

Normative Ansätze der Raumordnung zur Reduzierung des Verkehrsaufkommens - Beschreibung und Modellierung von Wechselwirkungen zwischen Flächennutzung und Verkehrsinfrastruktur in Metropolregionen

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It is widely accepted that human settlements in every scale compose of various functions and the interrelations between them are very complex. The increase in a function may create the positive effects to some functions and, at the same time, harm the others. Land use and transportation system are among the important components of human settlement, and each of both has a very close relationship to another. Nowadays, one of the main urban issue is transportation problem, which is mainly caused by the mismatches in the interrelations between land use and transportation system.

Land use expresses pattern of human settlement. Different parcels create different values and perspectives to different people. It includes not just only the buildings and users on each parcel, but also the way they relate to different uses and the roles they play as a member of settlement system. Even, in this paper, the use of land is broadly divided into four major types, it is, in practice, can be differently categorized in various purposes. Land use planning process is the method to create a land use plan which composes of four respective steps; diagnosis and data management, analysis and evaluation, scheduling and budgeting, and monitoring. According to the complexity of land use system, there are uncountable factors and stakeholders in planning process. Unfortunately, the "conventional" planning process hardly allows stakeholders to participate in plan-making, but the new process, so called "cooperative" planning encourages every stakeholder to join the process since the beginning step.

Transportation is one of the basic components of human settlement. It is the movement of people and goods between origins and destinations. This movement can be carried out through a variety of modes, use different energy sources, and serve different needs. Its planning process can be divided into four steps; planning intention, problem analysis, policy investigation, and decision-making and implementation, respectively. Like land use planning process, transportation plan making has a lot of stakeholders and two different degrees of public involvement. Currently, it is widely recognized that the mismatches between land use and transportation system is one of the critical issues in urban development. Land use and transportation planners have tried several tactics in land use policies and transportation demand and supply strategies to solve the problem, but so far quite in vain. There are few researches and little understandings in the interrelations between the two components. In theory, the relationships can be estimated by four different models; econometric model, heuristic model, simulation methods, and scenarios. Each of them has its own strengths and weaknesses that planners have to carefully consider before applying to achieve their purposes. These models can be used to study both forward and backward effects but, in practice, only forward effect is taken into account. Most researches on the backward effect have been done on already-implemented transportation projects, not on alternative plans. Moreover, the linkage estimation stage, which should be studied together by all stakeholders of both land use and transportation fields, is only in the duty of transportation planner. The reverse effect from transportation plan (which is designed under the context of land use plan) to the use of land, for example, the more competitive advantages on the land because of added-capacity roads, has hardly been estimated as one of the components in planning process. This is one of the main reasons of "unexpected" and "unplanned" development in the city, because planning processes are static and very straight-forward, while, in reality, the system of human

settlement is very dynamic and complex (see Fig. S-1).

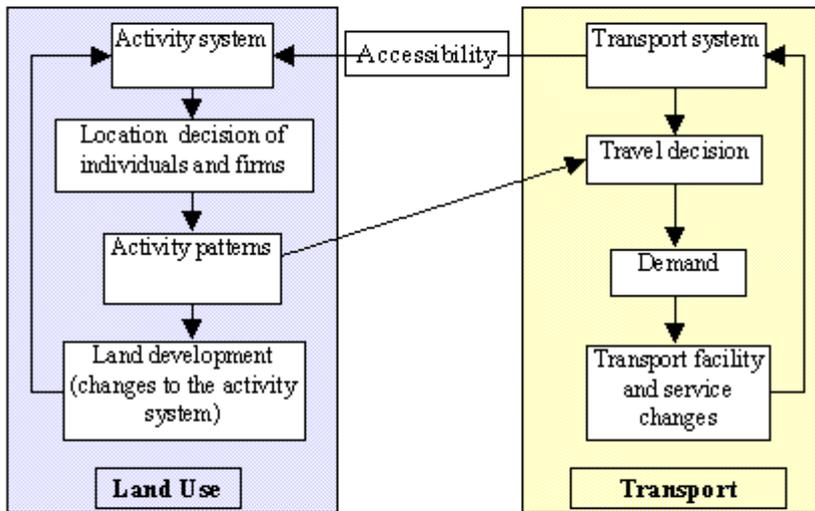


Fig. S-1

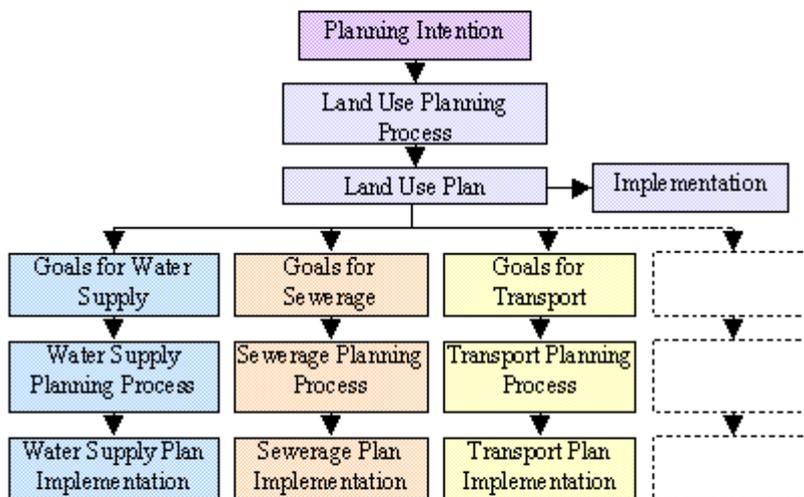


Fig. S-2

Hierarchy in planning process is also a part of the problem. Most people place land use plan on the top of the entire process, as the master plan of urban development. Other infrastructures should play the supportive roles to fulfil the requirements created by land use plan. The domination of land use plan comes from the point of view that the way the people use the land leads to the demand in infrastructure (See Fig. S-2). Therefore, land use plan should be firstly designed to be the "bible" for urban development. Presently, that trend is gradually out-dated. Urban researchers accept that the interrelations between city's components are in various forms. Not only the use of land creates the demand in

infrastructure, but, in turn, infrastructure also affects land use patterns. For example, every use of land needs accessibility, and, in the opposite direction, availability of mass transit brings more development potentials to the land along both sides of transit lines. Land use is not the single and absolute leader in urban development any more. Infrastructures are receiving more concerns, the linkage between each components are coming to the spot, and the new planning paradigm are growing. Planning process is now being changed from disaggregate process that each discipline separately took care on only his own plan to integrated process that all planners make "Urban development plan" together (see Fig. S-3). Furthermore, planners are decreasing their roles to be only the moderators and plan-makers and push the other tasks to the other stakeholders who are encouraged to take part in every step of planning process.

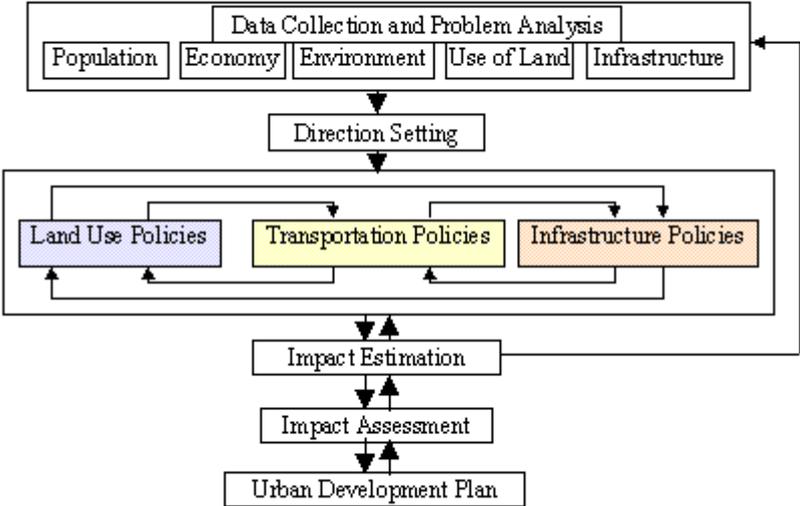


Fig. S-3

Concerning on the interrelations between land use and transportation system, the problem of the current paradigm cannot be solved just by taking the reverse effect from transportation plans back to land use planning process. Instead, it needs the new way of thinking and public involvement. Different projects and different planning scales require different solutions and treatments, because each of them has their own identity and characteristics. It is obvious that planning process and stakeholders in regional scale plan are not similar to community scale project, and even they are the same body, the roles they play in different planning scale are not identical. In the further step of the study, planning methodology in the interrelations between land use and transportation system in the context of "airport and its surroundings" and "ground access system" will be the focal point.