

(Eye)tracking users' patterns

visual experience and choice behavior in transition zones of Amsterdam-Southeast

Author(s)

Suurenbroek, Frank; Spanjar, Gideon

Publication date

2018

Document Version

Final published version

Published in

Shared behavioral outcomes

[Link to publication](#)

Citation for published version (APA):

Suurenbroek, F., & Spanjar, G. (2018). (Eye)tracking users' patterns: visual experience and choice behavior in transition zones of Amsterdam-Southeast. In *Shared behavioral outcomes* (pp. 176-177)

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SEPTEMBER 20-22, 2018

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(Eye)Tracking Users' Patterns: Visual Experience and Choice Behavior in Transition Zones of Amsterdam-Southeast

Dr. Frank Suurenbroek and Gideon Spanjar Ph.D.

Amsterdam University of Applied Sciences (AUAS), Faculty of Engineering, Research Program Urban Technology and Research Program Urban Management, The Netherlands, Europe

ABSTRACT:

Over the next 10 years, the City of Amsterdam plans to develop major housing schemes provide 90,000 new homes within the existing urban fabric. At the same time, an urban renewal program is being launched to revitalize the most deprived neighbourhoods. Together, these challenges call for more evidence based design-principles to secure liveable places. Recent development in neuroscience, provides innovative tools to examine in a measurable, cause-effect way, the relationships between the physical fabric, users' (visual) experience and their behavior in public spaces. In neuroscience, eye-tracking technology (ET) complements brain and behavioral measures (for overview see Eckstein et al. 2017). ET is already used to evaluate the spatial orienting of attention, behavioral response and emotional and cognitive impact in neuroscience, psychology and market research (Popa et al. 2015). ET may also radically change the way we (re)design and thus, experience cities (Sita et al. 2016; Andreani 2017). Until now, eye-tracking pilot studies collected eye fixation patterns of architecture using images in a lab-setting (Lebrun 2016).

In our research project Sensing Streetscapes, we take eye-tracking outdoors and explore the potential ET may offer for city design. In collaboration with the municipality of Amsterdam and the local community, the H-neighborhood is used as a single case study. The main focus for urban renewal lies in the "transition-spaces". They connect the neighborhood with the rapidly developing adjacent areas and are vital for improving the weak social-economic status. The commonly used design principles are validated (Alexander et al. 1977; Gehl 2011, 2014; Pallasmaa 2012) and the consistency of ET is tested, alongside (walk along) interviews and behavioral observations. In the next phase, the data will be analyzed by a panel of applied psychologists and urban designers.

The initial results provide valuable lessons for the use of eye-tracking in urban design research. For example, a visual pattern analysis offers more accurate images of the spatial key-elements that matter when moving through transition spaces. More sensory-based city design research is needed to gather a full understanding of the relationships between the configuration of space, users' (visual) experience, behavioral responses and in turn, perceptual decision making.

Figure 1 – Gaze plot from a single participant taken in the transition zone at the underpass between the business district and H-neighborhood. Eye fixation on movement (cars and pedestrians), balconies and the top of buildings.

Figure 2 - The H-neighborhood in the southeast of Amsterdam. Railways and elevated roads are barriers in socio-spatial interaction. Despite these barriers, the advanced network of footpaths and strategic location of the H-neighborhood offers opportunities for revitalization.

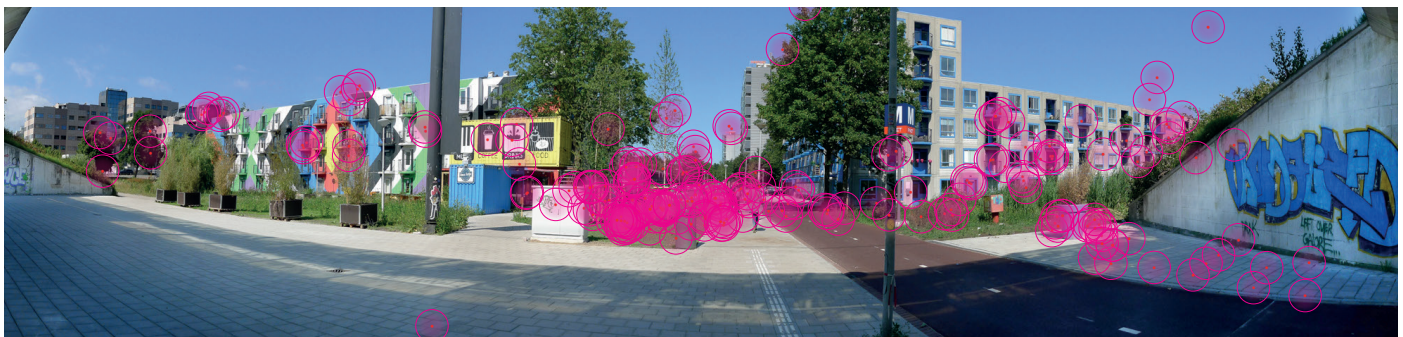


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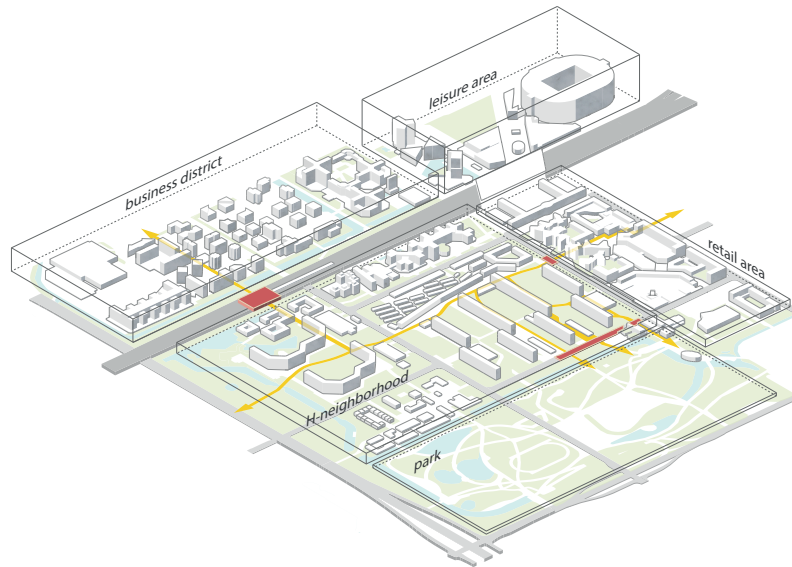


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AUTHOR BIOS:

DR. FRANK SUURENBROEK is Professor of Spatial Urban Transformation at the Faculty of Engineering at the AUAS. The new research project *Sensing Streetscapes* is in collaboration with several universities, SMEs, housing corporations and municipalities, and aims to connect directly to the field of neuro-architecture. Frank is also responsible for the multidisciplinary research-track *Inclusive Area-development*.

GIDEON SPANJAR holds a PhD in Landscape Architecture from the University of Essex. Gideon is currently senior researcher at AUAS, member of the research-track *Inclusive Area-development* and project manager of the action-research in the H-neighborhood, Southeast Amsterdam. He is an associate fellow of the Centre for Ecomics and Ecosystem Management.