POLYTECHNIC OF TORINO
FACULTY OF ARCHITECTURE 1
Degree in Architecture
Honors theses

New information and comunication technologies for planning
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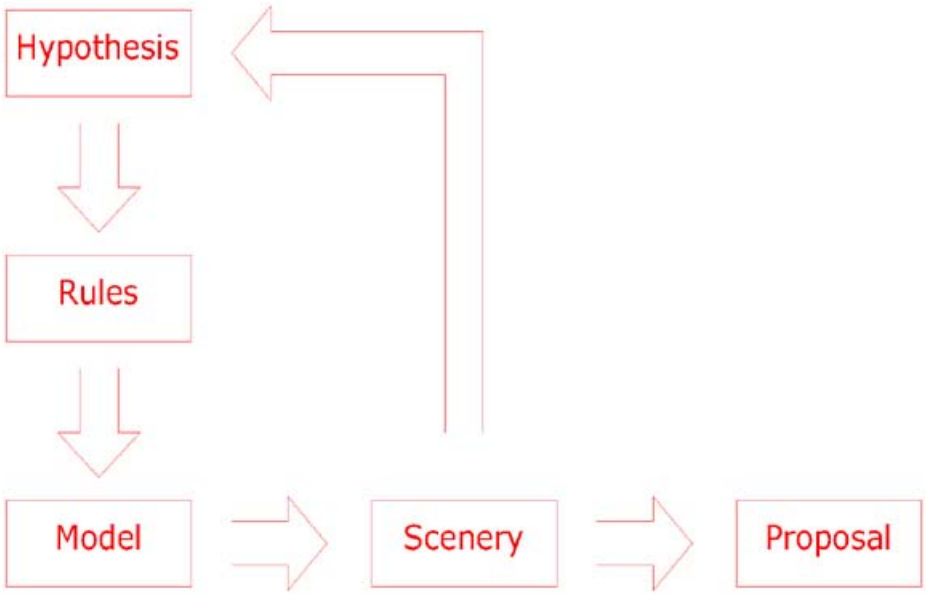
The evolution of the information technology allowed the contemporary urbanistic research to focus his studies on the definition of new models for the study of the territorial and urban systems.

The use of these new techniques, just in relatively recent times, comes from the new awareness that the contemporary city can't be described no more by methods having as purpose the explanation, the check, the accurate foresight, quantitative, spatially and temporally precise, of the results of the territorial dynamics.
Nowadays it's not possible to reduce these dynamics to simple connections between a few variables. The complexity grown, the interests are various and articulated, the connections don't seem to be coherent no more, that means they're no more explainable by a cause and effect principle.

The crisis of the traditional models just comes from the inability to describe those dynamics and from the ambition, later disappointed, to describe the city in a comprehensive way.
In fact, if in a way those models showed a very refined theoretic apparatus, on the other side they made the mistake of considering the description of the evolutive phenomena of the city as unchanging.

The techniques of simulation in the studies of the territorial and urban systems cause a change in the project. In particular, the foresight concept changes, and it's not deterministic no more. In fact, these techniques allow to have a global vision of the system considering the qualitative factors, the strategies of the different actors, and therefore to put into discussion what has been chosen. Their purpose's not to give a one-way answer to the question: "What happens if...?", but rather to suggest some inputs for the definition of the project.
We could schematize the process in the following way:



Pict.1 Scheme of the rule of the modelling in the project.

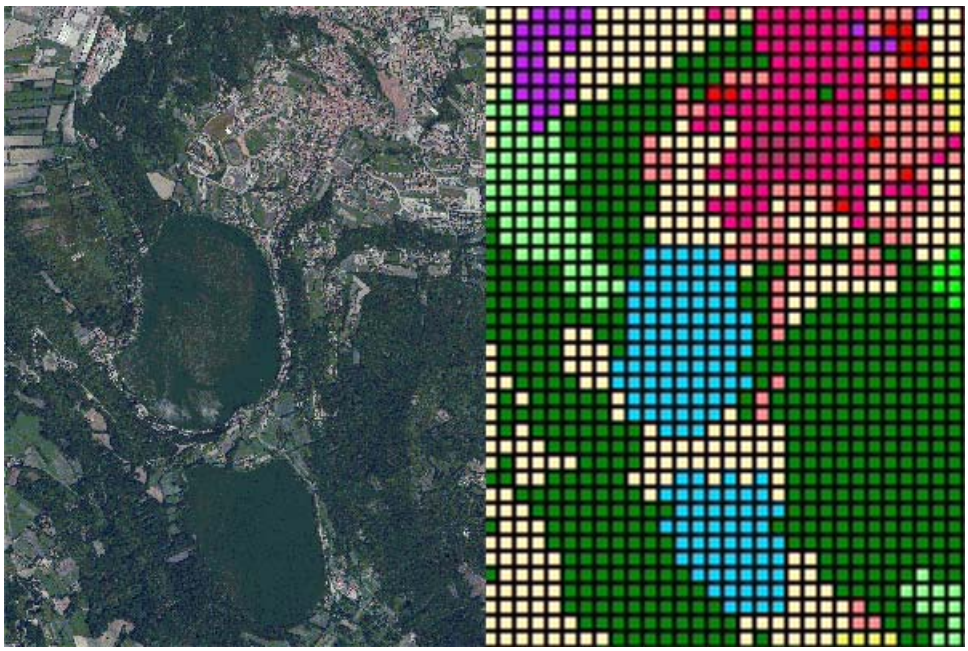
It's a circular process, in which the final solution comes from the analysis of the sceneries and from the distance from the proposed goals.

Thanks to the collaboration with the Joint Research Centre of Ispra it was possible to apply the models of urban simulation to some cases.
The area the study focused on was the Susa Valley. In this area four settings had been proposed from which the model of simulation was realized.

The first setting (ordinary dynamic) assumes the evolution of the built in an ambient without rules, where the growth depends on the free market and one chooses in a total autonomous way.
The second setting (linear development) assumes the evolution of the built along the highways and the roads at the foot of the mountains.
The third setting (reticular development) assumes the evolution of the built along the valley longitudinally and transversally advancing a reticular development.
The fourth setting (green passages) assumes a solution of ecological-environmental restoration, searching to creating a green net on the territory.

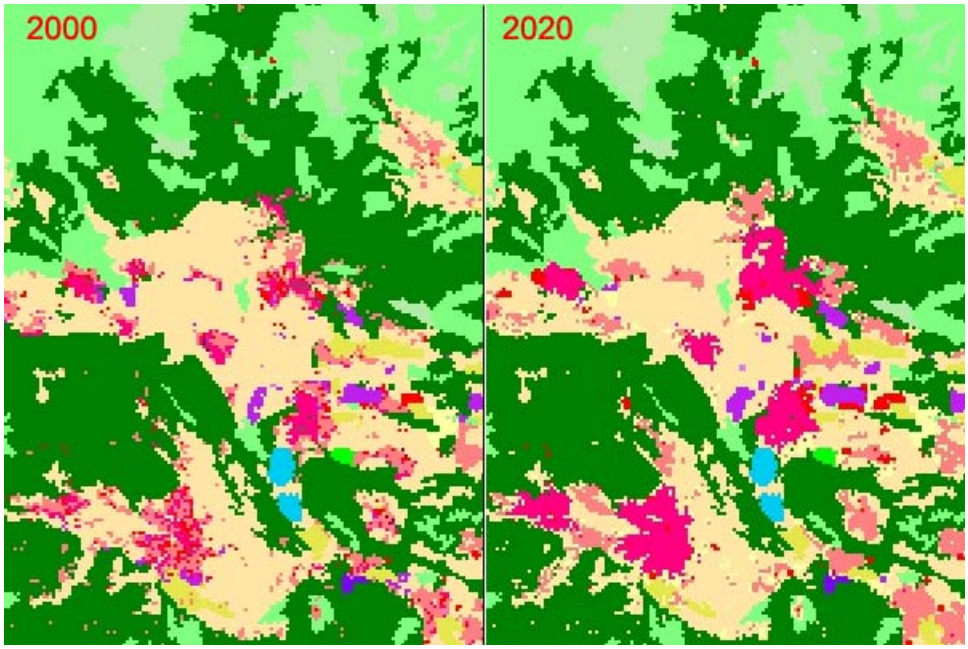
The technique used is the one of the cellular automatons. The analysis by the use of the cellular automatons requests that the territory's

divided into cells, and every cell has to have a status combined to the corresponding use of the ground.
In this model the territory's represented by a rectangular grid of square cells each rapresenting an area of 100 m on the side.



Pict. 2 Orthographic representation of the Avigliana zone and the use of the grounds in a cellular space.

As long as the data corresponding to the uses of the grounds are acquired to the infrastructurial net and to the normative bonds, the following step in the creation of the model's his calibration by the definition of the macro-model, the micro-model and of the levels of accessibility.
The definition of the macro-model consists of establishing the trend lines that the model can follow during his evolution; that means that it allows to assume the dynamic of the global growth.
Starting from this rules of general growth the model will evolve according to norms regarding the lowest level, the micro-model.
The last step of the calibration consists of defining parameters of accessibility which show the influence that every use of the ground passes through because of the presence of a certain infrastructure.
The following figure shows the result of one of the four simulations effected.



Pict. 3. Representation of the evolution of the model during two steps of the simulation.

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