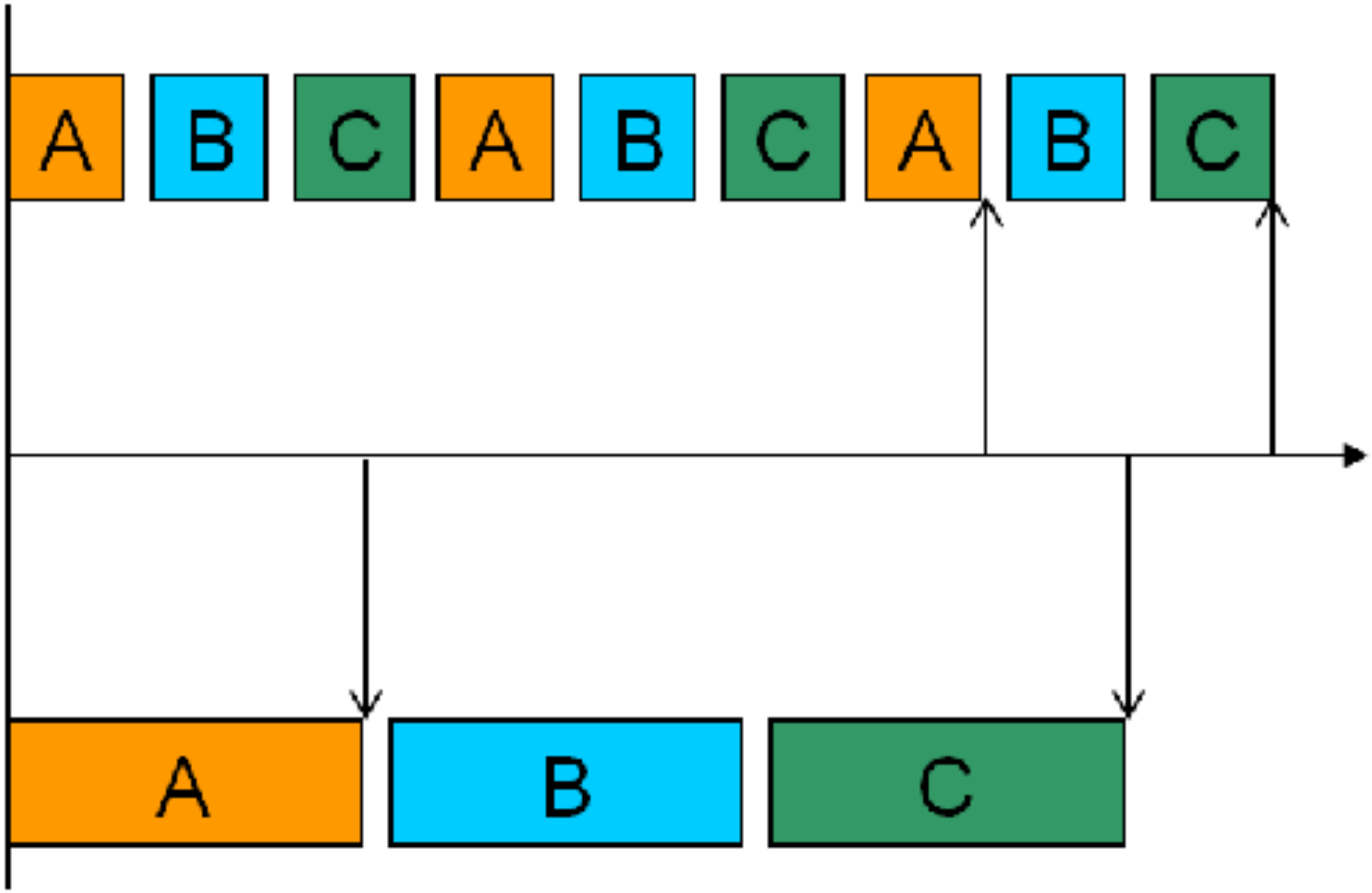


between 85-95% of Cycle Time

WHY?

Resource Efficiency


Working Time Available Per Project
Loss to Context Switching
Percent
100
80
60
40
20
0
1
2
3
4
5
Number of Simultaneous Projects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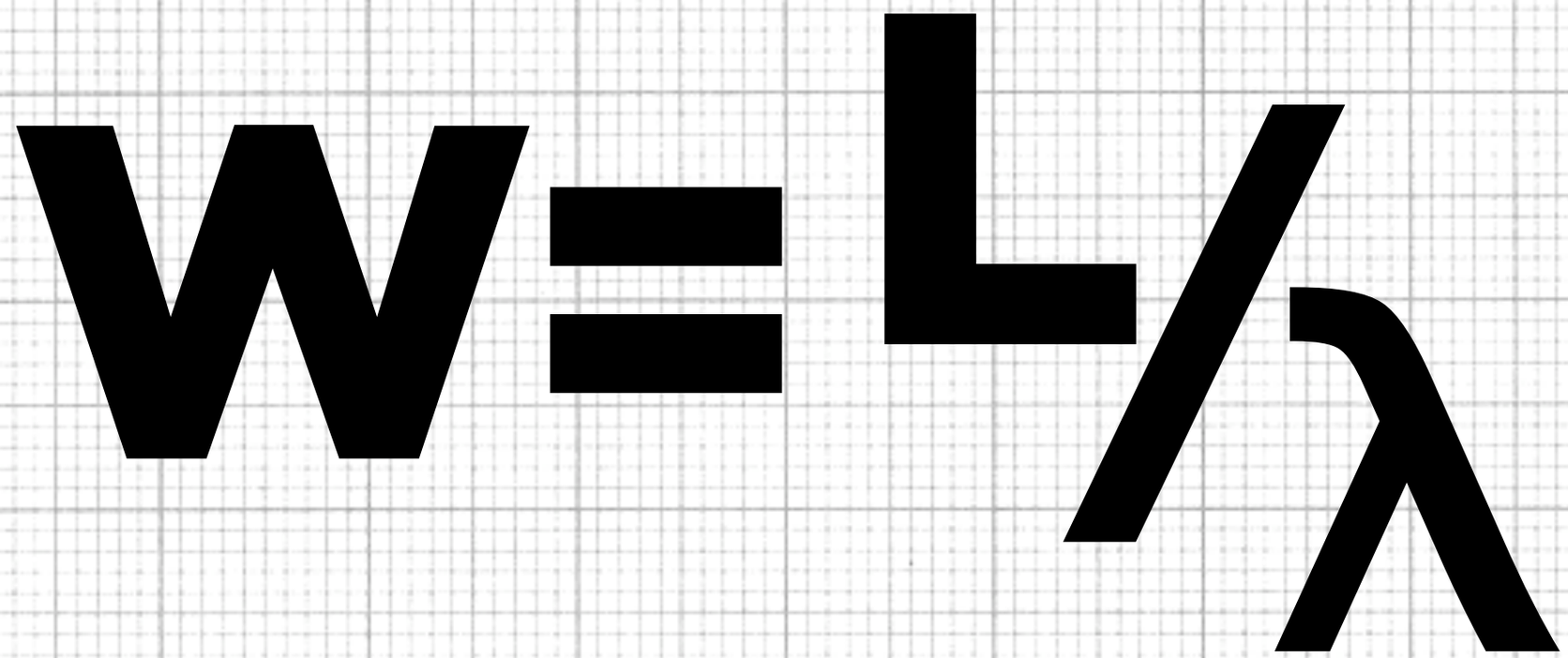
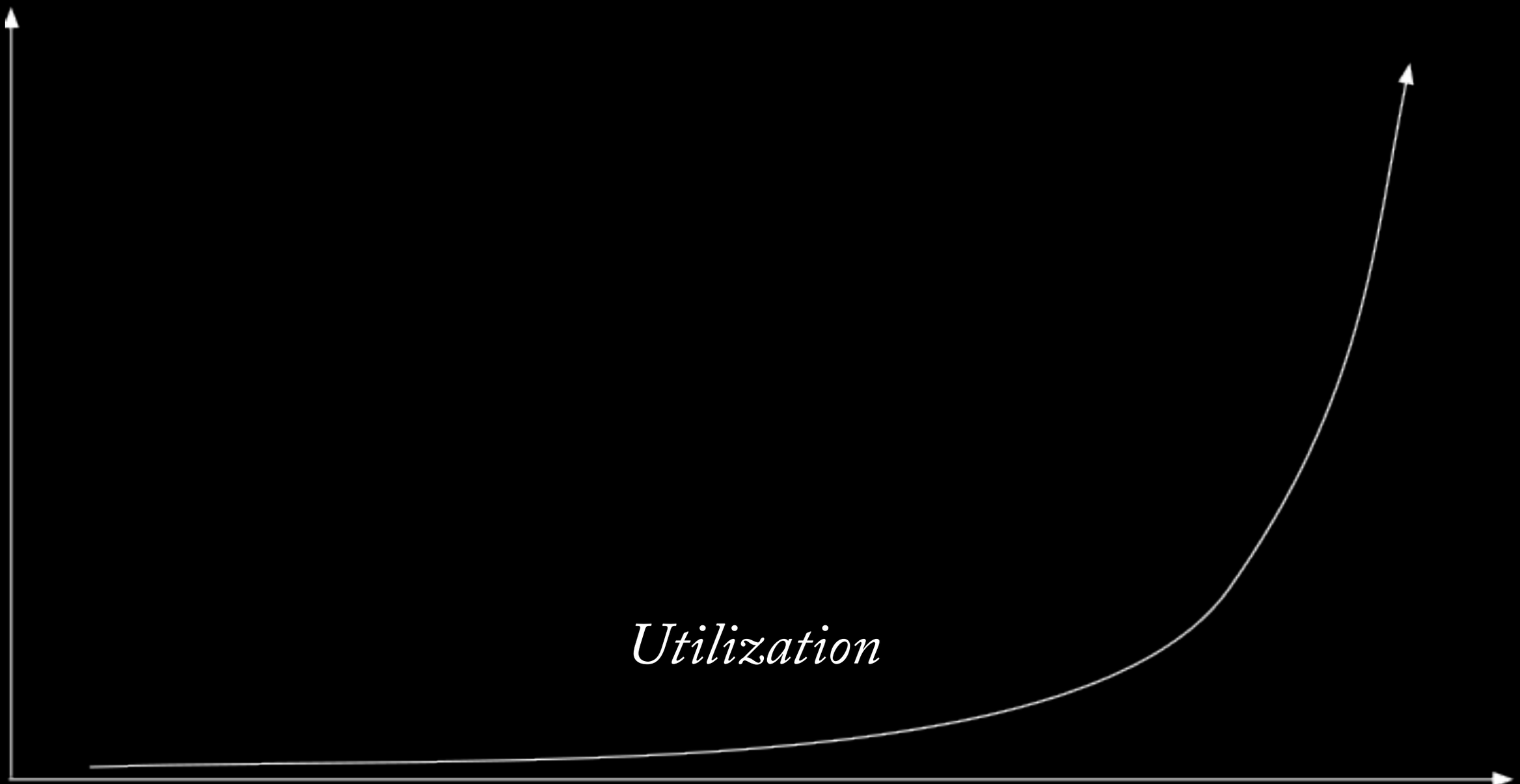


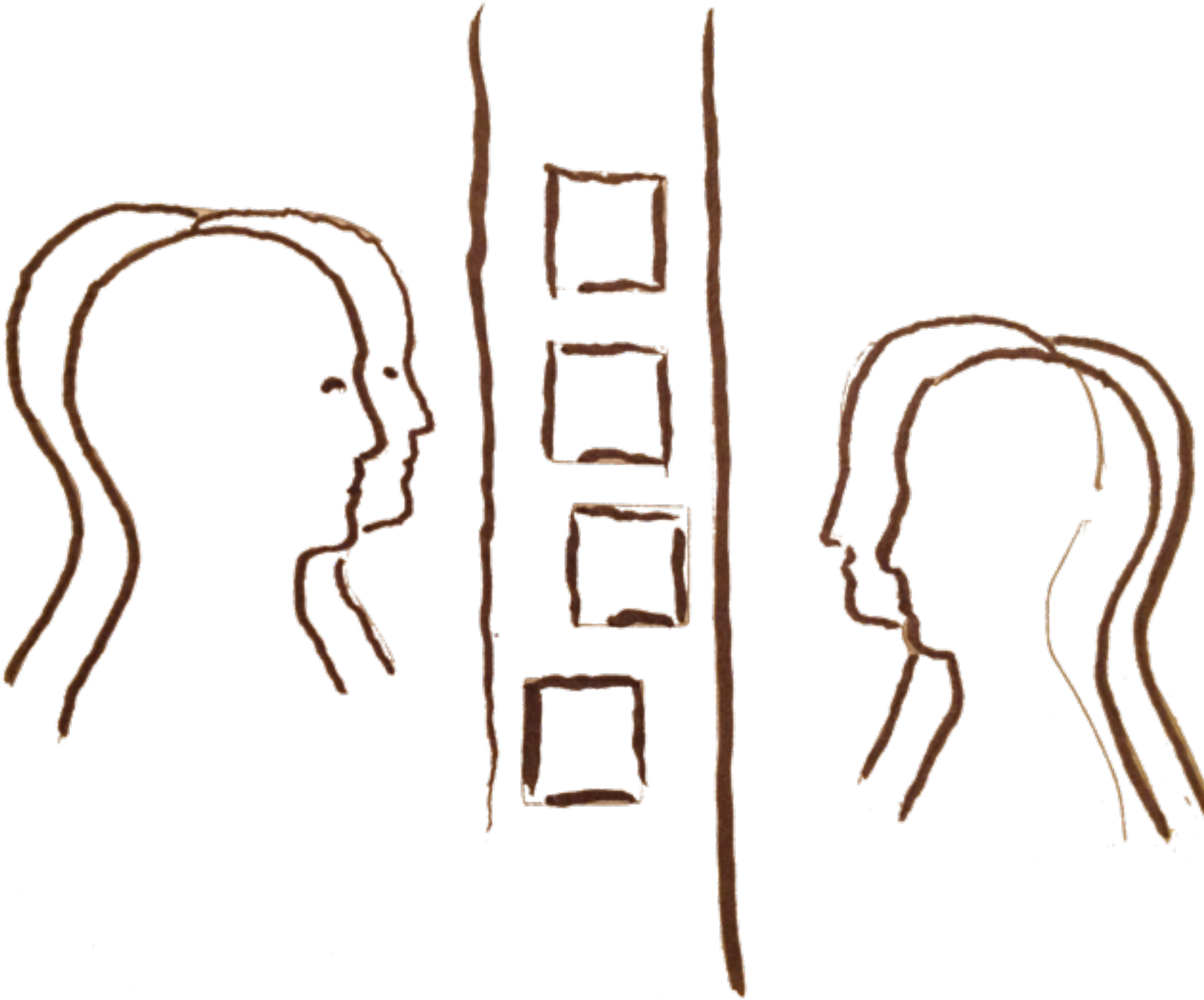
Time it takes to finish a job is equal to the average number of jobs in the system divided by the processing rate

The Effect of Utilization

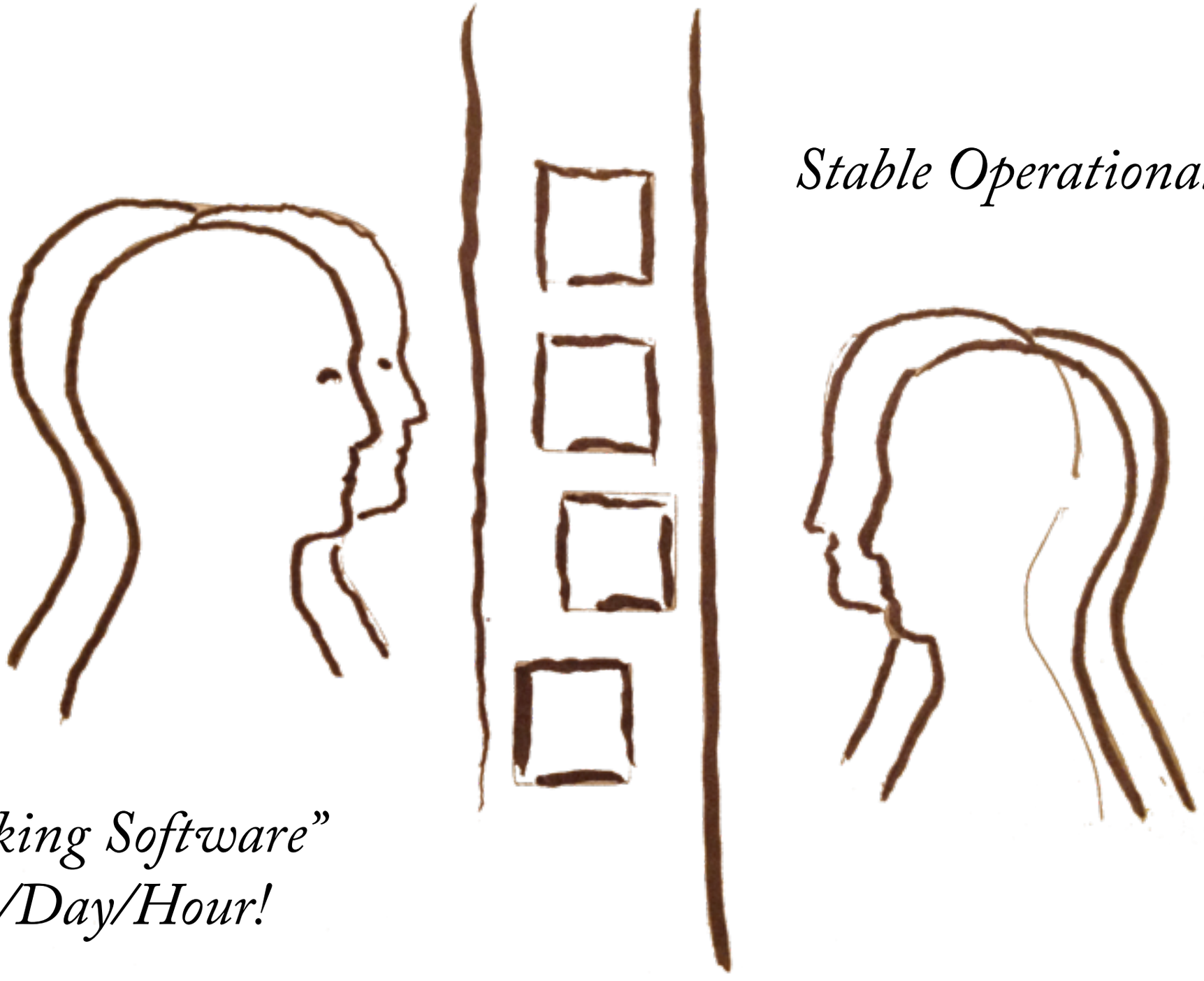



JNA TOURIST
DL 2C AD 2729

Approach Avoidance



Stable Operational State



NEW "Working Software"
Every Week/Day/Hour!

POLICY WALL

Errors Cause Cycle Time to Lengthen

Critically... certain errors happen more frequently when tasks have long cycle times (repeat)

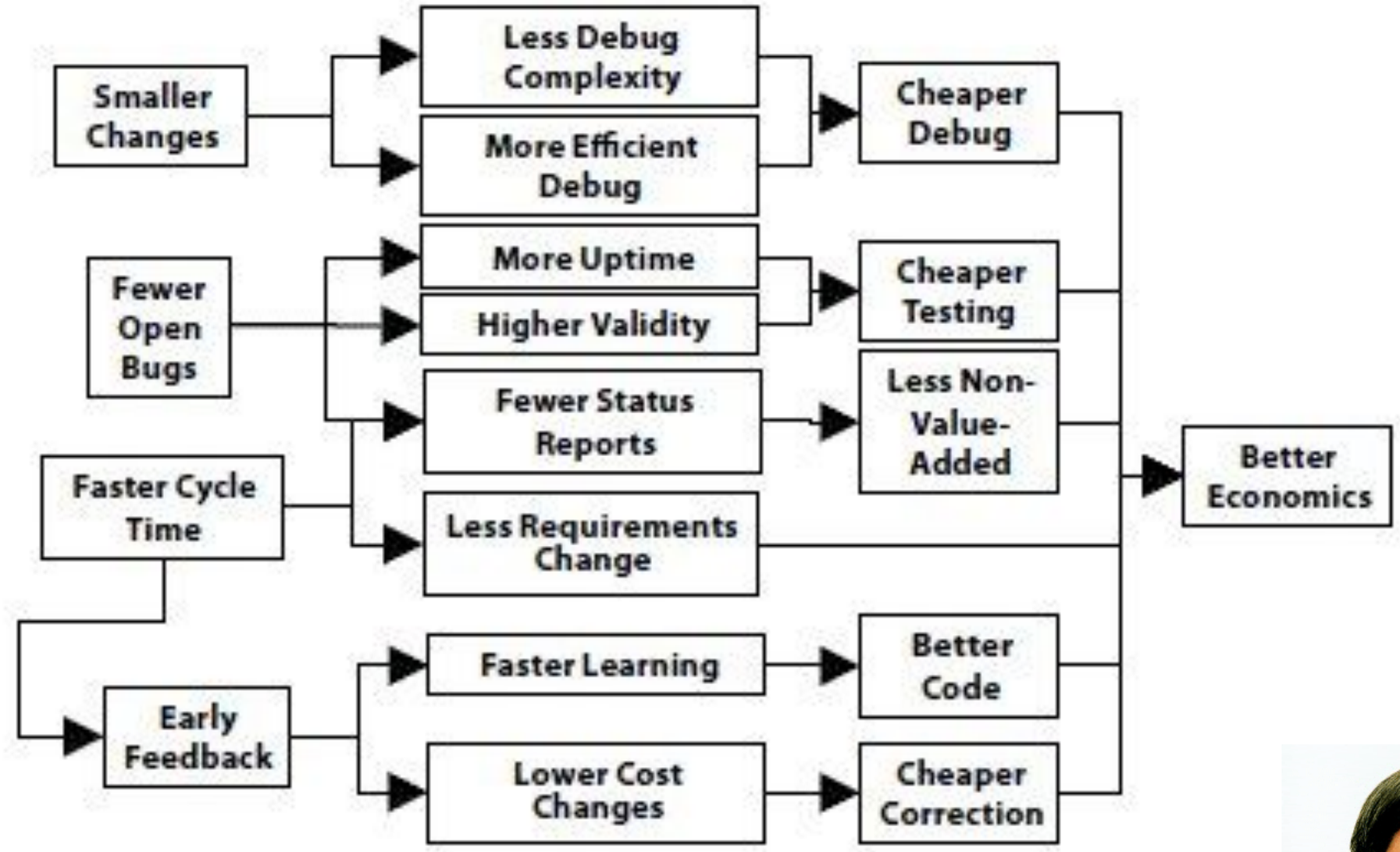


Figure 5-3 Smaller batch sizes produce a wide range of benefits. The impact on overall economics is surprisingly large.

Don Reinertsen

The Principles of Product Development Flow: Second Generation Lean Product Development

The Lean Tipping Point

What Should We Expect To See?

AUTONOMATION

Understanding

Increments vs Iterations

WHOLE SOLUTIONS

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Understanding Risk as "Not Enough Information" instead of "Not Enough Time/Money"

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Focus on Reduction of Cycle Time as a Method for Mitigating Risk

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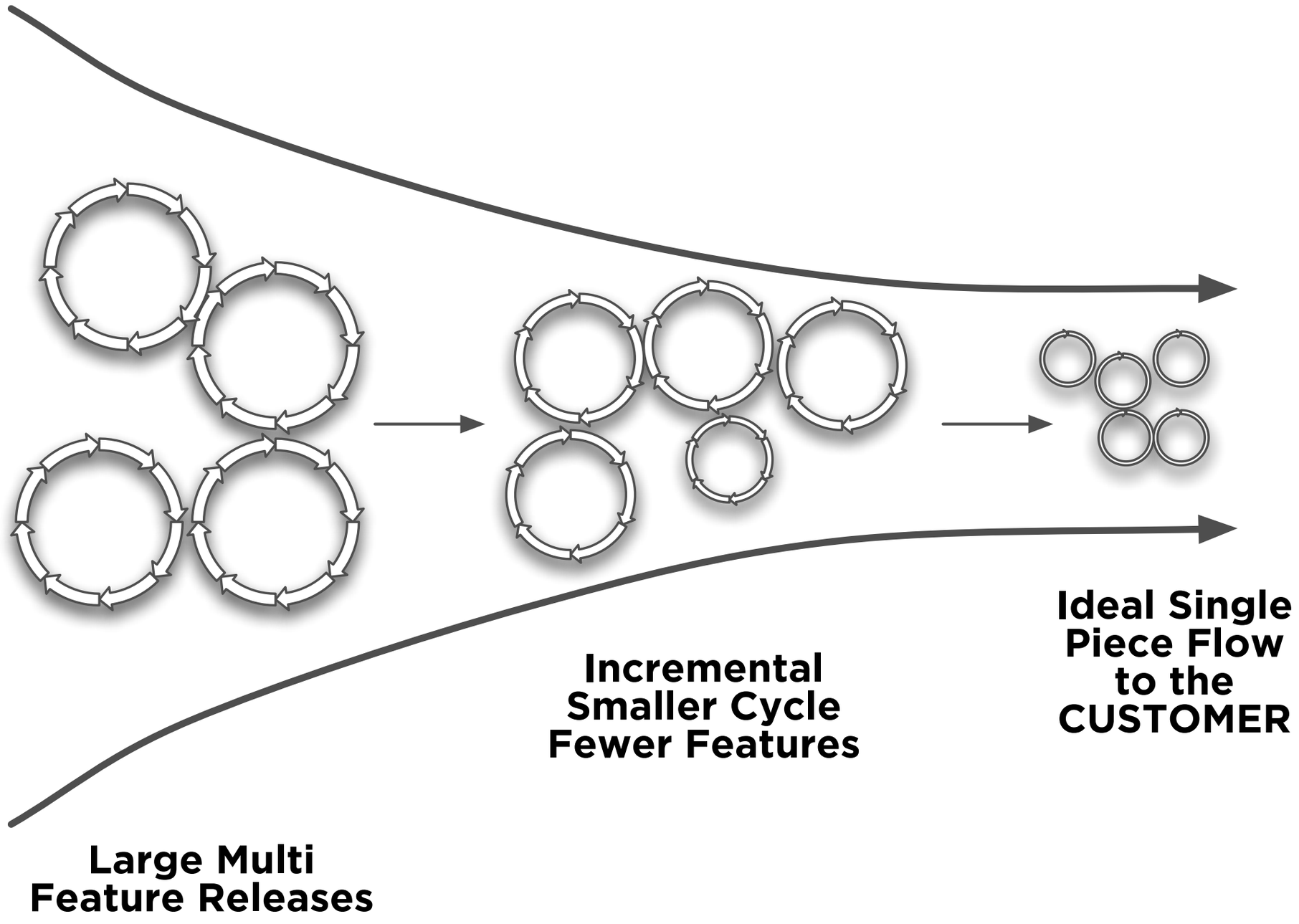

Ideal Single
Piece Flow
to the
CUSTOMER
Incremental
Smaller Cycle
Fewer Features
Large Multi
Feature Releases

Engagement in Problems thru Safe to Fail Experiments

Distributed and Diverse Experimentation Directly with Customers

Managers (must) adapt to the ambiguity of flatter organizations in which bureaucratic chains of command were replaced by networks of negotiated influence.

–Ronald Burt

Manifesto for Agile Software Development

We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on
the right, we value the items on the left more.

Kent Beck
Mike Beedle
Arie van Bennekum
Alistair Cockburn
Ward Cunningham
Martin Fowler
James Grenning
Jim Highsmith
Andrew Hunt
Ron Jeffries
Jon Kern
Brian Marick
Robert C. Martin
Steve Mellor
Ken Schwaber
Jeff Sutherland
Dave Thomas

Suggestions for more Humane Work

We are working together to explore ways of creating value with customers while leaving the world a bit better than the way we found it.

Through these explorations we have come to value:

Asking how is *Process* effecting *Outcome*?

Understanding Why

Working with others

Being in control of our work

Understanding the Nature of our Work

Through these explorations we have come to value:

Understanding Why

Narrative of my Work

What is the Problem?

What is the CONTEXT?

Distributed Decisions

Through these explorations we have come to value:

Working with others

Understanding the work of others

Understanding where our work comes from and goes to

Through these explorations we have come to value:

Being in control of our work

The Size of the work is a DESIGN Decision

The amount of work in the system is a DESIGN Decision

Knowledge ROTS… Just-in-Time planning

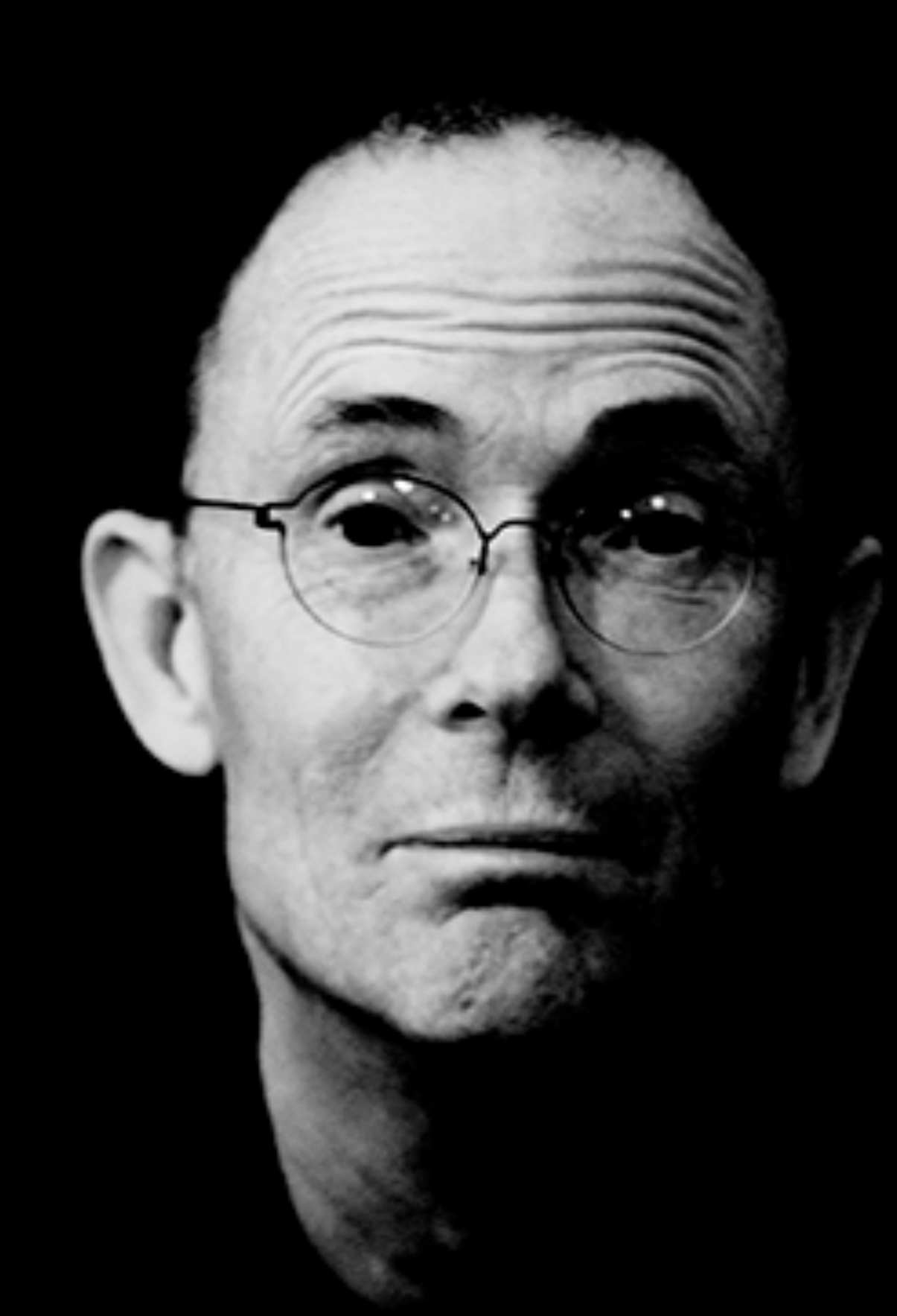
Humans in control means the Software isn't… Reduce Technical Debt

Through these explorations we have come to value:

Understanding the Nature of our Work

Understand the Problem… Understand the Problem… Understand the Problem…

Being Less Dogmatic
Designing Work and Processes for our Context
The work is MORE THAN the Artifacts



The future is already here — it's just not very evenly distributed.

–William Gibson

YOU LIVE IN THE FUTURE

There are moral and ethical consequences of instantiating these futures in the wider world.

Leave the world a bit better than the way you found it.

Thanks.

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