Lessons of the 1995 Kobe Earthquake Experience - Pre-Planning of Reconstruction to Avoid Side Effects

Submitted by: Kobe University

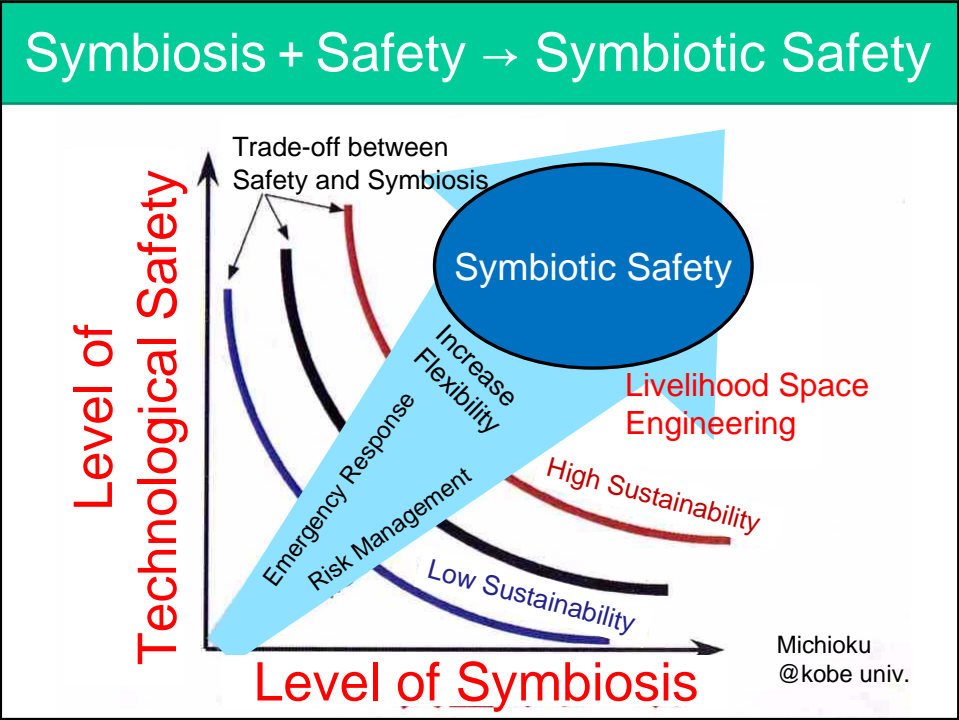**Seminar on Integrating Disaster Risk Reduction into Disaster Recovery and Rehabilitation**
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Lessons of the 1995 Kobe Earthquake experience
Pre-Planning of Reconstruction to Avoid Side Effects

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Symbiosis + Safety → Symbiotic Safety

Trade-off between Safety and Symbiosis

Level of Technological Safety

Symbiotic Safety

Increase Flexibility

Emergency Response

Risk Management

Livelihood Space Engineering

High Sustainability

Low Sustainability

Level of Symbiosis

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What is Symbiosis

- The symbiosis is the association on the part of the two or most individual ones of species different with the purpose of to receive mutual benefit for all of them.
- In this case,
  Symbiosis means living together with nature and also means living together with different social segments of communities.
- True Symbiosis must be provided with safety.

What is Technological Safety
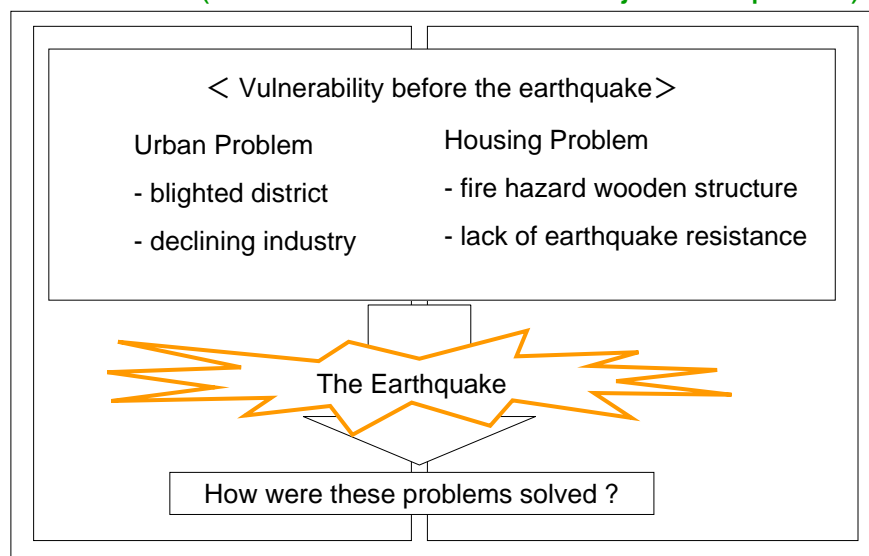
- Safety oriented technology without thinking of livelihood space and community activities.
- The true technological safety is symbiotic, but conventional technological safety is not symbiotic.

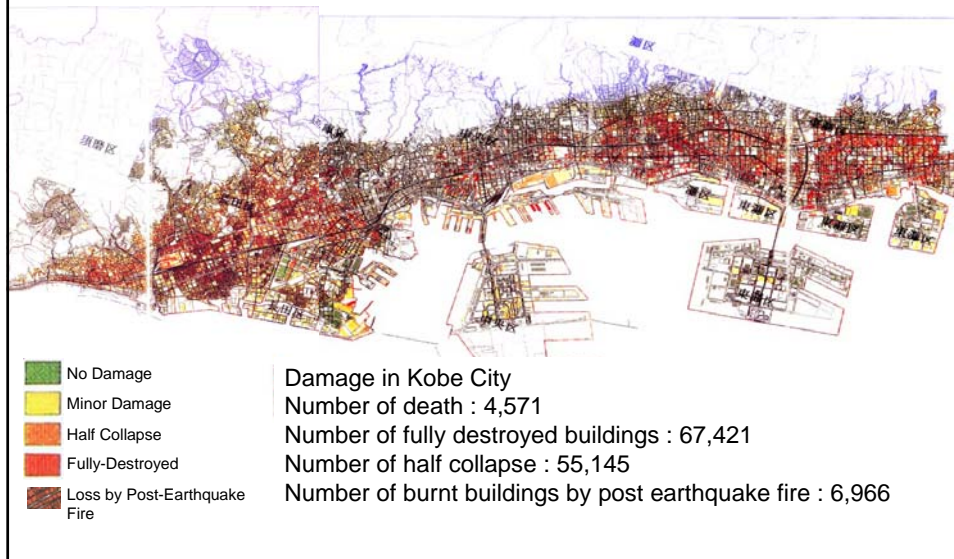# Side Effects of Limited Problem Solving Measures for Reconstruction

- **Technological Safety Limited Problem solving Measures**
  - Old-fashioned Technicism in Civil Engineering
  - Urban Government Paternalism
  - Disaster Prevention Fascist
  - Kicking out poor people and breaking communities ties
- **Symbiosis Limited Problem solving Measures**
  - Unplanned and Economical Way resulted in Crowded Places and unsafe

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Case Study : 1995 Kobe Earthquake in Japan

(The Great Hanshin-Awaji Earthquake)
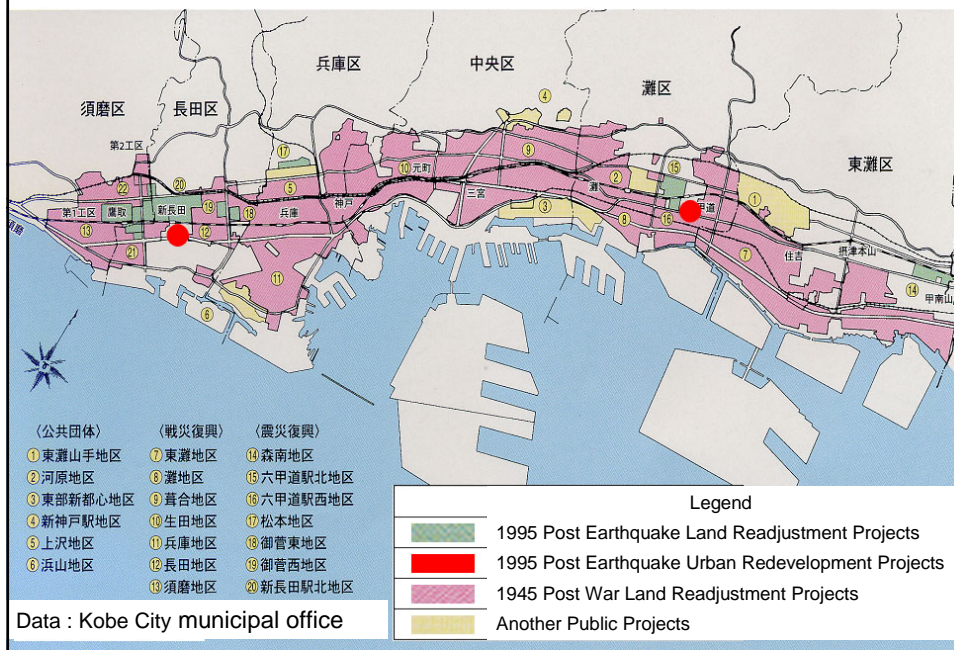
＜ Vulnerability before the earthquake＞

Urban Problem

- blighted district

- declining industry

Housing Problem

- fire hazard wooden structure

- lack of earthquake resistance

The Earthquake

How were these problems solved ?

Damage in Kobe City by 1995 Kobe Earthquake

No Damage
Minor Damage
Half Collapse
Fully-Destroyed
Loss by Post-Earthquake Fire

Damage in Kobe City
Number of death : 4,571
Number of fully destroyed buildings : 67,421
Number of half collapse : 55,145
Number of burnt buildings by post earthquake fire : 6,966

Reconstruction from the 1995 Kobe Earthquake

- **Urban Reconstruction**
  - Urban Redevelopment Projects in Central Downtown Area
  - Land Readjustment Projects around Central Downtown Area
- **Reconstruction of Housing**
  - Provision of Public Housing for Poor People in Remote Area (42,137 housing units)

Land Readjustment and Urban Redevelopment Projects Zones in Kobe City

兵庫区　　中央区　　灘区
須磨区　長田区　　　　　　　　　　　東灘区

〈公共団体〉　　〈戦災復興〉　　〈震災復興〉
① 東灘山手地区　⑦ 東灘地区　　⑭ 森南地区
② 河原地区　　　⑧ 灘地区　　　⑮ 六甲道駅北地区
③ 東部新都心地区　⑨ 葺合地区　　⑯ 六甲道駅西地区
④ 新神戸駅地区　⑩ 生田地区　　⑰ 松本地区
⑤ 上沢地区　　　⑪ 兵庫地区　　⑱ 御菅東地区
⑥ 浜山地区　　　⑫ 長田地区　　⑲ 御菅西地区
　　　　　　　　⑬ 須磨地区　　⑳ 新長田駅北地区

Data : Kobe City municipal office

Legend
1995 Post Earthquake Land Readjustment Projects
1995 Post Earthquake Urban Redevelopment Projects
1945 Post War Land Readjustment Projects
Another Public Projects

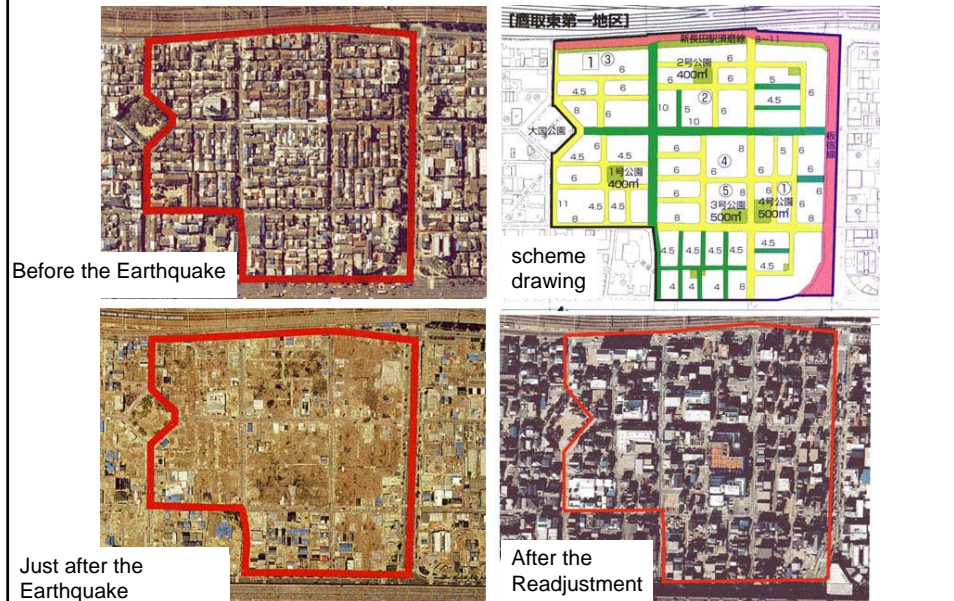Example of Post Earthquake Urban Redevelopment Projects

Area : 20 ha Population : 4,500 Housing units : 3,000
(composite picture of the project which is still under construction)

Data : Kobe City municipal office

Example of Post Earthquake Land Readjustment Projects

Data : Kobe City municipal office

Before the Earthquake

scheme drawing

Just after the Earthquake

After the Readjustment

Example of Provided Post Earthquake
Public Housing Complex in Remote Area

Advantages and Disadvantages of the Reconstruction

- Urban Redevelopment Projects and Land Readjustment Projects
  - Contribute to Urban Fire Safety and Rescue Service
  - Not enough common consent but urgent intervention
  - Not for the affected poor people but for the Renovation of blighted districts
- Provision of Public Housing
  - Safe and sufficient space
  - Relocation of poor people and destroy the community of original district

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Lessons of the 1995 Kobe Earthquake experience

- Out of date statutory project procedures resulted many side effects (Disadvantages of the Reconstruction).
- But we have had to use these procedures because there were no other way.
- We should establish new statutory project procedures which adapt to the changing social needs before disasters.
- It is also important to consider Pre-Planning for Reconstruction.

Pre-Planning for Reconstruction

- Tokyo Metropolitan Government made an urban recovery manual (1997) which was based on the concepts of pre-disaster planning for post-disaster Reconstruction.

- Neighborfood community-training program for post-disaster Reconstruction

- Implementing projects which follow pre-planning for reconstruction in advance of disasters

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