1. INTRODUCTION

Simulation by Multi-Agent System (MAS) is attracting an increasing interest in many domains of social sciences (Axtell, 2000; Ballot and Weisbuch eds. 2000; Conte, Hegselmann, and Terna, eds., 1997; Kohler and Gumerman eds., 2000; Marney and Talbert, 2000). Technological progress, diffusion of computer skill and more easily accessible software platforms are contributing to this success.
As simulation is becoming familiar to a wider and diversified public, it affects in the process the core activity of many domains. This is also evident in geography, where a number of questions are raised about the future advancement of the field, in an era in which the introduction of new communication technologies not only affects the spatial deployment of phenomena but also modify the ways we learn about them as well as the means we have to cope with them (see for example the Project Varenius).
This paper reports the results of an ongoing research activity carried out at IRES, in which a Multi-Agent System (MAS) approach is used to explore new model capabilities for dealing with commuting, accessibility and telecommuting[1] adoption.
The research strategy develops along three directions.

- The first is an exploration of some major urban phenomena associated with mandatory mobility, such as accessibility, commuting and telecommuting by means of computer simulation. In this context, one major scope of a multi-agent model is to spur revising the approaches commonly held to tackle these issues.
- The second direction concentrates on the model possibilities in providing novel premises to support policy decision-making. Simulation experiments by a MAS model, in fact, allow us to explore those elusive and often hidden links between individual spatio-temporal behavioural options, and their global outcome (i.e. the emergent properties) observable at a 'system level'. This is becoming an increasingly relevant issue for devising socially acceptable policy measures for urban sustainability.
- The last direction is a contribution to the more general debate concerning the role of model-based knowledge for innovating planning thinking and practice. A MAS approach endows modelling activity with new potentials. These result from the enhanced role of cognitive mediation that models can play as artefacts, i.e. in linking the components of an abstraction process and the domains of the external environment in which modelling activity takes place (see Occelli, 2001a, 2001b, 2003; Occelli and Rabino, 1999).

The paper is organized in three main sections.
The first hints at the more general debate about the role of model-based knowledge for innovating planning thinking and practice. In this context, a kind of model taxonomy is suggested which allows us to emphasize the potentials of a MAS approach compared with other model types.
The second and more extensive section presents the conceptual and methodological development of the SimAC (Simulating ACcessibility) model. This is a multi-agent model, which has been developed using the SWARM simulation platform. Underlying this model development are two lines of reasoning: a) that accessibility implies a notion of *performance* associated with an agent's action space (the better the performance the greater is the agent's accessibility) and b) that there exits a further notion of accessibility which results from the interaction of individual behaviours.
Finally, the last part of the paper illustrates the results of some simulation experiments. A few remarks about this experience with a MAS model conclude the paper.

[1] Although tele-work and tele-commuting does not exactly indicate the same phenomenon, in this paper the distinction is not relevant.