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A townscape changes simulation and its application to design -to maintain greenery space in suburban residential area-

Summary

Town of Seijo-gakuenmae in Tokyo is one of the most famous instances of modern Japanese suburban residential area with strong impression of greenery townscape. Although many effort to maintain its status by resident with shared image, long-term urban growth with rebuilt of house and sub-division of lot caused by inheritance changed its quality in this 70 years. Because of increasing density, it gradually became difficult to contact greenery space from private space. This is typical issue in suburban townscape in Japan and it will be particularly important in Asian urban design in sustainable way. Most of case in modern suburban area such as Seijo-gakuenmae, an individual architectural design of each house and organization of urban form are not well incorporated. Housing design without consideration for neighbor relationship destroys its townscape and local identity. On the other hand, strict design codes for uniform townscape often make individual housing space too homogeneous and boring. It is expected to develop a manner to connect between individual architectural design of housing and organization of urban form regarding long-term change.

We developed a computer simulation of changing townscape that can examine mechanism of possible volume to maximize private space in each lot which is subdivided by economical reason. To evaluate townscape greenery impression, an index called SEG (street elevation greenery) is suggested and used for analysis in this case. The simulated model of townscape change can foresee future greenery status too.

The final objective of this simulation is investigation of alternative way of change to self-organize both maintenance of greenery townscape and enlargement of confortable private space. For this challenge, we tried to explore certain collaborative interaction between neighbors to create more effective space in-between their lots and examine it in computer simulation as simple algorithm. By observation of result of simulation as prediction of future greenery townscape and continues improvement of algorithm until it obtain successful maintenance of greenery, a proposal of long-term development by design algorithm become possible.

Keywords:
Greenery townscape, long-term change simulation, collaborative neighbor space, Algorithmic urban design

Graduate School of Media and Governance
Keio University
Azusa Ino