

Monozukuri in 21st Century

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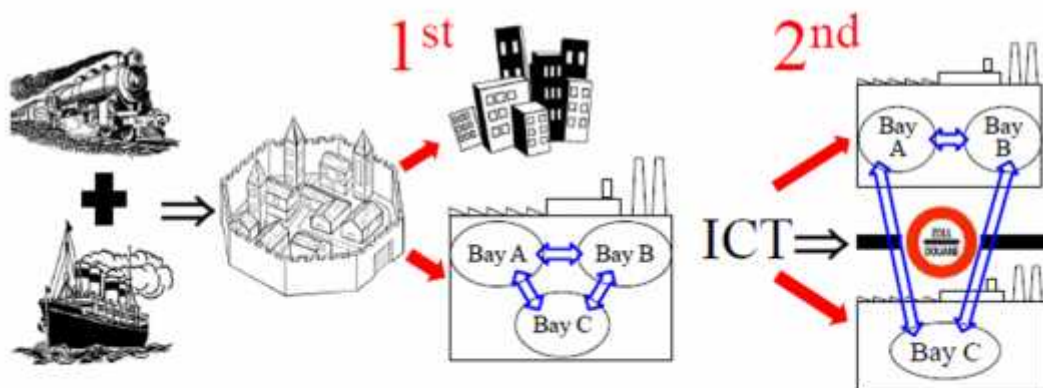
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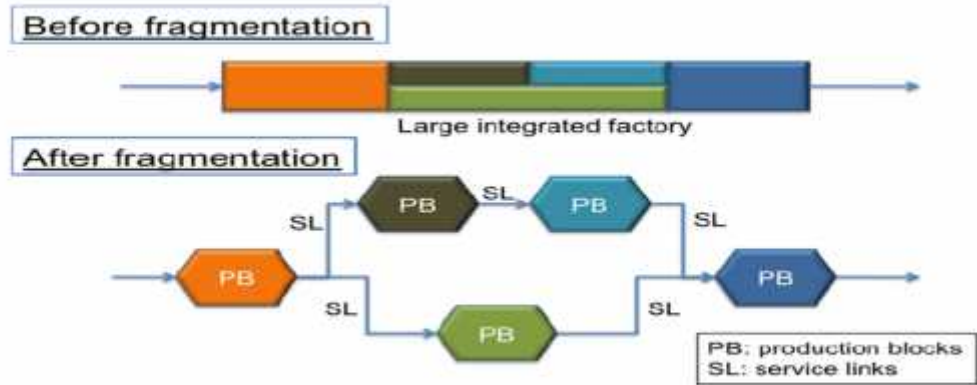
Expansion of Production Network

- The 2nd unbundling, i.e., international division of labor in terms of production processes and tasks, has developed since the 1980s.
- The 2nd unbundling in the manufacturing sector is most advanced in East Asia.



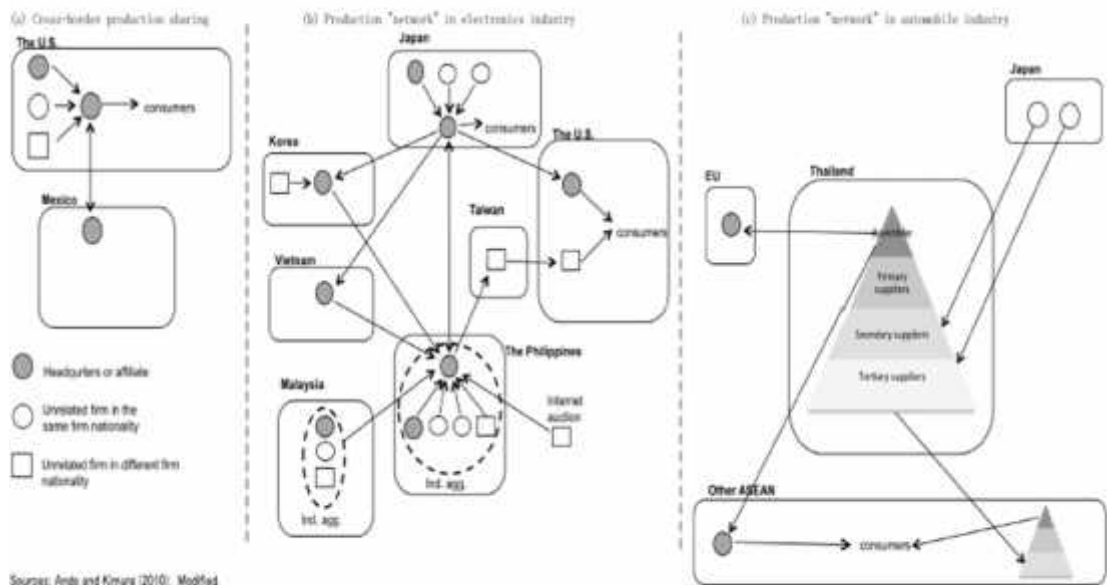
Source: Richard Baldwin / Fukunari Kimura

The Fragmentation Theory



Source; Fukunari Kimura

The Evolution of Production Networks: Illustrations



Industrial Cluster and Supporting Industries

- In the Automobile Sector, industrial clusters are growing.
- “Kanban Method” and “Kaizen Movement” covers the whole clusters
- Strong and broad supporting industries are indispensable for strong Clusters



Underlying Japanese Pylosophy for Monozukuri

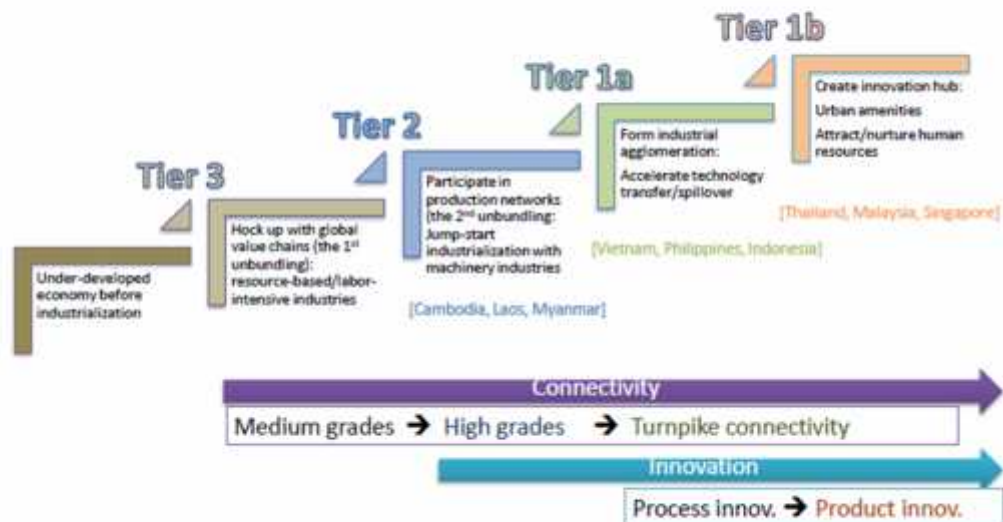
- ✓ Origin of the word “Economy”
= Oikos+Nomos (Household Management)
Essence; Pursuit of **Efficiency**
Japanese translation (150 years ago) 「経済(Keizai)」
←「經世濟民」(Sui Dynasty)
Meaning; Managing the country and **helping people**
 - ✓ Strong **Community Ties** in rural agricultural communities
 - ✓ Appreciation of **Craftsmanship**
 - ✓ War time **Mobilization** of SMEs
 - ✓ “**Mono**” has dual meaning; 「物(Thing)」 「者(person)」
- ↓
- Economic activity is seen as Community activity
 - **Monozukuri** is seen as imprinting personality into things

Core essence of Monozukuri="Genba-ryoku"

- ✓ "Genba ryoku"(On site power) is the collective ability to provide solution to various issues at the production site, and also the ability to find and identify such issues.
- ✓ Issue identification; Ability to grasp the whole production process and role of each player/ Understanding about final objectives and ability to think and act in other persons position.
- ✓ Solution; Knowledge and teamwork to produce "Collective Genius" , feedback to total process
- ✓ Participation of all member in the production process in the cycle of issue identification and solution

Connectivity with production network; the key for innovation

- ✓ Improved connectivity with production network will induce innovation
- ✓ Process innovation is indispensable pre-requisite for product innovation



Source: ERIA, Comprehensive Asia Development Plan 2.0.

How to mitigate "r>g" trend?

- Capital has stronger power because it lays the ground for issue-setting and issue-identification.
- If workers just follow the instruction of Manuals and provide solution only, labor will become subordinate of capital.
- Labor's contribution to economic activity, and return from it, will be improved only if each worker improve the ability of issue identification

Industrie 4.0; Challenge and Opportunity

- Challenge; If Industrie 4.0 will be developed with the single purpose to reduce cost by substituting labor with IT, the job opportunity will be reduced.
- Opportunity; If Industrie 4.0 will function to improve connectivity among various players in the economy, it will improve productivity and can create various job opportunity.
- How to achieve “People-Centred Industrie 4.0” is the key.
- *Monozukuri* education can complement the movement of Industrie 4.0, by strengthening ability of workers for issue-identification and issue-solution.

Conclusion

- Change the notion about the basic function of “economy”, from “pursuit of money” to “mutual support”.
- Spread the concept of “human-centric *Monozukuri*”, through education programs which nurtures labor force who grasp total production process and can conduct issue-identification and issue-solution collectively.
- This is indispensable to achieve “human-centric Industrie 4.0” and increase “Quality Job Opportunities”