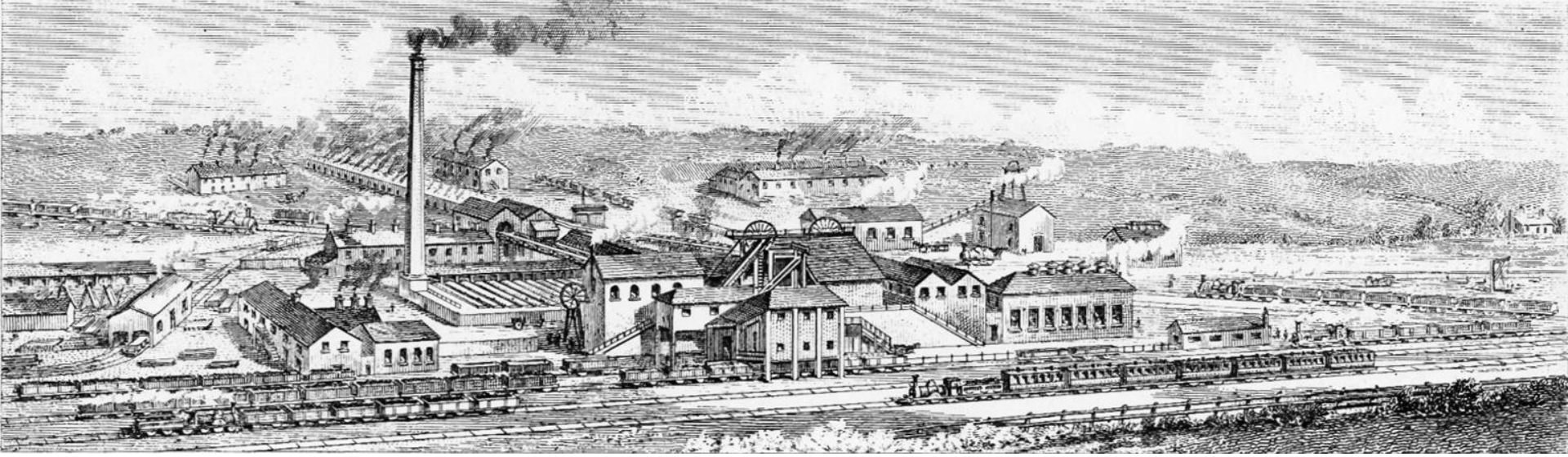
devops HEROES

Dal carbone al software

Ferdinando Santacroce

@jesuswasrasta

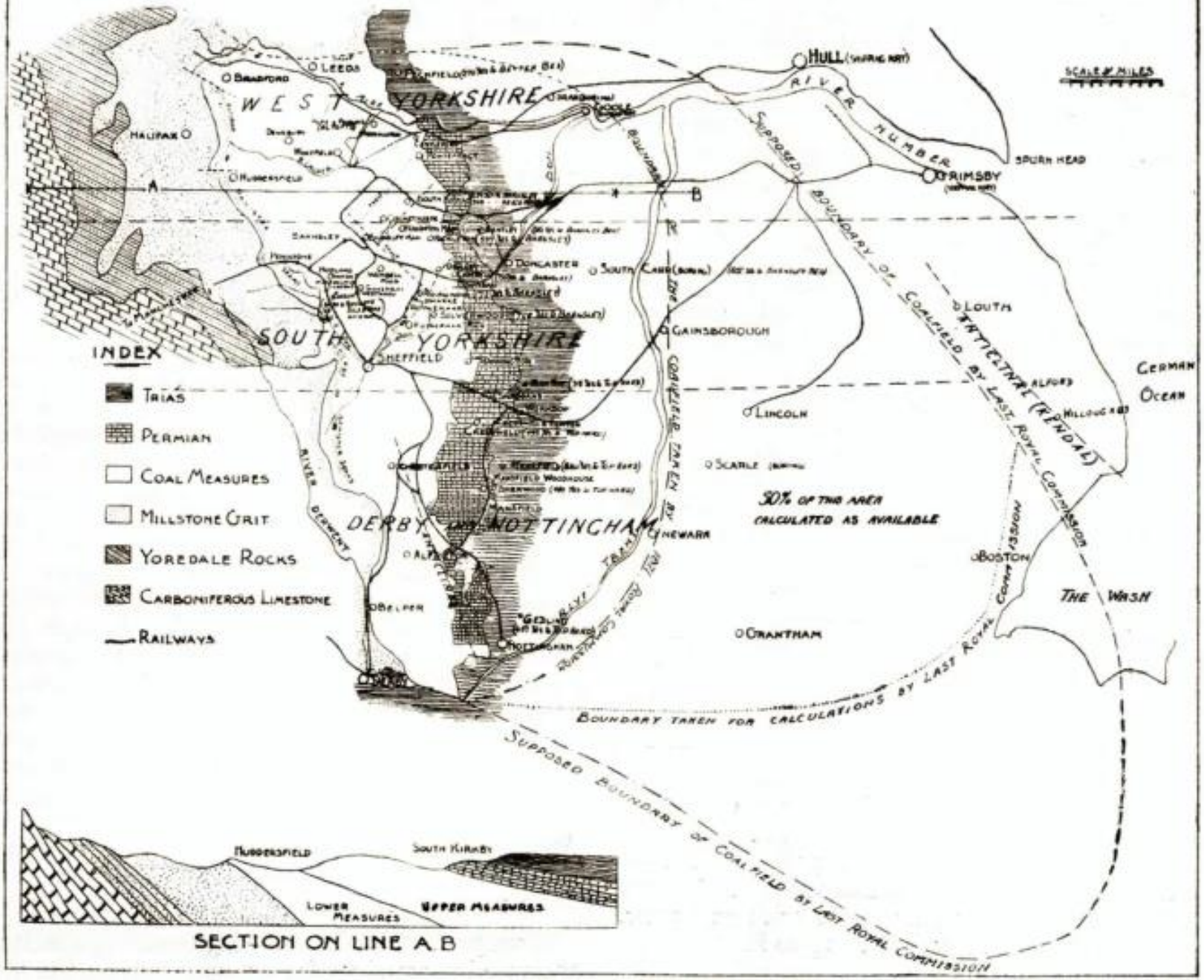
#DOH22



Dal carbone al software

I sistemi socio-tecnici

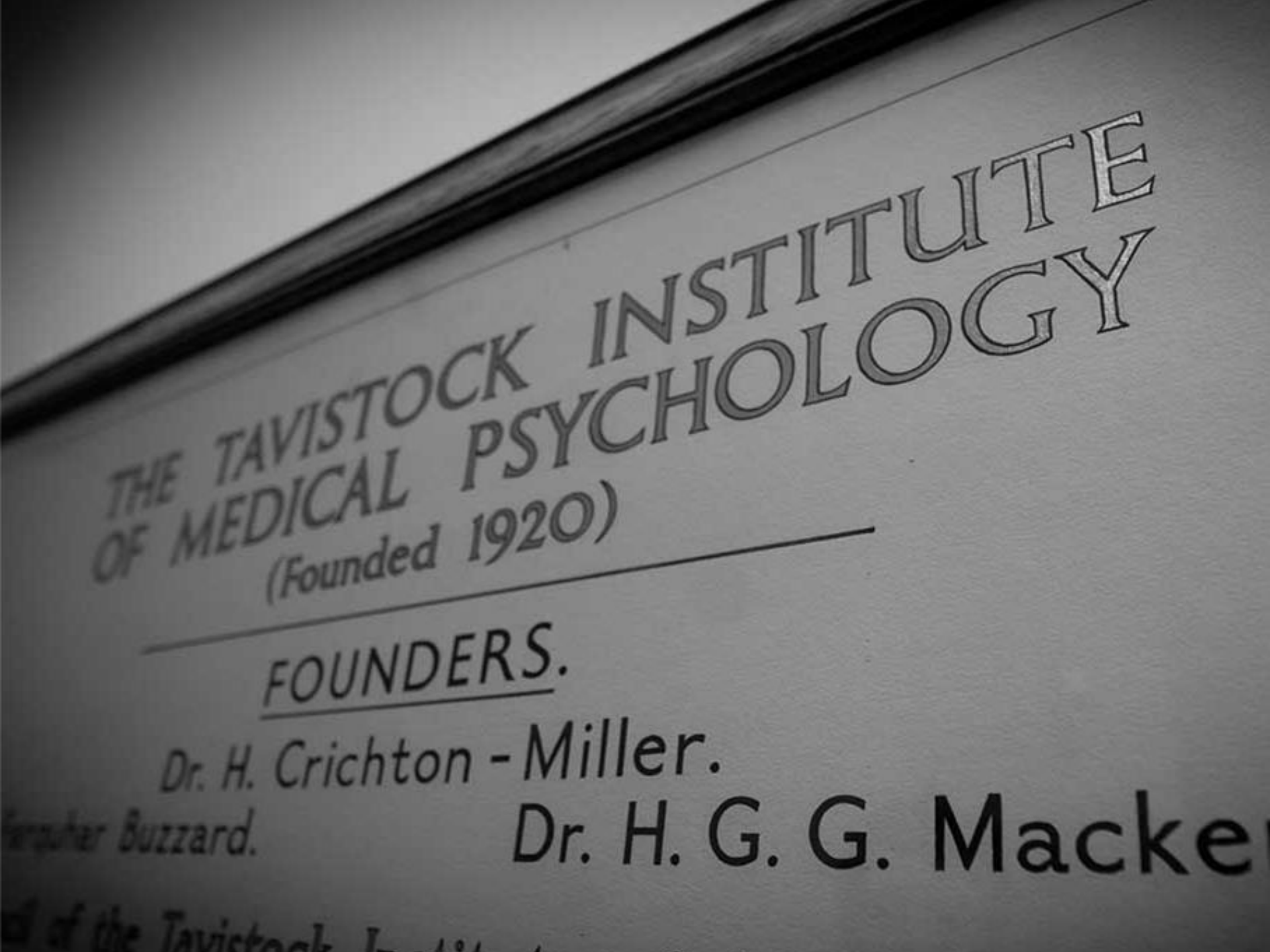
MAP OF THE COALFIELD OF YORKSHIRE, DERBYSHIRE, NOTTS, AND LINCOLN.




VICTORY
OVER GERMANY
1945
We shall have MOUSSEC wherever we go
LONDON HIPPODROME
IVOR NOVELLO
Perchance to Dream
PUBLIC SHELTER
LEWIS


THIS COLLIERY IS NOW
MANAGED BY THE
NATIONAL
COAL BOARD
ON BEHALF OF THE PEOPLE
JANUARY 1ST 1947


N C B
BBC


THE TAVISTOCK INSTITUTE
OF MEDICAL PSYCHOLOGY
(Founded 1920)
FOUNDERS.
Dr. H. Crichton - Miller.
Dr. H. G. G. Macke

Memorandum of Association

THE TAVISTOCK INSTITUTE OF HUMAN RELATIONS

The name of the Company (hereinafter called "the Association"
e Tavistock Institute of Human Relations."
The registered office of the Association will be situate in Englan
objects for which the Association is established are—
undertake, promote and encourage the study of th
ology of relations (in the widest possible sense of th
etween human beings and groups or classes
of human beings, and of the influence of environ
its aspects on the formation or development
er or capacity, and to conduct research a
s purpose, and to train, assist and encourag
y branches of the said study.
dertake contracts with other bod
for services which are ha
d with such stu


Eric Trist

"... caratteristico del capitalismo che le persone non siano viste come soggetti ma solo come fattori aritmetici, come le macchine..."

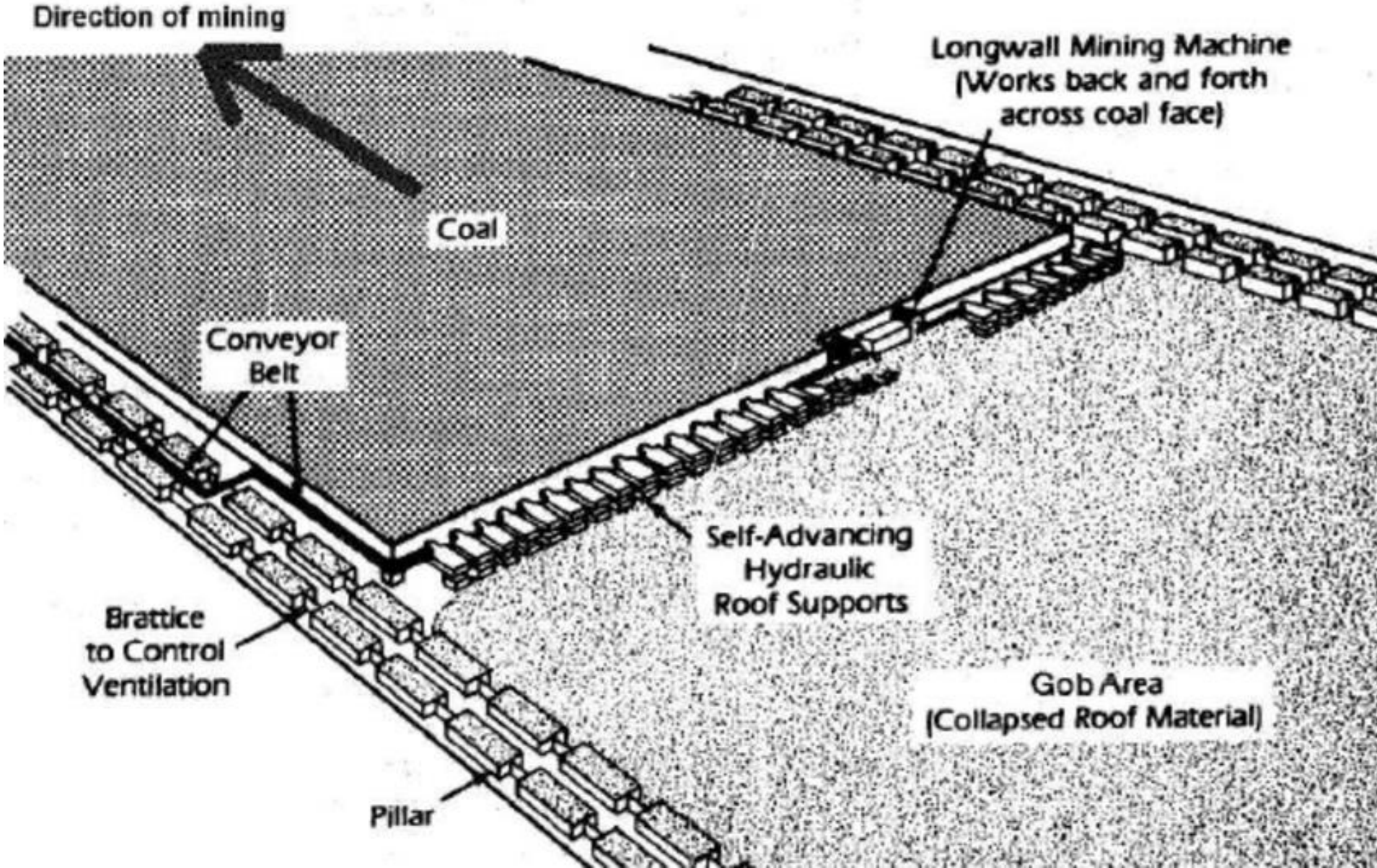
Kurt Lewin, 1920

fondatore della psicologia sociale


MACHINE RUNNING
MATTERS · HOW
WEDNESDAY

The field work necessary for this study has been lessened by the fact that Mr. K. W. Bamforth was himself formerly a miner and worked at the coal-face for 18 years.

Longwall


Direction of mining
Longwall Mining Machine
(Works back and forth
across coal face)
Coal
Conveyor
Belt
Self-Advancing
Hydraulic
Roof Supports
Brattice
to Control
Ventilation
Gob Area
(Collapsed Roof Material)
Pillar

1st shift: «cutting»

TABLE I

Occupational Structure in the Longwall System

Shift Sequence	*Occupational Roles*	*No. of Men*	*Methods of Payment*	*Group Organization*	*Tasks*	*Skills*	*Status Differences and Ranking*
First (usually called) "cutting" shift). Either *night*, 8 p.m.–3.30 a.m., or *afternoon*, 12 noon–7.30 p.m. (borers start an hour earlier). Though alternating between *night* and *afternoon*, personnel on the cutting shift are never on *days*.	Borer	2	Per hole	Inter-dependent pair on same note.	Boring holes for shot-firer in each stint to depth of undercut.	Management of electric or pneumatic drills, placing of holes, judgment of roof, hardness of coal, etc.	4·5, equal in pair.
	Cutter	2	Per yard	Inter-dependent pair on same note, front man and back man.	Operating coal-cutter to achieve even cut at assigned depth the entire length of the face; knocking out (front man), re-setting (back man) props as cutter passes. Back man inserts noggings.	Requires rather more "engineering" skill than other coal-face tasks. Mining skills in keeping cut even under changing conditions, watching roof control.	1, front man senior and responsible for cut; back man assists; cutting is the key preparation task.
	Gummer	4	Day wage	Loose group attached to cutters, though front man without supervisory authority.	Cleaning out undercut, so that clear space for coal to drop and level floor for filler. The coal between undercut and floor is called "the gummings".	Unskilled, heavy manual task, which unless conscientiously done creates difficulties for filler, for when gummings left in, the shot simply blows out and coal is left solid.	7, equal in group; some chance of promotion to cutter eventually.
	Belt-breaker	2	Per yard	Inter-dependent pair on same note.	Shifting belt-engine and tension-end into face clear of rippers; breaking up conveyor in old track, placing plates, etc., ready in new track, drawing off props in old creeping track; some packing as required.	Belt-breaking is a relatively simple engineering task; engine shifting is awkward and heavy; drawing off and packing involve responsibility for roof control and require solid underground experience.	4·5, equal in pair.

2nd shift: «ripping»

Shift Sequence	Occupational Roles	No. of Men	Methods of Payment	Group Organization	Tasks	Skills	Status Differences and Ranking
Second (usually called the "ripping" shift). Either *night* or *afternoon* alternating with cutting shift. Rippers may start rather later than builders. None of these personnel go on *day* shift proper.	Belt-builder	2	Per yard	Inter-dependent pair on same note.	Reassembling conveyor in new track; positioning belt-engine and tension-end in line with this; testing running of reassembled conveyor; placing chocks; packing as required.	As with breaking, the level of engineering skill is relatively simple; inconvenience caused to fillers if belt out of position. The roof control responsibilities demand solid underground experience.	4·5, equal in pair.
	Ripper	8	Cubic measure	Cohesive functionally inter-related group on same note.	To "rip" "dirt" out of main and side gates to assigned heights; place cambers and build up roof into a solid, safe and durable structure; pack-up the sides. The ripping team carries out all operations necessary to their task, doing their own boring. The task is a complete job in itself, seen through by the group within the compass of one shift.	This work requires the highest degree of building skill among coal face tasks. Some very heavy labour is entailed. Since the work is relatively permanent there is much pride of craft. On the ripper depends the safety of all gates and main ways.	2, the status of the "main ripper" is next to that of the front man on the cutter, but he is not separately paid. The group usually contains all degrees of experience and is egalitarian.

3° shift: «filling»

Shift Sequence	*Occupational Roles*	*No. of Men*	*Methods of Payment*	*Group Organization*	*Tasks*	*Skills*	*Status Differences and Ranking*
Third (usually called "filling" shift). Either *day*, 6 a.m.–1.30 p.m., or *afternoon*, 2 p.m.–9.30 p.m. Never *night*.	Filler	20	Weight—tonnage on conveyors.	Aggregate of individuals with equal "stints"; all on same note; fractionated relationships and much isolation.	The length of the "stint" is determined by the depth of the cut and the thickness of the seam. Using hand or air pick and shovel, the filler "throws" the "shot" coal on to the conveyor until he has cleared his length, i.e. "filled off". He props up every 2 ft. 6 in. as he works in.	The filler remains in one work place while conditions change. Considerable underground experience is required to cope with bad conditions. Each man is responsible for his own section of roof. Bad work on other shifts makes the task harder. It is heavy in any case and varies in different parts of the wall.	4·5, equal throughout the group; "corner" men are envied, reputation of being good or bad workman is important.

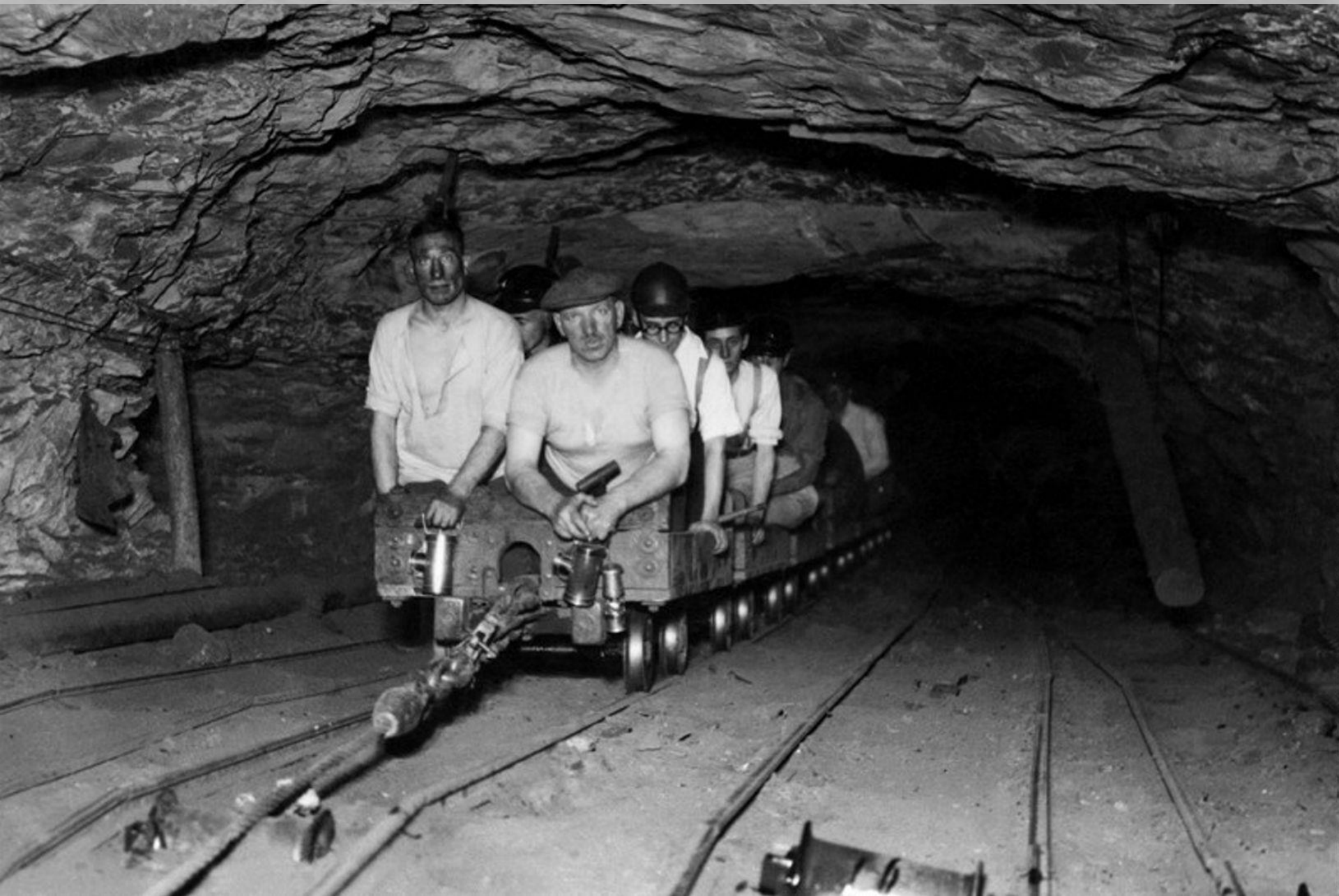
Trist and ... the Longwall Method of ...

Riassumendo

3 shifts	7 roles	40 men	5 methods	4 types	The common background of "underground" skill is more important than the task differences.	Differences in status and weekly earnings are small, apart from the case of the gummers.

- 3 turni sequenziali
- 7 ruoli
- 40 persone
- 5 diverse retribuzioni
- 4 tipi di sotto-gruppi

I punti deboli del longwall



I turni separati

- I tre turni non si incontrano mai.

- Ci sono turni che si protraggono sempre fino alla sera o di notte, inclusi sabato e domenica, minando i normali rapporti familiari e comunitari.

Interdipendenza dei ruoli

- **Interdipendenza fra ruoli in diversi turni (ad es. chi smonta e chi rimonta i nastri, chi taglia e chi raccoglie).**

- **La sequenza impostata richiedeva sempre prestazioni al 100% , non erano previsti ritardi.**

- **Reazioni a catena: una problema nella preparazione del fronte compromette il taglio, che compromette a raccolta.**

- **Chi raccoglie carbone è pagato a peso, e quindi finiva per rimetterci del denaro.**

Organizzazione sociale debole

- **Difficile comunicare efficacemente e costruire relazioni sociali in gruppi così grandi, lavorando in turni separati e spesso a distanza l'uno dall'altro.**

- **La fase più critica era quella di raccolta, ed era anche quella dove l'organizzazione sociale era più debole.**

- **Gli operai erano addestrati solo per la loro specifica mansione, e spesso vi erano "condannati" a vita.**

Condizioni avverse e cattivo lavoro

- Una miniera ha molte più incognite e variabili di una fabbrica, può succedere di tutto.

- "Cattive condizioni" possono causare "cattivo lavoro", ma è difficile distitnguerli nei passaggi di consegne.

- La mancata comunicazione fra turni rende difficile distinguere problemi causati da condizioni avverse da quelli causati da imperizia: crescono malumori, accuse reciproche.

Manager di un processo invisibile

I **manager** furono **messi a risolvere problemi che non potevano vedere**.

I minatori si lamentavano parimenti:

"*we don't need a boss that tells every minute what to do*".

Elsecar Main Colliery.

"I went down the mine, and came up a different man."

Eric Trist, 1990

SOME SOCIAL AND PSYCHOLOGICAL CONSEQUENCES OF THE LONGWALL METHOD OF COAL-GETTING [1]

An Examination of the Psychological Situation and Defences of a Work Group in relation to the Social Structure and Technological Content of the Work System

E. L. TRIST AND K. W. BAMFORTH [2]

1951

I

INTRODUCTION: A PERSPECTIVE FROM RECENT INNOVATIONS

A number of innovations in work organization at the coal-face have been making a sporadic and rather guarded appearance since the change-over of the industry to nationalization. During the past two years the authors have

Ogni turno comprendeva le tre fasi

Il longwall permetteva fronti di estrazione lunghi (fino a ~180 metri).

La conformazione della miniera (e la volontà dei minatori) imponeva filoni corti.

C'era carbone pronto per la consegna ogni 8h, anziché ogni 24h

Piccoli gruppi autonomi e responsabili

Lavoravano a coppie, a cui si aggiungevano altre 1 o 2 persone quando necessario (ad es. i "*trammers*", i ragazzi deputati al trasporto)

I gruppi più grandi arrivavano a 8 persone

Controllo totale del ciclo di estrazione

L'intero ciclo di estrazione era sotto loro completo controllo, in una forma di "*autonoma responsabilità*"

La leadership e la supervisione era interna al gruppo

I minatori negoziavano il compenso per il carbone estratto direttamente con il gestore della miniera

Artigiani orgogliosi...

Erano orgogliosi della loro destrezza, dell'arte che praticavano ("*craft*")

Ogni coppia aveva tutte le competenze necessarie per completare il ciclo di estrazione

La scelta dei membri era reciproca: le coppie e i gruppi si formavano su base autonoma

... sempre presenti l'un per l'altro

Spesso le coppie rimanevano stabili per anni.

Non era raro per un minatore prendersi cura della famiglia del compare nel caso fosse rimasto gravemente ferito o ucciso

Il lavoro in piccoli gruppi consentiva alle persone di coltivare rapporti personali, di sostenersi a vicenda in condizioni avverse.

Adattabilità al lavoro sotto terra

La **flessibilità** di questi piccoli gruppi aveva dei vantaggi:

- nel **muoversi** da un filone all'altro
- nell'affrontare **condizioni avverse** (ad es. pietra più dura da scavare, imprevisti vari)
- nel settare gli **obiettivi di estrazione**, tenendo conto della situazione, dell'età e della salute dei suoi membri

Tecnologia innestata nel processo

La tecnologia era stata innestata nel processo.

La maggiore efficacia della macchina e l'automazione nell'estrazione aveva aumentato i volumi, nonostante ci fossero nuovi costi (in termini di tempo) da pagare per l'allestimento.

L' approccio era rimasto pressoché uguale al precedente, quando la raccolta del carbone era fatta «a mano» ("hand-got").

Coi filoni lunghi andarono perduti:

- **cross functional teams**
- **visione end-to-end**
- **autonomia**
- **fiducia reciproca**

E si erano "guadagnati":

- **dipendenze**
- **controllo serrato**
- **iper-specializzazione**
- **paura, frustrazione**

Queste dinamiche vi ricordano qualcosa?

Perché continuiamo a ripetere gli stessi errori?

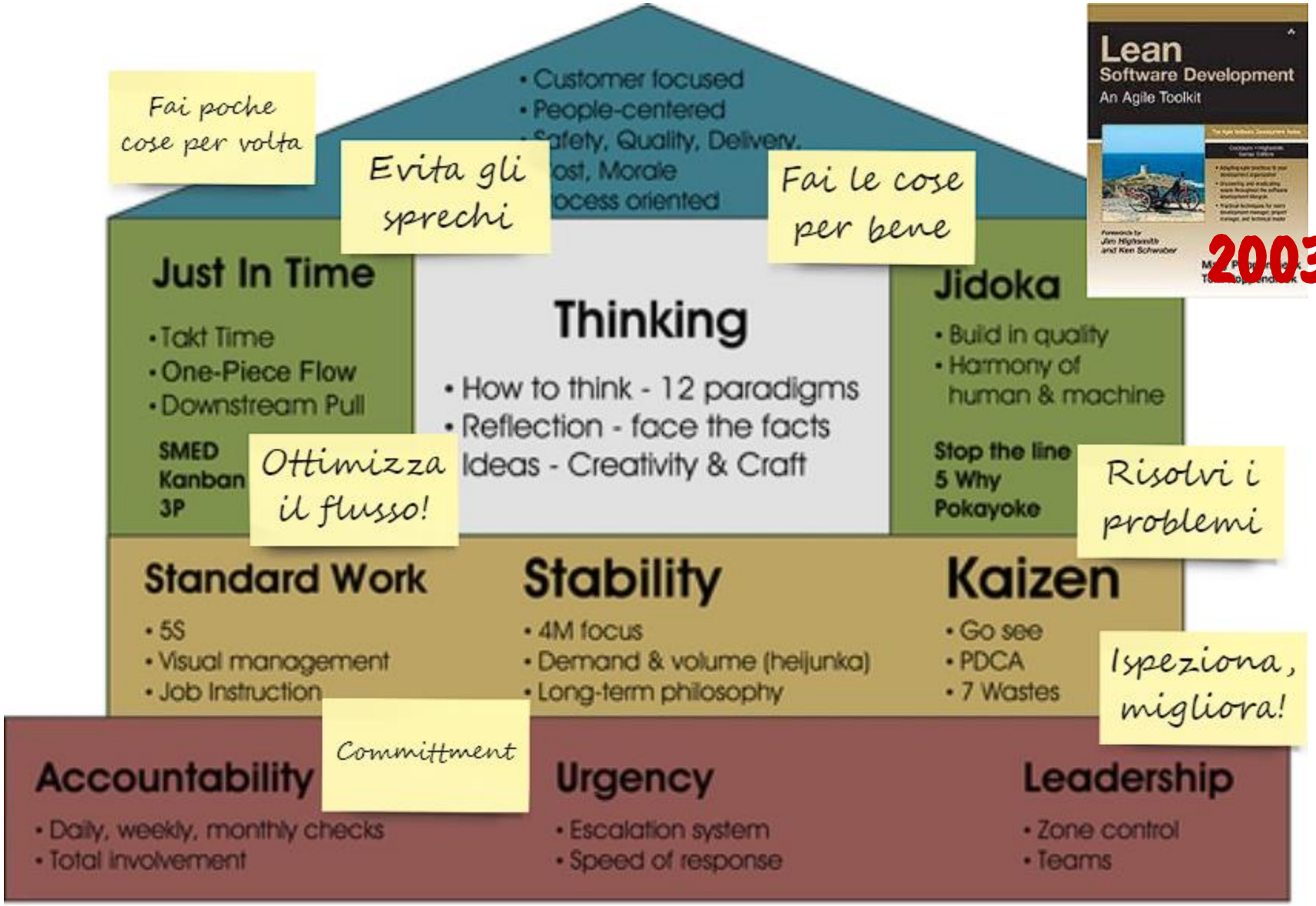
Sono 10, 20... 60 anni che abbiamo delle soluzioni!

Fai poche cose per volta, falle per bene, evita gli sprechi, risolvi i problemi alla radice

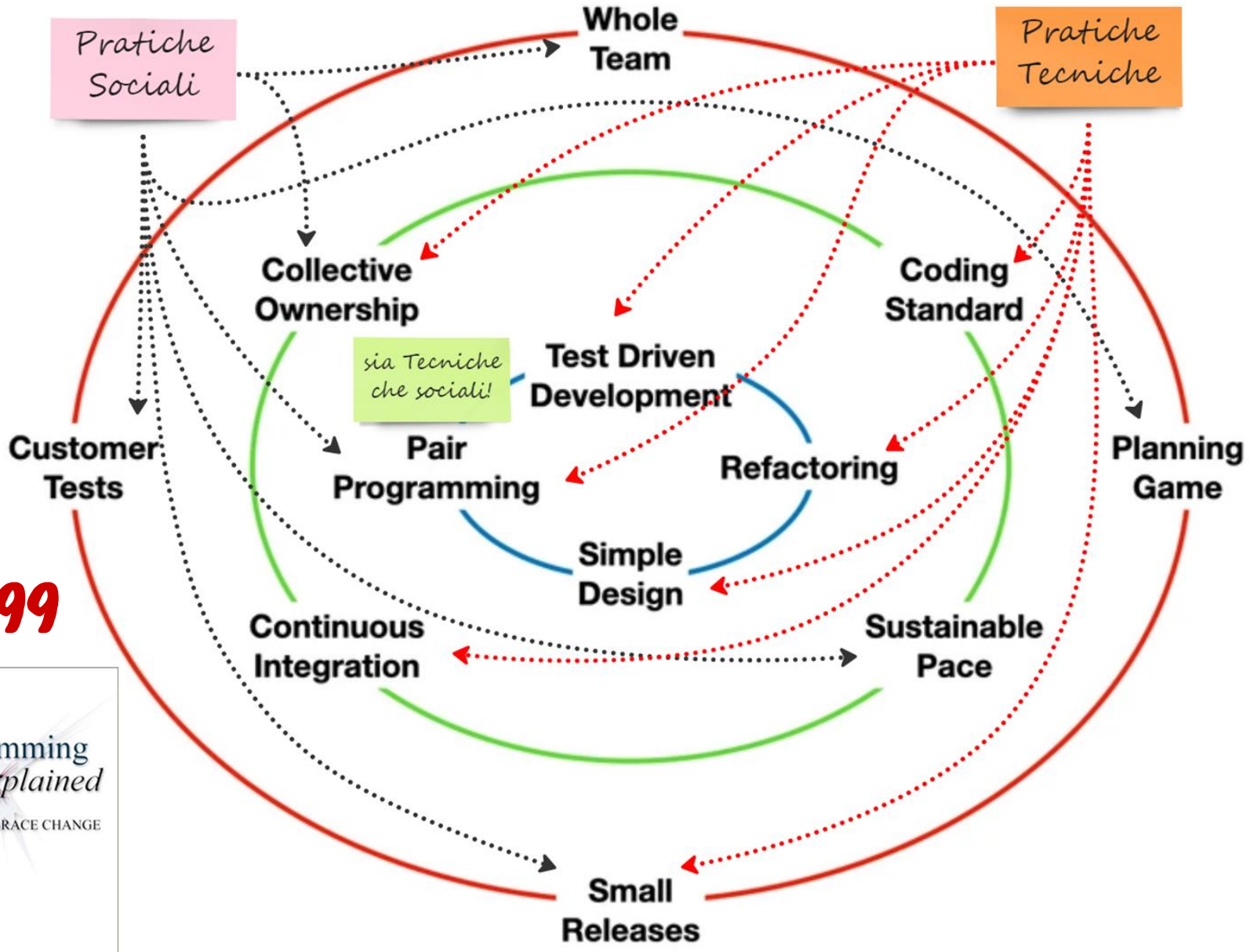
cit. Taiichi Ono (piu o meno... 😄)

~1960

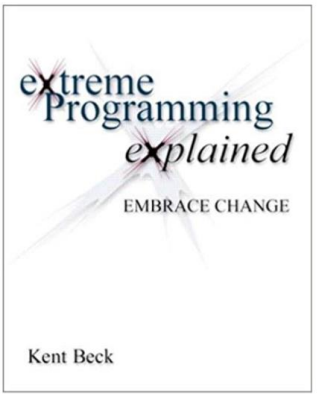
TPS e Lean


Fai poche cose per volta
Evita gli sprechi
Fai le cose per bene
• Customer focused
• People-centered
• Safety, Quality, Delivery
• Cost, Morale
• Process oriented
Just In Time
• Takt Time
• One-Piece Flow
• Downstream Pull
SMED
Kanban
3P
Thinking
• How to think - 12 paradigms
• Reflection - face the facts
Ideas - Creativity & Craft
Jidoka
• Build in quality
• Harmony of human & machine
Stop the line
5 Why
Pokayoke
Ottimizza il flusso!
Risolvi i problemi
Standard Work
• 5S
• Visual management
• Job Instruction
Stability
• 4M focus
• Demand & volume (heijunka)
• Long-term philosophy
Kaizen
• Go see
• PDCA
• 7 Wastes
Ispeziona, migliora!
Committment
Accountability
• Daily, weekly, monthly checks
• Total involvement
Urgency
• Escalation system
• Speed of response
Leadership
• Zone control
• Teams
Lean
Software Development
An Agile Toolkit
2003

XP Practices

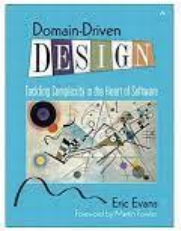


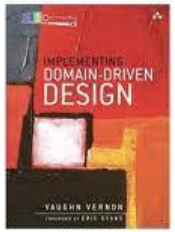
1999



Se il software è separato in componenti autonomi, con rapporti chiari di collaborazione, sarà più facile ottenere autonomia ed efficacia dei team e delle persone che lo compongono.

2003



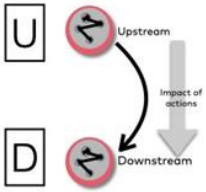


Open / Host Service

Each Bounded Context offers a defined set of services that expose functionality for other systems. Any downstream system can then implement their own integration. This is especially useful for integration requirements with many other systems.

Upstream / Downstream

Actions of the upstream team, have a direct impact on the downstream team.



Context Map Cheat Sheet

Customer / Supplier

There is a customer / supplier relation ship between two teams. The downstream team is considered to be the customer with some defined influence.

Conformist

The downstream team conforms to the model of the upstream team. There is no translation of models. Couples the Conformist's domain model to another bounded context's model.

Anticorruption Layer

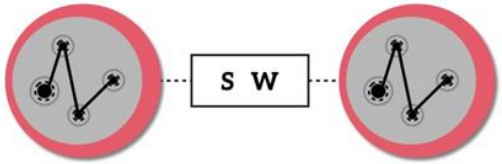
The anticorruption layer is a layer that isolates a client's model from another system's model by translation. Only couples the integration layer (or adapter) to another bounded context's model but not the domain model itself.

Shared Kernel

Two teams share a subset of the domain model including code and maybe the database. Typical examples: shared JARs, DLLs or a shared database schema

Separate Ways

There is no connection between the bounded contexts of a system. This allows teams to find their own solutions in their domain.
However there may be a „hidden" connection between the teams. Look out of for „organizational" solutions (Excel, Access, ..)



Published Language

Published Language is often combined with Open Host Service. However it goes as far as to model a Domain as a common language between bounded contexts. Typical examples are iCal or vCard.

Le pratiche tecniche
e le dinamiche sociali
sono interdipendenti e
ugualmente
importanti!

E invece noi
cosa facciamo?

Pratiche tecniche di Scrum, elenco completo

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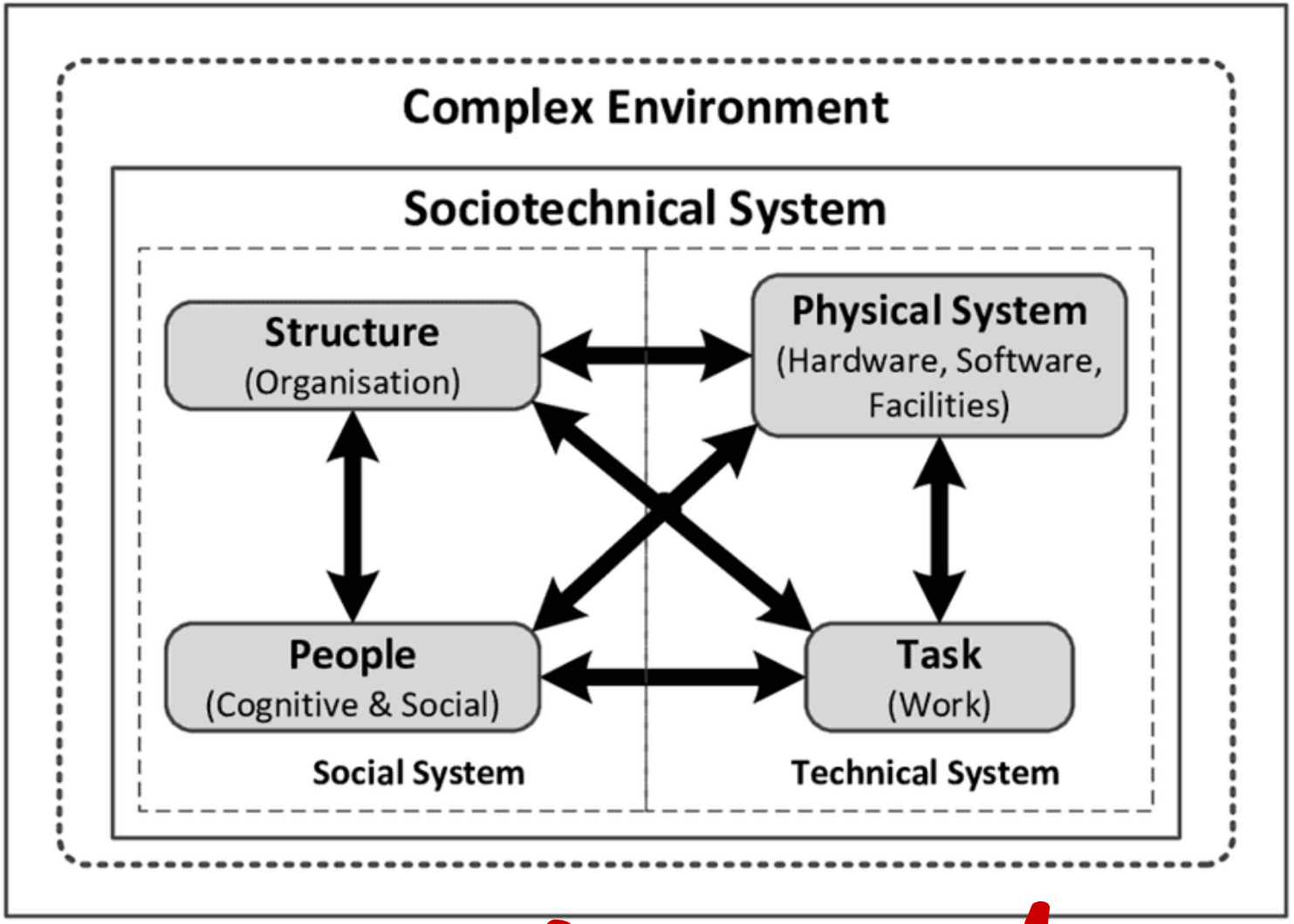
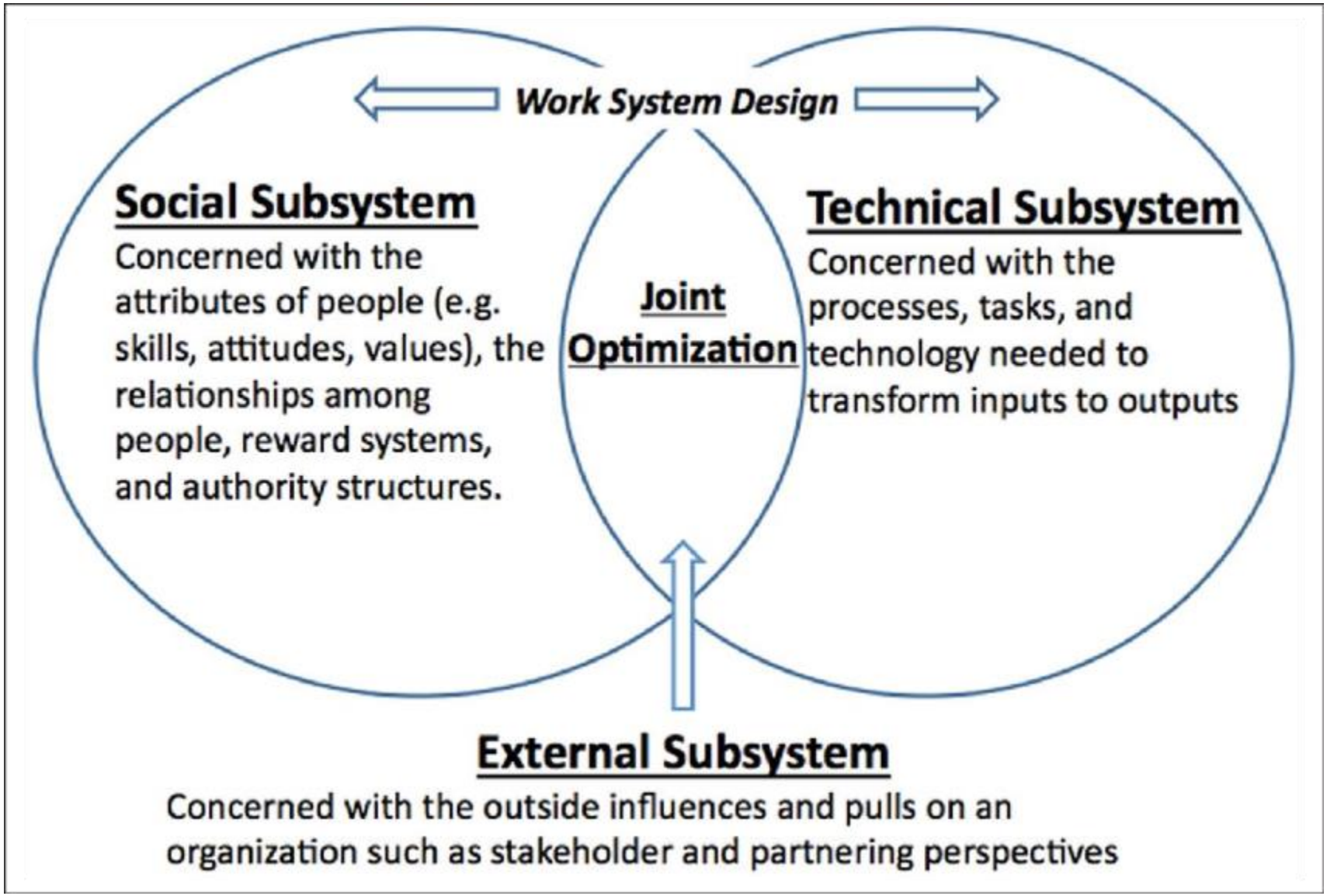
La tecnica influenza la società...



... e viceversa!

L'importanza della "Joint Optimization"



Cosa mi porto a casa

- Come organizzazione, non posso cambiare un sistema ignorando l'altro.
- Come manager, devo comprendere le questioni tecniche, creando le condizioni perché possano fluire rapidamente
- Come dev, posso lavorare sulla tecnica per promuovere l'organizzazione. Posso lavorare sulle mie abilità, senza peró ignorare le capacità relazionali: essere bravi con le macchine non basta.
- Come agente di cambiamento: mantenere l'umiltà, perseguire l'eccellenza attraverso la conoscenza (il Gemba insegna)

Insomma, smettiamo
di fare gli str...uzzi

Grazie 

Fammi sapere cosa ne pensi!

https://jesuswasrasta.com

Risorse

- "*Some Social and Psychological Consequences of the Longwall Method of cola getting: An Examination of the Psychological Situation and Defences of a Work Group in Relation to the Social Structure and Technological Content of the Work System*" - E. Trist, K. W. Bamforth (PDF link)
- *Eric Trist*, Wikipedia (link)
- *A conversation with Eric Trist* (video)
- *Soulful Socio-Technical Architecture* - Marco Consolaro (link)
- *Sociotechnical Systems – Trist and Bamforth* (podcast)
- Coal Mining (1950) (video)