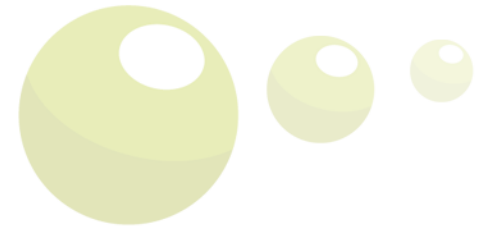


Restructuring of value chains
in software development – some
dialectics of knowledge and control
Findings from the WORKS project

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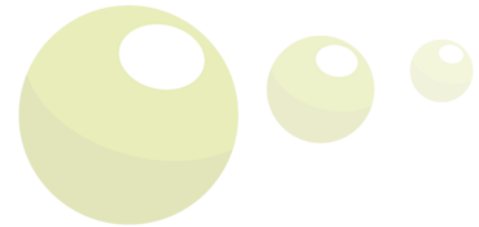
Value chains

- Origins in 1970s studies of globalisation, and industrialisation of late-industrialising countries
- Focus on manufacturing: clothing, automobile industry, electronics
- 80s: Vertical disintegration of MNCs, business process reengineering
- new technology, deregulation and public sector privatisation → VC concept also applied to services, SMEs, public sector
- BUT may be too linear for complex products & services

value chain governance

„variety of network forms of governance situated between arm's length markets [...] and large vertically integrated corporations“
(Gereffi/Humphrey/Sturgeon 2005)

- markets
- Modular („turn-key“) value chains
- Relational value chains
- Captive value chains
- Hierarchies

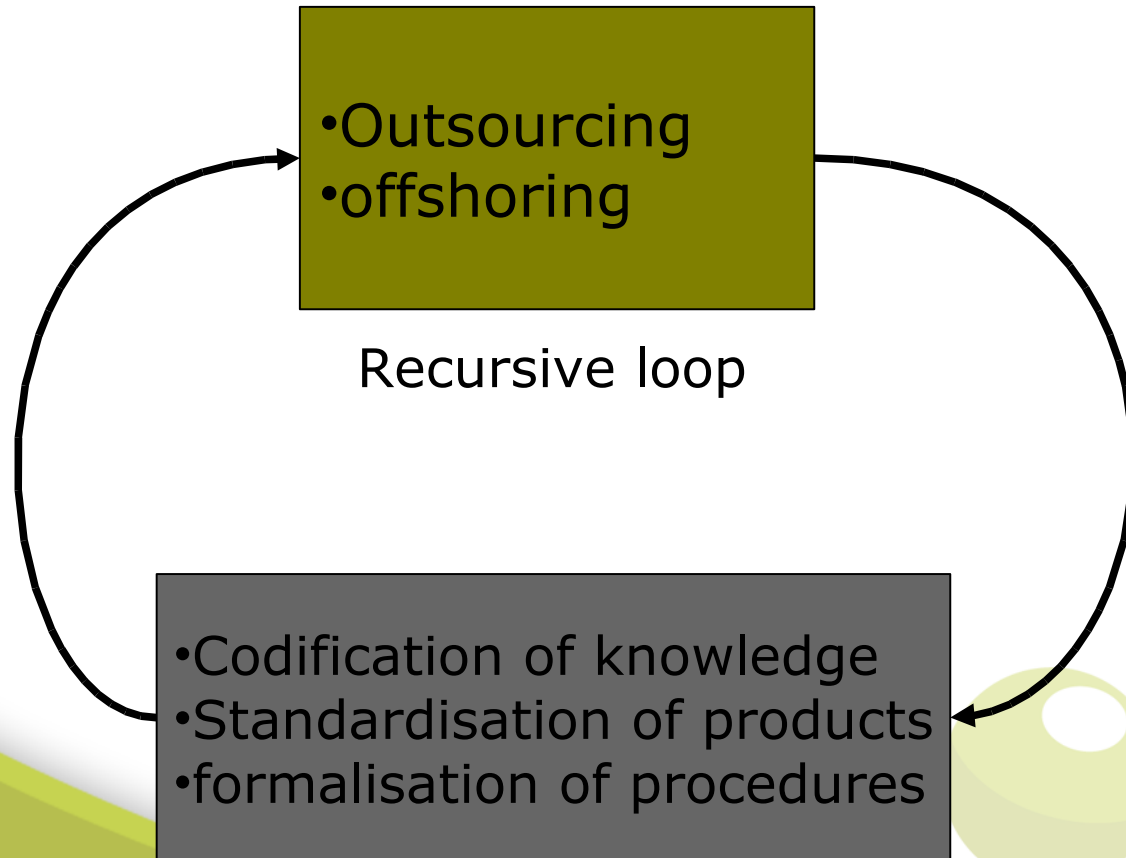


Networks and knowledge

- Network structures considered most effective for circulation and recombination of knowledge
- Von Hippel (1994): VCs
 - fragment where knowledge is most explicit/codified
 - Remain integrated when knowledge is tacit and “sticky”
- Espoused (professional) norms of collaboration, knowledge exchange, networking (“new spirit of capitalism”, “hacker ethic”)

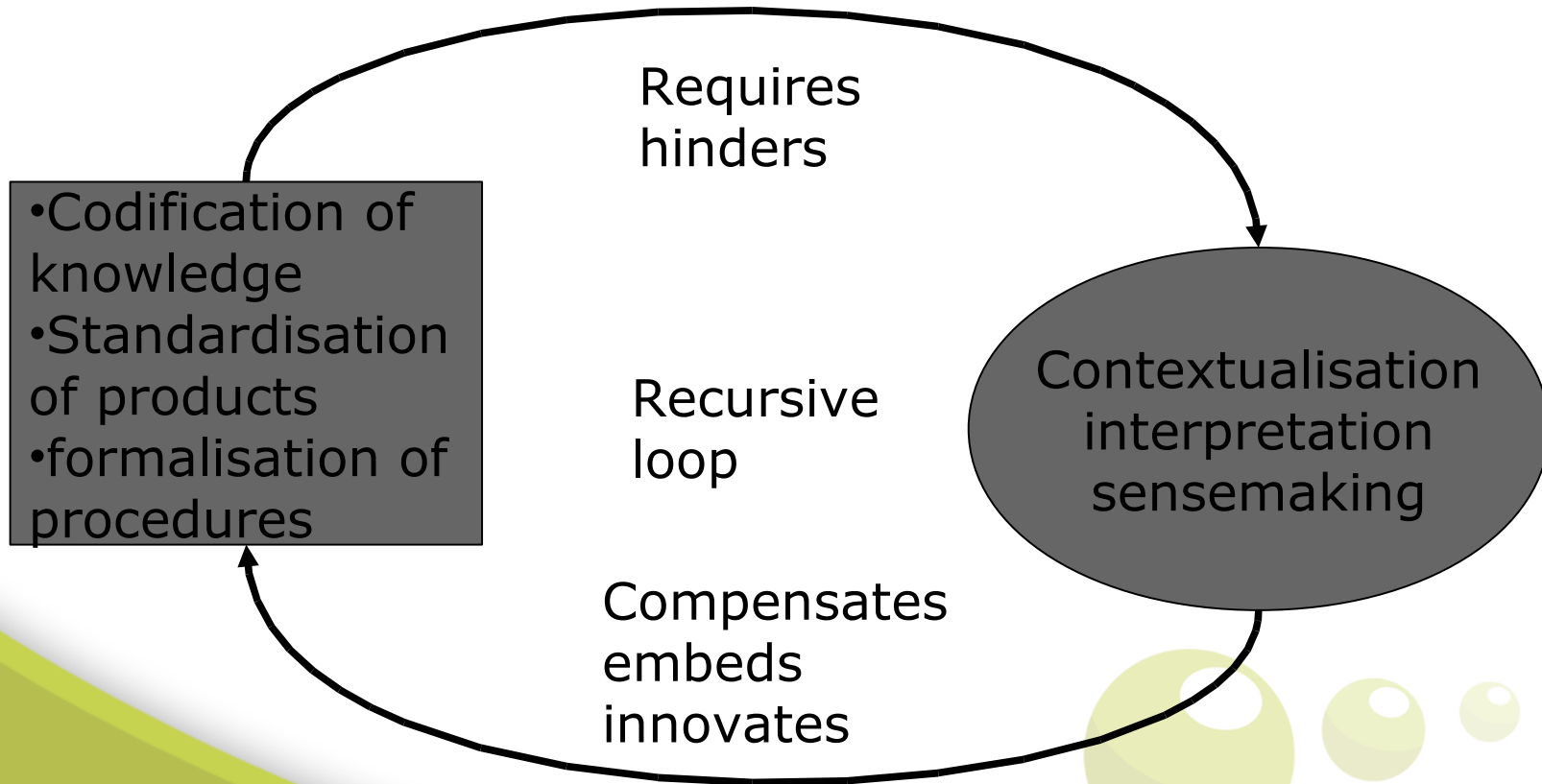


Knowledge and value chains 1: the labour process view



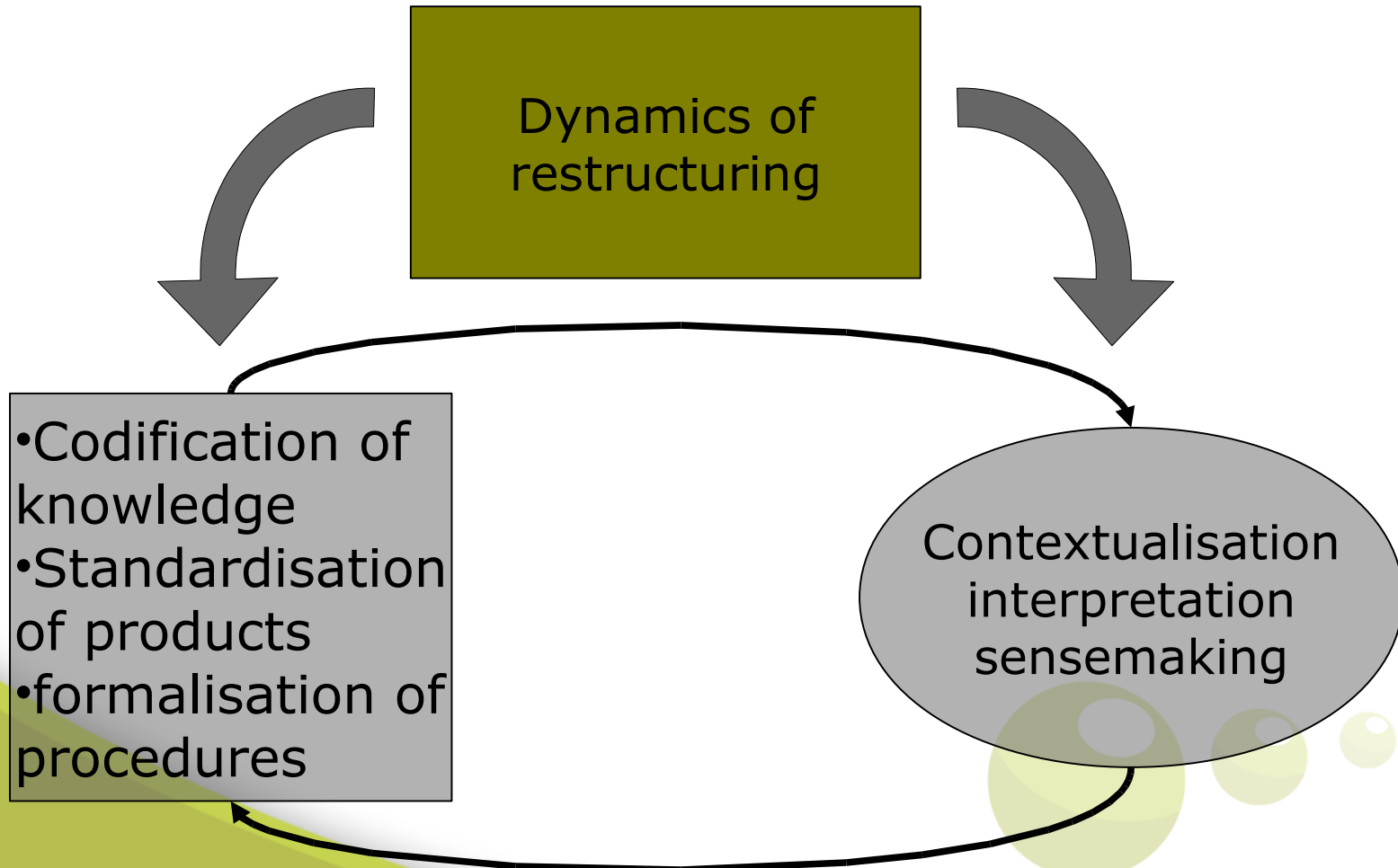
Codification enables outsourcing requires codification... (labour process debate, informatization)

Knowledge and value chains 2: The knowledge view



Codification „works“ to a limited extent only. (knowledge mgmt, *Wissenssoziologie*, symbolic interactionism)

Knowledge and value chains 3: the synthetic view



Dynamics of restructuring shape *the dialectic* of codification and contextualisation.

VC restructuring in software R&D and development: 11 cases

- R&D
 - 2 public sector boundary spanners (AT, BE)
 - 3 corporate (FR national, UK Japanese MNC, NO US MNC)
 - 1 (DE) (+ half of AT + NO originally) commercial university spin-offs
- Software development
 - 2 integrated MNCs (DE, HU)
 - 2 smaller units acquired by US-based MNCs (AT/CR, SE)
 - 1 subcontractor (BU)

VC restructuring in software R&D: Findings

- Research moving closer to the market across sectors
 - Occasionally complemented by professional coordination and collaboration (user groups etc.)
- Overall shorter time horizons
- Private sector outsources research risks
- Still most cases outside MNCs national/regional restructuring
- Both boundary-spanning functions and perspectives within research multiply
 - also new positions, more women with transdisciplinary skills)

Software research

“and it happens that [...] we say, we’ll try that but can’t fund it, so, dear Lab, maybe you can find some research funding, internal funding, whatever, to build a showcase for that” (Thomas, client liaison with Lab 1, Holtgrewe 2007)

Outsourcing R&D

“when I started in the Lab, I would have liked to sit here in my cubicle and do research and hand the results outside, hand them to the colleague, like I’m not the sales person, he does that and everybody has it nice and cosy, only, it doesn’t work this way.” (Markus, researcher Lab 2)

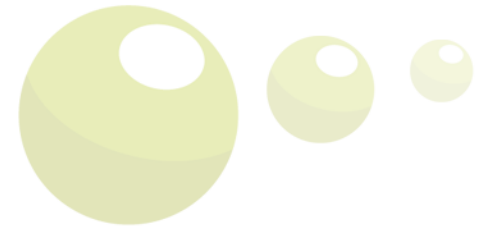
Multiplying perspectives

VC restructuring in software development: Findings

- Considerable transnationalisation (CEE, Asia in US-influenced companies)
- Patterns related to ownership and takeover histories (not „one new production model“)
- Offshoring both internally and outsourced starts with standardised tasks (coding, testing)
- Integrated MNCs implement internal markets (competition among owned subsidiaries)
- Outsourcing destinations move up VC and start their own offshoring

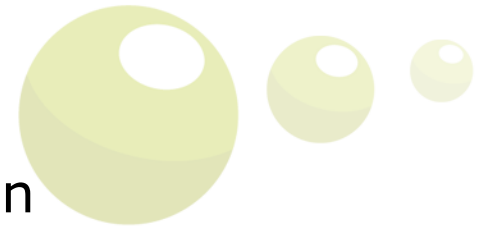
Standardisation and codification

- „industrialisation“ of software development, but not Tayloristic
- Bureaucratic, financial and technological standardisation
 - Requirements, specifications, architectures, interfaces,
 - procedures, project management, quality control,
 - documentation



contextualisation

- Standardisation complemented/compensated by contextualisation and tacit knowledge (at both ends of value chain)
- Local creativity: Messenger Croatia built „user cases“ to fill gaps of specifications
- Technical integration not necessarily seamless
- Multiplication of perspectives
 - Research & marketing
 - Interfaces up and down value chain
 - Intercultural skills and empathies
- BUT Overall speed-up of work



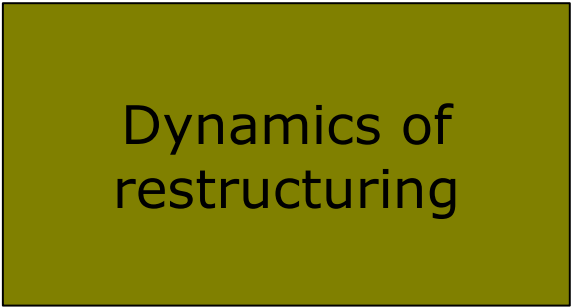
Domainsoft, Hungary: Knowledge circulation and competition

'That was an interesting situation when we succeeded to get a job which had never been delocalised to Hungary before. [...] Our foreign colleagues thought that this is a violence against their authority [...] As a consequence, if we ask something from them they will help but in doing so they try to keep as much information as possible, especially new or strategic ones. It is no more an aim to teach us for 100% because thus we could jeopardise their jobs. At the same time they cannot afford not to pretend being helpful.

The same is true for us. Our telephone centre has a support division in Romania, it is to them to solve eventual problems or errors, therefore they have often questions to us. Naturally, we always respond but we pay attention not to say too much from which they could take competitive advantage. Because we will be competitors on the next tender.' (Project manager, Domainsoft Hungary)

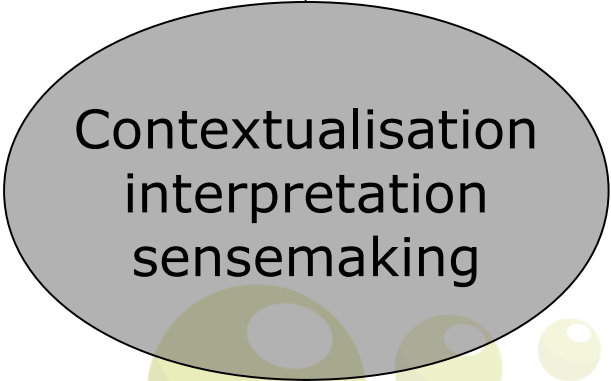
Knowledge and value chains 3: the synthetic view

Internal competition
Time pressure



Bottlenecks of project management
Expansion of working day

- Codification of knowledge
- Standardisation of products
- formalisation of procedures



Buildup of collaboration and trust vs compensation of deficits
Loss of craftsmanship

Conclusion: Dilemmas and contradictions

- Speed-up of business process vs buildup of relationships and competencies
- Circulation of knowledge vs internal competition
- “intensification of skill” and multiplication of perspectives under temporal and competitive pressure
- Norms of innovativity, networking and knowledge circulation both required and limited by competitive logic of flexible capitalism



Thank you!

