Landscape to the point

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Objekttyp: **Article**

Zeitschrift: **Pamphlet**

Band (Jahr): **- (2022)**

Heft 26: **Probing Zurich**

PDF erstellt am: **12.07.2024**

Persistenter Link: https://doi.org/10.5169/seals-1041723

LANDSCAPE TO THE POINT

Christophe Girot

Over the past five years, I am very grateful that our team at the ETH Zurich Chair of Landscape Architecture, led by Dennis Häusler and Magdalena Kaufmann with the help of Matthias Vollmer, Johannes Rebsamen, Ludwig Berger, Fabian Gutscher, and Benedikt Kowalewski, has relentlessly strived to develop a more locally rooted approach to landscape analysis through innovative point cloud modeling and sound sampling technology. This issue of Pamphlet presents an approach to city landscapes that teaches architecture students at ETH Zurich how to encounter and interact within the site knowingly. This approach will strongly influence and support the design process that they will develop subsequently, throughout their careers. In other words, the subjective mood of the moment can often distract from the essential point, when one attempts to grasp and record the physical properties of a site by conventional means such as sketching, photography, mapping, and video.

The LiDAR scan technology complements this traditional approach through incredible precision and stability that bring the capturing and understanding of any landscape to a completely different level. Beyond the spectral beauty of the images it generates, the technique is also capable of grasping all the distinctive features and traces that are proper to a site. The entire visual spectrum of the landscape that has been scanned can then be mapped back to corresponding geographic coordinates and further developed in the lab.

Depending on the scale and focus of the design task, whether through the study of micro-topographic nuances or through the analysis of more general macrophysical phenomena, each scanned site bears a specific landscape signature that is geographically unique and can be precisely worked upon and manipulated. Such precision is of the foremost importance today for a variety of reasons, ranging from historic preservation to advanced landscape design, urban physics, erosion control, flood control, and climate and biomass monitoring, to name but a few. With this technology at hand, students are now more aware of and informed about a given site than ever before. We

Fig.21 Künstlergasse, Zurich 2018.
Platanus tree, elevation.
By Mattia Furler, Valentin Ribi

live in an inconstant world with rapidly changing conditions in our living environment, where the key will be to grasp the physical properties of a place and to navigate freely within it at different scales of intervention.

So how can students be taught to better sense a landscape via LiDAR in response to a given context? The question of a trans-scalar approach to problem solving has always been at the core of our topological concerns in matters of design research: in a landscape or in an urban setting, scales interact much more through a complex web of processes and interactions than they do in architecture.

This issue of Pamphlet represents a selection of works and inquiries done by young architecture students during an elective course entitled "Topology" that ran over the past five years. Throughout this time, different aspects of urban landscapes proper to Zurich were revealed, sometimes with amazing levels of detail and precision. The work always consisted of initial fieldwork which focused on the sampling of point cloud data on site using terrestrial laser scanners. It enabled a multifaceted discovery of city landscapes by the students, enriching their analytic reflection. This was followed in the lab by work compiling different field scans into highly precise models of the city's landscape. In some cases, this involved the mapping of selected urban environments both above and below ground. Parts of Zurich shown in this issue of Pamphlet have been modeled in this manner for the first time, showing combined urban realities from both above and below ground. For instance, there is the hidden realm of the Selnau train station tucked under the bed of the Sihl river, or the extension of the Jelmoli store which expands underground far beyond the building's apparent footprint, not to mention the Zurich main station, a mammoth building bridging the Sihl that rises above a vast labyrinth of hidden halls, roads, and pathways, nor the endless shafts and galleries that constitute the daily reality of the Hönggerberg campus of ETH Zurich underground. Geolocated sound samples were sometimes inserted into the point cloud models, producing a unique sensory experience and capturing the atmosphere of the place. Different kinds of microphones were used, ranging from ambisonic mics to hydrophones, from contact mics to electromagnetic sensors. This provided us with a broad range of sounds typical of each place. The combination of sound and point clouds added a strong sensory dimension to some of the places under study, revealing yet another part of Zurich's hidden realities.

We are thankful to our distinguished guests from various disciplines for their contributions to this issue of Pamphlet: Maite Bravo, Aldo Sollazzo, Antonia Cornaro, Simon Kretz, Christian Salewski, Jacqueline Parish, Gerhard Schrotter, as well as three members of the Media Lab, Dennis Häusler, Johannes Rebsammen, and Matthias Vollmer. My thanks also go to Magdalena Kaufmann, Dennis Häusler, and Matthias Vollmer for their editorial work and introduction, as well as for the conception of the different site experiments and models that were developed by the students. Each project revealed different aspects of Zurich that we were not accustomed to; architecture students working on the location of bridges along the Sihl river, for instance, pointed to the extraordinary simulation potential of this tool. Various comments by the authors also pointed to the multiple facets and the potential that LiDAR investigation offers for the neighboring fields of architecture and urban design. Each student contribution brought forth a different type of gaze on the urban landscapes that we know, inviting a different level of understanding in the representation and interpretation of urban landscapes. The ever-growing importance of this approach within a physically modeled reality of the city and its landscape is gaining in significance. More generally, the point cloud model has become the common denominator of so many different disciplines ranging from the arts to science that it is now the transdisciplinary tool par excellence. LiDAR is ubiquitous: entire cities and countries are being mapped with this technology, one that will enable people working on cities and their landscapes to make a clear point by acting better and knowingly on the physical world that surrounds them.