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(Eye)tracking users’ patterns
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ABSTRACT

Over the next 10 years, the City of Amsterdam plans to develop major housing schemes to 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, eyetracking pilot studies collected eye fixation patterns of architecture using images in a lab-setting (Labrun 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 is to analyze socio-spatial interactions between the H-neighborhood and unlocks the urban renewal potential for the wider area.

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 matters 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.

PRELIMINARY FINDINGS

The research set-up is on a transition zone, at the end of the subway station and entrance of the H-neighborhood. Participants, consisting of residents and visitors, are randomly selected. Participants’ eye movements are tracked for 30 seconds at one single viewpoint using eye-tracking technology.

NEXT STEP

Currently, the meta-data output consisting of eye patterns, behavioral responses and user perceptions, are analyzed by a panel of experts such as urban designers, planners, architects, sociologists, psychologists, and practitioners. The research is taken forward to investigate opportunities to enhance human centered urban design through eye tracking research where urban identification continues. Therefore, we are seeking for researchers from universities, research institutes and practitioners to join forces in this new field of research.

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CASE STUDY H-NEIGHBORHOOD

Fig. 1 The 34 neighbourhoods designated for urban renewal in Amsterdam. A detailed action alongside action research in three neighborhoods including the H neighborhood in the Southeast.

Fig. 2A Buildings with railings and in particular balconies, catch the eye.

Fig. 2C Resolving barriers in the transition zones through technological, programmatic, environmental and socio-economic conditions (in red).

Fig. 3A The underpass to the office building catching the attention of several participants.

Fig. 3B Parks, water, local space, local facilities, and greenery catch the eye.

Fig. 3C The underpass to the office building catching the attention of several participants.