

LeSS

More with LeSS

**past
keynote
reflections**

**AI & HR
update**

**Myths of
Software
Mgmt**

2016

own vs rent

2017

interesting
techniques
related to
descaling

2018

cognitive biases in org systems

2019

Elinor Ostrom's
Core Design Principles
when there is a
“commons”

2020

coming impact of OpenAI
GPT (then 3.0) on **single-
specialist routine knowledge,**
org design, & OTOH the
value-add of humans
learning & adapting each day

2021

“research conclusions”
in almost all of
Management are no
better than *astrology*...
no large-N RCTs!!!

2022

Co-location: Psychologically, humans have to *connect* with other humans to create trust. That rarely happens remotely. **Beware psychologically-naïve work advice!**

We will need “*immersive co-location over dis-location*” ... probably from AR tech by 2035

2023

“AI & HR”: after 2020 talk,
again on coming impact of AI
on single-specialist *routine*
knowledge, org design, &
OTOH the value-add of
humans learning & adapting
each day

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Mgmt**

AI, HR & Organizational Design

AI: a passion since late 1970s

paid full-time AI developer starting 1986

*graduate CS thesis:
2nd-generation AI machine
learning from a 1st-generation AI ...*

Learning From Knowledge Systems

by

Craig Larman

not predictions for this year

years: 2027+

a 10+ year ride of
EXPLOSIVE growth
in AI capabilities



why highlighting

AI & org design? ...

Automation ***Supplanting*** Humans

1. routine *math* (1940s)
2. routine *movement/CNC* (1940s)
3. routine *info workflows* (1950s)
4. **routine expertise** (2020s)
 - >with powerful ***task-specific*** AIs

Routine (Single-Specialist) **Expertise**

- > product managers
- > business analysts
- > artists
- > UI/UX designers
- > data scientists
- > testers
- > coders (front end, back end, ...)
- > DB designers
- > architects

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**routine
expertise**

*has/will be
automated
by AIs*

Routine Task	Traditional Human	GLAD dev	GLAD-Trad Ratio	rounded
complex art graphic	2 pd	5 seconds	1:11520	10,000
video	10 pd	2 minutes	1:2400	2,000
design & code website	50 pd	1 minute	1:24000	20,000
0->100% coverage	100 pd	1 pd	1:100	100
mobile app	100 pd	18 minutes	1:2666	3,000

the story of Gojko Adjic
& AI leveraging

MAIN point

- > with AI tools **100x-20,000x** less effort or time, in “2027” (not today)
 - not a mere “20%” (1.2x)
- > with less errors
- > with novices or ‘general’ devs
- > with very low learning effort
- > -> **MULTI-LEARNING DEVELOPERS**

*concept/product market fit
of LeSS org design*

+

impact of AI in product dev

**ie, a *LeSS* market opportunity to
improve the world of work**

**past
keynote
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update**

**Myths of
Software
Mgmt**

Myths of Software Management: Conway's Law

Education Comment

how to clear fog on
many management or
'agile' ideas?

read the ORIGINAL

Education Comment

common naive way to teach:

- (1) explain **misunderstanding**
- (2) explain **clarification**

VS

ed-psych based way

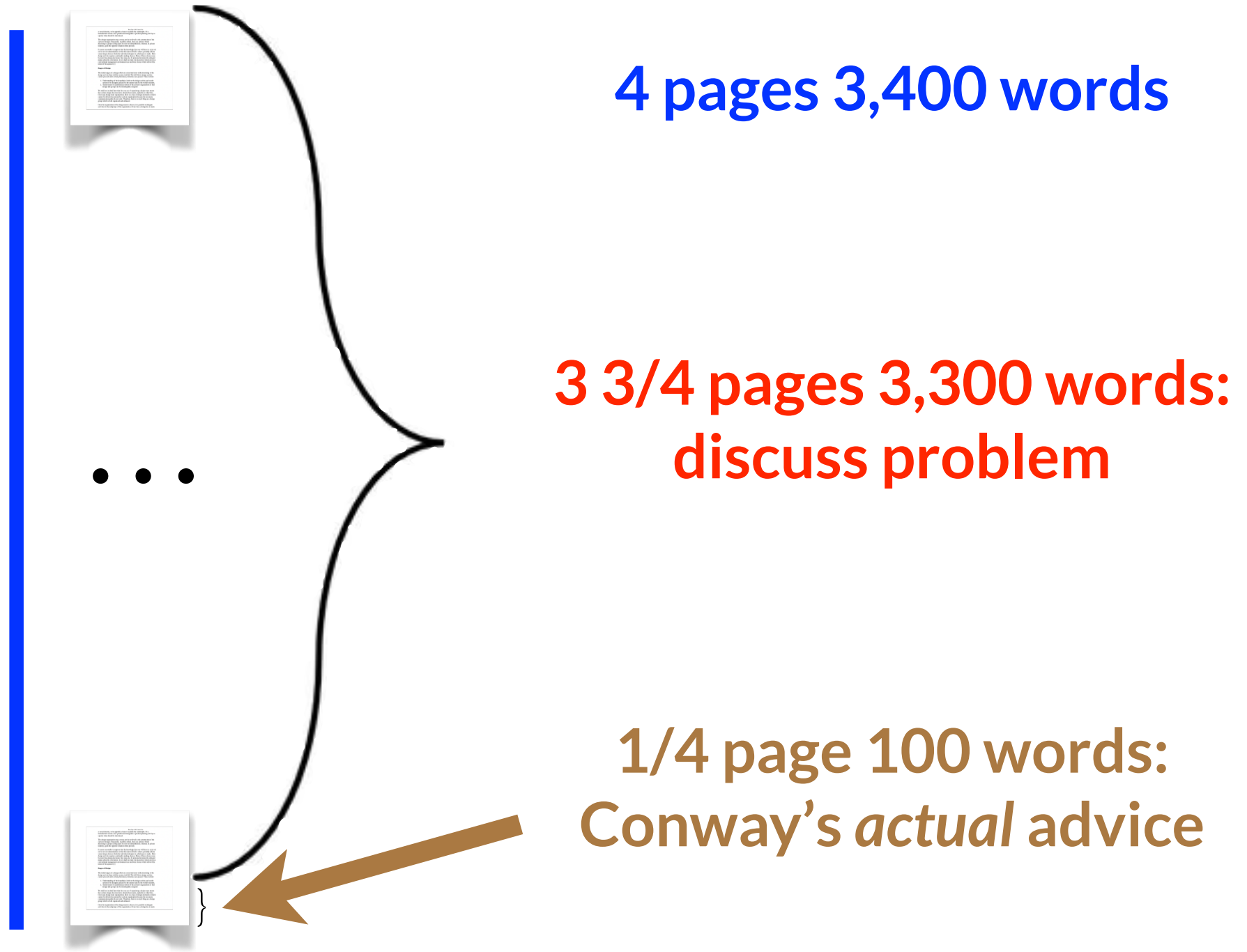
Conway's Law

Conway's Law

relevant to *large-scale
org design*, since...

very influential on
org structure

Misunderstanding Conway's Law



Conway's Advice: *Correct Understanding*

Conclusion

The basic thesis of this article is that organizations which design systems (in the broad sense used here) are constrained to produce designs which are copies of the communication structures of these organizations. We have seen that this fact has important implications for the management of system design. **Primarily, we have found a criterion for the structuring of design organizations: a design effort should be organized according to the need for communication.**

This criterion creates problems because the need to communicate at any time depends on the system concept in effect at that time. **Because the design which occurs first is almost never the best possible, the prevailing system concept may need to change. Therefore, flexibility of organization is important to effective design.**

Ways must be found to reward design managers for keeping their organizations lean and flexible. There is need for a philosophy of system design management which is not based on the assumption that adding manpower simply adds to productivity. The development of such a philosophy promises to unearth basic questions about value of resources and techniques of communication which will need to be answered before our system-building technology can proceed with confidence.

1. Conway's Advice: Correct Understanding

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“Primarily, we have found a criterion for the structuring of design organizations: a design effort should be organized according to the need for communication.”

Q: What is the “need for communication” IF the system-optimizing goal is either customer-centric (1) adaptiveness, or (2) ‘value’, or (3) ‘fast’?

A: The need is *cross-stack* and *cross-functional* E2E.

2. Conway's Advice: Correct Understanding

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“Because the design which occurs first is almost never the best possible, the prevailing system concept may need to change. Therefore, flexibility of organization is important to effective design.”

Sentence 1: Conway observes design ideas (architecture, components, ...) are *imperfect* & *therefore need adapting*.

Sentence 2: So, locking in teams around an imperfect architecture & components (ie component teams) is rigid & undesirable. What is a *flexible* org-structure alternative as he wants? ...

Teams NOT coupled to an existing architecture & components.

Conway's Driving Point, Usually Missed

“Because the design which occurs first is almost never the best possible, the prevailing system concept may need to change.”

1. Any architecture or design **LIKELY** ‘wrong’.

“Therefore, flexibility of organization is important to effective design.”

2. Therefore, flexible org team structure **NOT** coupled to architecture structure.

Conway's System Optimizing Goal

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“Because the design which occurs first is almost never the best possible, the prevailing system concept may need to change. Therefore, flexibility of organization is important to effective design.”

As we have shared over the years, there is usually an explicit or implicit *optimizing goal* for the org design. eg. (1) high adaptive/flexible, (2) low lead time, (3) high value, (4) low cognitive load, ...

Conway's advice is to *optimize for flexibility* (ease of change). Why? Prior decisions are likely imperfect.

3. Conway's Advice: *Correct Understanding*

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“Ways must be found to reward design managers for keeping their organizations lean and flexible.”

(aside) Written in 1968, note his use of ‘lean’ and ‘flexible’ (agile, adaptive).

Incentives matter! IF component teams & managers, THEN incentive is to maintain status quo, since manager positions depend upon the ongoing existence of “component A” and “component team A”. Private code also incentivizes rigidity.

“Ways must be found...” (1) Do NOT couple managers and teams to existing components, to incentivize flexibility. (2) Introduce shared code to incentivize flexibility in organization.

4. Conway's Advice: Correct Understanding

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“There is need for a philosophy of system design management which is not based on the assumption that adding manpower simply adds to productivity.”

What management ‘philosophy’ assumes need to add people to increase productivity? Answer: *Resource Management*, and it’s assumption of single-specialists in single-function and single-component roles, often with focus on “lower-cost resources”. Related? Hiring external contractors that do 1 specialization.

What management approach does NOT assume “more manpower”? (1) Multi-learning adaptive workers, (2) Multi-learning feature teams, (3) Hiring high-pay high-IQ 4+ year computer-science-educated devs that multi-learn. (4) Internal employees incentives to multi-learn over single-specialist contractors.

Conway's Advice: Correct Understanding

consistent org elements:

Conclusion

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- feature teams
- multi-learning developers
- shared code

- feature teams
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- feature teams
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Conway's Advice: *Correct Understanding* inconsistent elements:

Conclusion

The basic thesis of this article is that organizations which design systems (in the broad sense used here) are constrained to produce designs which are copies of the communication structures of these organizations. We have seen that this fact has important implications for the management of system design. Namely, we have found a criterion for the structuring of design organizations: a design effort should be organized according to the need for communication.

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component teams of single-specialists, with private code

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Conway's Advice: *Correct Understanding*

“evolving
flexible architecture
by flexible communication
in flexible organization”

Observation of **Constraint**, Not 'Good'!

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Conway is NOT promoting to organize around limited communication pathways, or to “reduce need for high-bandwidth communication.”

To achieve *his advice of flexible organization, single-specialists, component teams, and private code create limited/rigid communication structures, which are INCONSISTENT.*

What is “Organization”?

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Conway means org group STRUCTURES by “organization”.

Structure is very influential on communication pathways.

common misunderstandings...

“Inverse/Reverse
Conway Maneuver”? ...

Meaning of “Inverse Conway Maneuver”?

current popular
meaning of ICM is...

**OPPOSITE original
meaning of ICM**

“read the ORIGINAL”

Larman's Laws

1. Organizations are *implicitly* optimized to avoid changing the status quo middle- and first-level manager and “specialist” positions & power structures.
2. As a corollary to (1), any change initiative will be reduced to overloading or redefining the new terminology to mean basically the same as status quo.
3. As a corollary to (1), any change initiative will be derided as “purist”, “theoretical”, “religious”, and “needing pragmatic customization for local concerns” — which *deflects* from addressing weaknesses and manager/specialist status quo.
4. As a corollary to (1), if after *changing the change* some managers and single-specialists are still displaced, they become “coaches/trainers” for the change, reinforcing (2) and (3), and creating the false impression ‘the change has been done’, deluding senior management and future change attempts, after which they become industry consultants.
5. (in large established orgs) Culture follows structure.
(*behavior/mindset influenced by org system; “structure influences behavior”*)
 - (in tiny young orgs) Structure follows culture.

Correct, Original “Inverse Conway Maneuver”

FEBRUARY 3, 2011 BY JONNY

Dealing with creaky legacy platforms

The following article, written by myself and my colleague, Matt Simons, was published in the December 2010 issue of the

dysfunctions as the original. In what could be termed an “inverse Conway maneuver,” you may want to begin by **breaking down silos that constrain the team’s ability to collaborate effectively**. Of course

Original ICM Misunderstands Conway's Advice!

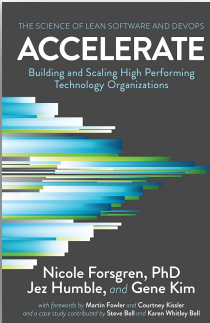
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As you have now seen, Conway NEVER advised “having silos of communication.” His advice in his paper **IS to break down communication silos that constrain flexibility!**

ie “*Inverse* Conway Maneuver” SHOULD have been called... “Conway Maneuver”!

Incorrect “Inverse Conway Maneuver”

Our research lends to support to what is sometimes called the 'inverse Conway maneuver," which states that organizations should evolve their team and organizational structure to achieves the desired architecture. **The goal is for your architecture to support the ability of teams to get their work done - from design through to deployment - without requiring high-bandwidth communication between teams**



Original ICM:

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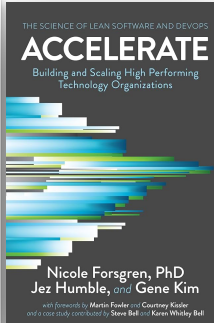
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Conway:

This criterion creates problems because the need to communicate at any time depends on the system concept in effect at that time. **Because the design which occurs first is almost never the best possible, the prevailing system concept may need to change. Therefore, flexibility of organization is important to effective design.**

there's NOTHING in original
“Inverse Conway Maneuver” or
Conway papers to suggest...

“... architecture to support the teams...”

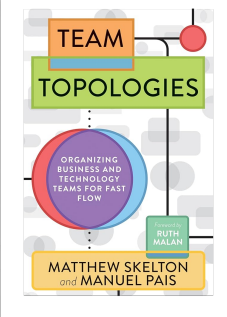
“...without requiring high bandwidth
communication between teams.”

In fact, these statements are
OPPOSITE of Conway's advice of
(1) evolving flexible architecture
by (2) flexible communication

“... architecture to support the teams...”

“...without requiring high bandwidth
communication between teams.”

Incorrect “Reverse Conway Maneuver”



The Reverse Conway Maneuver should align teams and architectures in a manner that lowers cognitive load, minimizes dependencies, and matches product direction. Our first attempt

Original ICM:

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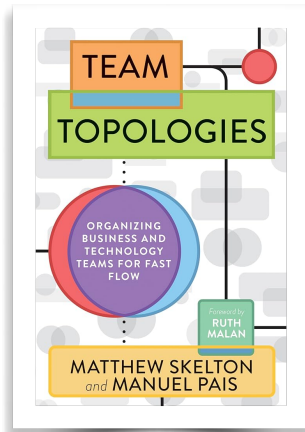
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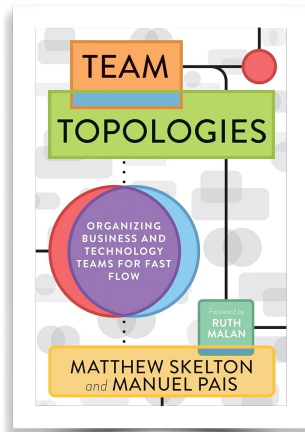
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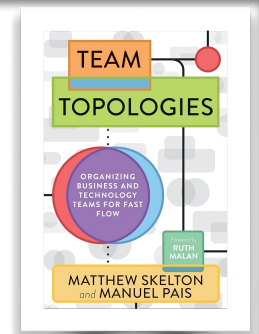
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any form of
“Adjust your organization to
match your target architecture”
(so-called “Reverse Conway
Maneuver” in *Team Topologies*)
is the OPPOSITE
of Conway’s driving point

Conway's Law & LeSS

study of Conway's original advice & goal of *flexibility* shows these are consistent org design elements:

- feature teams (LeSS)
- multi-learning developers (LeSS)
- shared code (LeSS)

Close



welcome to
connect with me!

structured Q&A