Conceptualization of place quality in High-Speed Rail station areas: A Review

UIC next station
TEHRAN 2019

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□ Background and value
□ Research questions
□ Review methodology
□ Review findings
□ Next step

Content

Research Background: Station-city relationship

China had 29,000 kilometers of HSR as of December 2018, accounting for two-thirds of the world's total.(World bank)

2014:   Opinions of the General Office of the State Council on Executing Comprehensive Development of Land to Support Railway Construction (No. 37 [2014] Issued by the General Office the State Council)

2018:   Guiding Opinions of the General Office of the State Council on Promoting Rational Development of High Speed Rail Precincts (No. 514 [2018] Issued by the General Office the State Council)

the Netherlands : "Design stations and their precincts as one whole"

-the plans include a diversity of business, residential, shopping and leisure functions
-density in the central area
-a relatively fine-grained grid
-functions such as retail and catering are planned in the streets
-reduce the negative effects of the infrastructure, particularly spatial fragmentation and noise
-improve the pedestrians' comfort（Castells，1996）

Utrecht central railway station, NL

Gross floor area **25.000 m²** ;
88 million people annually;
One hundred million passengers in 2030.

Guangzhou South railway station, China

The total construction area is **370,000 m2** ;
Expected 2020 passenger delivery volume will be **80.14 million** passengers.

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Ambitions & Construction volume

Four sets of expectations of HSR systems: 1. transportation goals; 2. environmental goals; 3. economic development goals; and 4. urban development/spatial restructuring goals. *(LOUKAITOU-SIDERIS et al., 2012)*

Railway stations must be adapted to the new **quality-oriented** characteristics of the city *(Conceição, 2015)*

It is argued that transportation hubs are increasingly **hybrid systems melting transit and urban activities** as contemporary urban environments. *(Stevens, 2015)*

Over time, attention has shifted from a focus on the development of multimodal nodes **towards an increased awareness of the importance of the urban context** in the railway station area. *(Zemp et al. 2011)*

In-sufficient tools

Unfortunately, the contributions about infrastructure mega-projects mostly focus on highways, tunnels, or rail lines and **have little to say about rail stations and their related urban surroundings.** (Peters, 2009)

Despite the fact that the redevelopment of railway stations is a common feature of almost every large city in Europe, train station (area) development (TSAD**) remains an under-studied topic** *(Peters and Novy 2012a; 2012c).*

Only a few pay reference to what is going on in the station's surroundings. (Mota & López, 2014)

Question

How is **place quality (PQ)** conceptualized in **academic discourses** in particular with respect to **HSR station areas**?

Methodology

In this paper, we review **44 academic articles written between 1996 and 2019**. For better dealing with the conceptual ambiguity, **two logics** are adopted to select the papers.

Type of paper	Number of papers	Percentage
Concept of PQ	17/44	38.64%
Evaluation of PQ	17/44	38.64%
HSR Practice	10/44	22.72%

Type of paper	Number of papers	Percentage
PQ in general space	2/44	4.55%
PQ in conventional Rail	22/44	50%
PQ in HSR	20/44	45.45%
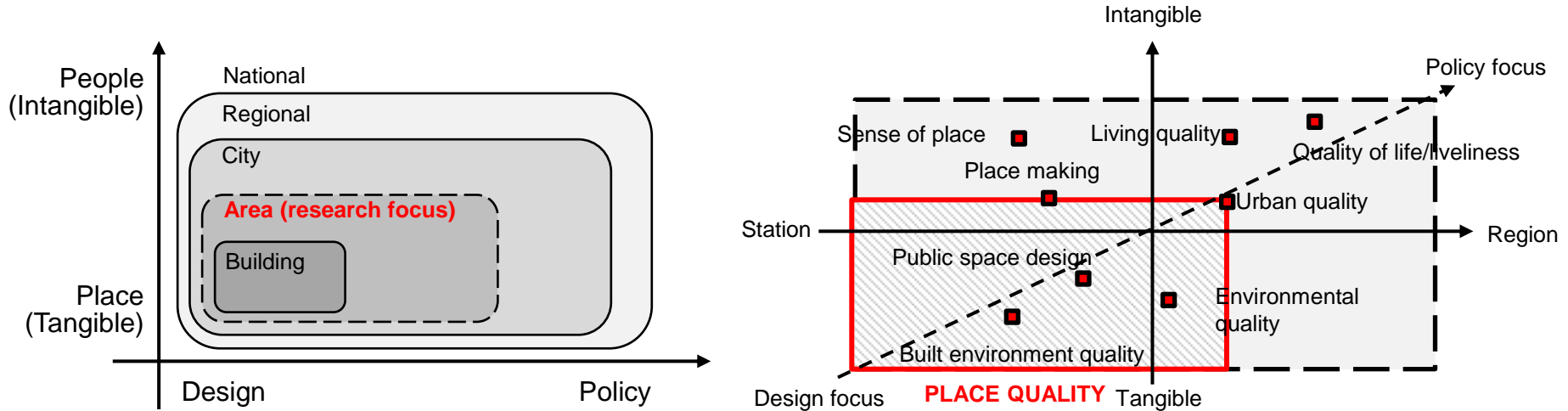
1: PQ in a scale-related structure

Differences are primarily related to differences in object, perspective, time-frame, domains, geographical scale level, indicator type, and context-dependency.

Many elements of place quality are relevant on more than one scale, and the influence is mutual. (Andrews, 2001; Esmaeilpoorarabi et al. 2018)
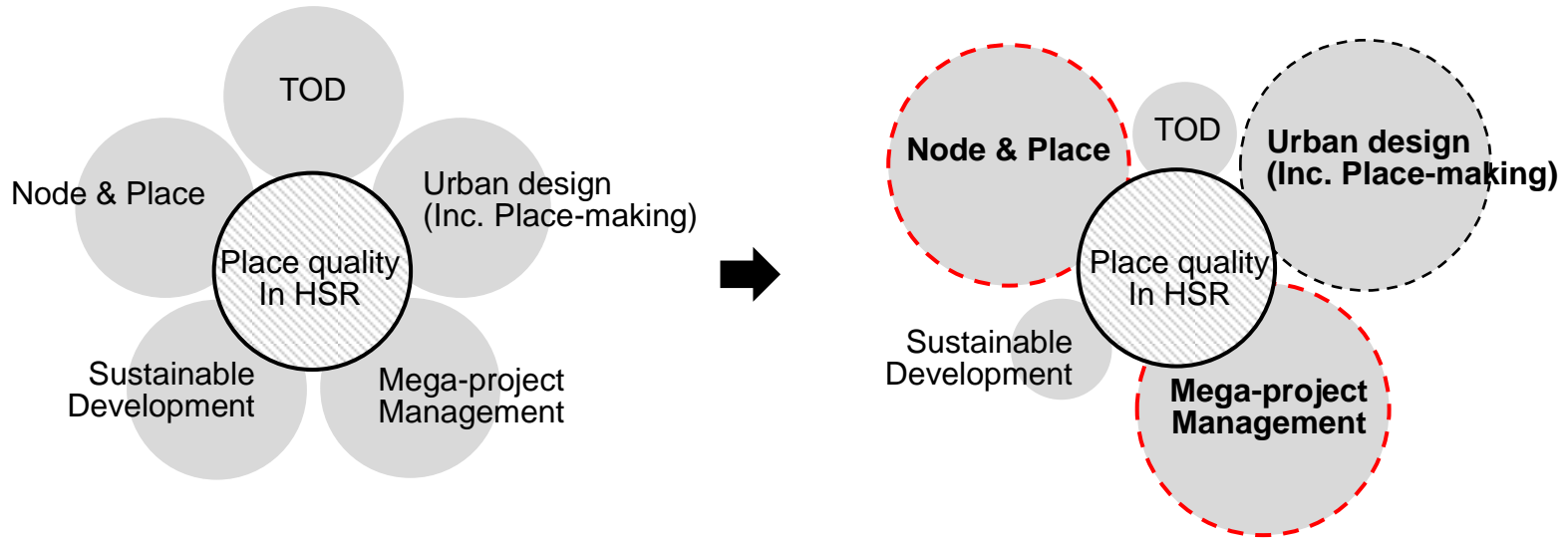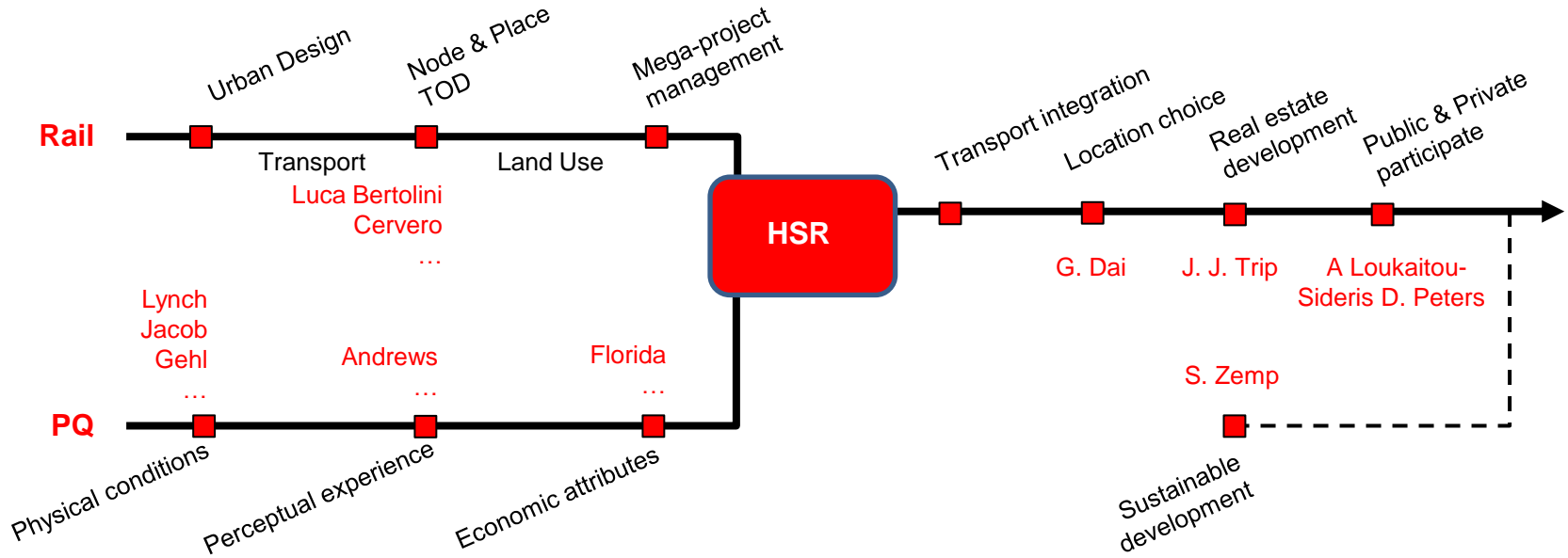
2: Multiple Disciplines

A stronger synergy between Node&Place, Urban design and Mega-project management.

	Country	Number of selected papers	Percentage	
Europe	**Netherlands**	**17/44**	**38.64%**	59.1%
	Czech Republic	1/44	2.27%	
	Swiss	2/44	4.55%	
	UK	2/44	4.55%	
	Spain	**2/44**	**4.55%**	
	Germany	**1/44**	**2.27%**	
	Portugal	1/44	2.27%	
North American	USA	5/44	11.36%	
Asia	Japan	4/44	9.09%	18.18%
	China	3/44	6.82%	
	Korean	1/44	2.27%	
Oceania	Australia	5/44	11.36%	

3: Geographical distribution

1. Why NL dominates this topic? **Node &Place theory**
2. The explanation of the small number of papers selected from Spain/Germany/France.

Rail

Urban Design — Node & Place TOD — Mega-project management

Transport — Land Use

Luca Bertolini
Cervero
…

Lynch
Jacob
Gehl
…

Andrews
…

Florida
…

PQ

Physical conditions — Perceptual experience — Economic attributes

HSR

Transport integration — Location choice — Real estate development — Public & Private participate

G. Dai — J. J. Trip — A Loukaitou-Sideris D. Peters

S. Zemp

Sustainable development

4: Research mainsteam

Why economic study plays a leading role of the topic?

Urban quality=property value.

Conceptual framework example (Spatial/Transport/Economic/Design/Environmental/Political)

Category	Scale*	The synonym sets of quality	Measurable Indicator	Perceptual factor
Spatial/ physical Factors	**UR**	**Position within urban structure**(Peters & Ph, 2015) (Babb, Falconer, Olaru, Duckworth-smith, & Isted, 2013); **Centrality**(Rond, 2011) ; **Station location**(Trip, 2008);	**Distance to urban centre** (Loukaitou-Sideris, 2013)	N/A
			Distance to basic facilities: airport, schools, hospitals, etc. (Loukaitou-Sideris, Higgins, & Cuff, 2013; 2012)	N/A
	RE	**Position within traffic network**(Peters & Ph, 2015)	**Terminal/pass/hub**(Loukaitou-Sideris, 2013)	N/A
	UR DI	**Barrier effect**(Trip, 2007a) (Loukaitou-Sideris, 2013) **Spatial fragmentation**(Robert C. Kloosterman & Trip, 2011a) **Street pattern**(Trip, 2007a);	**Size of the station area**(Vreeker, 2008)	N/A
			The shape/configuration(Vreeker, 2008)	
	UR DI	**Urban design** (Trip, 2007a); **External orientation**(Loukaitou-Sideris et al., 2013); **Compactness; continuity of layout** (Zemp, 2011)	**The number of intersection, The number of cul-de-sac; Change of skyline**(Vreeker, 2008)	N/A
	DI	**Walkability**(Trip, 2007a) (Babb et al., 2013)(He, 2016)	**Length of pedestrian lanes**	Pedestrian environment

- RE=Regional & National scale   UR= Urban scale   DI=District scale   BU=Building scale

Summary

- The relationship between HSR station areas and place quality has **not received systematic attention**, despite the evolution of urban planning paradigms towards the quality of life.

- **Node & Place, Urban design and Mega-project management** have a stronger synergy with place quality, but the concepts spanning the different disciplines have remained compartmentalized.

- Even though quality has a scale-related characteristic, **a multi-scale and multidimensional framework** is still missing.

- By structuring the conceptual framework, **the synonym sets of quality have been clarified, as well as the levels where they locate**. **The relation and synergy between categories** will be discussed in the next step.

- The conceptual ambiguity stems from **insufficient attention to the HSR features** and more specific to **a lack of a systematic classification of HSR station areas.**

Invitation

- Test the academic findings with empirical evidence, which will be a **Delphi survey**. Looking for experts who have experience of and interests in place quality within HSR projects.

- Contact email: **j.du1@tue.nl**

Thank you
for your kind attention