

A CITY IN MOTION: TIME-SPACE ACTIVITY AND MOBILITY PATTERNS OF SUBURBAN INHABITANTS AND THE STRUCTURATION OF THE SPATIAL ORGANIZATION OF THE PRAGUE METROPOLITAN AREA

by
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ABSTRACT. This contribution attempts to reveal the relations between new suburban areas and other parts of the Prague metropolitan area by investigating the time-space activity and mobility patterns of the inhabitants of newly built suburban districts. The focus on some aspects of the everyday life of people in new suburbs helps us to identify the impact of suburbanization on the changing geography of the metropolitan region and to better understand how the spatial organization of the Prague metropolitan area is produced, reproduced and transformed. We use several interrelated concepts, which serve the theoretical foundation of our work, namely time geography, structuration theory and the post-communist city. The empirical data utilized are primarily based on 262 diaries completed by eighty-eight individuals from thirty-eight households, accompanied by household questionnaires and interviews with the heads of households. The research confirmed the implicit, generally unspoken view that new suburbs in the Prague metropolitan region are heavily dependent on the core of the metropolitan area for the provision of jobs and services. However, newly built suburban shopping facilities to some extent disrupt this pattern, keeping some daily activities of inhabitants within the suburban zone. In addition to empirical observations, the key purpose of this contribution has been to discuss and apply time geography concepts and methods to the research of urban restructuring, and to understand the structuration of metropolitan spatial organization.

Key words: time geography, time-space, structuration, activity and mobility patterns, postcommunist city, suburbanization, urban and metropolitan change

Introduction

During the past decade, post-communist Prague and the surrounding metropolitan area have experienced profound changes of spatial organization, with suburbanization bringing the most radical reorganization of metropolitan space (Sýkora, 1999a; Ouředníček, 2006, 2007; Sýkora and Ouředníček, 2007). The growing role of suburbanization in metropolitan development is not unique to Prague as other major

cities in post-communist countries follow a similar path (Leetmaa and Tammaru, this issue; Kok, 1999; Kok and Kovács, 1999; Nuissl and Rink, 2005; Pichler-Milanović, 2005; Sailer-Fliege, 1999; Tammaru, 2005; Timár and Váradi, 2001; Tosics, 2005). Suburbanization should thus be considered as one of the crucial topics in the study of urban change in post-communist cities.

This contribution attempts to reveal the consequences of suburbanization for the changing geography of metropolitan Prague through an examination of the everyday lives of the new suburban inhabitants. It investigates relations between new suburban areas and the other parts of the metropolitan area via time-space activity and mobility patterns of the inhabitants of newly built suburban districts.

The main research questions include the following:

- What is the time-space allocation of the basic daily activities of the residents of new suburban areas? Are there differences among people based on gender, economic activity, social role and location of residence? Can we group individuals according to similarities and differences in the time-space allocation of their activities?
- How does the existing metropolitan geographical environment influence the time-space activity and mobility patterns of inhabitants? For instance, how does the location or spatial distribution of particular functions necessary to everyday life, such as schools or shops, or the availability of various means and modes of transportation (i.e. the ability to use public transportation or dependence on a passenger car), impact upon their actual movement across metropolitan time-space?

- How does the time-space allocation of inhabitants' activities, especially their routines and repetitive actions, contribute to the reorganization of metropolitan space?

We are primarily interested in changing geographies in terms of transforming spatial organization (in our case, that of the metropolitan area). The empirical focus of this paper on time-space activity and mobility patterns allows us to better understand how the spatial organization of the Prague metropolitan area is produced, reproduced and transformed. The current process of suburbanization in the context of post-communist urban restructuring creates a dynamic scene in which we can investigate not only selected aspects of the suburbanization process itself, but also some more general questions regarding how to conceptualize and analyse urban change.

Looking at everyday metropolitan life via the investigation of the time-space activity and mobility patterns of new suburban inhabitants in the specific context of a post-communist metropolis, we attempt to contribute to:

- the interpretation and explanation of changes in the spatial organization of post-communist cities and their metropolitan areas and their consequences;
- expanding knowledge of the suburbanization process including some very tentative propositions concerning political and planning regulations that would mitigate some of its negative consequences;
- the application of time geography concepts and methods in the research of urban restructuring;
- the understanding of the role of agency and structure in the restructuring of an urban (metropolitan) spatial system.

Conceptual embedding

There are several interrelated concepts serving the theoretical embedding of our work. They are used as a supporting frame of reference to anchor our own approach. We refer namely to concepts stemming from the discussion within and about time geography, structuration theory, complex geography and post-communist cities. The main aspects of our approach include (1) the focus on change, motion and their dynamism, (2) the emphasis on relations between spatial structure and individual action, and (3) the respect of complex geography as the contextual frame of the empirical case study.

Our emphasis on the change in spatial organization is given by the nature of urban geography in the context of post-communist transformations. Post-communist cities are characterized by relatively rapid and radical transformations in their spatial organization. Their research must focus on the study of processes of change in spatial structures, their description and explanation (Sýkora, 2000). The geographic model of a transitional post-communist city must be a dynamic model of change. This emphasis on change is also at the core of the time geography perspective, the aim of which is to demonstrate 'changeability and dynamism' (Lenntorp, 2004, p. 223). Our empirical research employs well-known, popular concepts from time geography, focusing on the everyday paths or trajectories of individual actors in metropolitan space and the resulting time-space activity and mobility patterns of inhabitants. However, the conceptual nexus of our research is the relation of time-space activity and the mobility patterns of individuals with dynamic structural change in the spatial organization of a metropolitan area. We use a corporeality perspective that enables us to grasp both the mutual co-existence of actors as well as relations between actors and the metropolitan environment.

Our aim is to understand how the existing geographical system influences the actions of individuals and, conversely, how the system is being reorganized by the actions of individuals. We call this mutual relationship between a geographical environment and the actions of individuals 'structuration of the metropolitan area'. While the term 'structuration' is commonly linked to Giddens' structuration theory (1984), we would rather refer to Hägerstrand's time geography (see the study of Bruk Valley, 1982) and Pred's accounts of time-space geography and the structuration process (Pred, 1981, 1984). The structuration theory of Giddens does not advance beyond reaffirming that all action takes place in space (Phipps, 2001, p. 197). Giddens, and many others using his 'social' structuration theory, perceive structuration as occurring in time-space, abstracting from concrete time-space situations and contexts. Hägerstrand (1970, p. 9) advocated 'a closer look at the individual human being in his situational setting' that 'would improve our ability to relate the behaviour of small scale elements and large scale aggregates'. Pred (1984, p. 281) argued for the integration of structuration theory with time geography, which would enable us to 'capture the uninterrupted time-space flow of the structuration process.' 'As struc-

uration unfolds, the structural properties of any social system express themselves through the operation of everyday practices at the same time that everyday practices generate and reproduce the micro- and macro-level structural properties of that social system' (Pred, 1984, p. 281). In 1985 Moss and Dear stated that 'there has been little exploration into the empirical viability of structuration theory for geographic research' (Moss and Dear, 1985: 231) and proposed a model for analysing the structuration of urban space that links spatial form and social relations. Such attempts have however, been, rare, and Phipps (2001) recently concluded that geographical applications of structuration theory have not succeeded in integrating geography with the structuration process, namely in the acknowledgement of the duality of structure.¹ Thus Pred's (1984) views of the application of structuration theory with time-space geography in understanding how places are produced, reproduced and transformed still has yet to be accomplished. The overview of new approaches, methods and models in the analysis of time-space behaviour by Timmermanns *et al.* (2002, p. 186) concluded that there is a need for a better spatial representation in existing models and that 'a more integrated approach simulating the dynamics between land use and activity-travel patterns is urgently needed'.

Time geography and its applications stress that the time-space mobility of inhabitants and their daily activity patterns are influenced by the existing geographical and, in our case, urban structures. On the other hand, human activity forms and reforms the spatial organization of any place or geographical (in our case, metropolitan) area. We are interested in the ongoing structuration of the metropolitan spatial system via the mutual relations between structure and actors' actions, which, in this study, are represented by the spatial organization of the metropolitan area and the time-space allocation of activities in stations, and mobility trajectories of people in their everyday lives. We attempt to reveal the dynamic picture of the presence and absence of people in particular places within metropolitan space, thus contributing to an understanding of the production, reproduction and transformation of metropolitan geography.

An essential aspect of our approach is an attempt to grasp the complexity of metropolitan change through a view of the metropolitan landscape which integrates the individual and the structural into one dynamic picture. Referring to a time geography perspective, this is to use the diorama approach²

that Hägerstrand (1982, p. 338) sees as the key tool to a full exploration of the revealing power of time geography. The essential characteristic of the diorama approach is in its appreciation of the coexistence of phenomena in time-space³ as 'all sorts of entities (which) are in touch with each other in a mixture produced by history, whether visible or not' (Hägerstrand, 1982, p. 326). The diorama perspective allows us to 'appreciate how situations evolve as an aggregate outcome', 'observe relations which would escape us otherwise', 'ask questions which we would not ask without it' and 'estimate the importance of what we have to leave out of consideration' (all quotations from Hägerstrand, 1982, p. 326).

We are not able to grasp the full reality that is present within the aquarium of the diorama. An abstraction has to be employed to select the constituents of the subject under investigation (Sayer, 1992, p. 86). The multidimensional reality has to be 'disassembled to reveal those connections or relations that explain how objects come into being and are subsequently transformed' (Jones and Hanham, 1995, p. 194, quoted in Yeung, 2003). We shall consider the complex geographical organization in the region of the diorama in terms of the 'external (environmental) organization of society' (Hampl, 2000) and mechanisms by which this organization is produced, reproduced and reorganized through the coexistence of various forms of matter. This is what, in our view, Hägerstrand (1985) sees as corporeality.⁴ He often criticized its neglect in studies on society (Lenntorp, 2004, p. 223). Similarly, Hampl (2000, p. 65) stresses the general emphasis of social research on the coexistence of individual actors, however, without the interest in the external (environmental or geographical) organization of society. The diorama approach allows us to integrate the traditional research of external aspects of the geographical organization of society with the study of the internal structuration of this system, looking to the implications of the actions of individual subjects in their everyday lives for the change in the whole structure. Instead of replacing spatial with action-centred perspectives as suggested by Werlen (1999), we can retain and integrate both.

Reality, whether seen as a whole or in parts, as a complex system, semi-complex structure or the action of individuals, does not only exist in time-space. Material reality consists of the temporal-spatial arrangements of objects (i.e. entities), which are the outcomes of concrete relations (with distinct

spatial and temporal aspects) between these objects. We used to call some of these entities 'places' or 'regions'. They are internally integrated and structured aggregates or, better stated, complexes of objects and their mutual relations. Massey's (1999, p. 262) note on the recent rethinking of 'space-time as relative (defined in terms of the entities "within" it), relational (as constituted through the operation of social relations, through which the "entities" are also constituted) and integral to the constitution of entities themselves (the entities are local time-spaces)' is supportive of this line of thinking.

Places and regions are objects themselves and key aspects of reality itself. They are complex (time-space) systems. The particular internal spatial arrangement of parts within these systems is crucial to their existence, exhibits certain rules, and bears certain causal properties itself. Despite the fact that in comparison a region is many times more complex than a molecule or a cell, the particular position of an atom within a molecule or of a shopping centre within a city has, in both cases, significant implications for the operation of the whole. The diorama approach, whether focused on a cell, organism or geographic region, helps us to describe the structure and organization of objects in complex systems, but also to formulate situated and contextually based explanations, placing parts within the wider system.

Structuration of a metropolitan area

An urban environment exhibits an 'immense wealth of forms and complexities through which matter spontaneously manifests itself' (Hägerstrand, 2004). It encompasses physical structures (both natural and man-made) and human activities, all of which are highly differentiated across the space of a city or metropolitan area. Physical structures can usually be described via patterns showing spatial variability, for instance, in a built-up environment. Similarly, we can mirror some characteristics of people and their activities and present them as spatial structures, being the distribution of the population according to characteristics such as age, education, income or travel patterns based on the repetitive routine activities of citizens reflecting interdependence among localities (such as travel from home to work, school or services). Physical structures are more stable in time-space and their character is linked with certain types of human activities and the functional specialization of localities within the urban spatial structure. Various human activities (residence, work, leisure) are concentrated in differ-

ent areas and are connected via human mobility (transportation). Mobility flows themselves form relatively stable patterns (Hägerstrand, 1987). Patterns of places and flows between them form the skeleton of an urban or metropolitan spatial system. Traditional geography approaches, namely locational analysis, perfected methods for the investigation of the external appearance of these patterns in terms of interaction, networks, nodes, hierarchies, surfaces and diffusion (Haggett *et al.*, 1977).

These patterns or spatial structures are the outcome of long-term development and their basic character is reproduced and confirmed by everyday human activities. However, they are also reshaped by those human activities that do not correspond to existing patterns. For instance, the construction of a shopping centre in a suburban locality by an investor can significantly reshape the pattern of travel for shopping in the wider urban area. Change in the place of residence by migration to new suburban localities creates new travel patterns within a metropolitan area. A new residential area may increase the attractiveness of the wider region for other households and firms, which can in turn establish additional residences, offices, shops, and entertainment and production facilities there. Consequently, we can observe entire chains of changes in the organization of a metropolitan area that follow the initial step(s).

Looking at the changing geography of a metropolitan area, there is an interesting relation between permanence and motion, between immobility and mobility. The location of immobile property such as shopping facilities brings change in the structure of a metropolitan area with regard to the distribution of retail in space and thus 'motion' in the pattern. However, more importantly, this sets into motion people who commute there for services. People adapt their habits in everyday life to new situations, and the former pattern of commuting changes and stabilizes in a new, more or less fixed and stable pattern or structure of commuting for services. The seeming paradox of immobility producing motion and on the other hand a stable structure of mobility (commuting) patterns is created by the dialectical relation between the individual and the structural. The movement or formation of individual immobile property in(to) a new location within the structure of a metropolitan area changes the entire pre-existing system as it sets the spatial (with some minor effects on the temporal) organization of daily life in motion. Many individuals adjust their daily practices, including time-space mobility via commuting, to make use of the newly opened opportunity offered

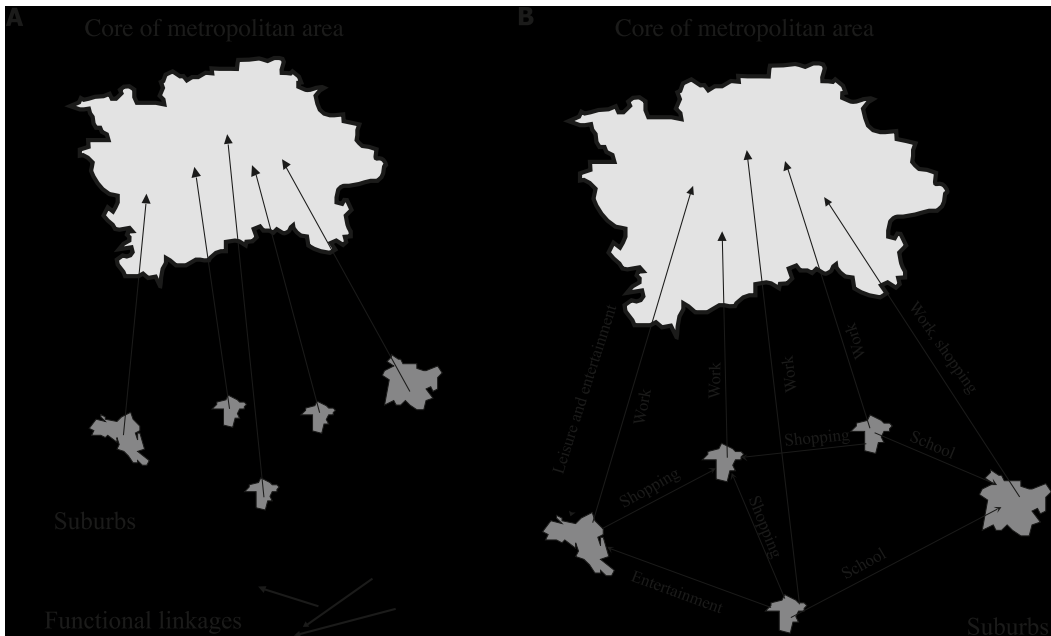


Fig. 1. The position of suburbs in the structured space of the metropolitan area: (a) centripetal dependence of suburbs on the metropolitan core, (b) traditional centripetal pattern enriched by newly developed centrifugal relations and tangential linkages between suburbs.

by a shopping centre, forming an altogether new situation with certain structural properties relatively stable in time across metropolitan space.⁵ Precisely this way of thinking is crucial for our understanding and investigation of the time-space mobility of new suburban inhabitants and its role in the structuration of the metropolitan area.

We see a dynamic picture of a metropolitan area with growing (and also shrinking) material entities in the landscape, and web-like trajectories of people, of which some are stationary in space and others are in motion. Of course, in addition to the physical objects carrying its function within the system, it also comprises spatially structured memories, feelings, symbols and other non-material aspects related to the material world. The long-term restructuring of spatial organization in this picture is directly linked to short-term individual changes, such as the construction and opening of a hypermarket, and daily flows of people moving across metropolitan space. As Hägerstrand (2004, p. 323) puts it, 'we release the picture from its deep-frozen state' adding 'the temporal dimension'.

In general, all cities are subjected to the ongoing revision of their historically formed landscapes. However, there are periods of more radical changes

that usually concern certain zones within urban regions. One recent example is the dramatic changes taking place in post-communist cities with suburban areas as a prime example of processes in which new human activities significantly reshape existing urban patterns and the spatial organization of metropolitan areas. The routine daily activities of its inhabitants are an important part of these processes. Newly developed suburbs and their inhabitants form a qualitatively new element in the structuration of the metropolitan area. We are interested in the ways in which the urban system and its organization are being transformed via new suburban developments that form new structural properties of the metropolitan area and the reflection of these new developments on the reaction of individual actors, constituting new routines in time-space within the diorama of the metropolitan area. We see the totality of people paths aggregated in time-space as a form of material entity and a part of metropolitan 'physical' reality. This does not mean that we deny the social aspects. Individual trajectories are aggregated to flows that have social character given by participants. It also does not mean that we deny the individual and his or her means of decision-making (voluntary within the structural con-

strains) from intention to realization. At this stage, we are however interested in the contribution of time-space patterns of human activity and mobility as the structured whole to the development of metropolitan spatial organization.

There are several questions behind our empirical investigation. How do the newly established suburbs and their inhabitants contribute to the ongoing structuration of the Prague metropolitan area? Suburbs are not autonomous units. Their inhabitants are highly dependent on workplaces, schools, shops, services and other functions located in other parts of the city. How much are they dependent, and in which types of human activities? What does their presence or absence in their home locality mean and what impact does this have on ordinary life in that locality? What are the functional links between new suburbs and other zones in the metropolitan area? And how are these relations mirrored in metropolitan space? Are suburbs tangentially integrated with the rest of the suburban zone or do radial relations with the inner city prevail? Is a new suburb an island in a 'deserted landscape' for its inhabitants, or can and do its inhabitants use facilities in surrounding suburban settlements? A very simple illustration is provided in Fig. 1, which illustrates two 'edge' positions of suburbs within the spatial-functional divisions in a metropolitan space.

Spatial organization of the Prague metropolitan area and the challenge of post-communist suburbanization

Suburbanization is the dominant process changing the spatial organization of post-communist Prague and its metropolitan area (Sýkora, 1999a). Outer city areas and the urban hinterland are now being radically transformed through the construction of new residential districts, shopping areas with malls, hypermarkets and factory outlets, and zones with warehousing and industrial facilities (Ouředníček, 2006, Sýkora and Ouředníček, 2007). These developments bring a radical departure from the spatial model of a communist city. Under central planning, suburban areas did not figure prominently in the then prevailing 'intra-metropolitan landscapes of priority' (Gentile and Sjöberg, 2006). Both new non-residential as well as residential investments were subject to planned allocation of resources. Preference was given to settlements with the status of centres. Within administrative areas of large cities, compact spatial development was preferred. Consequently, large numbers of small settlements

around cities as well as outer city boroughs were omitted (Lichtenberger, 1984; Musil and Ryšavý, 1983). The communist city developed in quite a compact form with a steep internal hierarchy of centres and strong centripetal orientation (Maier, 2003) towards city centre and inner city areas where jobs and services were predominantly located.

At present, the share of the suburban zone over the total metropolitan population as well as number of jobs and retail services is rapidly increasing. In Prague, the suburbanization of non-residential functions, particularly of retail and warehousing, has been, up to this point, more dynamic and influential than residential deconcentration (Sýkora and Ouředníček, 2007). New jobs and services located in the suburban zone challenge the traditional monocentric pattern of Prague (Pommois, 2004) and the centripetal orientation of commuting to work, services and cultural amenities. Suburban areas are gaining a higher social status population. Residential suburbanization thus contributes to the reversal of the traditional socio-spatial pattern of the socialist city, characterized by the declining socio-economic status of the population away from the city centre (Sýkora, 1999b). More importantly, jobs of the new suburban population are mostly located within the inner city and residential suburbanization of a wealthy population thus generates a rapid increase in travel-to-work journeys. The new spatial distribution of the population, jobs and services thus has important implications for the daily rhythm of commuting to work, schools and shopping facilities.

The suburbanization of retail facilities has completely reshaped the pattern of commuting for shopping. At present, a large share of shopping takes place in edge-of-town and suburban shopping areas. Many of these locations are not serviced with sufficient public transportation and people travel from the inner city, the suburban zone and the more remote regional hinterland by car. Another major impact of suburbanization is in the field of spatial mismatch in the distribution of jobs in metropolitan areas. Suburban jobs are namely in retail, warehousing and distribution (Sýkora and Ouředníček, 2007), with low-paid jobs taken by people from the inner city and the surrounding region. On the other hand, suburban areas are now becoming the home of a wealthy population that commute to their office jobs in central and inner cities. Therefore, a spatial mismatch is developing between the location of jobs and residences, contributing to increased travel in the metropolitan area. Furthermore, the booming

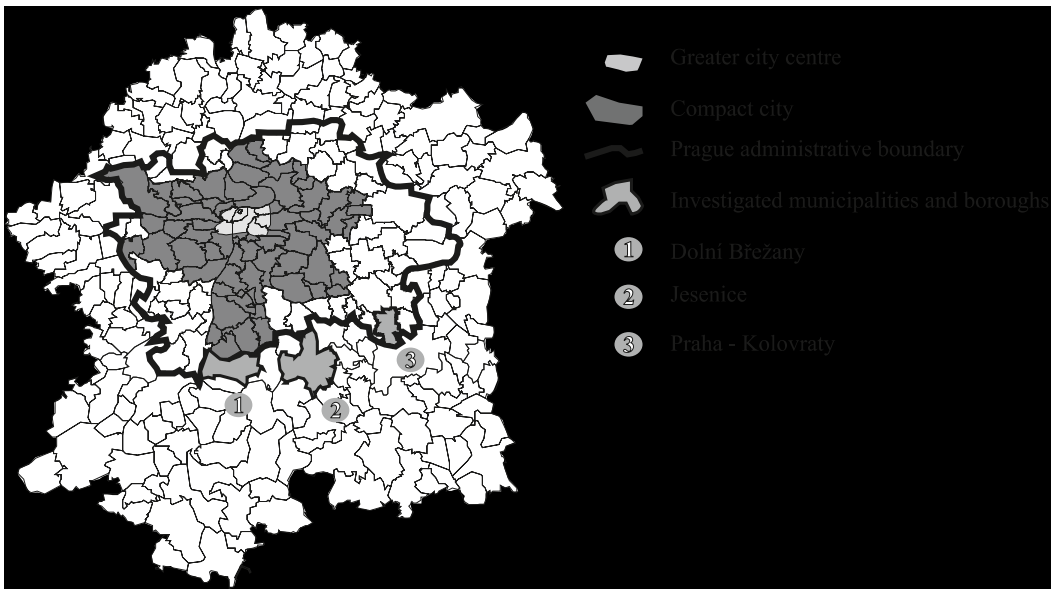


Fig. 2. Spatial divisions of the Prague metropolitan area. Prague metropolitan area consists of the city of Prague and districts Prague-East and Prague-West.

suburban areas are short of kindergartens and primary schools. Many households look for inner city alternatives, where schools are not overcrowded (some are even being closed down due to insufficient and still declining numbers of children) and often offer better quality educational programmes. It is important to note here that children are heavily dependent on the availability of public transport or car rides from their parents.

New suburban developments appear in a highly fragmented pattern. The compact character of the former socialist city is being changed by the spatially non-contiguous development that takes the form of a leap-frog suburban sprawl. The societal costs of sprawl are well known in North America and Western Europe (for the most comprehensive literature overview and discussions of causes and consequences of sprawl see *Costs of Sprawl* reports; TCRP, 1998, 2002) and now threaten sustainable metropolitan development in the Czech Republic. Despite a short period from the beginning of the transition, suburbanization has already dramatically reshaped the morphology, functional land-use patterns and socio-spatial structure. The outcomes of rapidly developing suburbanization in terms of the spatial distribution of people and their activities in the metropolitan area are mostly irreversible and form conditions which will influence the life of society for several generations. The suburbanization

process itself and its outcomes in terms of new settlement patterns produce important economic, social and environmental consequences, and shape the quality of urban and suburban life. Therefore, patterns of urbanization in metropolitan areas clearly belong to the decisive topics of urban and metropolitan research, and to public debates that should impact on the formulation of policies and planning tools intended to retain and/or develop a more sustainable urban form. Indeed, the study of time-space activity and mobility patterns of new suburban inhabitants can significantly contribute to our knowledge of suburbanization and its consequences, and help us to direct policy and planning interventions in favour of such spatial organization that will provide better conditions for the high quality of everyday life of inhabitants in the metropolitan area.

Methods

The main goal of our empirical research was to obtain information about the time-space patterns of the major types of human activities which play a prime role in the spatial structuration of the metropolitan area; that is, location of home, work, school, shopping, entertainment and mobility, including the mode of transportation between the locations of these mostly stationary activities. We are primarily concerned with the location of places where indi-

viduals conduct their everyday life activities within the spatial structure of the metropolitan area. In addition, we are interested in actor intentions, and the forces and factors that impact on them. The empirical investigation of human activities and time-space mobility was based on interviews, questionnaires and diaries that comprised information for households as well as individual household members in three case study suburban residential localities within the Prague metropolitan area (Dolní Břežany, Kolovraty and Jesenice; see Fig. 2).

The field research took place in May and June of 2004 and provided information about human activity and its absolute time-space position (geographic location in ten-minute slots) for 262 days (for eighty-eight individuals from thirty-eight households; two weekdays and one weekend day for each respondent). This can be seen as a relatively small sample. However, it includes a large share of new suburban inhabitants in the analysed places and thus provides in-depth information concerning their everyday activities. We have to acknowledge that the assembly of primary data for time-space analyses is exceptionally time-consuming. For comparison, Mei-Po Kwan used in her study of space-time and integral measures of individual accessibility a sample of eighty-eight individuals (Kwan, 1998), and the study of the influence of travel-time variation and facility opening hours on individual accessibility used 200 activity travel-diary datasets (Weber and Kwan, 2002).

The selection of case study areas was not based on any explicit typology of suburban communities, nor was it a random choice of locality. All locations represent communities which had experienced substantial construction of new housing and immigration of new inhabitants over the past ten years. They are located in mutual proximity (for the ease of fieldwork) within the southeast segment of the Prague suburban zone; that is, in the middle of the area experiencing the most dramatic growth. One settlement is located inside the Prague administrative boundary (Kolovraty is a borough of Prague) and two are municipalities outside of Prague (Dolní Břežany and Jesenice). Within these three settlements, particular zones comprising exclusively newly constructed homes were delimited. These areas differ in the availability of various transport means for commuting to work and in the age of new housing. There are no major differences concerning the supply of local services such as kindergartens, elementary schools, post offices, physicians, dentists or grocery stores.

The subject of the empirical investigation was the whole household and all its members aged at least 12 years old. Three means were used for information collection: questionnaires for households, individual diaries for each household member (see Appendix) and interviews with the heads of households. The crucial information about time-space activity and mobility patterns was collected in diaries that included both pre-coded and open form answers. The design of the diaries was inspired by two recently conducted surveys of the UK Office for National Statistics. The first was the Time Use Survey of 2000 which used self-completion diaries, and the second was administered as a part of the existing Omnibus survey in July 2001, with a pre-coded design. Gatenby (2003) describes both surveys and discusses differences in the information obtained.

In all, 262 diaries that recorded two weekdays and one weekend day for each respondent were collected with a response rate of 66%. In the diaries, the type of human activity, its geographic location and persons co-present with the respondent were recorded in ten-minute slots from 4 a.m. to 1 a.m. the following day (see Appendix 1 for an example of a completed diary). The activity types were recorded by a combination of pre-coded categories (including sleeping, eating and personal hygiene, homework and care for children, work and study, leisure and entertainment, shopping and services, and others) and open answers for more precise definition. Mobility was additionally coded by mode of transport (passenger car, public mass transportation, walking and bicycle). The geographic location of the activity was filled in by the respondent, usually using the names of neighbourhoods and settlements, and then coded to distinguish between the home, one's own neighbourhood and locations in the main genetic-morphological zones of the Prague metropolitan area (the greater city centre, compact city, suburban zone; Fig. 2), outside the metropolitan area and time spent in travel. The recognition of particular zones within the metropolitan area and one's own neighbourhood from the rest of the suburban area allows us to see the differences between prisms of individuals and, more importantly, to reveal the main spatial relations between new suburbs, the surrounding suburban zone and particular parts of the compact city via the spatiality (time-space distancing or stretching over time and space) of people's daily activities. Respondents also recorded whether they conducted the activity alone or together with another person

(child(ren), another household member, other person(s)) indicating not only co-presence, but also dependence, collaboration or coexistence of involved parties. The diary was complemented by a request for a drawing of the scheme of spatial movement for each recorded day. In the scheme of spatial movement, respondents graphically depicted the sequence of spatially discrete stations (where particular activities occur) conjoined by lines with a specification of timing and mode of transport. The scheme represents both objectively accomplished everyday activities and mobility patterns, and their subjective representation by respondents. This corresponds with concepts of action and activity spaces (Golledge and Stimson, 1997). Regrettably, recording the scheme of spatial movement proved to be a difficult task for many respondents. Therefore, in the majority of cases, the scheme was created consecutively during the digitalization of diaries.

The household questionnaires covered the basic characteristics of each household and its members: average monthly household expenditures and the identification of a household member with the main source of household income, length of residence in the locality as well as sex, age and economic activity for each household member. The interviews conducted with one representative of each household focused on the perception of the residential environment in terms of positive aspects and most pressing problems and limitations. These interviews helped us to understand the forces that shape people's time-space trajectories.

The individual records of each day reported in diaries were analysed in three principal ways: (1) time-activity allocation and time-locality allocation, (2) the sequence of events, (3) the complex picture of activities in time-space. Time allocation to a particular activity represents a total amount of time which each person spent on it, and time-locality allocation represents a total amount of time spent in a particular geographic area. The sequence of events represents the successions (chain) of different activities in time (including time allocated to them). The complex picture of activities in time-space represents a sequence of various activities in time-space, i.e. time allocated to a particular activity in a particular location.

These three approaches may be used to form a generalized picture of the whole sample. However, there are major differences between inhabitants in the allocation of activities in time-space. For instance, the daily picture of a person in the work-

place on a weekday is strikingly different from that of a mother with children who stays at home, or from an ordinary weekend day. Therefore we have employed a cluster analysis to group records for individual days. The variables for each day were represented by type of activity and their value was given by time-activity allocation. The analysis confirmed that the major divisions are given by the type of socio-economic activity (employment, study, homework) and type of day (weekday, weekend day). Therefore, further analysis was carried out for the following principal types of person-days: the weekdays of the employed, the weekdays of students, the weekdays of mothers with children, the weekdays of stay-at-home persons without children (mostly women without children or with grown-up children – in the Czech Republic, they are called 'green widows' – and occasionally pensioners) and weekend days. For each group, the time-activity allocation and time-locality allocation (Table 1 and 2), sequence of events (Fig. 5) and the complex picture of activities in time-space was prepared. The complex picture of activity time-space allocation in everyday life is based on the combination of activity distribution and spatial mobility during the day. Activity distribution informs us about the proportion of people participating in a certain activity at a particular time (Figs 3, 6, 8). The pattern of spatial mobility shows the proportion of people located at a particular time in a given geographic area or in transport (Figs 4, 7, 9). These two angles of view can be merged into a dynamic map of the time-space distribution of activities within a metropolitan area (Fig. 10). Hägerstrand (2004, p. 323) thought that 'this can not be completely graphically depicted'. Nevertheless, contemporary GIS techniques facilitate generalizations and visualizations in three-dimensional time-space (Kwan, 2004) and a time sequence of two- or three-dimensional pictures of the diorama in question. We use the dynamic map consisting of a time sequence of two-dimensional pictures.

Time-space activity patterns

In this section we provide detailed information about three types of activity patterns based on the analysis of diaries: the working days of the employed (sample of ninety-nine days), the weekdays of mothers with children (twenty-six days) and weekend days (eighty-four). The two other groups, that is, stay-at-home persons without chil-

Table 1. Time-activity allocation.

Activity	Weekday of employed (n=99)	Weekday of mothers with children (n=28)	Weekend day (n=84)
Transportation	1 : 59	1 : 20	1 : 37
Work and study	8 : 48	1 : 30	1 : 00
Shopping and services	0 : 21	0 : 49	0 : 23
Homework and care for children	1 : 31	7 : 24	3 : 45
Leisure and entertainment	2 : 59	3 : 40	7 : 09
Eating and personal hygiene	1 : 46	1 : 58	2 : 10
Sleeping	6 : 36	7 : 19	7 : 56

Note: Total amount of time in hours and minutes per activity during a day.

Table 2. Time-locality allocation.

Locality	Weekday of employed (n=99)	Weekday of mothers with children (n=28)	Weekend day (n=84)
Transportation	1 : 59	1 : 20	1 : 37
Greater city centre	3 : 11	0 : 32	0 : 44
Compact city	4 : 58	0 : 29	0 : 34
Suburban zone	0 : 39	0 : 35	0 : 43
Neighbourhood	0 : 27	1 : 38	0 : 33
Home	12:20	19:07	16:25
Outside the metropolitan area	0 : 26	0 : 19	3 : 24

Note: Total amount of time in hours and minutes spent in locality during a day.

dren (eighteen days) and students (twenty-four days), are omitted because of smaller samples and high internal variabilities in their daily activity and mobility patterns (they also do not represent large segments of the population among new suburban residents). While mothers with children comprise a smaller group, each piece of information in fact represents two or more individuals, their activity and mobility patterns are similar and, most importantly, they are the group spending most of their time in their home suburban locality and its surroundings, and are therefore most dependent on the quality of its environment and supply of services.

The working days of the employed

The relation between home and the workplace is the strongest element in the time-space activity patterns of inhabitants with a major impact on the structuration of spatial organization in the metropolitan area. The employed spend most of their daily lives in their suburban homes, in the workplace in the compact city and in transport between them. New suburban

inhabitants are usually highly educated professionals who work at jobs located in the inner city. The complex picture of time-space activities of the employed shows that over 70% of them are present in the compact city between the hours of 9 a.m. and 4 p.m. of a working day (Figs 3 and 4). The move to the compact city usually starts after 7 a.m., at which time three quarters of them are still at home. This clearly indicates that the peak hours of morning traffic are between 7 a.m. and 9 a.m. due to commuting to work. Afternoon travel is stretched out over a longer period of time, with 90% of the employed back home by 9 p.m. The increase in travel between the suburbs and the city is one of the most visible consequences of suburbanization (Sýkora and Ouředníček, 2007). The employed surveyed in our study spend two hours each day commuting. In comparison, Colleoni (2004) reports that on average, employed residents of peri-urban localities in the Milan metropolitan area spend ninety-six minutes commuting, i.e. less in comparison with Prague. The differences in commuting time are influenced by the character of the transport infrastructure and variability in the spatial structures of

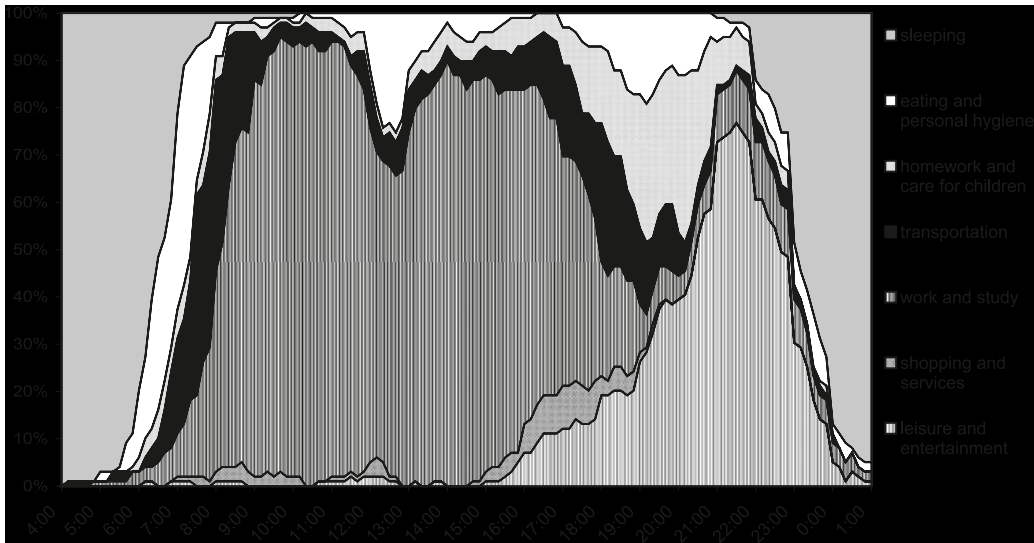


Fig. 3. Activity distribution of employed persons during a weekday.

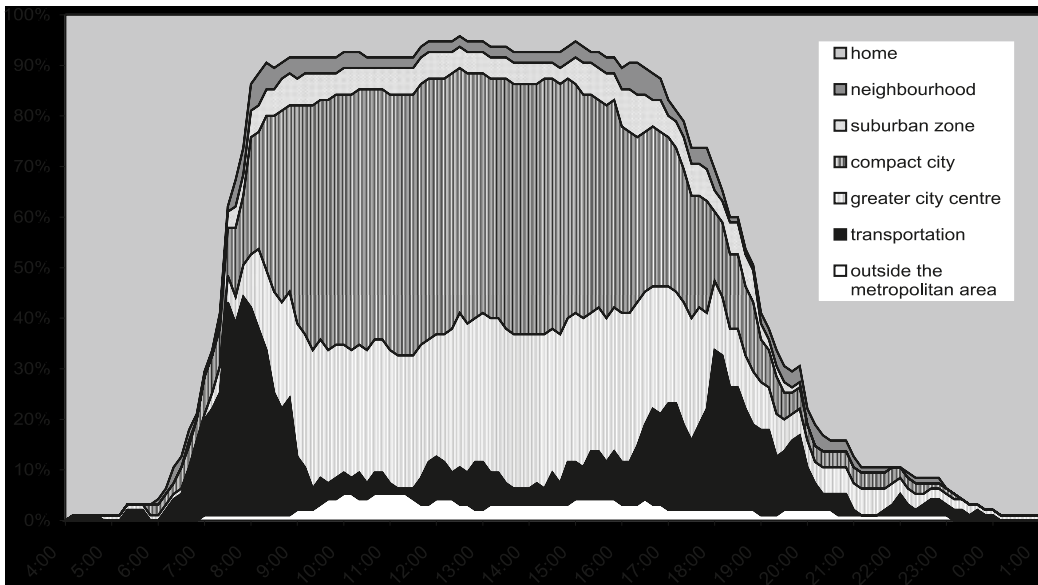


Fig. 4. Spatial mobility of employed persons during a weekday.

Prague and Milan. In Milan, multi-directional mobility flows have developed in the metropolitan area (Colleoni, 2004). Prague is characterized by strong centripetal relations between the highly dominant city centre and the outer city and suburban locations (Maier, 2003). In this structure, the rapidly growing traffic causes congestion at several bottle-neck

points, thus decreasing speed and increasing time spent in travel.

The most common activity sequence of the employed is very simple: home → work → home (Fig. 5). The analysis revealed that in the morning the majority of the employed follow a direct route to their workplace, while the return route home is of-

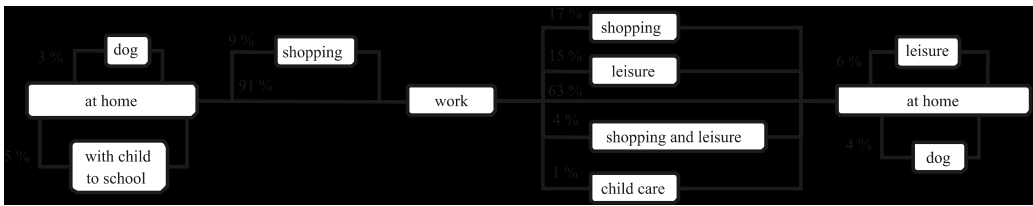


Fig. 5. Probability model of activity sequence for employed persons during a weekday. Figures show the share of a particular activity while at home and on the way between home and workplace.

ten interrupted by shopping or leisure activities (altogether 36%). One-third of this shopping on the way home from work is done in new suburban shopping areas and one-fifth in the vicinity of the home (see Table 3). Despite the fact that most shopping is accomplished within the compact city (43%), results show the importance of new suburban malls (mostly accessible only for those employed who travel by car) and also indicate that people take advantage of basic amenities such as local shops in their own suburban settlements.

The weekdays of mothers with children

The activity patterns of mothers with children are very similar and thus, due to low internal variability, we consider the sample of twenty-eight days sufficient for making generalizations. Homework and care of children take the largest share from time-activity allocation (Table 1, Fig. 6). The activity sequence of mothers with children has several fixed time-space stations and partial paths (taking children to and from school and kindergarten, lunch at home) between which other activities are conducted (shopping, leisure). For instance, 96% of the time, midday is spent at home. In the mornings mothers usually take children to school or kindergarten, visit local shops and take care of the housework. Afternoon trips or trajectories are connected with walks in their neighbourhood, including visiting friends. Their activities and mobility are strongly connected with the home and its surrounding neighbourhood (Fig. 7, Table 2). There is a high probability (36%) that a mother will go for a walk in the neighbourhood. On average, they spend only one hour per day in the compact city.

The spatial movement of mothers is quite irregular in comparison with repetitive commuting to work of the employed. They are heavily dependent on cars (Table 5) as many of the particular journeys undertaken by mothers with children are difficult to

maintain by means of public transport. Mothers with children represent the population group which uses the residential neighbourhood most intensively and are therefore most dependent on the actual environment and facilities available in the suburbs. Absence of public space, parks with benches and playgrounds for children, footpaths for walking and meeting up with other residents are characteristic signs of some quickly growing suburbs around Prague. In a number of new residential locations there are virtually no attractive or safe footpaths that would connect a new residential area with an older settlement where basic services, shops and offices are located. On the other hand, there are areas with well-established public spaces and facilities for children. This research's ability to provide detailed local knowledge about time-space mobility and about those segments of the daily trajectories perceived as uncomfortable by mothers with children can deliver valuable information for local development planning.

The time-space activity and mobility pattern of mothers with children is quite different from that of employed people commuting to the city. Interestingly, this contrast concerns the common households of new suburban inhabitants consisting of a husband working in the city and a wife with children in the suburban home. If we consider the whole family as one unit, its prism spans all the basic city zones. In its daily life, the typical new suburban family uses amenities which stretch over the entire metropolitan area. The daily activities of these families thus contribute significantly to the integration of metropolitan regions as distinct geographic units.

Weekend days

The picture of weekend days was constructed from eighty-four diaries. Tables 1 and 2 and Figs 8 and 9 show the allocation of activities in time and space. Many residents spend weekends at home, often with half-day trips for shopping, leisure or visiting relatives. Due to the high variability in the destinations

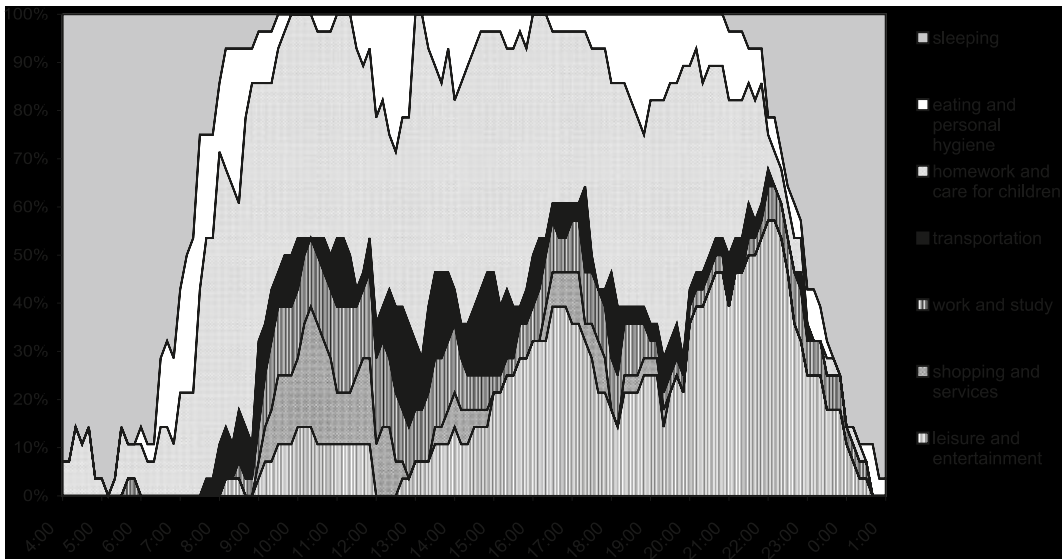


Fig. 6. Activity distribution of mothers with children during a weekday.

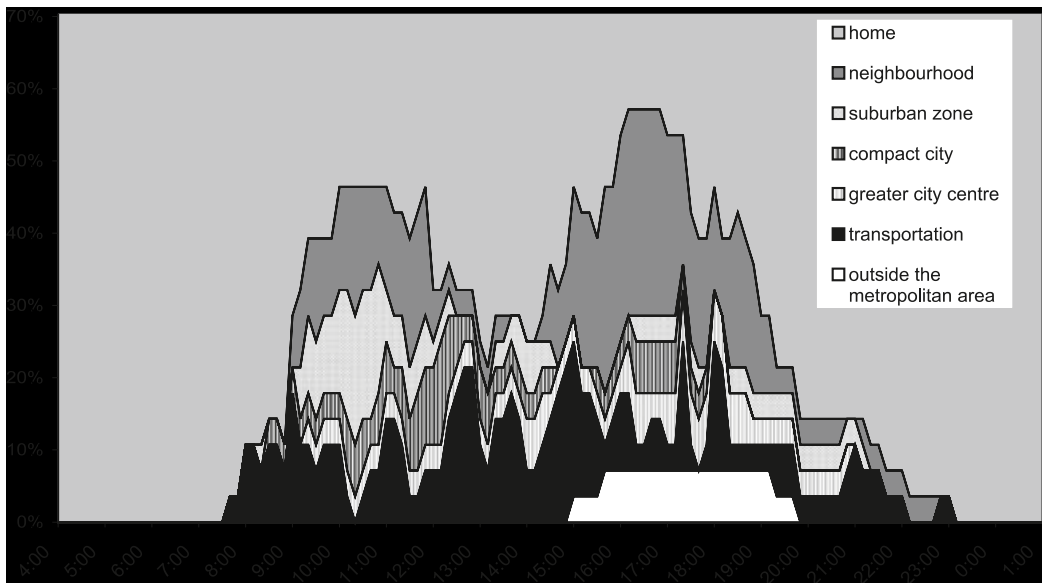


Fig. 7. Spatial mobility of mothers with children during a weekday.

and family character of trips, 86% of journeys are made by car (Table 5; 83% of trips are conducted by at least two family members together). Family lunch plays an important role, taking place at home 79% of the time. A weekend day is usually divided into morning and afternoon by lunch. Shopping is a typ-

ical morning activity, done predominantly in suburban shopping centres (20% of weekend diaries included 'large family shopping' with 17% done in the morning as opposed to 3% accomplished in the afternoon). The afternoon is often reserved for leisure activities outside of the home (43% of diaries). Few-

Table 3. Shopping localization (spatial distribution of shopping due to localization).

	Greater city centre %	Compact city %	Suburban zone %	Suburban zone – hypermarket %	Neighbourhood %	Total sum %
Employed (44)*	11	32	5	29	23	100
Mothers with children (21)*	5	24	10	28	33	100
Weekend day (35)*	11	26	6	54	3	100
Total (100)*	12	31	5	35	17	100

* Note: Number of records of shopping activity in diaries.

Table 4. Leisure outside the home*.

	Greater city centre %	Compact city %	Suburban zone %	Suburban zone – hypermarket %	Outside the metropolitan area %	Total sum %
Employed	24	39	8	23	6	100
Mothers with children	0	0	5	81	14	100
Weekend day	16	9	11	12	52	100
Total	16	12	10	20	42	100

* Note: Share of total time spent on leisure and entertainment activities outside own home.

er than 10% of inhabitants leave their house for the night during the weekend. This is in sharp contrast with the traditional pattern of weekend recreation of Czech families outside the city in their weekend and summer houses. There is a striking difference between living in a suburban home with one's own garden and living in a flat within a multi-dwelling building, which is the case for over four-fifths of Prague inhabitants. Our interviews confirmed that new suburban residents appreciate the quality of the residential environment at their homes and do not feel inclined to leave the house in favour of a better environment for the weekend.

The time-space distribution of activities and structuration of the Prague metropolitan area

In this section we look at particular activities, such as shopping, transport and leisure. This provides us with additional information which allows us to grasp the everyday time-space patterns of activity and mobility in the metropolitan area. At the end of this section, we arrive at a generalized synthesis in a dynamic model of the time-space allocation of activities in the metropolitan area. We use the event approach to record shopping and transport, which means that we analyse the number of all accomplished shopping events or journeys made. Leisure activities were approached differently and analysed as the amount of time spent by people at a particular leisure activity.

After employment and residence, shopping and leisure activities are the most important activities that contribute to the structuration of the metropolitan area. Recently established suburban shopping centres with hypermarkets represent a new element in the functional structure of the Prague metropolitan area. The shopping behaviour⁶ of people is influenced by their individual everyday time-space mobility pattern, personal preferences and the particular retail supply in proximity to their home, workplace or in the area where commuting to work takes place. Table 3 shows the share of shopping according to particular urban zones. Employed people shop during weekdays in the vicinity of their workplace, on their way back home from work in suburban hypermarkets located along the way (29%) or in their own residential neighbourhoods (23%). They mostly shop alone (75%), for forty minutes on average. Activity and mobility patterns of mothers with children are heavily connected with their residence. In 72% of cases, they do their shopping in the suburban zone, of which 33% is in their own neighbourhood. Mothers use cars for most shopping trips. They usually shop with another household member, usually a child (76%). During weekends, shopping can be the main activity for the whole household (80% of shopping is done by more than one person). Substantial shopping in malls and hypermarkets dominates weekend days (54%).

Leisure activities are more variable in time, space and type. The majority of free time is spent

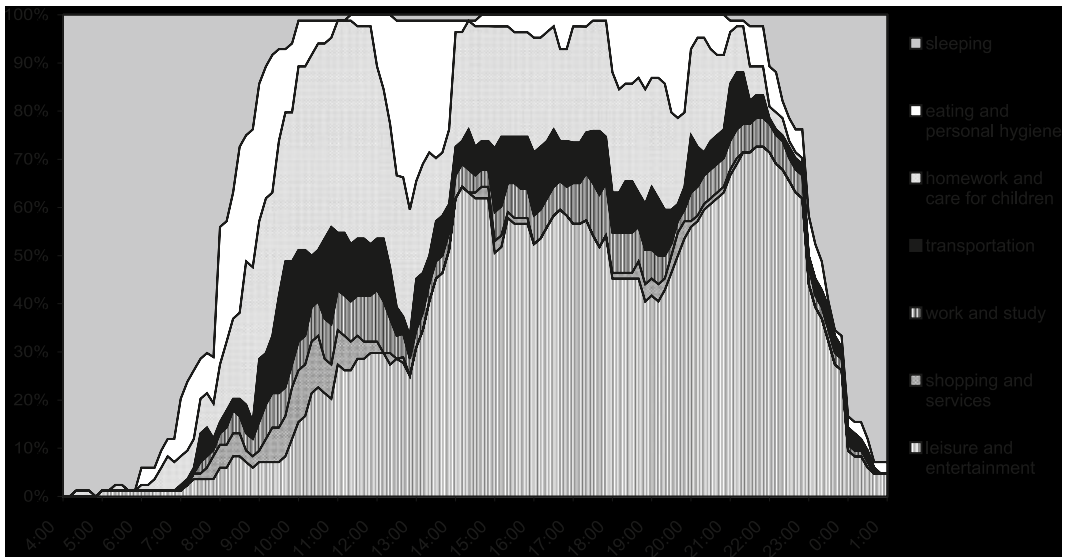


Fig. 8. Activity distribution during a weekend day.

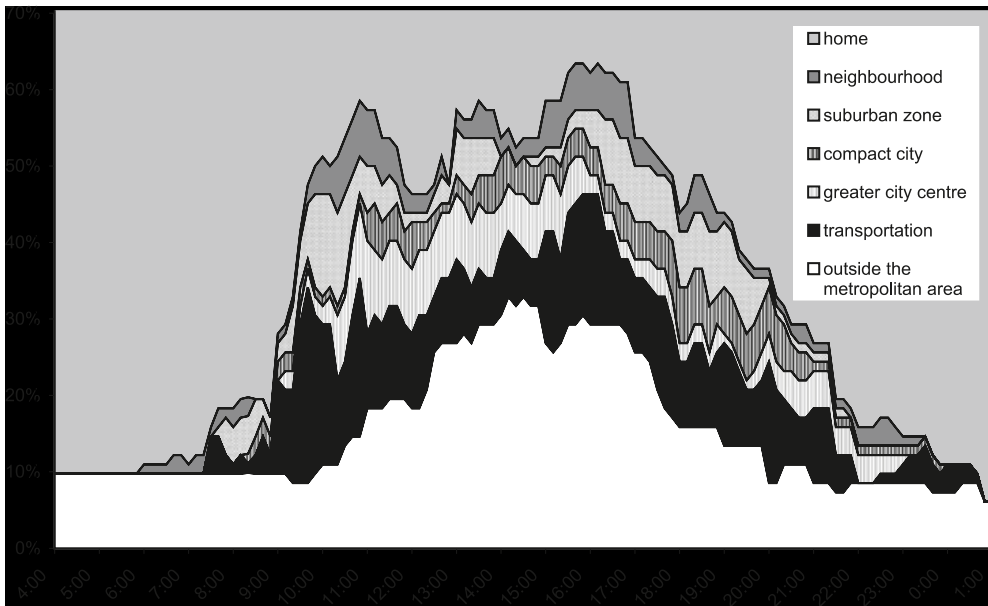


Fig. 9. Spatial mobility during a weekday.

at home (60%). However, leisure activities performed outside the home are more important for the spatial structuration of the metropolitan area. There is a sharp distinction between the weekdays of the employed and mothers with children, and

weekend days (Table 4). These results confirm the dominance of greater city centre and compact city for the employed even for free-time activities during weekdays, while mothers with children are largely tied to their home neighbourhood. During

Table 5. Share of means of transport used.

Transport mode	Walking and bicycle %	Public mass transportation %	Passenger car %	Total %
Employed (303)*	5	25	70	100
Mothers with children (64)*	19	9	72	100
Weekend day (202)*	5	9	86	100
Total (569)*	7	22	71	100

* No. of trips.

Table 6. Share of means of transport used for commuting to work in case study localities.

Locality	Passenger car %	Public mass transportation %	Combination %	Total %
Dolní Břežany	65	21	14	100
Jesenice	74	3	23	100
Kolovraty	39	55	6	100
Total	59	27	14	100

weekends, over half of leisure activities are realized outside the metropolitan area.

The travel behaviour of new inhabitants in suburbs is highly differentiated and dependent on transportation connections of the locality. The research confirmed the expected dominance of passenger automobiles over mass public transportation (Table 5). The level of use of individual automobiles is 70% or more for all realized moves for each of the three groups of suburban inhabitants, and cars fully dominate weekend days. During weekdays, employed persons use mass transit for one trip out of four. However, there are differences between localities (Table 6). Fifty-five per cent of the employed from Kolovraty use mass transit for commuting to work as the neighbourhood is serviced by a regular railway connection to the city centre. The situation in 10 km-distant Jesenice is markedly different, as only 3% of the employed use the means of mass transport. The municipality is connected by bus routes that are slower and less frequent in comparison with the train. However, in Jesenice, people employ a combination of cars and mass transport in 21% of trips. Usually, a car is used by two household members to bring one of them to one of the stations of the underground network. Where fast and frequent mass transit is in place, people are likely to use it. This observation supports the idea that the spatial pattern of suburbanization should be influenced by metropolitan planning to concentrate new development in places, areas and axes that are well serviced by mass transit.

The everyday pulse of the metropolitan area can be represented by a dynamic map of the time-space allocation of activities. From the data obtained, we have prepared a dynamic model of a weekday using animation that consists of a sequence of maps of the metropolitan area within a twenty-minute pace. Maps contain boundaries of basic spatial divisions in the metropolitan area (taken from Fig. 2) and points which represent each respondent and his or her location in the metropolitan area, with the points' colour representing the actual activity being performed.⁷ As the dynamic map in the above described form cannot be presented in the pages of this journal, we have selected specific time-cuts that show the main break points in the spatial allocation of people in the metropolitan area and had to abstract from the type of actually accomplished activity (Fig. 10).

Conclusions and future research

The Prague metropolitan area has experienced profound changes since the beginning of its transformation, and this urban restructuring will continue in the coming years and decades. Our investigation has contributed to a better understanding of some impacts of suburbanization on the structuration of the metropolitan area. We have paid particular attention to those activities that are most important for the structuration of the metropolitan area due to the quantity of people involved, the inevitability and repetitiveness of these activities, and the spa-

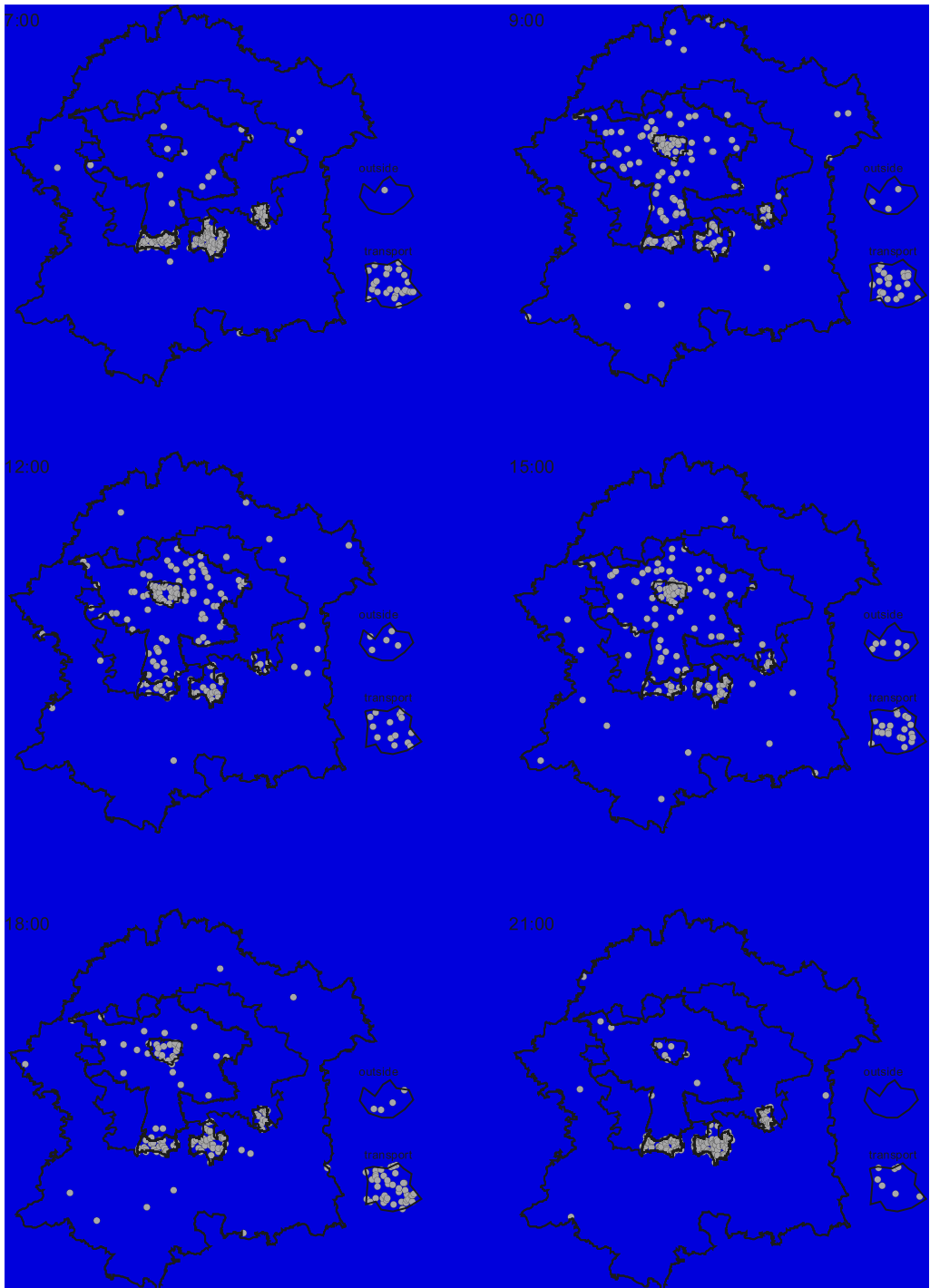


Fig. 10. Specific time-cuts from the dynamic map. Each point represents one respondent and her or his location at a given time; the box 'outside' shows people absent in the metropolitan area and the box 'transport' shows those present within the metropolitan area but on the move (from walking to riding in a passenger car).

tial–functional division among places that they produce within the metropolitan area. Therefore, the relation between home and the workplace, school or shopping received more attention in comparison with, for instance, evening or weekend walks in the vicinity of home. The home–employment relation was primarily comprehended by looking at the weekdays of the employed. Relations between home, shopping and leisure activities, accompanied by a closer look at the means of transport used, were added to complete the picture of time-space distribution of activities and its role in the structuration of the Prague metropolitan area.

The dynamic picture of the time-space allocation of activities of new suburban inhabitants clearly indicated the strong functional integration of newly built suburban areas with the compact city, namely its inner areas that offer jobs as well as cultural, entertainment and shopping opportunities for new suburban inhabitants. Importantly, the whole metropolitan area or, more correctly, particular places within it form a habitat (or in terms of time geography, a pocket of local order: Hägerstrand, 1985; Lenntorp, 2004) for suburban households. The household as a unit uses in metropolitan space localized opportunities afforded by job offers, provision of services, cultural and other amenities as well as available and affordable housing and a suitable residential environment. However, the integration is not multi-directional. New suburbs in the Prague metropolitan region are heavily dependent on the core of the metropolitan area for the supply of jobs and services. Recently built suburban shopping centres have shifted part of the inhabitants' daily activities to the suburban zone. A significant proportion of the population redirected its shopping trips towards the suburban hypermarkets and malls (Garb and Dybic, 2006). However, recent suburban developments are only initial steps that may in future lead to a more polycentric intra-metropolitan development.

Within our sample of new suburban inhabitants we have distinguished three groups whose time-space activity patterns are most important for the structuration of the Prague metropolitan area. Each of them contributes to the constitution of specific socio-spatial relations that structure metropolitan space internally. During a working day, the employed are heavily dependent on jobs in the compact city, with a minimal amount of time spent in the suburban zone and home neighbourhood. Places of residence are significantly spatially divided from workplaces. The patterns of the weekday of the employed also confirmed a very low rate of in-

tegration between concrete suburbs and the surrounding suburban zone. The suburb–city relation strongly prevails over the suburb–suburb relation. New suburban inhabitants thus contribute to the traditional centripetal pattern of commuting to work. This, however, can be different for inhabitants in pre-existing neighbourhoods, as some of them might commute for (often routine and not well-paid) jobs to new suburban facilities.

The spatial-temporal activity and mobility patterns of mothers with children are very different, with a high dependency on the home and their own suburban neighbourhood. The suburb–city relation as well as the suburb–suburb relation is weak. The presence of mothers with children and their rapidly increasing numbers in suburban places bring major challenges. For this group of inhabitants, suburbs are places where they spend most of their daily lives. Suburban settlements thus should not be seen as dormitories for commuters to work in the city centre, but as places that offer a wider spectrum of opportunities to increase the quality of suburban life. Currently, the insufficient capacity of kindergartens and elementary schools is a particularly pressing issue in many suburban settlements within the Prague metropolitan area.

The weekend days of the new suburban inhabitants are characterized by a concentration of activities around their homes, with trips to various destinations outside the metropolitan area, in the compact city as well as in the surrounding suburban zone. A small share of weekends spent at summerhouses distinguishes the new suburban inhabitants from the traditional pattern of weekend out-of-town commuting. Interestingly, the time-locality allocation during the weekend day is the same for the suburban zone and the compact city, displaying a strong relation between the suburbs and leisure and cultural amenities of the core city. This might be different for old suburban inhabitants, whose weekends are concentrated around home and garden, while the new, higher income, better educated and in general younger population maintain its urban attachment and grip over the whole metropolitan area.

This was an initial research project with the sample of respondents being too small to answer some more detailed questions, such as those related to the impact of the differences in the actual quality of the residential environment in the researched areas on the inhabitants' time-space activity and mobility patterns. This kind of research could be repeated in other suburbs in the metropolitan area to support collected evidence and/or applied in qualitatively

very different neighbourhoods, such as old postwar housing estates or inner city districts of newly built condominiums to see the difference in time-space activity and mobility patterns of their inhabitants and ways in which these neighbourhoods are integrated into the city organism.

The research of time-space activity and mobility patterns presented in this paper has to be perceived as the first round of conceptual work with an initial assembly of empirical material, serving for the development of more complex and technically sophisticated future projects. This kind of work requires empirical research that is very time-consuming and difficult to undertake. However, it helps us to attain more firmly grounded and contextualized knowledge. As Dicken (2004, p. 19; emphasis in the original) argues, geography needs 'more careful, a more considered and a more inclusive *conceptualization*'. Case studies and *in situ* research play an important role in this aspect (Castree, 2005; Massey, 2001; Yeung, 2003). Situated and contextually based explanations can position parts within the wider system and help to build a more complex picture of reality. Without such pieces of research we would learn nothing about the whole and vice versa. We have seen and conceptualized this particular investigation from its beginning as an integral part of a long-term effort of grasping the whole complex of metropolitan restructuring. As Hägerstrand (2004, p. 322) puts it, we must 'reason from the simple to the complex', and we might add, following Hampl (1971, 2000), we must document the organization of complex systems through the investigation of partial and semi-complex entities.

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Notes

1. Structuration occurs via the duality of structure, a dialectic process that connects immediate individual social actions with long-term reproduction of socio-geographic systems across time-space.
2. For a fuller discussion of diorama concept see Hägerstrand (1982).
3. Hägerstrand uses terms such as 'togetherness' (Hägerstrand, 1985, p. 195) or 'thereness' (Hägerstrand, 1982, p. 326)
4. We understand the term 'diorama' serving as a frame for examining reality, and the term 'corporeality' serving as a tool for grasping an essential characteristic of that reality.
5. Of course, the developers and retail operators carefully investigate the location of their new facilities and adjust it to existing flows of potential customers in a metropolitan area. Ongoing dialectics stem from the duality of structure.
6. The analysis of shopping behaviour derives from information on 131 records of shopping in diaries.
7. A simple graphic presentation of the dynamic model is presented online at <http://www.natur.cuni.cz/~kubanov>.

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APPENDIX: AN EXAMPLE OF DIARY

What are you doing? Where are you? Are you with anyone else?

Datum: 27.4 Znak: _____

ČAS d	Co přesně děláte? (můžete prosím upřesnit vaši aktivitu?)	Kde se nacházíte? (domo, v práci - uvěďte prosím, kde přesně např. Vinohrady, Příhonice)	Jste s někým?			
			sám	s dětmi	ostatní členové domácnosti	jiná mladá osoba
4	STANEC	BOLESLAV KUCZAKOVY JEDNA	X	X	X	X
5			X	X	X	X
6	MILUŠENKA PŘÍPRAVA INKUBATORU	BOLESLAV KUCZAKOVY JEDNA	X	X	X	X
7	PROJEKT VILIMSKÁ PLOŠINA CESTA DO VLCOV	BOLESLAV KUCZAKOVY	X	X	X	X
8	ZEMSKÁ ŠKOLA 700 FIRDŮV	ŠTĚPŮV	X	X	X	X
9			X	X	X	X
10	PULCOVÁ ŠKOLA PŘE OŘEC	HOLČOVICE	X	X	X	X
11	TRÁVA JE VŠE PŘEKO	KACUNOV	X	X	X	X
12			X	X	X	X
13			X	X	X	X
14	PRÁZE		X	X	X	X

With someone else
 Other household member
 With children
 Alone