

17. IGE-SEMINAR, HOCHSCHULE LUZERN, 17. MÄRZ 2021

## **DENSE+GREEN CITIES**

ARCHITEKTUR ALS URBANES ÖKOSYSTEM

PROF. DR. THOMAS SCHRÖPFER, SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN



Photograph: Carlina Teteris

## **SUSTAINABLE FUTURE CITIES: THROUGH SCIENCE, BY DESIGN, IN PLACE**

### **Through Science**

To achieve sustainability, science is essential. Science provides the basis for understanding how cities develop and interact with the environment at different scales. Cities are composed of physical stocks, resource flows, social institutions, and cultural catalysts which interactions generate a quantifiable 'metabolism'. The scientific focus is to quantify such metabolisms and understand how they might best be structured for the benefit of sustainable cities.

### **By Design**

A sustainable city must also be liveable. To achieve liveability, design is essential. Design is a collaborative process that combines analytical techniques, imaginative strategies, and transdisciplinary knowledge to generate new ideas and bring them to fruition. Design skills bring often conflicting technical, economic, social, and cultural demands (such as environmental sustainability, profit, comfort, convenience, identity, security, satisfaction, and desire) into innovative and harmonious relationships.

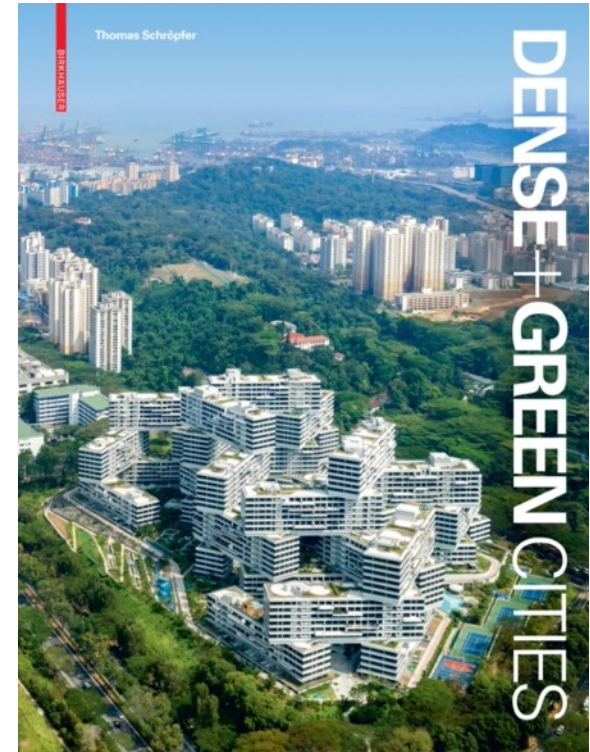
### **In Place**

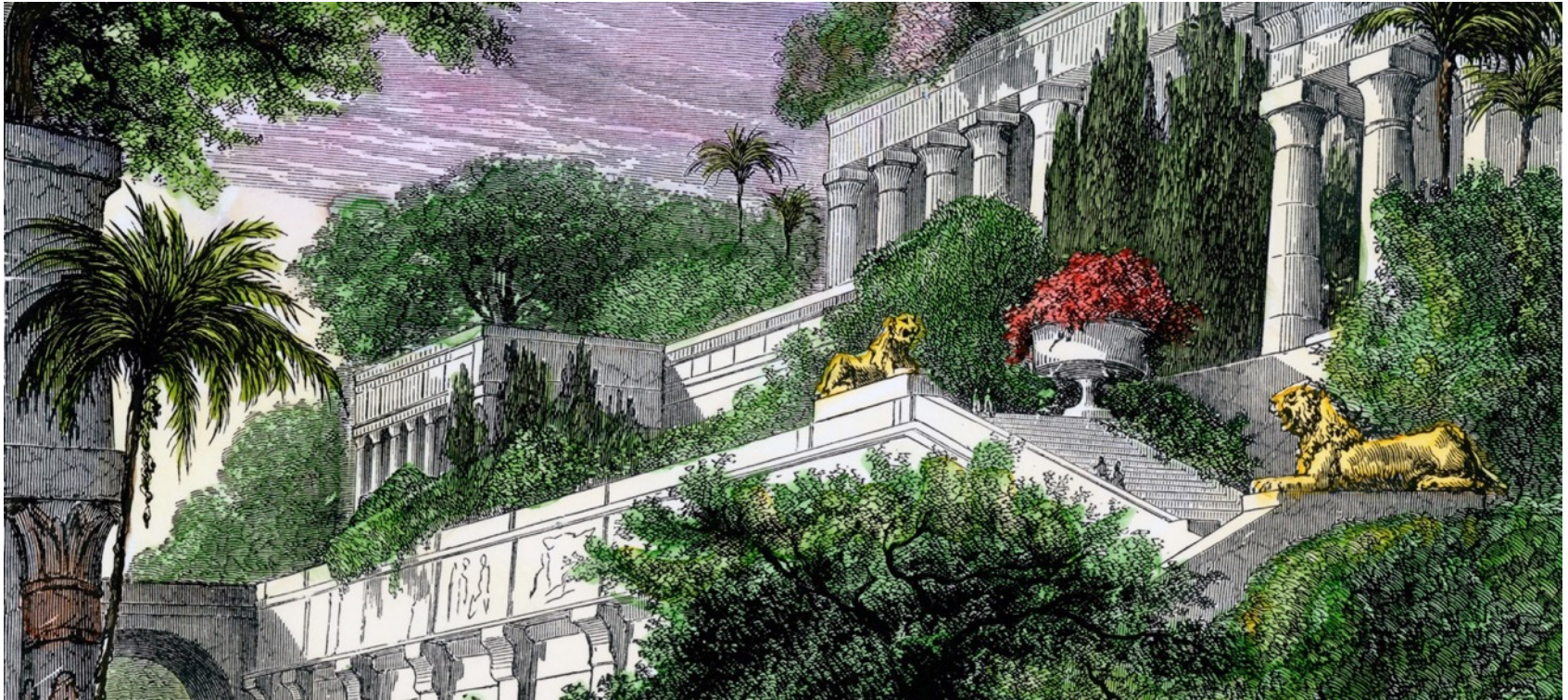
Science and design are effective only if they serve places and the lives that are lived in them. Places result from common processes (growth and decline, competition and cooperation, ebb and flow of capital, people, goods and ideas, and climate change) and differentiating factors (geography, culture, language, and history). Our research addresses diverse lived places, from compact cities with high population densities to extended cities with a mosaic of urban and rural land uses.

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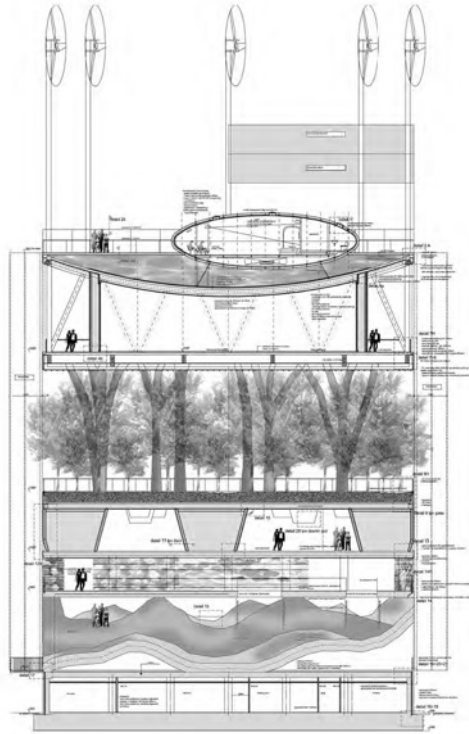




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Photograph Hans van Reeken

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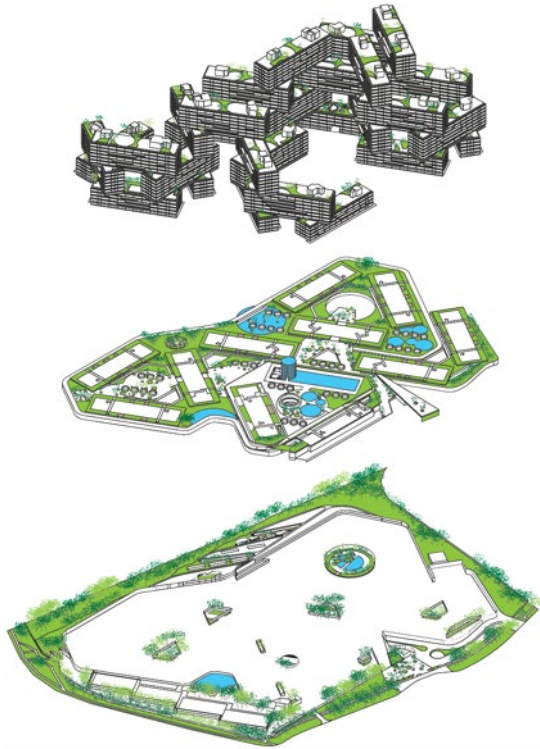


Source: WOHA

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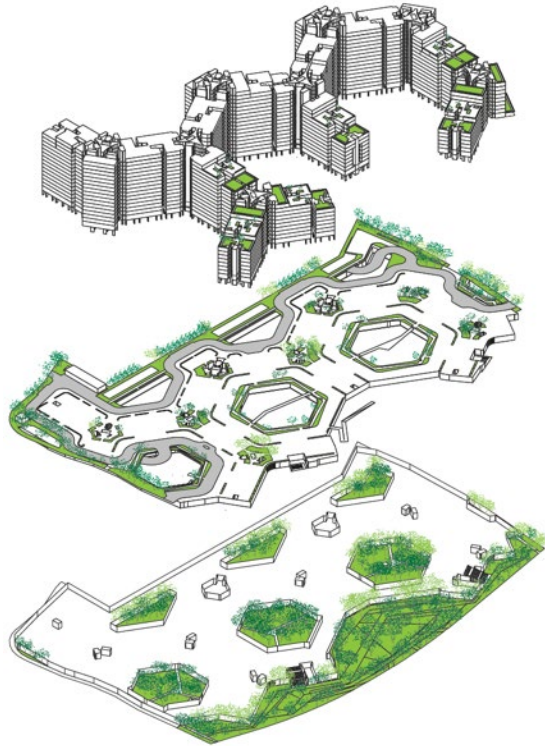


Source: Urban Redevelopment Authority Singapore

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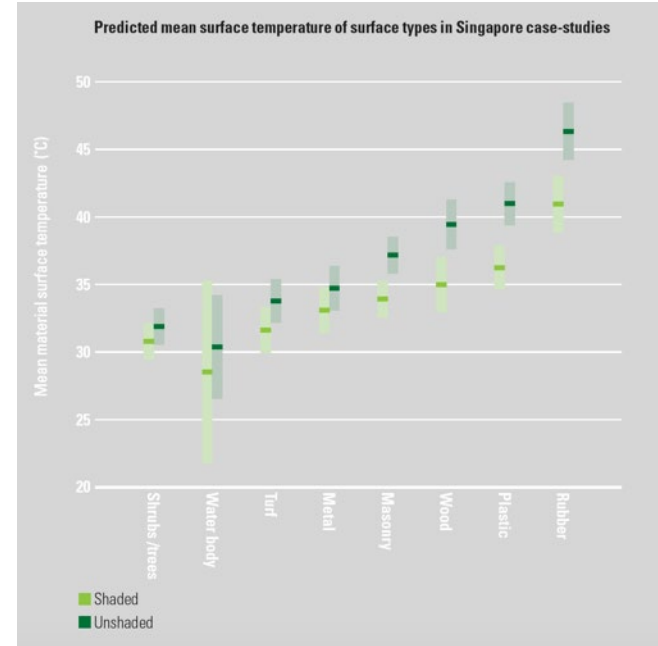
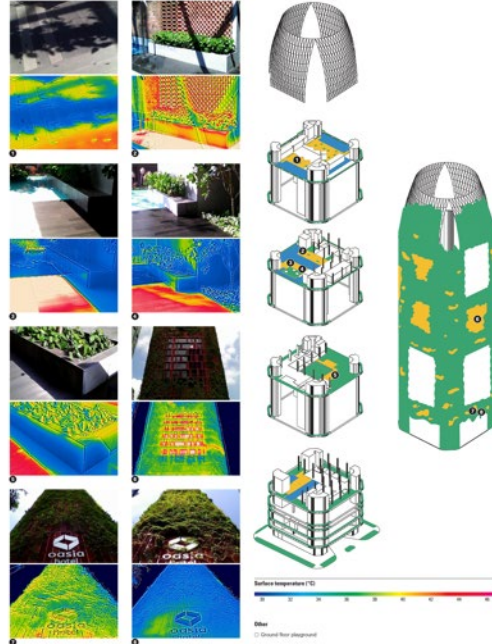
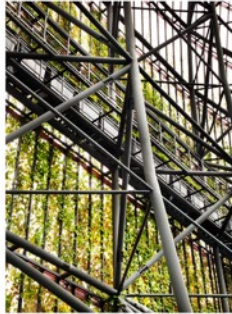
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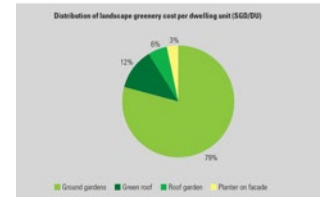
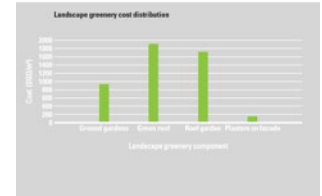
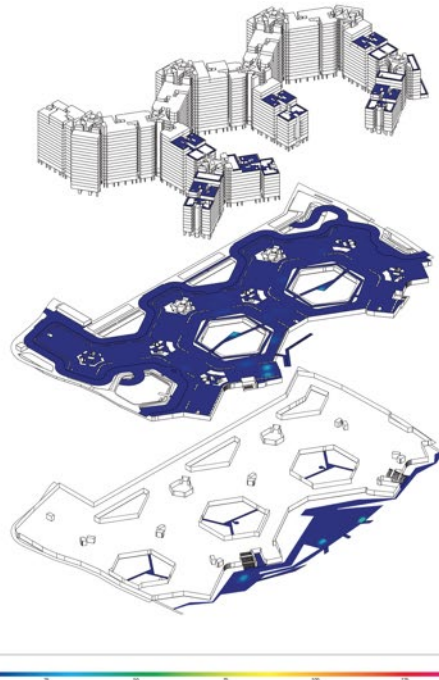
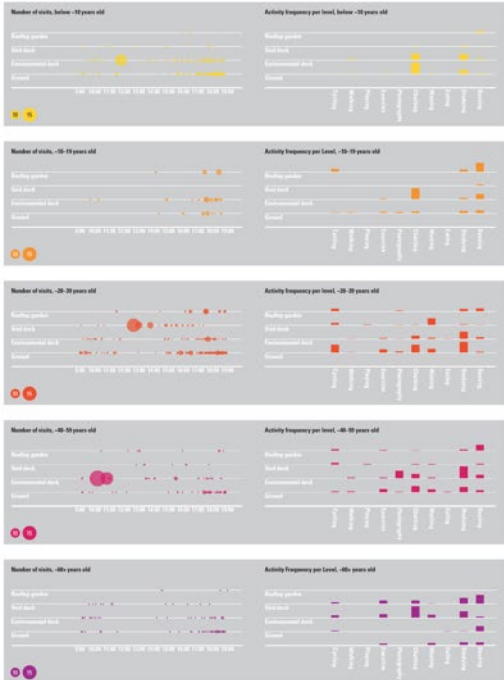
### Regulating Services



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### Socio-Cultural Services

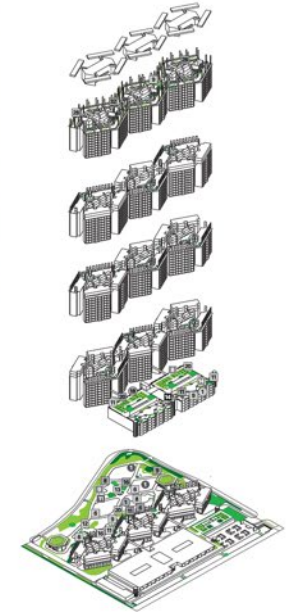
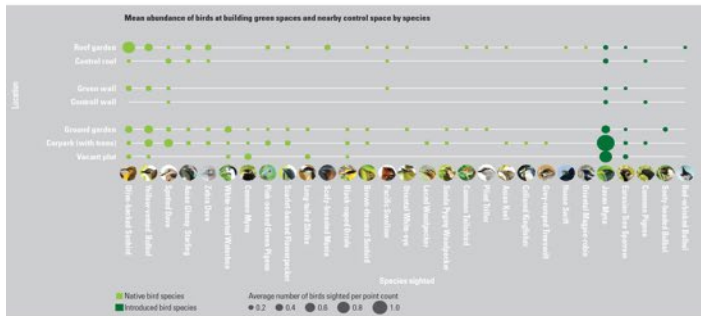
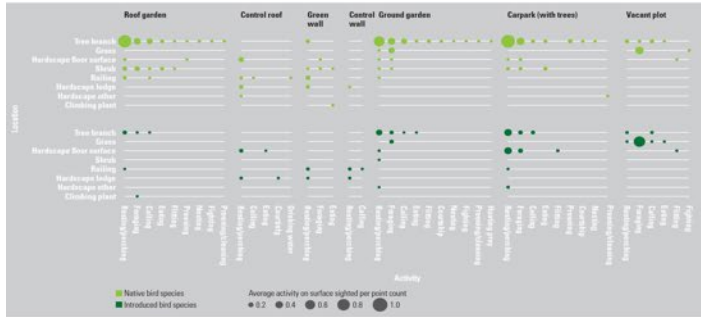




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### Supporting Services



**Bird species type (shape)**

- Native species
- Introduced species

**Information**

Common names of species found in our studies are shown. Numbers correspond with the birdhouse diagram on the left.

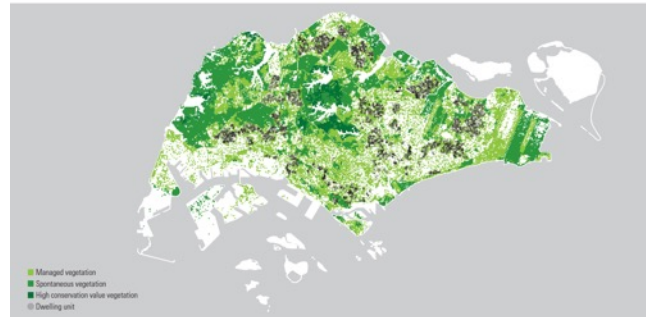
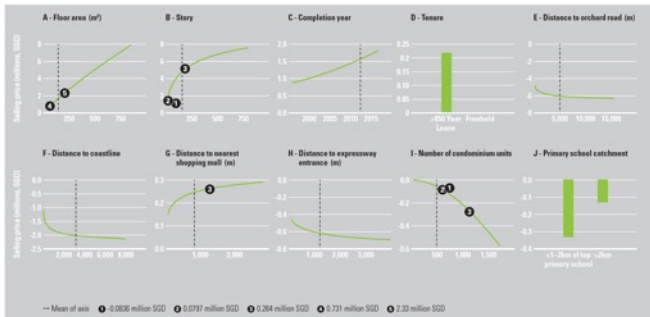
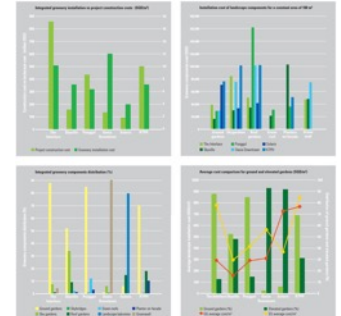
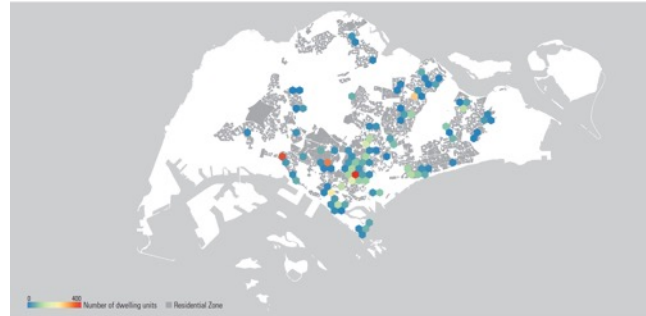
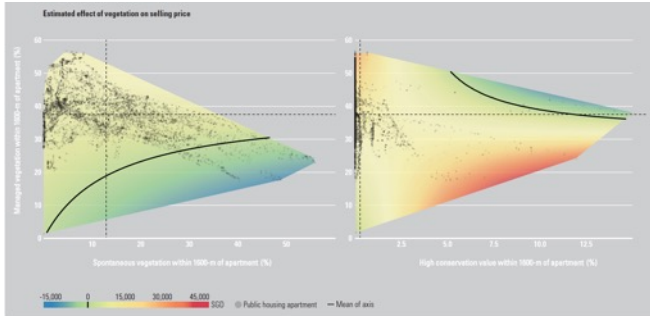
**Plant attraction type (color)**

- Butterfly attracting
- Bird attracting
- Attracts both
- Native species
- Introduced species

**Number of birds sighted (shade)**

Other

### Economic Services



## Coda

Dichte und grüne Projekte leisten wichtige regulierende Beiträge zur gesunden, nachhaltigen Stadt. Dazu gehören u.a. die teilweise deutliche Minderung von urbanen Wärmeinseleffekten.

Dichte und grüne Projekte tragen zum physischen und psychischen Wohlbefinden der Stadtbewohner bei. Sie erhöhen den Annehmlichkeitswert und die Attraktivität der Stadt insgesamt und bieten Erholungspotentiale. Indem sie Orte bereitstellen, wo sich Menschen treffen, ausruhen und gemeinsam sein können, fördern sie die soziale und kulturelle Integration.

Dichte und grüne Projekte steigern die Biodiversität, insbesondere in Verbindung mit weiterer urbaner blau-grüner Infrastruktur, und tragen so zur Widerstandsfähigkeit der Stadt insgesamt bei.

Dichte und grüne Projekte sind in Bezug auf Bau- und Instandhaltungskosten erschwinglich. Diese variieren zwar nach Standorten, erhöhen die Kosten aber im Allgemeinen nicht wesentlich. In den untersuchten Projekten trugen sie, unabhängig vom Bautyp, zwischen 1,5 und 4,5% zu den Gesamtkosten bei.

Dichte und grüne Projekte unterschiedlichster Nutzung sind ökonomisch nachhaltig und tragen zur Aufwertung ihrer städtischen Umfeldler und damit der Stadt insgesamt bei.

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