LEE LI MING
PROGRAMME IN
AGEING URBANISM

Planning and Design for walkable environment

Prototyping and tech-inspired interventions at various scales[1]

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Planning and design play vital roles in creating new products and environments for people to walk indoors and outdoors. Challenges and opportunities of walking-supportive design interventions vary in size, shape and scale. Often, urban spatial design practices capitalise on the power of multidisciplinary collaboration and increasingly on the state-of-the-art digital technologies including artificial intelligence.

This article presents planning and design interventions that support walking at various scales, from stair-aids for older adults to neighbourhood design proposals to urban masterplans. The focus is on the use of prototyping and technologies that are often engaged to optimise urban plans and designs.

[1] This is an evolving database. We will be adding more examples and cases over time.

Fixperts: Product Prototyping at Individual Level

Fixperts is a human-centred learning and support programme that mobilises young designer's imagination and skills to create innovative solutions for real persons, including older adults. Initiated in 2012, the progarmme is a prototype of a larger collaboration initiated by Brunel University, UK and Tongji University in Shanghai China as a design engagement platform to help communities and people with their everyday problems.

Following an inclusive and collaborative design approach, Fixperts transfers skills from people to people (e.g. from a Fixperts eg students/designers to a fix partners, eg a person having practical problems in daily life).[2] In its process, a fixperts works with a fix partner to identify problems, engage multidisciplinary knowledge groups (master Fixperts) and develop practical solutions (Dong, 2013). At the end of a project, a filmmaker documents the process and outcomes of a project.

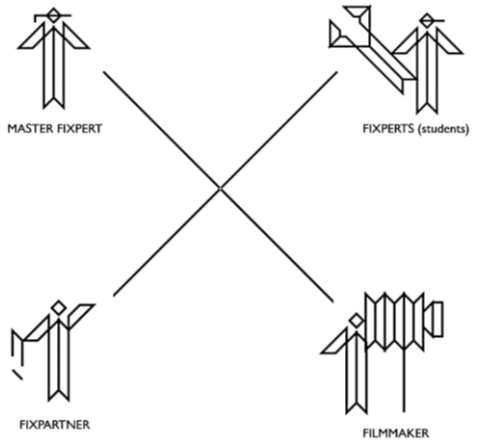
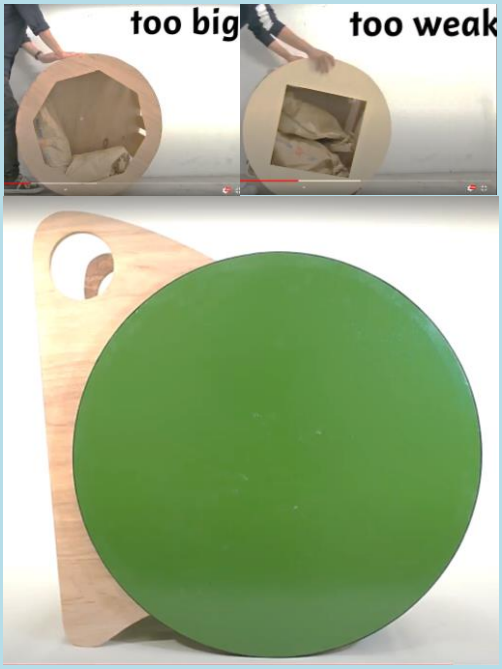


Diagram illustrating the Fixperts model. Image source: De Vere and Phillips (2015).

Box 1: Fixterts products

An older adult using a stair-aid prototype, which was developed using the Fixperts model.

Image source: Yong, R. D. (2018). http://rfdy.hk/responsibility/100233.html. Accessed 11 May 2019.



(Above) Design prototypes and (below) finalised flexible and large-wheeled trolley for a rice shop owner, developed by using Fixperts model.

Image source: http://fixing.education/films. Accessed 28 Oct 2020.

Fixperts programme has evolved as an award-winning educational 'think-and-do

[2] See, www.fixperts.org

tank' running in more than 30 universities worldwide and provides resources to undertake projects within respective institutions, e.g. care-centres, schools, colleges, universities. [3] Started as a 6-week project for student learning, currently, the duration and scale of Fixperts collaboration vary depending on whether it addresses problems for individual or community. For example, a trolley for a rice shop owner (Fixperner) designed by four students (Fixperts) from Kyoto Design Lab at Kyoto Institute of Technology took several months under the supervision of professors.

Market Street Prototype: Urban Design at Street Level

In 2015, Gehl Architects transformed a transport corridor at the Market Street in San Francisco into a lively shopping district. The urban design team, in collaboration with the San Francisco Planning Department and Yerba Centre for the Arts, organized a 2 day prototyping festival from 9 to 11 April, 2015. [4] Five key purposes of prototyping were to bring citizen and decision makers closer, reduce gap between idea and implementation, unlock the public potentials of civic assets, envision the unimaginable, and create a feedback loop between community needs, interventions and uses.

Five types of prototypes, e.g. the Outpost (a modular wooden structure with potted plants and turf), Show Box (stacked wooden cylinders with plug-and-play electrical facilities), Common Ground (combined seating, plants and water to facilitated interactive game), Tenderloin ExerTrail (fitness trail with gym activities), Tag Tunnel (large chalk bords for youth street artists), were installed in different locations along the Market Street.

Box 2: Market Street prototypes

Ping Pong board and 'Outpost' prototype on Market Street, San Francisco.

Image source: Anna Muessing (2015). https://gehlpeople.com/blog/makers-on-market/. Accessed 29 October 2019

Using multiple methods, e.g. observations, social media analysis, online surveys, intercept surveys, in-depth interviews, photo survey, and prototype

[3] See, http://fixing.education/fixperts

[4] See, Gehl Studio San Francisco. (2015). Markers on Market: Lessons from San Francisco's Market Street Prototype1. Retrieved from http://marketstreetprototyping.org/wp-content/uploads/2016/04/MSPF-Report_Vol1_Makers-on-Market.pdf

evaluation tool, the prototype interventions were assessed in terms of street for people, engaged communities, shared civic spaces, opportunity & access, and building capacity. Participatory assessments helped to understand peoples' preferences for the designed blocks, their magnetic effects during festive events and most importantly, people's changing perceptions of the Market Street. For example, the outpost prototype increased lingering activities (e.g. standing, sitting and active activities measured each hour) by 700 percent, averaged for all districts.

Superblock Model: Urban Design at Block Level

The Superblock model, a design prototype developed by Spanish urban planner Salvador Rueda, considers existing urban built forms and recommends solutions to reclaim public spaces for people and enhance active mobility with a focus on sustainability, equality, health and happiness in urban life. Starting in 2012 with the Superblock Programme, the superblock model is being implemented in Barcelona by the Barcelona City Council through various strategic action plans including the Municipal Action Plan 2016-2019.[5]

The superblock model implemented at Vitoria-Gasteiz, an old town in Spain with 244,000 inhabitants, got the UN Global Green City of the Year award in 2019. Nine square blocks of about 40 acres, extended sidewalks, extended tree plantations, addition of bike lanes, instalment of benches, rule on speed limit of 10 km, and the absence of through traffic within a block are some of the key design features of the superblock.

Box 3: Vitoria-Gasteiz, Spain

A superblock street intersection at Vitoria Gasteiz, Spain.

Image source: Ériver Hijano (2019). https://www.bloomberg.com/news/features/2019-10-29/the-superblock-revolution-is-making-cities-safer-and-cleaner. Accessed 6 November 2019.

Inclusion of public and diverse views in the implementation and evaluation of Superblock Programme.

Image source: Barcelona City Council, (2016). https://ajuntament.barcelona.cat/ecologiaurbana/sites/default/files/en_gb_MESURA%20GOVERN%20SUPERILLES.pdf.

A pre-post comparative study conducted by Martin Javier Delso et al. (2018), including 12,323 pedestrian crossings and traffic signals, have shown that the

[5] See, Barcelona City Council. (2016). https://ajuntament.barcelona.cat/ecologiaurbana/sites/default/files/en_gb_MESURA%20GOVERN%20SUPERILLES.pdf

superblock's pedestrian network contributed in reducing pedestrian commuting times by 4 to 5 percent. Another case study of Poblenou neighbourhood superblock suggests more vertical and horizontal coordination to reduce observed conflicts between residents and non-residents, and neighbourhood and urban level traffic (Scudellari et al. 2020).

Sidewalk Toronto: Urban Planning and Design at Community Level

Sidewalk Toronto is an AI-inspired walkable neighbourhood plan along the Eastern Waterfront in Toronto. The plan was 'built from the internet up' by Google Sidewalk Labs. [6] The winning urban design entry proposes an idyllic community with grassy parks, modern building modules, and underground routes for delivery robots supported by internet cable networks. Sidewalk Labs' model put technologists and urbanists in the same team to explore new potentials of urban transformations in the 21st century. The size of the total proposal is 750 acres while 12 acres is allocated for piloting.

The area proposal is "free of cars" and includes the use of sensor-networks to reduce carbon footprint, monitor noise, traffic and pollution and improve and redesign continuously. Google Sidewalk Labs has recently developed a machine learning tool called 'Delve' that help developers, planners and designers to generate prototypes and alternative building forms. The tool considers criteria such as optimal floor area and land use, height limits, daylight access and so on, to choose from. [7]

Box 4: Sidewalk Toronto: Quayside

Sidewalk Labs' illustration of The Quayside page-friendly plan

Image source: Alexis Wise (2019). https://medium.com/sidewalk-toronto/aging-and-thriving-in-place-2d7679066c80

Although a winning entry, Sidewalk Toronto is a widely watched and debatable smart city development project. Scholars and policy makers raise questions on "ubiquitous data collection and surveillance", digital rights as human rights, legitimacy of digital public participation process.[8]

[6] See, Summers, N. (2018). https://www.engadget.com/2018-03-16-alphabet-google-sidewalk-labs-toronto-quayside.html

[7] See, Ikhena, O. (13.10.2020). https://medium.com/sidewalk-talk/announcing-delve-discovering-radically-better-urban-designs-1f932326330c

[8] See, https://www.smartcitiesworld.net/opinions/opinions/waterfront-toronto-lessons-in-community-engagement

NEOM City: Urban Planning at City Level

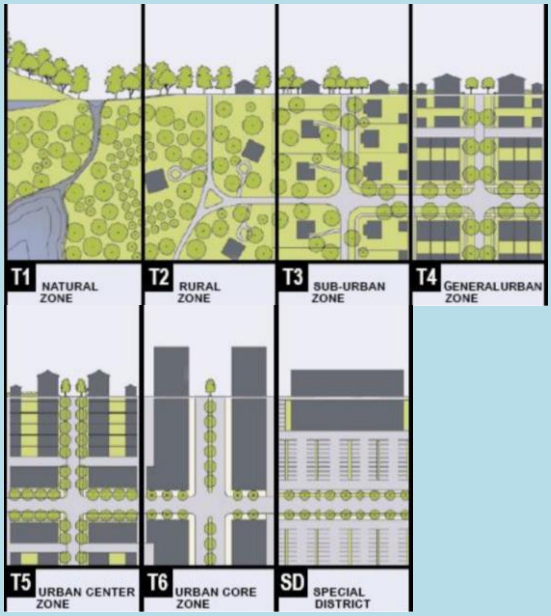
NEOM is a $500 billion city project (Vision 2030) by Saudi Arabia. NEOM aspires to build a walkable, adaptable, inclusive, and progressive cross-border city (with Jordan and Egypt) that would foster innovation by being a financial hub, a technological lab and a futuristic playground. [9] The proposed location of the city is at the Red Sea West Coast near Tabuk.

Lead by the London-based office of BIG, NEOM masterplan, urban fabric, and architectural design would be guided by New Urbanism principles, SmartCode V9.2, and vernacular architecture of Saudi Arabia (Fallatah, 2019).

As planned, wind and solar energy would power the 26,000 square km city. People would move using green transport systems including automated cars and passenger drones. SmartCode V9.2 utilizes a systematic zoning category considering rural-urban transect zones, e.g. natural, rural, sub-urban, general urban, urban center, urban core and special districts.

The first phase of the project, e.g. the King Abdullah Financial District at the Northern part of Riyadh started construction in 2006. According to project consultant Henning Larsen, climate-responsive positioning of the buildings would guide the desert wind and sun in an optimal way, resulting in 8 to 10 degrees temperature drop within the district.

Box 5: NEOM City: Smart Code V9.2



The NEOM City plan follows rural-urban transect zones as depicted in Smart Code V9.2.

Image source: Center for Applied Transect Studies. (n.d.). SmartCode V9.2. Retrieved from https://transect.org/codes.html

Artist's illustration of potential public outdoor activities in the proposed King Abdullah Financial District, Riyad.

Image source: https://henninglarsen.com/en/projects/0700-0799/0770-king-abdullah-financial-district/

[9] See, https://www.bloomberg.com/news/articles/2017-10-24/saudi-arabia-to-build-new-mega-city-on-country-s-north-coast

However, NEOM city project is lagging behind from its original completion date (2025) due to geo-political circumstances, reception and reaction towards this mega project from various stakeholders including the existing communities living in the project site.

Summary

Planning and design interventions for creating walkable environments for all are multi-disciplinary and collaborative ventures - often involving urban planners, designers, researchers, students, industries, communities and individuals.

Design prototyping are employed at various scales to get user or community feedback on proposed plans and designs before implementation. Apparent in the Fixperts and Market Street prototype projects, small-scale design prototypes were effectively used to test user-sensitivity, functionality, and feasibility of design ideas before mass production (Fixperts) and large-scale intervention (Market Street).

New technological developments in digital sensors, AI – machine learning, big data analytics play increasing roles in shaping concepts, plans and designs for walkable environments. Projects such as the Sidewalk Toronto capitalise on the power of digital sensors and AI at neighbourhood level while the NEOM city proposal capitalises SmartCodes, automated vehicle technologies and so on. Long-term performances of tech-inspired urban plans and designs focusing on creating walkable, sustainable and energy efficient urban environments are yet to be tested.

Sources:

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