Discussion Papers 2007.
Social Inequalities in Urban Areas and Globalization.
The Case of Central Europe. 51-76. p.

a core-periphery model of dual social structure where the traditional model of socially high-ranked centrre with and low-ranked periphery has been extended by another scheme of low-ranked centre and high-ranked periphery. All these processes have created a new type of socio-spatial unit.

The Austrian case study – Social Inequalities in the Vienna Metropolitan Region

Preface

A spatial analysis of social inequalities tackles one of the major issues of modern human geography: How equal or unequal is society and its spatial distribution? The answers range from one extreme, a totally equal distribution representing a homogeneous social area, to the other, a distinctly unequal distribution as a characteristic feature of a society that is socially as well as spatially highly diverse. Equal distribution indicates that all spatial units share the same features, which means that all units have the same proportion of affluent and poor residents, the same proportion of qualified and unqualified employed persons and of large and small apartments. Unequal distribution obviously refers to the complete opposite. The highly qualified and well-off groups of population as well as the large apartments concentrate in a very limited number of units, whereas low-income and unskilled residents living in small apartments concentrate in a completely different set of spatial units. What is not intended in this context, however, is an evaluation of socio-spatial inequality, since the question whether an unequal spatial distribution is to be interpreted as fair or unfair will always be a matter of ideology. Therefore the focus of this paper will rather be put on an objective description.

The analysis itself is primarily based on data of the census 2001, which allows a very detailed spatial differentiation. The first step includes the identification of relevant indicators characterizing social inequality, the second step is aimed at depicting their spatial distribution and, thirdly, the individual features are going to be combined in order to establish basic dimensions of inequality. The smallest spatial unit in this analysis is the community or municipality for the suburban region of Vienna or the census tract for the City of Vienna itself. Together the City of Vienna and its suburban region constitute the Vienna Metropolitan Region that has been subject of the analysis.[14]

[14]In this context Ms D. Schönbichler is to be thanked for the translation into English as well as for reviewing the draft.

Heinz Fassamann - Gerhard Hatz : The Austrian Case Study – Social Inequalities in the Vienna Metropolitan Region.
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Theoretical background

The analysis of social and spatial inequality has evolved from two basic questions of research: the Social Indicator Research of the 1970s and the Social Area Analysis of urban space of the 1940s. In this paper both concepts will be dealt with and for the first time combined to achieve an integrative approach. For this purpose the two rather different concepts will be introduced briefly in the following chapters.

Social inequality and social indicator research

Social inequality is a relative measurement of the distribution of relevant indicators within society. Social inequality is the expression of different access to housing, health care, and education. It is inextricably linked to unequal distribution of income and wealth in society, which was again made the focus of attention during the creation of the social welfare states in Europe. The question as to which extent social inequalities can or even should be tolerated and which extent makes public interference desirable or even necessary was becoming a crucial issue. Therefore measuring social inequality by means of social indicators was regarded as a fundamental task (see *Fassmann,* 1997).

The social indicator research of the 1970s was guided by a normative conception of an active social policy. This conception advocated state intervention with the aim of bringing about change within society, by ensuring equality of possibilities and by supporting selected groups. Social indicators were and still are a necessary pre-condition in the field. Social policy is not feasible without prior knowledge of the social situation and without identification of the marginal groups of society. The question concerning which political measures should be implemented on which population groups, remains impossible to answer without the knowledge of the real and objective situation. With reference to an extensive system of yearly economic statistics, the foundation for every national economic policy, a similar system of social reports was conceived and carried out in an exemplary manner. The functions of the system consisted of a statistical observation of society, the gaining of information on specific problem groups and the supervision of the success of the socio-political measures.

Social indicator research was not based on a universal self-contained theory, which settled the central dimensions of a modern industrial society and set up a relationship with each other. The theory rather served the normative fixed dimensions, which, on the basis of operationalized indicators, should have reproduced the notion of „quality of life“. The theoretical argument, in terms of which societal dimensions were selected and through which indicators were operationalized, took on more of a subordinate role. Empirical analyses of the individual indicators

or the formation of synthetic indicators were and still are in the forefront of the wide range of literature devoted to measuring quality of life, living conditions or trends in the development of the social structure.[15]

Social area analysis

In the late 1940's Eshref Shevky and Wendell Bell developed the Spatial Area Analysis which heavily relies on the tradition of Social Ecology founded by the Chicago School (see Shevky and Bell 1955). Spatial Area Analysis claims that cities are divided into small, segregated 'worlds' which are referred to as 'Natural Areas'. They correspond to the 'Neighborhoods', the residential areas typical of American metropolitan areas. Those neighborhoods provide a high potential of identification for the residents who deliberately separate themselves from the outside and insist on social control mechanisms within the boundaries of their neighborhoods. Consequently, 'Natural Areas' or 'Neighborhoods' are 'natural' units of the city, just like biotopes can be seen as 'natural' units of nature.

Social Area Analysis regards the city as a mosaic consisting of numerous individual neighborhoods. It is the goal of Social Area Analysis to distinguish these neighborhoods from each other and to describe the structure of the neighborhoods by using different indicators. Who is living together? Which groups of population constitute a common social entity of its own? How can the social-spatial patterns of a city be described and explained?

The Social Area Analysis did not have any normative objective. It was not aimed at any specific measures of planning or policy and it did not claim to even out inequalities. Its goal was rather to identify the social morphology of a city, the extent of segregation and, most of all, the crucial variables responsible for the differentiation. In time two different approaches developed: firstly an inductive approach with the concept of collecting as many variables as possible in order to determine the primary dimensions in the formation of neighborhoods by means of factor analysis (factorial ecology) and, secondly, a deductive approach in which the selection of variables influencing the socio-spatial differentiation of a city is based on theoretical considerations (e.g. modernization theory). Both notions have advantages and disadvantages and have clearly contributed to explaining

[15]In Germany for instance, the SPES-Project (socio-political decision and indicator system for the Federal Republic of Germany) or in Austria, the project examining „social inequality" were two examples of this type of research dating back to the 1970's. Evaluations of the societal development as well as social transformation were carried out and published in manual form in many European and non-European countries. The British Social Trends (published yearly since 1970), the French Donnees Sociales (1973), the American Social Indicators, the welfare surveys and social reports in Northern Europe or the Austrian report pertaining to the population's social situation should be mentioned here.

socio-spatial differentiations. With regard to this analysis, however, it is not necessary to dwell on these approaches any further.

In this analysis it is attempted to combine both approaches. The selection of the indicators is based on the concept of social indicator research and they ought to be able to define and validly measure social inequality. Therefore a profound examination is necessary, because official statistics provide a large number of indicators identifying physical, economic and demographic structures, which, however, contribute hardly anything to a problem-centred delineation of social inequalities. The path of analysis itself is determined by Social Area Analysis. It leads to an understanding of the socio-ecological milieus of a society characterized by obvious social inequalities and imbalances and finally to an answer to the basic question: how can the social morphology of the Vienna Metropolitan Region be described.

Relevant indicators

The social indicator research provides the background for the selection of indicators: they certainly have to contribute to comprehending and explaining social inequalities. This alone hardly gets you anywhere, however, because there are numerous variables responsible for social inequalities. The decisive criterion is the availability of data especially for a spatial differentiation. Therefore the data required need to provide information related to social inequalities at the level of communities and municipalities for the urban fringe and at the level of census tracts for the City of Vienna. Both levels together constitute the Vienna Metropolitan Region. In the following section every individual indicator and its specific advantages and disadvantages will be defined and presented in a statistical and cartographic overview.

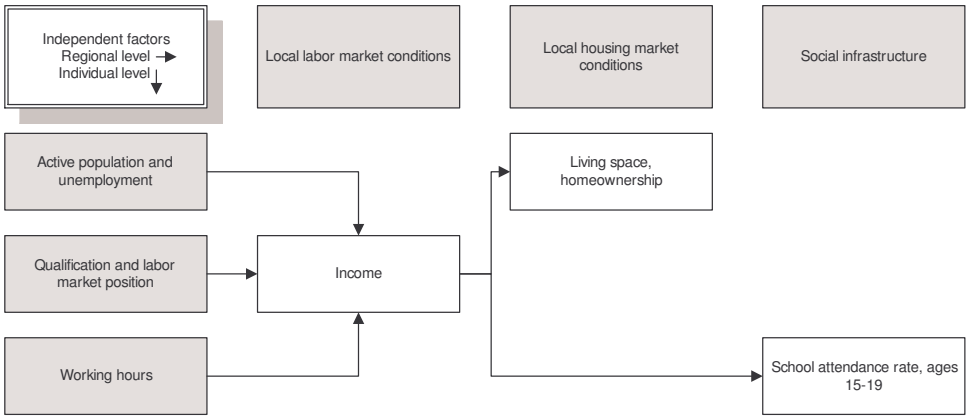
Selection model

The first differentiation that can be ascertained concerns the difference between subjective and objective indicators. Inequality and quality of life and welfare do not only concern objective living conditions, but are also a matter of personal perception. The same objectively evaluated living conditions can be perceived differently from a subjective point of view. This occurs because either relevant factors are left out or because the living conditions, which are evaluated at a specific time, sometimes are the result of a "recovery process", and at other times and places of a downward spiral. Both objective and subjective indicators are

valuable in their own way, as the methodological difficulties in collecting and comparing subjective indicators are well known (*Table 1*).

Table 1

Model of social inequality



Source: Author's concept.

The present article concentrates on objective indicators that are available on a detailed spatial level. The considerations are based on a model which forms causal chains of variables and differentiates between independent and dependent factors. Independent factors comprise indicators related to employment, whereas income, standard of living and school attendance rate of teens between 15 and 19 can be understood as its consequence. At first there must be some kind of employment, only in that case income can be generated. The local labor market conditions influence how much somebody earns, although this mainly depends on the kind of employment.

Consequently, the level of income determines the living conditions, even though the specific local situation has to be taken into account again (real estate market, property prices, building costs, do-it-yourself (DIY) resp. mutual support in tightly knit neighbourhoods). At last, the level of income but also the "social background" influences the school attendance rate of the 15–19 year olds, who have already completed their compulsory school attendance. High-income households with privileged positions on the labor market pass on the necessity of gaining higher qualifications to the next generation. In this context local conditions seem to be of a certain relevance again. A dense network of educational infrastructure appears to be reflected by a high school attendance rate of 15–19 year olds.

Thus, social inequality is operationalized as a phenomenon which is first of all based on employment leading to different levels of income. These incomes permit the purchase of goods, especially living space as a central indicator of social inequality. Eventually, local infrastructure and public facilities (e.g. schools) are indirectly perceived as a part of social inequality.

Statistical Overview

After testing several variables if they are significant and reliable 12 variables have been included in the analysis. These variables characterize the local employment opportunities defined by the general employment rate, unemployment, the quality of jobs and working hours as well as the dependent dimensions income, quality of housing and the proportion of high school students as indicators of the local infrastructure and predominant social values.

The following table mainly shows the respective means as well as the coefficients of variation, which illustrate the extent of socio-spatial inequality[16] (*Table 2*).

Table 2

Mean, standard deviation and variation coefficient of the indicators of social inequality

Indicator	City of Vienna		Suburban Region		Metropolitan Region	
	mean	var.coeff.	mean	var.coeff.	mean	var.coeff.
Income per capita	12.8	11.0	12.2	6.2	12.5	9.6
Active labor force	82.4	4.3	82.6	3.5	82.5	4.0
Unemployed	9.9	41.4	5.0	33.6	7.8	52.6
Self-employed	8.8	57.6	10.8	38.0	9.6	49.6
Highly qualified labor force	13.8	28.1	7.4	62.2	11.1	47.4
Unskilled workers	17.9	44.6	16.8	36.9	17.4	41.8
Full-timers	75.0	5.2	79.6	3.0	77.0	5.2
Part-timers	10.4	15.7	11.8	17.3	11.0	17.7
Marginal part-timers	4.1	34.3	3.0	40.0	3.6	39.1
Living space per capita	37.6	18.8	43.6	7.0	40.1	16.0
Homeownership	25.0	76.6	73.5	17.7	45.6	64.3
High school students	43.2	30.9	42.4	22.4	42.9	27.7
Number of spatial units	245		181		426	

Source: Statistik Austria: Census 2001, author's calculation.

[16]Coefficient variation can be understood as the variation with regard to the mean in %. A small value indicates a very equal spatial distribution, a high coefficient of variation, however, indicates an unequal distributionof variation: Standard deviation divided by mean (multiplied by 100).

The spatial level of reference is provided by 245 Viennese census tracts and 181 communities and municipalities of the Viennese suburban fringe. All in all, a total of 426 spatial units have been included.

Employment and Qualifications

Social inequalities are triggered by an unequal distribution of income and income will mostly be allocated by employment. Somebody who has been unemployed over a long period of time usually has a hard time reintegrating into the labor market and is not only in danger of dropping below the poverty line, but also loses some part of his identification in society. A job does not only provide economic security but also fulfils important social and psychological functions. Not only is income distributed through a position in the labor market, but holding a job gives life structure and meaning. Indicators pertaining to the employment situation and to unemployment are therefore regarded as the central issues in each social report. For the analysis eight indicators that characterize the employment situation as well as the estimated income are selected.

The first indicator characterizes the percentage of the active labor force defined as the economically active population between ages 20–60 as a percentage of the total population of the same age group (*Figure 19*). A high rate of active labor force indicates the economic need of making a living by holding a job on the one hand and the opportunity of being attached to the local labor market. The distribution of that variable shows a less significant variation. The population in the Vienna Metropolitan Region is integrated in the labor market with a similar intensity in all spatial units and the range varies only from around 70% to 85%. The variation coefficient is one of the lowest compared to other variables and the spatial variation shows no clear pattern.

In contrast to this "homogeneous" spatial distribution of the rate of active labor force, with a coefficient of variation of 52.6 the distribution of unemployment is rather unequal (*Figure 20*). Joblessness concentrates on the City of Vienna and amounts to almost 10%, whereas it is only half of that in the surrounding region. Even there it is not distributed equally, but there seem to be some "hot spots" whose labor markets face serious problems. The southern part of the Vienna Basin with its old industries can be counted among these "hot spots". In addition, there are also some communities in rather rural areas which make workers redundant as a result of rationalization and concentration in agriculture.

The high unemployment rates in Vienna are a relatively new phenomenon, for which there is not just one single explanation. Even though the city was the region with the highest employment rates and the lowest unemployment rates until recently, this pattern is changing dramatically. The factors relevant in this process are the exodus of maufacturing, trade and retail to the suburbs.

Figure 19

Active labor force, Vienna Metropolitan Region 2001

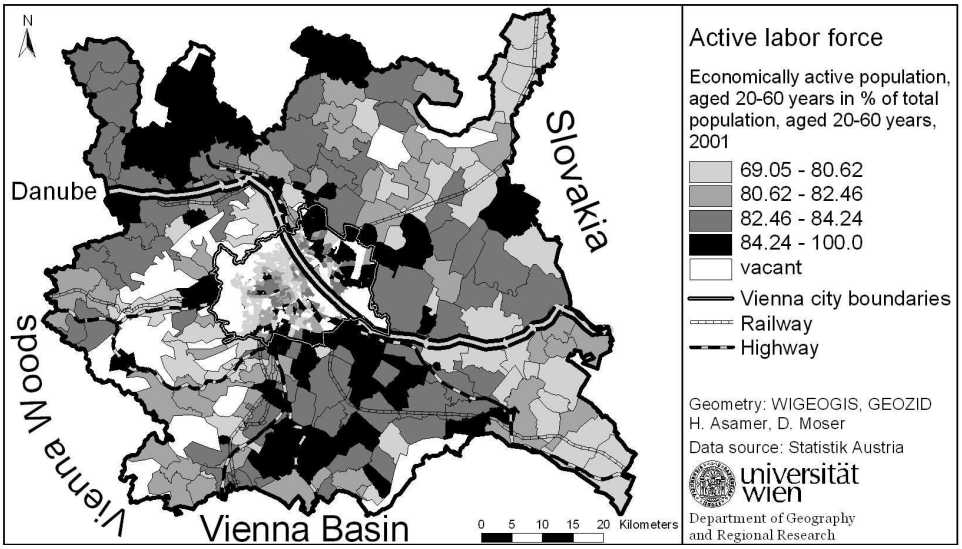
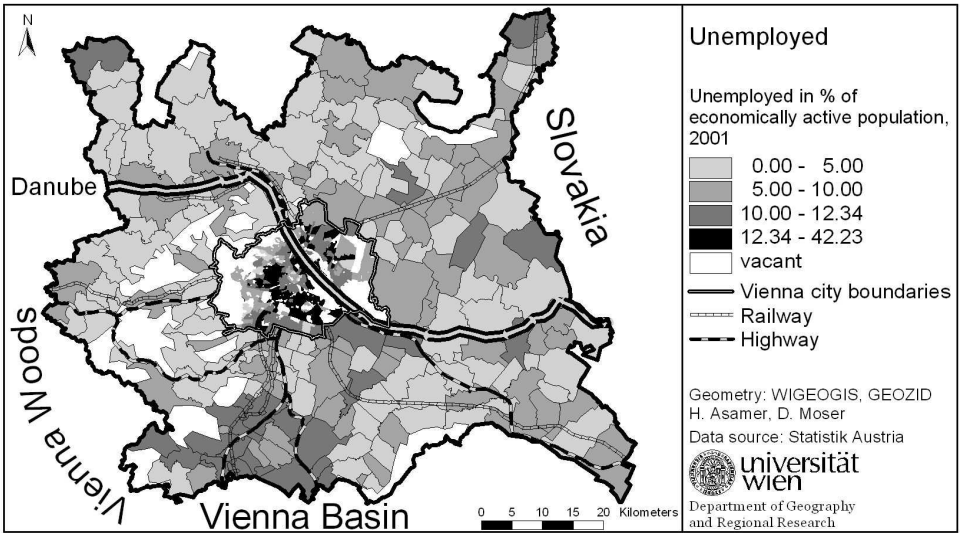


Figure 20

Unemployed, Vienna Metropolitan Region 2001



The establishment of shopping centres as well as the relocation of manufacturing to the outskirts result in a loss of jobs in the city. Due to limited space many industries did not see any chance of expansion in the city and have consequently moved their production sites to the urban fringe. In addition, the inner city is getting less and less accessible for trucks and lorries, which is, however, extremely important in an era of "just in time production". The city has lost jobs in production, supply and distribution and due to suburbanization it simultaneously has to face a loss of younger high- and middle income households with children. The groups remaining in the city are those at a greater risk of being made redundant: immigrants, unskilled workers and elderly people still in employment.

The city undeniably provides protection and anonymity for those who regard joblessness as a stigma. In rural or suburban areas unemployment is more visible, because people who are out of work do not leave the house in the morning and return at the end of the working day. The social environment pays attention and observes. People having to cope with a long-term "labor-market exclusion" find cheaper housing in the city, together with an environment without intensive social control. In addition, joblessness is something that has to be admitted. If in a specific environment a larger number of unemployed people are open about the struggle they have in common, it is easier for the individual to reveal the personal situation and turn to the labor exchange.

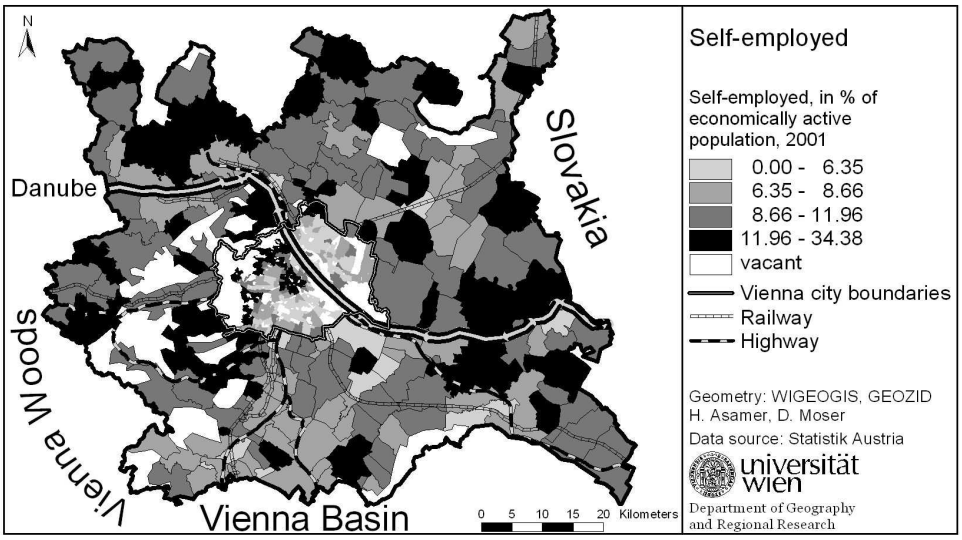
Another important indicator is the percentage of self-employed among the economically active population (*Figure 21*). This indicator defines a group that generally has a higher income as well as a higher prestige. The category "self-employed" includes entrepreneurs, doctors, lawyers, architects, notaries, tradesmen, and the group of "new self-employed" people as well. The group of self-employed can certainly not be regarded as homogenous, yet it rather marks the top of society, especially as the number of self-employed people providing jobs in industrial businesses and service industries (small tradesmen) has declined. All in all, in 2001 an average of 8.4% of the labor force in Vienna is self-employed, but 10.8% in the suburban zone around the city. As the variation coefficient and the respective spatial distribution clearly demonstrate, the proportion of self-employed is rather unequally than equally distributed. The variation coefficients of 57.6 within the city and of 38.0 in the urban fringe rate among the highest, observed in the indicators analysed in the course of the study.

Self-employed are concentrated in the city center (1st district), its neighboring districts and in the outlying districts in the west of the city. Especially in the outskirts of the districts 13–19 and 23 with their attractive locations at the slopes of the Vienna Woods the proportions of self-employed people are above average. But also in the more rural communities with a higher proportion of farmers and wine makers in the north and east of the Vienna Metropolitan Region, the percentage of self-employed is above average. Further steps of analysis therefore

have to prove if in those spatial units with high proportions of self-employed the "dependent" social indicators such as income, living space per capita and the rate of high school attendance show positive correlations. In that case it can clearly be argued that the proportion of self-employed people characterizes the spatial pattern of social inequality.

Figure 21

Self-employed, Vienna Metropolitan Region 2001



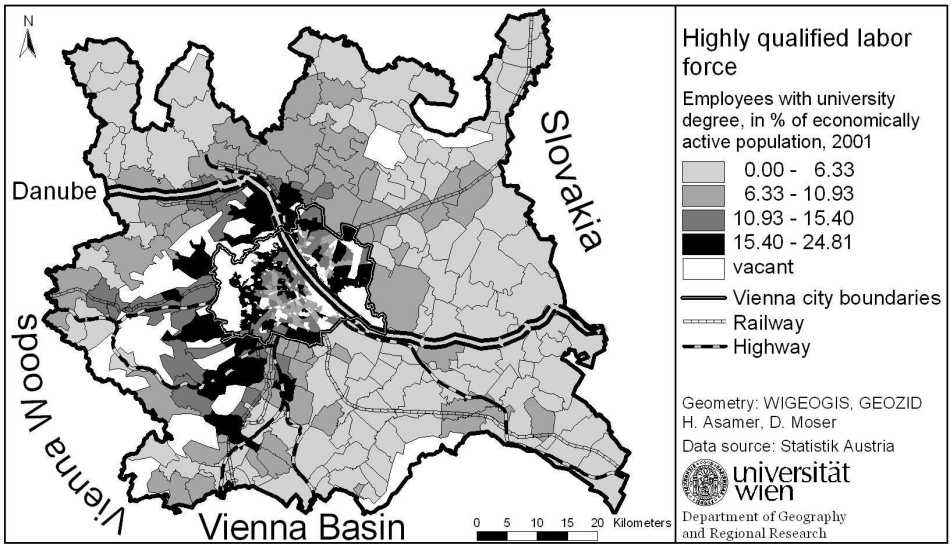
Social inequality in the Vienna Metropolitan Region is even more clearly and precisely reflected by the distribution of highly qualified labor force than by the share of self-employed (*Figure 22*). The indicator comprises employees with a university degree in relation to the economically active population. The spatial pattern reveals that the City of Vienna is still the prime residential area for highly qualified labor force. On average 14% of the economically active population living within the city boundaries hold a university degree, while the respective value drops to half the amount in the suburban region.

What is also significant is the difference of coefficients of variation in the city proper and the suburban region. While the indicator shows a relatively homogenous distribution in the City of Vienna and suggests that – with the exception of the typical working class districts of Favoriten, Simmering in the southeast, Floridsdorf in the northeast of the city as well as in the census tracts along the Gürtel, the second ringroad around the inner districts 1–9, a considerable number of university graduates lives in nearly all districts, the complete opposite can be noticed in the suburban regions where this indicator is extremely unequally distributed. In

a small number of communities beyond the city limits, especially in the south, west and northwest of the city along the Danube, up to 25% of the population hold a university degree. Communities and municipalities such as Klosterneuburg, Kaltenleutgeben, Mödling or Perchtoldsdorf are the "strongholds" of university graduates in the metropolitan region. The coefficient of variation of a total of 62.2 in the suburban region is the highest among all indicators.

Figure 22

Highly qualified labor force, Vienna Metropolitan Region 2001



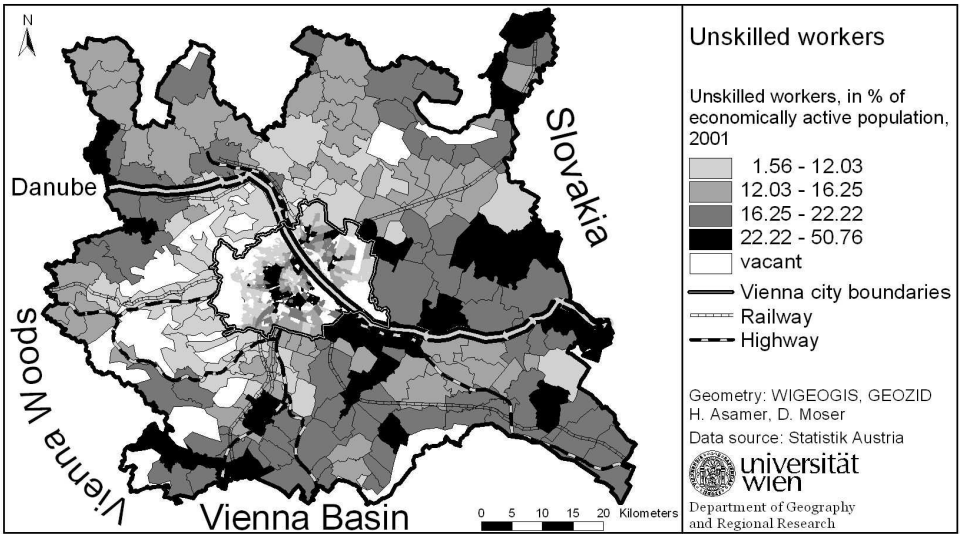
The distribution of university graduates is in total opposition to the distribution of unskilled workers (*Figure 23*). This group constitutes on average 17.4% of the entire economically active population, with only a slight difference between city (17.9%) and suburban region (16.8%). Similarly, the coefficients of variation hardly differ. Unskilled workers are highly segregated in the city as well as in the outskirts. They live in environments that provide affordable housing and their pattern of distribution points out a marked contrast to the distribution of the highly qualified labor force.

In Vienna a high percentage of unskilled workers can be found in the working class districts along the Gürtel, moreover in parts of Favoriten and Simmering in the south-eastern and Floridsdorf in the north-eastern section of the city. The south-western sector of the suburban region can be neglected in this respect, whereas the percentages in the southeast and east along the Danube are above average. This is mainly the result of property prices, because due to their limited

income, unskilled workers are forced to move to neighbourhoods where they can find affordable housing, either to buy or to rent. These are predominantly communities in the eastern parts of the suburban region, which is fertile and productive farmland, though not considered as an attractive or idyllic location. In addition, some locations are dominated by the effects of specific functions or facilities, like the refinery, the airport or the food plants in Schwechat, southeast of Vienna, or traditional industrial cities in the south of the Vienna Basin going back to the 19th century, like Wiener Neustadt.

Figure 23

Unskilled workers, Vienna Metropolitan Region 2001



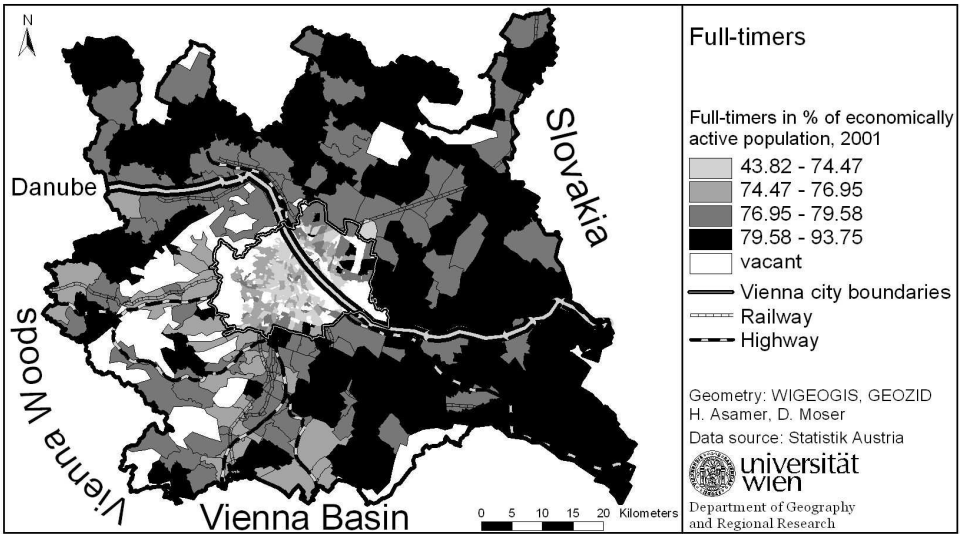
The third combination of variables in the field of employment deals with working hours. This category is split into three subcategories: the percentage of full-timers (*Figure 24*), part-timers and marginal part-timers, reflecting the trend to new flexible, untypical and precarious jobs.

In the Vienna Metropolitan Region regular full-time jobs are still the norm. On average about three quarters of the active labor force in the city and almost 80% in the suburban region hold jobs requiring approximately 40 hours per week. Depending on the sector, it can be slightly more or less, but 40 hours a week are generally regarded as the official norm. This type of employment is still dominating manufacturing, trade and a lot of service industries. In the census of 2001 those members of labor force working more than 32 hours weekly were labelled as full-timers.

The low values of the coefficient of variation (5.2 in the city and 3.0 in the surrounding region) indicate that full-timers are equally distributed in the entire metropolitan region. Although the spatial distribution shows that the percentages of full-timers is higher in the more industrialized and agricultural communities in the southeast, east and north of the city than in the south, southwest and the City of Vienna itself, there are hardly any variations with regard to the means. Just like the distribution of employment itself, the distribution of full-timers is similarly equal.

Figure 24

Full-timers, Vienna Metropolitan Region 2001



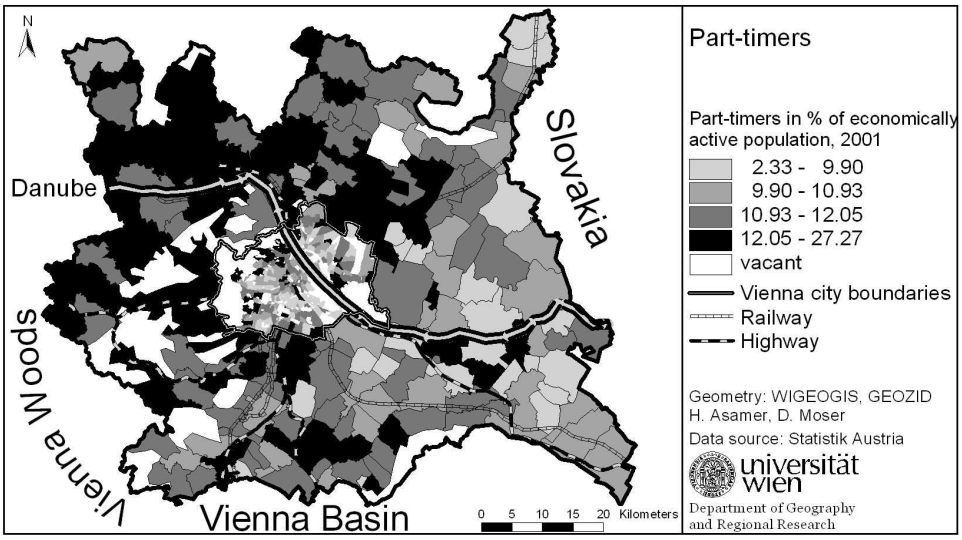
The distribution of the part-timers, however, results in a different pattern (*Figure 25*). They amount to an average 10.4% in the city and 11.8% in the suburban region. Part-time jobs are basically female, concentrate in few sectors like retail, light industry, but also in private and public service industries, and are characterized by working-hours which are far less than the norm of 40. In the census of 2001 part-timers were considered as the active population working at least 12 up to a maximum of 31 hours weekly. In many respects part-time work matches the intentions of women who want to have their own income and combine job and child care. Especially for women who live in the outskirts and have to cope with a considerable amount of commuting a regular 40-hour-job can be very stressful.

Correspondingly, in the suburban region the percentage of female part-timers, hardly any males, is considerably higher than in areas further away or in the city itself. Yet, the specific local situation must not be overlooked, such as the influ-

ence of shopping malls. This is why the communities in the vicinity of Shopping City Süd, Shopping Center Nord or the Factory Outlet Center in Parndorf are characterized by higher percentages of part-timers.

Figure 25

Part-timers, Vienna Metropolitan Region 2001

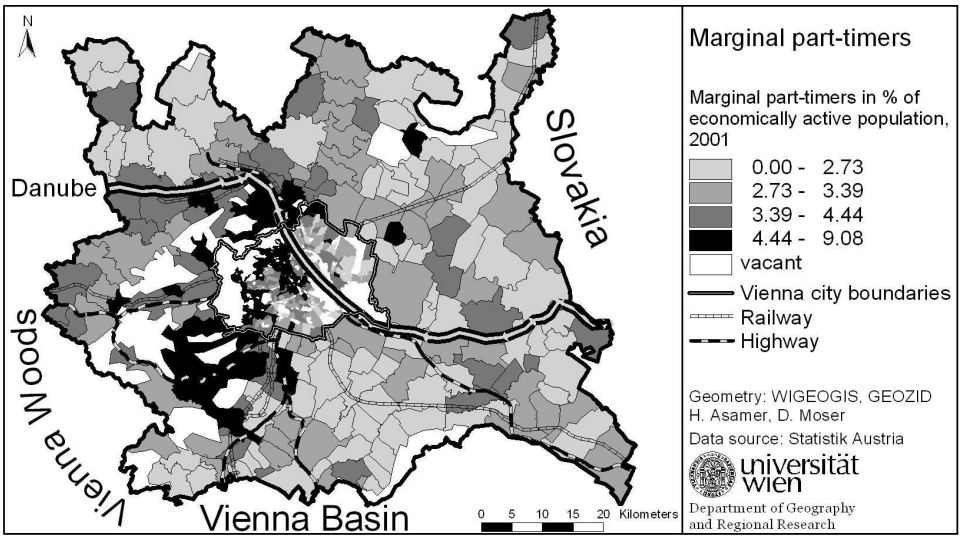


Finally, there is a third indicator called marginal part-timers (*Figure 26*). These are members of the labor force who work part-time in what could be called "mini jobs". According to the census of 2001 marginal part-timer comprise active labor force working up to 11 hours per week.

Marginal employment represents new forms of labor which can react to expectations of the labor market even more flexibly than traditional part-time work. Again it is mainly women who accept marginal jobs either to supplement the family income or to take on specific jobs in their husbands' company, office or surgery without having to bother about contributions to social security. These types of employment have been created as a reaction to economic deregulation and liberalization, and they probably do not point to social inequalities, but rather to a total transformation of labor. It seems to be characteristic that these marginal part-timers can be found in all the neighbourhoods with high percentages of self-employed and university graduates. Respectively, these neighbourhoods are mainly situated within the city proper, in the upscale districts in the west (Döbling, Währing and Hietzing) and, beyond the city limits, in the south-western segment of the suburban region and in Klosterneuburg in the north.

Figure 26

Marginal part-timers, Vienna Metropolitan Region 2001



Income

In most cases income will be allocated by employment and income is the main source for all forms of social inequalities. Due to a certain level of income, specific parts of the city and the suburban region can be afforded and others cannot (*Figure 27*). Therefore spatial inequalities can only be explained in a satisfactory way when the income distribution is considered. Those who own available capital can afford specific neighbourhoods, those who do not are displaced and forced to move to less attractive locations.

Unfortunately, the census does not offer any direct data on the income situation. Therefore the spatial income distribution was estimated by combining two variables. The census provides very detailed information of the occupational structure of the population in each of the census tracts and communities. The second source of the income distribution for each of the occupational categories, but without any spatial information, was the microcensus. The estimated income per capita was calculated by multiplying the occupational distribution by the average income for each of the occupational categories. It can be assumed that the income per capita in each of the communities and census tracts is mainly linked to the occupational structure and the spatial effect can be neglected. Shift and share analyses show that this assumption is not perfectly true, even though the effect of the occupational structure is much more important than the spatial effect.

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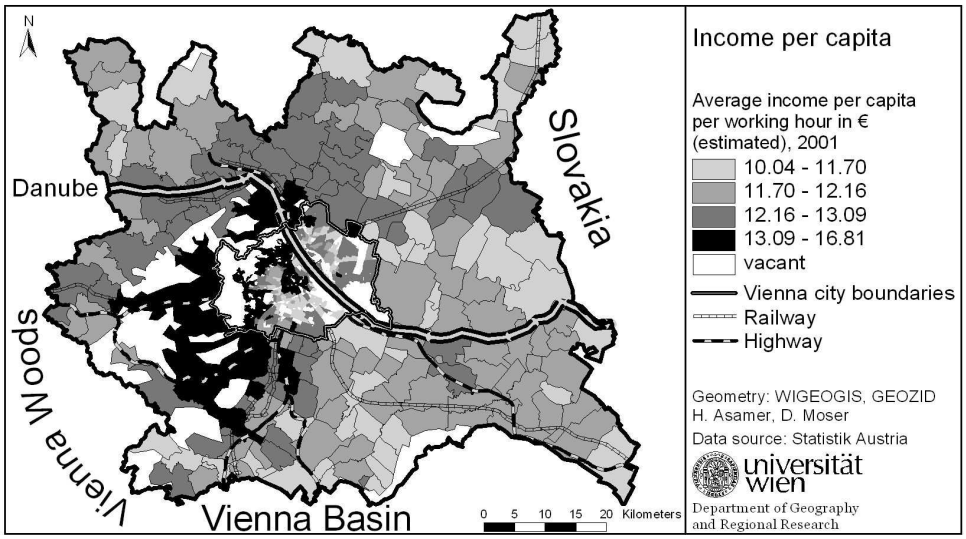
Figure 27

Income per capita, Vienna Metropolitan Region 2001



The average income per capita and per working hour varies from 10.0 € to 16.8 €. In individual cases the income difference can be higher but on average it is around 1 to 1.7. The spatial distribution shows a very clear differentiation into sectors. Within the city limits the districts in the western part (Döbling, Währing, Hietzing) show a significantly higher income than that of the districts in the southeast (Favoriten, Simmering) and the northeast (Floridsdorf, Donaustadt). This sector of high income units reaches far beyond the city limits. In the suburban communities in the north, west and southwest high income groups are living and contrast to the more agrarian and low income sectors in the east and the southeast. The more elaborate and socio-ecologically relevant analysis is aimed at finding out which social structures are prevalent in the high-income neighborhoods.

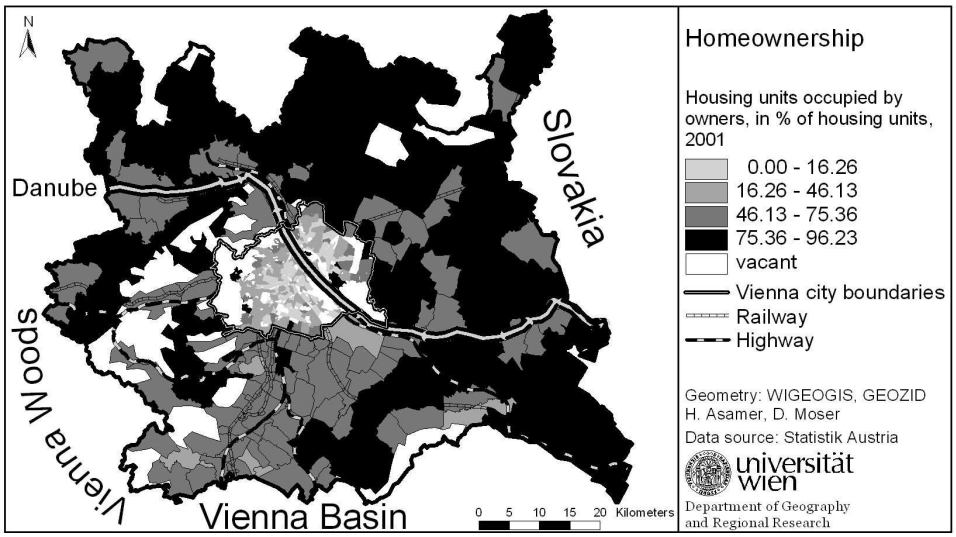
Housing and living conditions are directly linked to the economic position which, respectively, depends on the integration in the labor market. The real estate market, however, is also influenced by local conditions which can definitely change this chain of cause and effect. Especially in rural areas relatively cheap land and a good deal of neighborly help can compensate for lower incomes.

A key to social inequalities is homeownership (*Figure 28*). Owning or not owning property was and maybe still is the most important feature of social differentiation which further results in specific cultural and political attitudes. Those owning a house or an apartment might think and act differently under certain circumstances than others. On the whole a little less than half of all households in

the metropolitan region own a house or an apartment, but it is three quarters in the suburban region and only a quarter in the city itself. Whereas homeownership practically occurs in the entire suburban region and there are hardly any differences between the individual sectors, homeownership within the city proper reveals a spatial concentration. The coefficient of variation amounts to 76.6, which is the highest of all indicators in the city. Homeownership can only rarely be found in the inner districts, whereas in the newly developed areas at the fringe of the city it is by far more common.

Figure 28

Home ownership, Vienna Metropolitan Region 2001



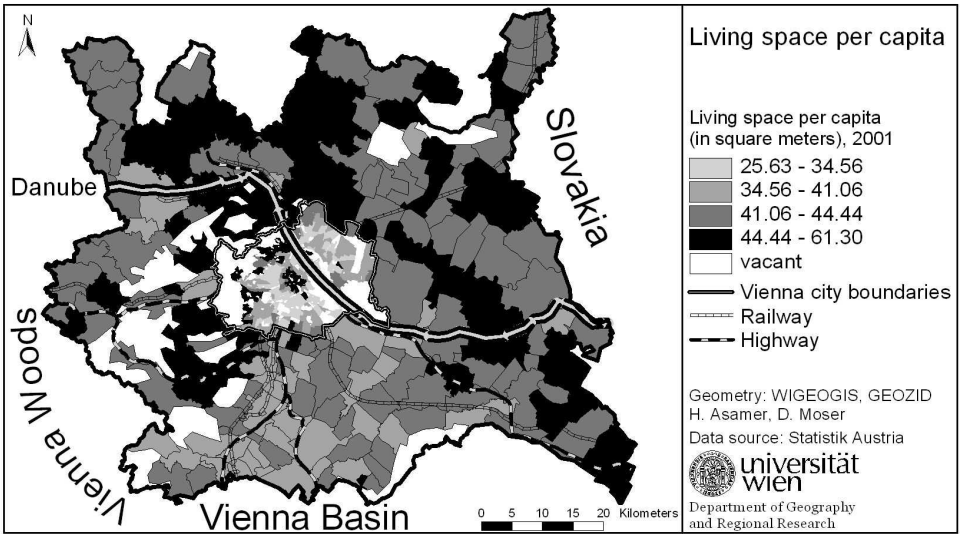
The second indicator with regard to housing defines the available living space per capita (*Figure 29*). Again it is not surprising that living space can be a measure for social inequality, in this case even in two ways: On the one hand vast living space indicates that individuals or households have sufficient means of buying, renting or maintaining it. On the other hand the living space available has an enormous impact on an individual's quality of life, which, in turn, correlates with social equality or social inequality.

On the whole an average of 40.1 m^2 living space per capita is available to the population of the entire Vienna Metropolitan Region, in the city itself it is 37.6 m2 and in the suburban region it goes up to 45.6 m^2. The spatial distribution shows a positive correlation with other indicators of social differentiation: income, percentage of self-employed and university graduates. In the City of Vienna the upper-class districts Döbling, Währing and Hietzing as well as the city

center itself are characterized by extensive living space per capita. The most striking phenomena in the surroundings are the affluent south-western sector and the agrarian communities in the north, east and southeast of the city. In these communities it is the farms and the DIY-houses that are responsible for the increase in the average living space.

Figure 29

Living space per capita, Vienna Metropolitan Region 2001



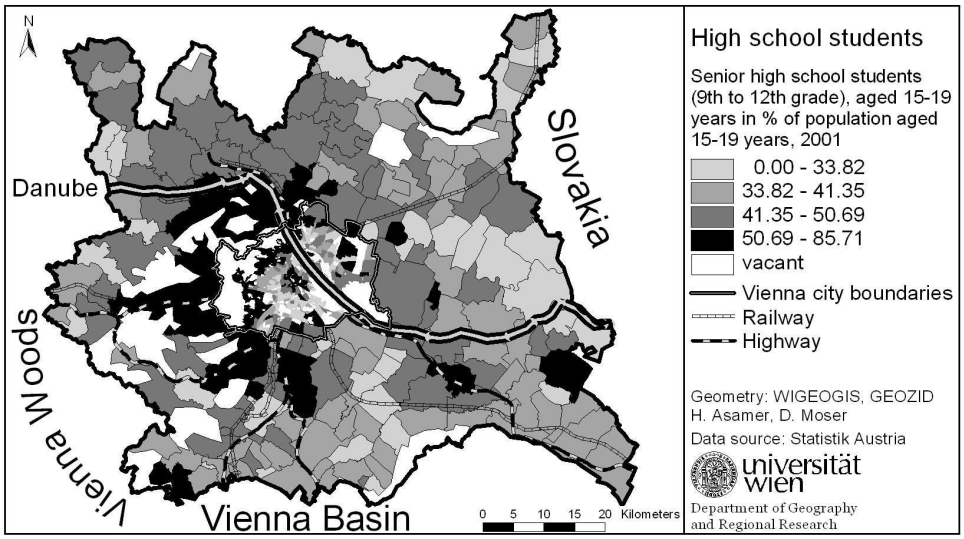
School attendance rate

In addition to employment, income and housing conditions, the school attendance rate is also used as a variable determining social inequality (*Figure 30*). In this context two aspects should be taken into consideration: on the one hand parents' and teenagers' pattern of behaviour deciding either to remain in the educational system as long as possible or to drop out in order to be financially independent as soon as possible. This decision is certainly heavily influenced by the cultural and social background adults and teens are exposed to. As it is widely-known, social inequality may also be passed on from one generation to the next. On the other hand this variable points to the infrastructure of the communities or census tracts, which can also be interpreted as spatial context of social inequalities. Spatial units lacking infrastructure put the inhabitants at a disadvantage, whereas top infrastructure means that the residents are in a privileged position.

The school attendance rate of the 15- to 19-year-olds averages 42.9% in the entire Vienna Metropolitan Region and there are only slight variations between city itself (43.2%) and the surrounding areas (42.4%). The coefficients of variation hint at a "medium" inequality, which matches the variables income, university graduates and living space per capita. Vienna's upper-class districts as well as the affluent south-western sector in the suburban region stand out with distinctly higher attendance rates.

Figure 30

High school students, Vienna Metropolitan Region 2001



Heinz Fassamann - Gerhard Hatz : The Austrian Case Study – Social Inequalities in the Vienna Metropolitan Region.
In: Social Inequalities in Urban Areas and Globalization. The Case of Central Europe.
Pécs: Centre for Regional Studies, 2007. 51-76. p. Discussion Papers, Special

Dimensions of social inequality

After the descriptive analyses of the variables, their spatial distribution and the extent of segregation, the bivariate correlations and dependencies between the variables has to be examined. In the course of this procedure this set of correlations is going to be simplified and basic underlying factors of social inequality and its spatial dimensions which cannot be determined a priori are extracted from this larger set.

Bivariate correlations

At the beginning of the article the selection of variables was thoroughly discussed. It was assumed that employment was an important factor to explain social inequality. Employment determines the level of income which, in turn, influences the material and financial aspects of living standard and quality of life. Living space and homeownership are equally dependent on the available income, the same is true of other goods which, due to a lack of statistics, cannot be measured (car ownership, household equipment, extensive and frequent long distance vacations, etc.). Finally, the school attendance rate of the 15-to 19-year-olds was included in the analysis, which seems to depend on the financial background of the parents, but which also reflects the existing infrastructure of the residential neighborhoods.

In order to test these assumptions statistically, bivariate correlations based on spatial units were calculated. All in all, this analysis, which can also be referred to as ecological analysis, clearly proves the whole set of assumptions. Employment determines the income. The higher the percentage of self-employed and especially highly qualified labor force in a particular unit (census tract or community), the higher the (estimated) income. The bivariate correlation between the percentage of highly qualified labor force and income is about +0.7, which again emphasises the importance of this indicator. None of the other indicators succeeds in marking the extent of social and cultural inequality in the city and the suburban region in the same way as the proportion of highly qualified labor force. It is also true the other way round: the higher the percentage of unskilled workers, the lower the income.

What is amazing is the correlation of the marginal part-timers with the local level of income, which might indicate that wives are employed in the companies, offices or surgeries of their husbands for a few hours per week, but it could also be concluded that high income groups and new service industries available to them exist side by side (*Table 3*).

Table 3

Correlation Coefficients, Vienna Metropolitan Region 2001

Nr.	Indicator	1	2	3	4	5	6	7	8	9	10	11
1	Income per capita	x										
2	Active labor force	-0.44	x									
3	Highly qualified labor force	0.70	*	x								
4	Full-timers	*	*	-0.25	x							
5	Part-timers	0.31	*	*	*	x						
6	Marginal part-timers	0.68	-0.45	0.55	-0.48	*	x					
7	Unemployed	-0.26	*	*	-0.72	-0.56	*	x				
8	Self-employed	0.58	-0.24	*	0.26	0.39	0.35	-0.60	x			
9	Unskilled workers	-0.75	0.30	-0.57	-0.23	-0.31	-0.44	0.53	-0.52	x		
10	Living space per capita	0.61	-0.32	*	0.34	0.46	0.25	-0.70	0.79	-0.64	x	
11	Homeownership	*	*	-0.41	0.54	0.41	-0.22	-0.73	0.44	-0.26	0.61	x
12	High school students	0.80	-0.27	0.57	*	0.42	0.53	-0.41	0.58	-0.76	0.62	*

Source: Statistik Austria: Census 2001; author's calculation.

By examining the variables associated with „housing", income shows a positive correlation regarding living space per capita. The higher the average income in a spatial unit, the more living space is available for the residents in this unit. Vice versa, the higher the rate of unemployed or unskilled workers, the more available living space per capita is declining.

Finally, there is convincing evidence that the assumed correlation between the variable "high school students" and the socio-economic indicators as well as the local infrastructure actually exists. The higher the income in a spatial unit – together with the percentage of self-employed and highly qualified labor force, that refers to university graduates, – the more teenagers between 15 and 19 remain in the educational system. Vice versa, the school attendance rate is declining in a specific unit, if the percentage of unemployed or unskilled workers is high. Social inequality is therefore something that can be inherited, and social inequalities also continue in the next generation as a result of discrimination in education.

Multivariate Factor Extraction

Based on the analysis of bivariate correlations it might be assumed that the spatial structure of social inequality is defined by only one differentiation: income which is the result of qualification and labor market position. If this refers to the real

situation, it can be revealed by Factor Analysis. It analyses the direct bivariate effects, examines the input of more independent variables and suggests a reduction of bivariate correlations to a few principal dimensions (factors). These factors are artificial features which are results of mathematical and statistical procedures and which cannot be measured directly.

The technique chosen for factor extraction involves primary components and, subsequently, oblique rotation. Factors have been selected according to the criteria of eigenvalues. The matrix of loadings presents an interesting, plausible and not at all trivial explanation of the socio-economic structure and its related spatial dimensions of social inequality in the Vienna Metropolitan Region. It indicates that is not sufficient to emphasize just one dimension of social inequality – for example income –, because the matter is much more complex (*Table 4*).

Table 4

Factor loadings – oblique rotated factor matrix

Nr.	Indicator	Factor 1	Factor 2	Factor 3
1	Income per capita (estimated)	0.905	-0.337	-0.540
2	Active labor force	-0.252	0.202	0.800
3	Highly qualified labor force	0.887	*	-0.225
4	Full-timers	*	-0.633	0.594
5	Part-timers	0.245	-0.590	*
6	Marginal part-timers	0.661	*	-0.770
7	Unemployed	*	0.925	-0.200
8	Self-employed	0.417	-0.746	-0.402
9	Unskilled workers	-0.837	0.546	0.202
10	Living space per capita	0.436	-0.865	-0.296
11	Homeownership	*	-0.838	*
12	High school students (aged 15–19 years)	0.859	-0.475	-0.326
	Explained Variance (in %)	35.0	30.4	13.9

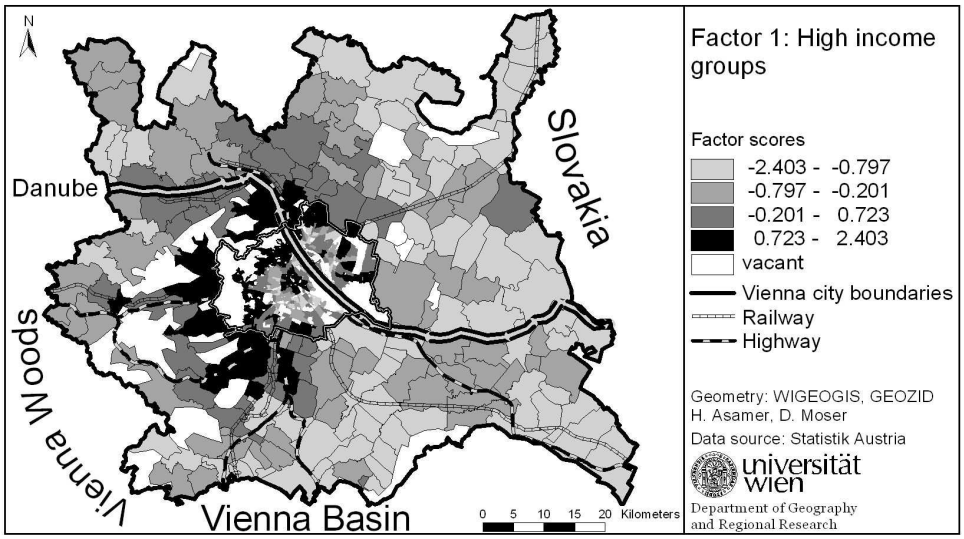
Annotation: Loadings between .200 and -.200 are represented by '*'. The technique chosen for factor extraction involves primary components and, subsequently, oblique rotation; factors have been selected according to the criteria of eigenvalues.
Source: Statistik Austria: Census 2001; author's calculation.

The first factor describes the effect of position on the labor market and income on the spatial pattern of social inequality. The first factor is certainly the most important one and explains 35% of total variance of all input variables. It shows high loadings with regard to the percentage of the highly qualified labor force, to the level of income and the school attendance rate as indicated by the share of high school students aged 15–19 years, and – interestingly, to the marginal-employed part-timers.

The spatial pattern of this factor is clear (*Figure 31*). Its significance is obvious in the Vienna city center and in the upper-class districts in the west of the city. It continues throughout the privileged south-western sector of the suburban region along the slopes of the Vienna Woods as far as the fringe of the Vienna Basin, and it also spreads to the suburban districts in the north. The factor loadings decrease with a growing distance to the city. This means: the further one moves from the city limits, the lower the average income and the more distinct is the decline in the percentages of highly qualified labor force and in the school attendance rate of the 15- to 19-year-olds. Middle and upper classes are replaced by a social structure dominated by lower and middle classes.

Figure 31

Dimension of income, Vienna Metropolitan Region 2001



The second factor basically resulting from unemployment und indicators related to housing turns out to be independent of the social stratification. High unemployment rates in a specific spatial unit, combined with a low rate of home-ownership and limited living space per capita cannot simply be matched with a very basic social model of "top-bottom". This factor contributes with a value of 30% to the explanation of the total variance of the analyzed variables and therefore has to be regarded as very important for the set of data and for the entire Vienna Metropolitan Region.

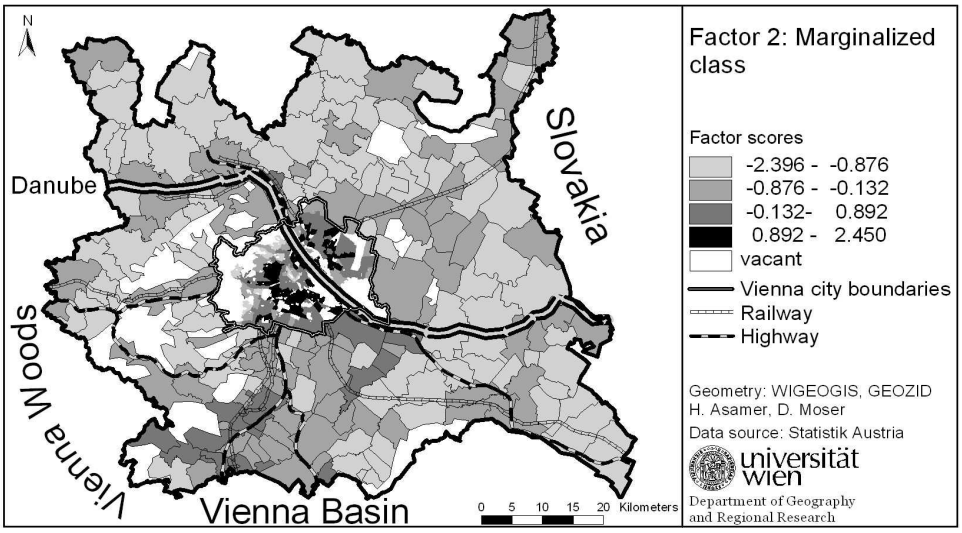
Unemployment together with a low standard of housing is a typical phenomenon of the City of Vienna and a small number of selected communities in the southern part of the suburban region which are dominated by old industries

(*Figure 32*). Within the city proper all census tracts along the Gürtel, but also a few in the east, in the districts of Floridsdorf and Donaustadt are characterized by this combination of variables. It can be assumed that even more variables which are not included in this analysis correlate with this factor: the proportion of late–19th century working class apartment blocks, the proportion of low-standard apartments lacking up-to-date sanitation and the proportion of immigrants not holding Austrian citizenship.

Häussermann and Siebel (1987) quite drastically referred to this structure as the marginalized city of peripheral groups, the excluded, the jobless without any chance of work, the immigrants. The two authors regarded the typical neighborhoods inhabited by these groups as mentally segregated, the complete opposite to the globalized or international city of the affluent, educated and highly-qualified population.

Figure 32

Dimension of marginalization, Vienna Metropolitan Region 2001

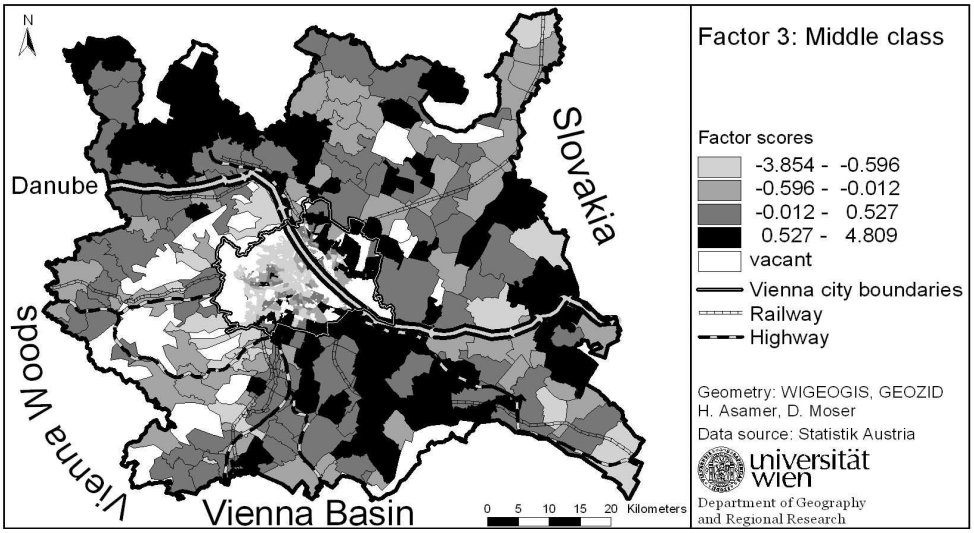


At last a third factor which characterizes social inequality but cannot be linked to the other two factors has to be considered. Explaining 14% of the total variance of all indicators selected for the analysis, this third factor is not so significant, but it cannot be totally ignored. It is constituted by a high percentage of members of the active labor force, full-timers and low rates of marginal part-timers. This factor refers to the traditional world of labor, which can either be influenced by agriculture, industry or trade and which cannot unquestioningly be assigned to the

"top" or to the "bottom". What is meant in this context is the "normal" city providing work, supplies and housing (see Häussermann and Siebel 1987), which is neither marginalized nor particularly chic, modern, fashionable or trendy. In Vienna this applies to some parts of the working class districts like Ottakring along the Gürtel in the western section of the city, but also the newly-developed housing estates in the south, close to the city limits (parts of the districts Liesing and Favoriten). In addition, most of the communities in the southeast, east and north of the city can be counted among the "normal", ordinary ones, which are neither particularly upscale nor extremely marginalized (*Figure 33*).

Figure 33

Dimension of the middle class, Vienna Metropolitan Region 2001



Conclusion

Social inequality always has a spatial dimension, which is the main focus of the present article. At first, it has proven the spatial dimensions by means of simple univariate statistics and, in a next step, by means of factor analysis. The empirical analysis comes to the same conclusion as Häussermann and Siebel, who already introduced the idea of a city divided into three sectors in 1987.

This type of a city is characterized by three separate social milieus, which are segregated from each other and whose development is due to completely different processes. The first sector is the city of the rich and educated who benefit from

the globalized economy. They live in the city center, the upper-class neighbourhoods and the "affluent" suburbia. They use the airport, cultural facilities in the city and high-quality services. These provisions determine their scope of action.

In this paper the second city refers to the city of the marginalized groups, consisting of the unemployed, an underclass dealing with multiple social problems like poverty, homelessness and drug abuse, and, finally, specific groups of immigrants. Their city is made up of small units and they live in rather distressed neighbourhoods providing cheap housing. They do not have any contact to the globalized economy and their actions are restricted to their immediate neighborhood or a few intersections of public transport.

Last but not least, the third city has to be mentioned, the "normal" city providing work, supplies and housing. Its population consists of "ordinary" people, neither particularly affluent and well-educated nor extremely poor or marginalized. It is the city of the middle class, making up the largest part of the entire Vienna Metropolitan Region. It comprises the "working-class" districts of the city itself, reaches far beyond the city limits and can be found in all areas with attractive property prices. The inhabitants rarely use the airport, the high-class cultural facilities and the globalized service industries in the city. Their actions concentrate on where they live and work and on a limited number of cultural and sports facilities. The third city is not directly influenced by globalization, but by local and national political and planning decisions.

This city that is divided into three parts and the suburban region cannot be interpreted statically, but is undergoing continuous transformation. The first city can expand into sectors of the third city, the second city can relocate its small-scale centres. The dynamics of this development has not been topic of this analysis and therefore predicting the future can rather be understood as clairvoyance than as a result of a profound analysis. But it can be assumed that due to globalization and internationalization on the one hand and the ongoing transformation of the welfare system on the other hand the polarization of social inequality and, thus, the division of the city in three parts will rather be increasing than decreasing. Especially the first city will be the "powerhorse" of the economic development and, at the same time, the marginalized city will be growing, due to a social network that nowadays is not as tightly knit as it used to be. Polarizations will be more characteristic of the social reality in a city than a homogeneous structure.