Davos 2018
Declaration

Neil Davidson

Using big data to improve wellbeing Informing policy and high quality, site-specific interventions

Conference : Getting the measure *Baukultur* – pour un espace de vie de qualité
4th and 5th November 2019 at the Pavillon Sicli in Geneva
Parallel session 1: Streetscapes

Everything is connected. The design of beautiful urban landscapes of quality and imagination have the potential to provide transformative benefits to health and wellbeing. However, many people who live in cities have lost their connection to the environment and the natural world that surrounds them.

When we consider cities as landscape networks there is no one-shot cure, nor a single-purpose panacea, but the need for collaborative solutions. The impacts of climate change are undeniable and our response to it glacial. As urban populations explode and intensify, centralising resource demand and dispersing resource production, access to nature becomes increasingly fundamental to our mental and physical wellbeing.

Concepts of re-wilding, land restoration, safeguarding urban habitats and habitat creation are gathering renewed momentum. Simultaneously, revenue funding for the public realm and parklands is diminishing at an alarming rate.

There are several fundamental components of critical infrastructure that are key to every project that we work on and collectively they require us to better appreciate the web of life, how everything hangs together in the 'balanced nature of nature'. With people central to the ecosystem not at the top of an unsustainable pyramid.

Soils: directly provide the vast majority of our food; they are also the largest store of carbon in the earth system; they regulate water quality and quantity, reducing the risk of floods, droughts and pollution.

Flora (specifically trees): London is home to roughly the same number of trees as there are people, just over 8 million. However, the tree canopy is under extreme pressure, from underground services, emerging disease and development pressures. Many of our street trees are of a similar age and there are no new city-wide tree planting initiatives responding to this issue with the necessary urgency to replenish tree stocks.

Water: the natural system has been disrupted – historically we have imposed the city on the natural environment, we urgently need to find a solution that works with this process symbiotically. Water as critical infrastructure is a variable condition and usually is only deemed newsworthy when there is either too much or too little.

We believe landscape architects are ideally placed to mediate between these topics and scales; to innovate in the fields of public realm, environment, wellbeing and green infrastructure. The ability of the landscape architect to draw on knowledge from arts, humanities and sciences and to champion a project from inception through to delivery, covering scientific research and resource management and the ability to empower urban communities, to become provocateurs in this process is key to this. We must grab the mantle as built environment professionals.

And when we collaborate with experts in other fields, such as artists, neuroscientists and technologists, the potential for positive change grows exponentially.

A shared desire to improve wellbeing in urban environments led to cross-disciplinary collaboration and the creation of the research project Urban Mind. It was conceived with neuroscientist Professor Andrea Mechelli

→

of Kings College London and Michael Smythe of art foundation Nomad Projects and the Landscape Architecture studio, J&L Gibbons, in 2015.

More than half the world's population live in urban areas. This number is rising fast in both developed and developing countries, and it is expected that 66% of the global population will live in cities by 2050. This has major implications for global mental health, not least because people who live in urban environments are at higher risk of a range of mental health issues.

Existing evidence on the beneficial effects of nature on mental health largely comes from studies using cross-sectional designs, in medical research this places the focus on whole population trends rather than individual responses or site-specific interactions.

The pilot began back in 2015 and set out to develop a new prototype for cross-disciplinary research across the boundaries of practice and academia but importantly delivered by citizen scientists.

One of the core principles of the study has always been to make the results of the data analysis freely available, on open source platforms where appropriate. We feel this sort of research should be implicitly generous. The sharing of this knowledge is possible due to the rigorous ethical process the research is subject to, the anonymity of the participants and crucially the absence of any commercial imperative.

The Urban Mind smartphone tool is used to help examine the impact of the surrounding built environment on mental wellbeing as people go about their daily lives. It uses a methodology known as Ecological Momentary Assessment, which involves repeated sampling of an individual's current experience in real-time and in real-world contexts.

For example, when reviewing a snapshot of my own walk to work alongside a sample of the questions that participants are prompted to respond to during an assessment, I realise that I am lucky that nature is ever present during my journey, even if it is not necessarily a designed intervention or could be objectively considered to be of high quality. The snapshot begins to illustrate the benefits of little and frequent contact with nature, also known as bio-dosing.

- Can you see plants right now? (Nature question set)
- Are there derelict buildings nearby? (Deprivation question set)
- Is the place where you are easy to navigate your way through? (Spatial inclusivity question set)
- How would you rate your physical wellbeing right now? (Wellbeing question set)
- Do you feel safe here during the day? (Safety question set)
- How would you rate your mental wellbeing right now? (Wellbeing question set)
- Can you see or hear bird song right now? (Nature question set)
- Does the air feel polluted right now? (Sensory question set)
- Can you see trees right now? (Nature question set)
- Do you feel welcome in the neighbourhood where you are right now? (Social inclusion question set)
- Right now, I feel… anxious, stressed, down, lonely, tired, confident, relaxed, happy, connected with other people, energetic… (Mental wellbeing question set)
- Can you see the sky right now? (Nature question set)
- Does it feel overcrowded where you are right now? (Sensory question set)

→

The ecological momentary assessment has three significant benefits:

- It allows multiple measurements over time, providing insight into dynamic changes in mental states that could not be captured by a single snapshot;
- It allows the acquisition of detailed information on the type and amount of nature that people experience either incidentally or intentionally;
- It maximises ecological validity as data is collected in real-world environments.

During the pilot we used the data to test three related hypotheses:

- Exposure to natural features, including trees, the sky, birdsong and water, would be associated with higher levels of momentary mental wellbeing;
- These effects would still be evident in subsequent assessments, in which people are no longer exposed to trees, the sky, birdsong, and water, indicating time-lasting benefits;
- These effects would be more evident in people with higher trait impulsivity, who are thought to carry greater vulnerability to mental health issues, than those with lower trait impulsivity.

All of these hypotheses were proved by the results and provide empirical support for the notion that short-term exposure to specific natural features has measurable beneficial effects on mental wellbeing. One of the most profound results was that these beneficial effects could still be observed, even if the participant was no longer outdoors and no longer had access to nature. This lagged effect indicates a time-lasting impact of nature on mental wellbeing that can still be observed after several hours.

The pilot was conceived as a London-specific study, but uptake quickly spread globally, the ability to geo-tag data and to then combine it with other data sets opens up many avenues for site-specific investigation across all stages of a project from feasibility to post-occupancy review. It also allows us to cross reference responses from different global locations where the pressures on development are radically different. Crucially the ability to geo-reference participant data allows us to cross reference existing and emerging data sets from other sectors. We are also able to sample global trends in participation in virtual real time.

From the perspective of urban planning and design, the data provides a much needed evidence base to inform future investments and policies. In particular, our findings suggest that greater access to natural features within the built environment can be especially beneficial to individuals who show higher levels of impulsivity and, as such, may be at greater risk of developing mental health issues. From the perspective of mental health, the data can inform the development of low-cost scalable interventions aimed at promoting mental health in urban populations. This is an urgent global health priority because mental illness is the leading cause of disability worldwide.

London is approximately 47% green space and as part of the work we undertook for the Mayor of London on the All London Green Grid – the green infrastructure guidance for London Plan – we analysed the typologies of open space to inform future investment. Diagrammatically variations in colour were used to represent different typologies of open space from regional parks down to pocket parks. However, what was apparent was the issue is not quantity but rather access.

Large areas of open space in London are under private ownership. A second diagram was created with overlapping layers of pink to identify where access to open spaces is limited in the case of each typology of open space; in the case of central London, the famous Royal Parks provide significant benefits in terms of access to large scale landscapes, however much smaller parks within neighbourhoods are deficient in terms of provision of access. A key observation to make when analysing these types of metrics is that the data is purely quantitative and not qualitative. The Urban Mind research potentially leads to the creation of wellbeing maps for London, to help focus investment and maximise positive change.

Our project Making Space in Dalston, in Hackney in east London, is a rich example of a green infrastructure

→

project at a local scale with hyper local and site-specific interventions. Here impact is related to the genius loci of the place rather than physical size or capital cost. Crucially it is not a 'copy and paste' solution. We developed our own brief with our collaborators muf architecture art for our client the Mayor of London. The intention was to create a series of new public realm and open space enhancements in this part of London. But how do you do this in a dense neighbourhood where under-used space is at a premium. We realised very quickly that a distinct typology was necessary; a series of micro interventions that could make real impact locally where the need was greatest. Collectively these projects deliver a wide-reaching transformative impact on wellbeing for local residents supported by new cultural, social and environmental programmes.

Three principles emerged following our research and dialogue with local stakeholders;

1. Value what is there
2. Nurture the possible
3. Define what is missing

As important as the physical interventions during this project was the process of engagement, delivery and aftercare. The largest of the micro interventions was the Dalston Eastern Curve Garden, a 0.2 Ha garden on an abandoned piece of railway land. It included the involvement of local stakeholders to create a robust management structure for the garden to grow and thrive.

The biggest obstacle to overcome was that of perception. How can we convince those who were funding the project and owned the land that a piece of landscape with negative connotations could be transformed into a positive addition to the local public realm. In retrospect, robust wellbeing data, such as Urban Mind generates would have helped irrefutably reinforce what we knew instinctively. Our concept was to maintain a sense of surprise and delight; a garden hidden behind a hoarding, built by local people who would be learning skills during the construction process and ultimately would create a space that would be managed by local people and volunteers. The carefully curated seasonal programme of events is very important for the garden to maintain its vibrancy and relevance to the visiting community.

At the end of 2019, Urban Mind will be relaunched. It will be available in English, Portuguese, German, French, Italian, Cantonese and Mandarin. The new version of the app is also structured thematically, this enables greater flexibility in terms of customisation. This flexibility allows future project collaborators to work with the Urban Mind project team to design a set of questions to test bespoke hypotheses.

For further information relating to Urban Mind please visit the project website – www.urbanmind.info **or on social media**
Instagram - @Urban_Mind_Project
Twitter - @Urban_Mind_Proj
Facebook - https://www.facebook.com/UrbanMindProject/