WORKING PAPER 12

THE RELATIONSHIP BETWEEN COMMUNITY SIZE, FEMALE EMPLOYMENT RATES AND THE EDUCATIONAL LEVEL OF THE FEMALE LABOUR FORCE

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The relationship between community size, female employment rates and the educational level of the female labour force

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1. Introduction

Community (city) size has long been used in the social sciences as well as in economics as an important variable to explain the differentiation and complexity of the economy and society. Also in central-place-studies and the analysis of urban systems city size is a significant characteristic of the hierarchical organization of settlement structures. Larger cities and metropolitan areas have important agglomeration advantages due to external economies. The variety and degree of specialization of employment possibilities and services available expand with increasing community size; in larger cities access to capital and valuable face-to-face contacts are easier, supporting a greater creative potential and a raised "inventive capacity" (Feller, I. 1973). Many innovations can only be adopted in agglomerations above a certain size, either because they require particular technical, scientific or organizational conditions or because they are only useful to specialized occupations. Therefore, social and technical innovations often display a hierarchical pattern of diffusion: they appear first in the large cities and the more important centres, and then diffuse throughout the urban system from top to bottom.

Although the significance of the indicator "city-size" may be modified on the micro-scale by factors like the location or economic function of a city, in analyses on the macro-scale "city-size" appears to be a meaningful variable for many topics of economics, social sciences and geography.

The aim of this paper is to show that the rank of a city in the urban system (the size of a city) also strongly influences both the age-specific female employment rates and the educational level of the female labour force at the place of work. Also the feminization process of many occupations closely corresponds to the size of the city where the jobs are located. The paper also shows that the specific patterns of female employment rates reflect changing ideologies, state policies and attitudes of the society.

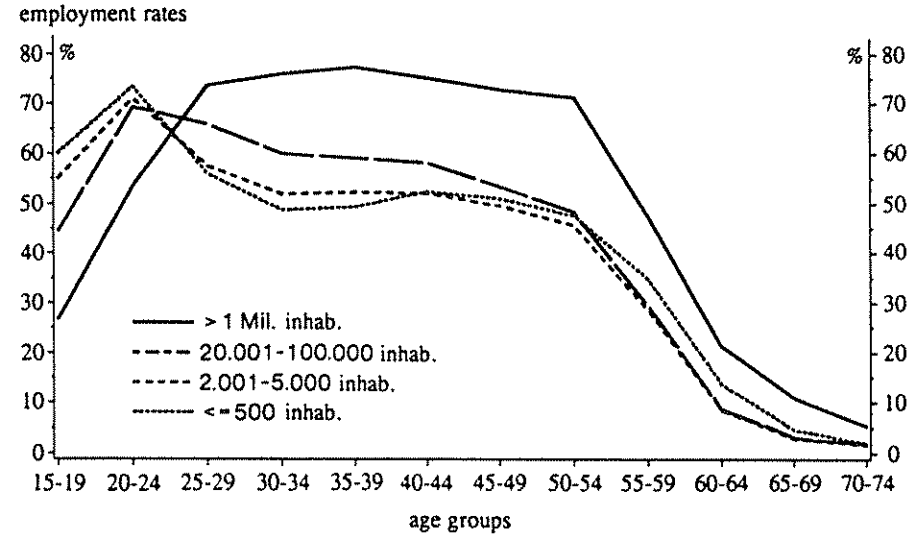
2. City size and age-specific female employment rates

While among the male population in most countries only minor regional differences in age-specific employment rates are seen (mainly in the training period up to 20 years of age), the age-specific female employment rates in many countries alter greatly according to the size of the place of residence. Figure 1 shows clearly the extant differences in the age-specific female employment rates among some community sizes in Austria in 1981. In rural areas (small size-groups of communities) many more women tend to start work between 15 and 19 years of age than in large cities reflecting the lower level of educational attainment in the rural areas. Conversely, in rural areas a greater proportion of women leave work during the "family- or child-rearing-period" than in the larger cid ties.

The double-peaked curve of female employment rates described by Myrdal/Klein (1956) could no longer be discerned in 1981 even in the rural areas of Austria. With increasing community size, the "family-period" had less influence on the female employment curve. In Austria this trend is influenced by many factors such as the improved facilities of child care available in larger cities, the higher educational level of female employees in large cities, the better job opportunities for highly qualified females in large cities and the different attitudes taken towards a "working mother" in cities and rural areas. In Vienna, the only Austrian city with more than 1 million inhabitants, the female employment curve resembles almost the male employment curve. Such an influence of the city-size on the female employment curves can be found in many countries with different political and economic systems, with only the degree of the female employment and the shape of the curves, that is the influence of the "child-rearing-period", varying from country to country.

Figure 1

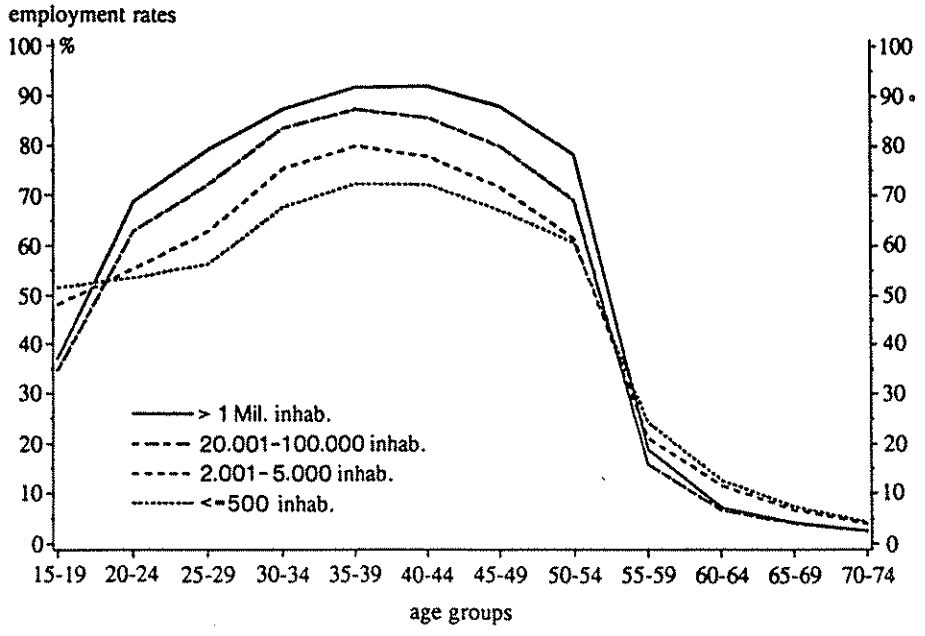
Age-specific female employment rates in Austria (1981) with regard to the size of the cities



Source: unpublished data of the Austrian census 1981

Figure 2

Age-specific female employment rates in Hungary (1980) with regard to the size of the cities



Source: unpublished data of the Hungarian census 1980

Figure 2 shows the age-specific female employment rates in Hungary in 1980. The differences between the two political and economic systems are numerous. First, female employment rates in Hungary are much higher in all size-classes of communes. Second, in Hungary the "child-rearing-period" has almost no influence on the female employment rates. Thus, with increase in the community size class of the place of residence, the female employment curve in Hungary simply rises without any appreciable change

in shape, while in Austria the shape of the curves is affected by the differing importance of the "child-rearing-phase" factor.

The fact that women in Hungary do not stop working even when they have small children derives mainly from the relatively low income earned by their husbands, necessitating at practically every level of income that the wives also work. In Hungary employed women do not lose their "employed" status during their maternity leave of 20 weeks after the birth of a child.

3. City-size of the place of work and the qualification of the female and male labour force

Although many gender-specific disparities on the labour market are based on discrimination and can therefore be best explained by segmentation theories or conflict theories, both the relation between the qualification structure of the female labour force and the rank of the cities where the jobs are located, as well as the unequal distribution (concentration) of highly qualified females in a very few economic branches can be better explained by an approach based on organization theory. Both the spatial and the gender-specific qualification differences in the labour force are closely linked with the structure of organizations and with the questions whether and why the various types of organizations tend towards centralized or else towards decentralized regulation and control.

3.1. Theoretical approach

Organization theory views all of the various economic, social and political organizations as social systems that are hierarchically structured and that regulate, control and structurally adapt themselves to their declared goals via information and communication processes. Since an organization can only cope with a certain degree of incompetence for a longer period of time, it is in its own interest to fill the key positions of decision and control with highly qualified persons. In particular, those elements and subsystems that are constantly confronted with uncertainty and/or those elements whose decisions have long-lasting consequences for the entire system need to have a redundancy of qualifications and specialized knowledge. Redundancy reduces uncertainty and enhances stability.

It is therefore no wonder that large and powerful social systems have long since made passing examinations a prerequisite for any person intent on being promoted to important positions within the system. As the economy and society became more complex, especially since the industrial revolution, attempts were made to achieve the redundancy of qualifications felt to be requisite for key positions in the system by issuing precise education and licensing regulations for more and more professions. From a theoretical point of view, certificates and the professionalization of jobs have made a major contribution towards reducing "uncertainty" (see Montagna, P., 1980, p. 21).

From organization theory we know that the degree of centralization of the decision-making authority in a social system depends in part on the size and complexity of the organization, on the degree of its bureaucratization, on the availability and the technical standard of its telecommunications, on the "stability" or "uncertainty" of the environment (degree of competition), on the significance of face-to-face contacts for its economic success, and, above all, on the type of tasks to be handled. Most of the basic concepts of organization theory, like division of labour, coordination, control, hierarchy of decision-making authority (power) and communication-structures, redundancy, "uncertainty" etc. are not only strongly linked with aspects of qualification, competence and educational level but had during the last decades also an impact on the spatial distribution of the relevant jobs and the percentage of females among the highly qualified labour force.

Sociology and economics have a longstanding tradition in dealing with research on organizations, but they have not yet paid enough attention to the spatial dimension of organizational structures even though the interaction of parts of organizations with the "environment" are essential aspects of organization theory. In the sixties, a growing number of geographers recognized the significance of the contact and information potential offered by big cities as a location factor for the "office industry" and the top management of large organizations and thus, for the first time, findings from organization research made their way into economic and urban geography (Goddard 1971, Törnqvist 1970, Thorngren 1970, Westaway 1974); nevertheless, the organization theory approach in geography is still in its infancy.

The larger and more complex a social system is and the more it is regulated by bureaucratic guidelines, then as a rule, the larger the number of hierarchically arranged planning, regulation and control authorities. If the production and administrative tasks at the base or on the lower levels of the organizational hierarchy can be largely automated and executed routinely - i. e. according to fixed rules and regulations - then the decision-making and problem-solving processes, the research and development as well as the planning and coordination will shift to the upper levels of the organizational hierarchy and consequently the peripheral regions will lose more and more highly qualified jobs to the centres.

If the subsystems at the lower levels of an organization deal with constantly changing, unpredictable transactions (great "uncertainty" of the environment) or if a task is not suited for vertical division of labour (e.g. teacher or medical doctor), then decentralization of the competence and authority is more efficient. In the case of decentralized control, many members of a system can accumulate information on their own and use it to update their own relatively complex services. The greater openness of the system to its environment achieved in this way facilitates a rapid adaptation to new situations and allows new solutions to problems to be found and implemented (see Geser, H., 1983, p. 172; Hill, W., Fehlbaum, R. and P. Ulrich, 1981, p. 387 - 397).

In the real world, most organizations combine both techniques of system control. In industrial plants, for example, public relations work or product manufacturing are centralized, whereas the areas that are confronted with an unstable environment, such as marketing, are characterized more by decentralized forms of cooperation (Lawrence, P.R. and J.W. Lorsch, 1967). The control techniques predominant in a certain system are also subject to change over time. This has to do, among other things, with the life cycle of a product and the changing competitive conditions.

The question concerning which parts of an organization and which services and professions are bound to higher-ranking central places or to large agglomerations as well as the question as to which economic activities or parts of an organization can be moved to smaller cities or peripheral regions without a loss or even with a gain in efficiency and competitiveness have to do increasingly with the problems of communications and information processing. Many studies in organization theory have shown that the higher the professional status in an organization, the greater the amount of external face-to-face contacts with other organizations. As the status in the organizational hierarchy rises, the proportion of routine and indirect contacts goes down while the amount of contacts involving planning and orientation as well as face-to-face contacts increases (see G. Törnqvist, 1970, p. 27; B. Thorngren, 1970, p. 415-419; J. B. Goddard, 1973, p. 160-162; E. J. Westaway, 1974; etc.).

The economic success of many decision makers, providers of specialized services and highly qualified professions depends largely on whether they can make on-the-spot face-to-face contacts with other decision-makers. Activities and functions for which there are plans, rules and regulations call for very few face-to-face contacts with other organizations. The lowest levels of the hierarchy of a large organization which perform mostly routine activities make low demands on the communication potential of the locations and can therefore, at least theoretically, be situated in a great number of

smaller cities, as long as the traditional location factors such as transportation costs, wage costs, etc. make it feasible. The harder it is for decisions to be governed by guidelines, plans and regulations and the greater the uncertainty about the consequences of a certain decision, about the future development and about the correctness of the methods and objectives, the more necessary it is to have face-to-face contacts with qualified and well-informed representatives of other organizations. Uncertainty generally increases the need for and the frequency of face-to-face contacts with important political, economic and cultural decision-makers, etc.

The communication and contact requirement of the upper management levels of a large organization can therefore be fulfilled only by a few major cities (metropolitan areas). Proximity to decision makers in government, large industrial corporations, research, finance, insurance and international news agencies etc. provides the top management with a head start when it comes to crucial information, thus facilitating their adaptation to new situations and developments; this is especially important in areas that have to deal with a high degree of uncertainty and where economic success often depends on fast, risky decisions.

The most important reassurance against the uncertainties of business life is knowledge about the flow of money and information as well as prompt knowledge of innovations, political and economic developments. Empirical evidence from different countries demonstrates that headquarters of multiplant-corporations are more likely to be located in the capital of a nation the larger the enterprise is both in terms of employed people and in turnover (L.S. Burns, 1977, p. 211; A.W. Evans, 1973, p. 387; P. Meusburger, 1980, p. 102-104).

The social and economic situation of employed women therefore is not only reflected by their educational level and their distribution in the different economic sectors, but also by the spatial distribution of jobs occupied by highly qualified females. As long as the proportion of women is very low in jobs with high decision making authority and in management functions dealing with great "uncertainty" and high competition, and as long as highly qualified women (with university degree) predominantly are employed in more or less "protected" labour markets like education, social services, health services, civil service or in management functions far away from the main position of power (e.g. social or cultural affairs), there will be marked gender-specific differences in the spatial distribution of jobs for male and female university graduates.

3.2. Empirical results

The best way to test these theoretical findings empirically is by analyzing single organizations of different types and structures. This kind of research has been done on the micro-scale by sociologists and economists. In this paper a more abstract macro-scale approach is used focusing on the hierarchy of the urban system.

The ranks of the urban system are represented by the size-classes of the communes where the jobs are located. In order to move from small-group research or company sociology to the meso- and macro-regional level of organization theory, it is also necessary to find indicators of power, professional authority, qualification and competence on this level of aggregation. On the macro-scale, spatial analysis of the educational level of the work force can give an insight into the spatial distribution of power and competence, at least in those countries where the hierarchy of educational levels still represents a hierarchy of qualification and training and where the percentage of people with an university-degree is still relatively low. Thus in countries like Austria, where in 1981 only 4,7% of the male and 2,2% of the female work force had achieved an university degree, the educational level of the work force is an important indicator, at least on the macro-scale where one has to rely on census data. These indicators are not so helpful in countries like Japan or the United States which are characterized by a strong hierarchy of universities and where it is important to consider where the degree has been awarded.

As the economic branches vary considerably in the homogeneity of the structure and size of their organizations (institutions, enterprises), the validity of this approach also differs from branch to branch. Generally speaking, the more homogeneous branches like banking, insurances, public administration, education etc. show stronger correlations and more reliable results than some of the more inhomogenuous branches of the secondary sector such as the textile industry or production of machines where the economic branches comprise both large multinational companies and small workshops of artisans.

Table 1

The spatial concentration of jobs in the five largest Austrian cities with regard to the educational level of the work force

	Percentage of the Austrian jobs concentrated in the 5 largest cities				
	School level of the work force				
selected economic branches	University	Secondary School	Commerc. + Techn. School	Vocational School	Elementary School
Publishing	90,4	84,0	78,8	78,4	74,5
Private insurances	89,5	81,4	69,8	66,2	68,8
Banking and finance	88,6	68,7	48,4	63,5	56,6
Prod. of electro-technical equipment	83,4	77,9	67,1	59,4	53,4
Social insurance	81,5	83,8	75,3	80,6	77,5
Road traffic	80,7	64,0	43,9	50,8	39,1
Wholesale business	80,5	74,8	60,4	58,9	54,2
Public representation of interests	79,7	73,2	67,5	65,3	64,9
Printing and copying	79,4	72,5	65,5	66,4	63,0
Real estate and business services	71,6	73,9	59,0	70,7	73,5
Shipping	71,4	66,3	59,4	61,7	64,1
Public administration	70,0	60,0	43,9	43,1	39,7
Retail business	65,4	62,7	44,3	43,2	42,6
Civil and construction engineering	63,7	47,0	37,9	34,0	34,6
Manufacturing of transport vehicles	62,4	51,3	41,8	42,7	37,6
Prod. of machines exc. for electrical mach.	61,8	49,7	39,4	34,3	28,5
Production and processing of metals	58,1	49,7	37,3	33,4	31,6
Production of food	55,5	46,7	33,4	34,5	34,7
Health services and public welfare	55,0	60,4	48,8	51,6	48,0
Education & research	44,9	31,5	36,9	47,8	37,8
Textiles and clothing	39,7	36,7	29,5	34,1	16,8
Religious Institutions	30,5	55,7	45,9	41,8	36,5
Wood processing	23,8	23,8	14,7	31,2	10,1

Source: Austrian Census of 1981, Unpublished special tabulations

In measuring the spatial inequalities of qualification, two forms of disparities have to be distinguished.

- the absolute distribution or the spatial concentration of jobs occupied by people with different educational levels.

- the central-peripheral decline (gradient) of the proportion of highly or lowly qualified people in a branch. If the "center-periphery" concept is not defined in terms of spatial distance but rather from the organizational point of view, then one can refer to large cities or central places of the upper ranks as "centres" and to small communities without a central rank as "peripheries". On this basis, one can also call the gradient that exists between the city-size classes as the central-peripheral gradient.

In almost all economic classes, jobs involving far-reaching decision-making authority and requiring a high level of education as well as frequent face-to-face contacts with other highly qualified specialists show a strong tendency toward regional concentration in a few large cities, whereas routine activities in production and administration calling for lower levels of education show a trend towards decentralization. Therefore the general rule "the higher the educational level of the employees the higher the spatial concentration of the jobs" fits most branches of the economy (see tab. 1).

Whereas there are several methods of determining the spatial concentration of jobs, the gradient in the ratio of university graduates according to city-size classes cannot be illustrated as easily by one single parameter. It is important to consider that the x-axis in figure 3 does not represent the individual sizes of single communes but size groups (=ordinal data). Using ordinal data on the x-axis does not permit computation of a regression equation or prediction of values of the dependent variable on the y-axis. Moreover, the statistical relationship between the two variables in the majority of economic classes is not linear. Therefore the ascending gradient of the regression equation cannot be used for this purpose. In the end, the steepness of the "gradient" was described graphically by a curve which fits closest to the point patterns of the relations between the size groups of the communes of work and the educational level of the work force employed in these size groups. They enable a visual comparison of the differing central-peripheral gradients (compare fig. 3).

The central-peripheral gradient is generally lowest for graduates of the middle levels of the educational system (e.g. technical or commercial schools, vocational schools), whereas it is highest for university graduates and compulsory school leavers (see fig. 4 and 5). Therefore, special attention will be paid in this paper to the central-peripheral gradient of the proportion of university graduates.

Figures 3 and 5 show that the central-peripheral gradient of jobs held by male university graduates is much steeper than the gradient of jobs held by female university graduates. Several reasons explain this pattern, the most salient for this paper being that the curves confirm the well known fact that jobs held by female university graduates apparently belong to a greater extent to protected labour markets and to a much smaller extent to the segments where the most important decisions are taken and which are concentrated in the capital or the largest cities.

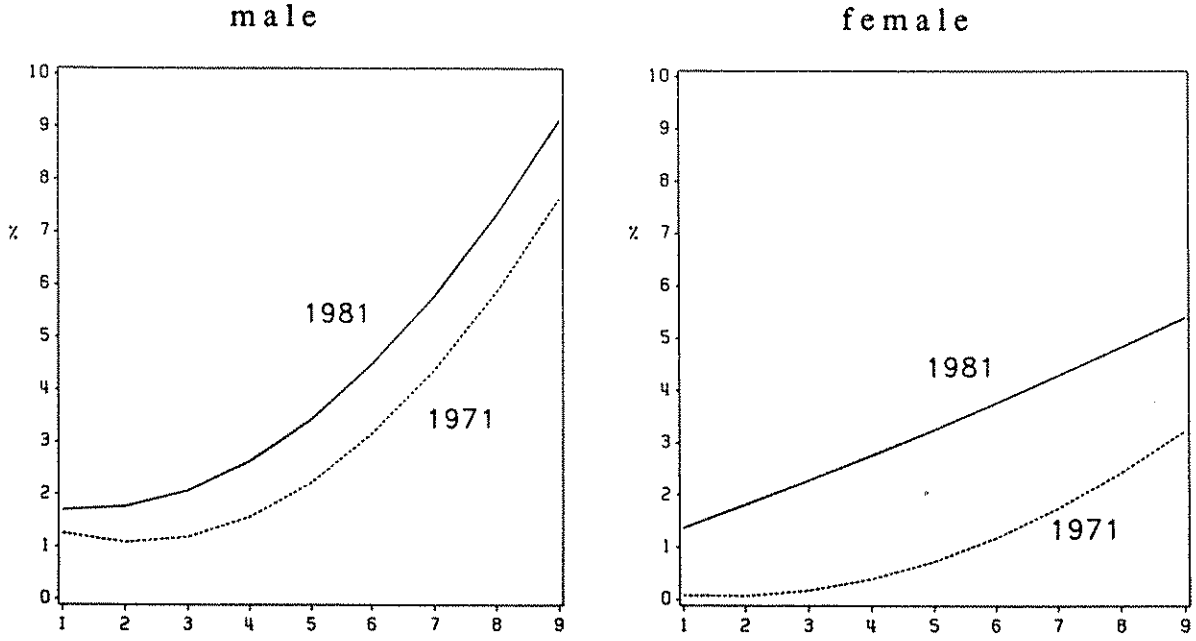
This central-peripheral gradient of the proportion of university graduates varies greatly from one economic class to the next and shows a remarkable consistency over time. It is highest in the economic branches "public representation of interests", "public administration", "publishing", "banking and finance" and "private insurances" and quite low in branches like "real estate and business services", "education", "health" (table 2).

In most economic categories the percentage of university graduates in the work force of large cities is many times higher than in the rural peripheries. Both the degree of spatial concentration of jobs for university graduates as well as the steepness of the central-peripheral decline of the percentage of university graduates in the work force differ considerably in the various economic branches. If one combines the spatial concentration of the jobs for university graduates with the central peripheral decline of the

percentage of university graduates and also takes into account the average proportion of university graduates in the whole labour force of the economic branch, then different types of economic classes can be distinguished.

Figure 3

The steepness of the "central-peripheral" gradient of university graduates in the Austrian work force in the years 1971 and 1981 in relation to the size of the communes where the jobs are located



1971: $r^2 = 0{,}98$ 1971: $r^2 = 0{,}99$
1981: $r^2 = 0{,}98$ 1981: $r^2 = 0{,}97$

Size groups (number of inhabitants) of the places of work

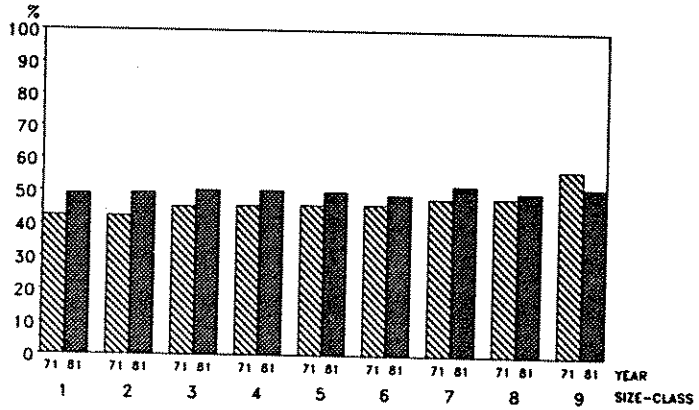
1 = up to 500	4 = 2.001 - 5.000	7 = 20.001 - 100.000
2 = 501 - 1.000	5 = 5.001 - 10.000	8 = 100.001 - 1 Mill.
3 = 1.001 - 2.000	6 = 10.001 - 20.000	9 = more than 1 Mill.

Source: unpublished data of the Austrian censuses 1971 and 1981

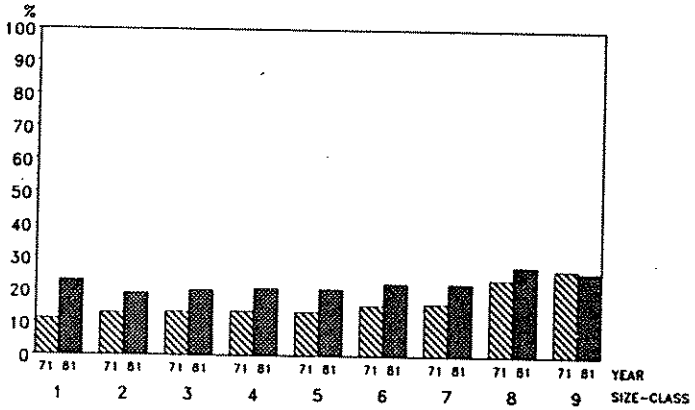
The first category is characterized by a high spatial concentration of jobs for university graduates and a strong "central-peripheral gradient" of the proportion of university graduates. In Austria this type includes branches such as "banking and finance" (fig. 6), "publishing", "public administration" and "representation of interest" (=chambers of commerce and industry, trade unions). In 1981 in the "publishing" sector 90,4 % of all Austrian jobs for university graduates were concentrated in the five largest cities (all above 100.000 inhabitants) and in "banking and finance" 88,6% of the jobs offered to university graduates were located in those cities (compare table 1); in "private insurances" this figure was 89,5%, in the "representation of interests" it was 79,7% and in "public administration" it was 70,0%, even though these five large cities had only 39,4 % of the total number of Austrian jobs and 33,1 % of the Austrian jobs for compulsory school leavers. In this category the jobs held by female university graduates were concentrated to an even larger extent in the capital or the five largest cities than those held by male university graduates.

Fig 4: The Percentage of the Austrian Labour Force in the "Secondary Sector" having completed Vocational Schools 1971 and 1981 in Relation to the Size of the Communes where the Jobs are located

MALE



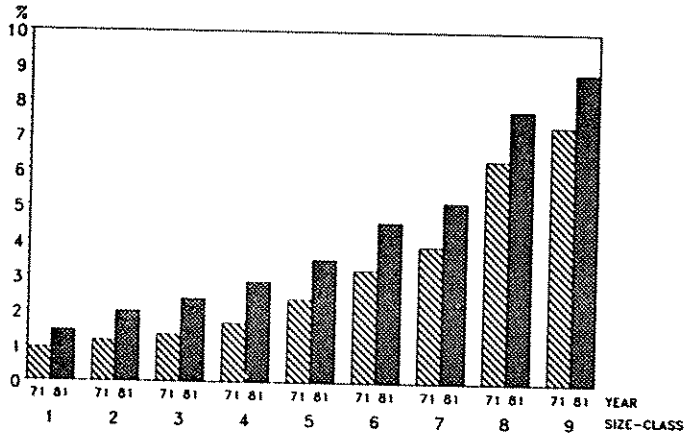
FEMALE



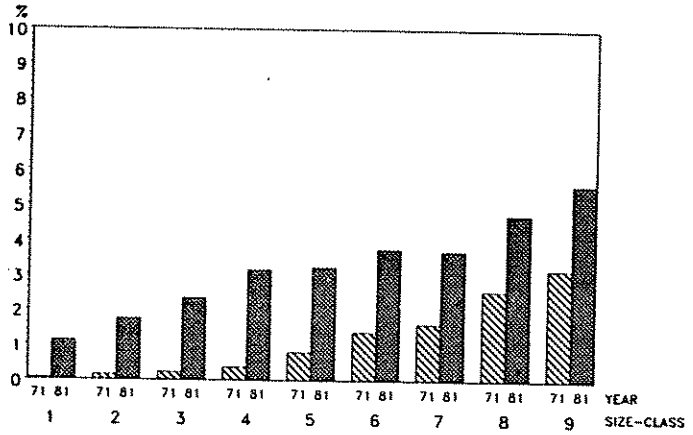
SOURCE: UNPUBLISHED DATA OF THE AUSTRIAN CENSUSES 1971 AND 1981

Fig 5: The Percentage of University Graduates in the Austrian Labour Force 1971 and 1981 in Relation to the Size of the Communes where the Jobs are located

MALE



FEMALE



SOURCE: UNPUBLISHED DATA OF THE AUSTRIAN CENSUSES 1971 AND 1981

The proportion of university graduates in the working population of the "banking and finance" sector in Vienna was almost 22 times as high as in the communes of up to 2.000 inhabitants (see table 2 and fig. 6), and in "public administration" it was approximately 12 times as high.

Table 2

The percentage of university graduates in the Austrian work force in relation to the size of the communes where the jobs are located

Economic branches	Size groups of the place of work								
	1	2	3	4	5	6	7	8	9
	per cent university graduates								
Wood processing	0,2	0,3	0,2	0,4	0,4	0,4	0,6	0,4	0,9
Road traffic	-	0,2	0,1	0,1	0,2	0,4	0,2	0,8	0,9
Manufacturing of transport vehicles	-	-	0,1	0,2	0,5	0,3	0,9	1,2	1,0
Textiles and clothing	-	0,3	0,4	0,5	0,6	0,6	0,8	1,6	1,0
Printing and copying	-	-	0,6	0,9	0,4	0,8	0,6	1,2	1,3
Shipping	-	-	0,3	0,2	0,3	0,6	1,2	0,6	1,4
Prod. of food	-	0,2	0,5	0,5	0,8	0,6	0,6	0,9	1,6
Production and processing of metals	0,7	0,4	0,7	0,6	0,8	1,3	1,3	2,9	2,1
Civil and construction engineering	0,2	0,4	0,4	0,5	0,6	0,9	1,0	2,0	2,1
Production of machines except for electrical machines	-	0,3	0,5	0,9	1,3	1,2	1,1	3,6	2,7
Retail business	0,2	0,3	0,7	1,1	1,4	1,4	1,5	2,2	3,3
Production of electrotechnical equipment	-	0,3	0,9	1,1	1,5	0,8	1,6	2,8	4,3
Wholesale business	-	0,8	0,9	1,4	1,6	1,3	1,4	2,0	4,9
Private insurances	-	-	1,6	0,6	1,1	1,0	1,7	3,2	5,3
Production of chemicals and chemical products	-	4,2	2,7	3,7	2,8	2,6	2,6	4,8	7,5
Banking and finance	-	0,3	0,4	0,5	1,2	1,9	2,3	5,1	7,5
Publishing	-	-	3,6	2,7	2,8	1,9	3,7	5,8	8,6
Public administration	1,1	1,0	1,7	2,4	4,2	5,5	6,9	10,6	12,3
Real estate, law and business services	8,3	9,3	9,1	9,1	10,8	13,2	11,9	12,4	12,4
Representation of interests	4,5	3,7	3,2	4,3	7,4	8,5	10,7	11,9	14,1
Health services and social welfare	3,4	9,4	12,5	11,8	11,7	11,9	11,8	12,7	15,0
Religious institutions	56,6	45,1	43,5	33,7	29,3	23,8	27,0	23,0	24,0
Education and research	30,9	34,3	35,5	37,0	38,7	41,9	42,1	47,6	48,1

Source: Austrian Census of 1981, Unpublished special tabulations

Size groups see fig. 3

The slightly lower regional concentration of jobs for university graduates and the lower central-peripheral gradient in "public administration" is due to the fact that the locations of administration authorities - the classic example of the bureaucratic system as postulated by M. Weber (1922) - cannot be selected primarily according to the principle of cost minimization or of maximum efficiency but rather, at least on the lower levels of administration, must also be present in peripheral and sparsely populated regions. Public administration is also a kind of "protected" market.

The next category encompasses the economic classes that also have a high spatial concentration of jobs for university graduates and a relatively high average level of education but that have little or no "gradient" in the proportion of university graduates between "centre" and "periphery". This category includes economic classes like "real

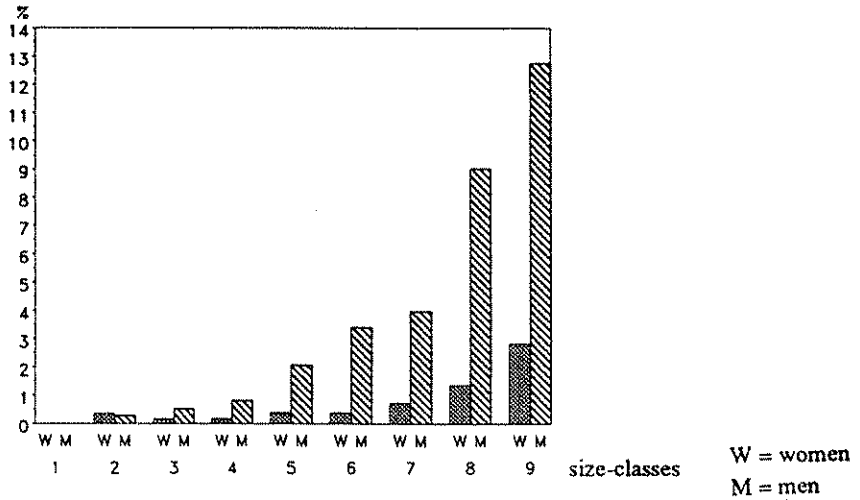
estate, law and business services". Although these specialized services are also highly concentrated in just a few big cities, when they do occur in small towns or rural communes, they call for qualifications similar to those required in the big cities.

In the economic class "real estate, law and business services" the relation between the proportion of university graduates in Vienna and in communes with a population of up to 2.000 was only 1,4 : 1. But 71.6 % of the jobs for university graduates were concentrated in the five largest cities. Even though the tasks to be performed may differ greatly between big cities and small towns, in fact the educational level required for lawyers or notaries is the same everywhere since these are professionalized occupations.

Other services in the tertiary sector, like "education and research", "health services and public welfare" and "religious institutions", belong to a more or less protected labour market. These economic classes also have a relatively high proportion of "professionalized" jobs, that is to say professions for which the necessary level of education is precisely defined. Therefore they show an above-average proportion of university graduates in their working population and a very low degree of spatial concentration. Also the central-peripheral gradient of the proportion of the university graduates is far lower than in the first two categories. In Austria only 44,9% of the jobs in "teaching and research" held by university graduates were situated in the five largest cities, in "health services and public welfare" (fig. 9) it was 55,0% and in "religious institutions" only 30,5% of the jobs were offered in the five largest cities. The smaller the amount of competition and "uncertainty" (in the sense of Montagna 1980) in an economic branch the higher is the decentralization of highly qualified jobs and the larger is the percentage of females among the university graduates. Therefore branches like "education" and "health services and public welfare" show not only the smallest spatial concentration of jobs for university graduates in large cities but also the highest percentage of females among the university graduates.

Fig 6

The percentage of university graduates in the Austrian work force of "banking" (1981) in relation to the size of the communes where the jobs are located

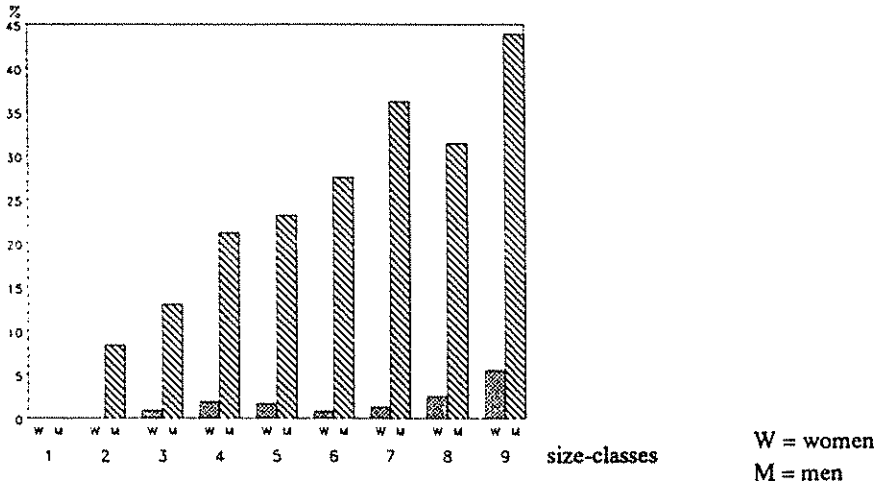


Size classes of the communes where the jobs are located (see fig. 3)

Source: unpublished data of the Austrian census 1981

Fig 7

The percentage of university graduates in the Austrian work force of "public representation of interests" (1981) in relation to the size of the communes where the jobs are located

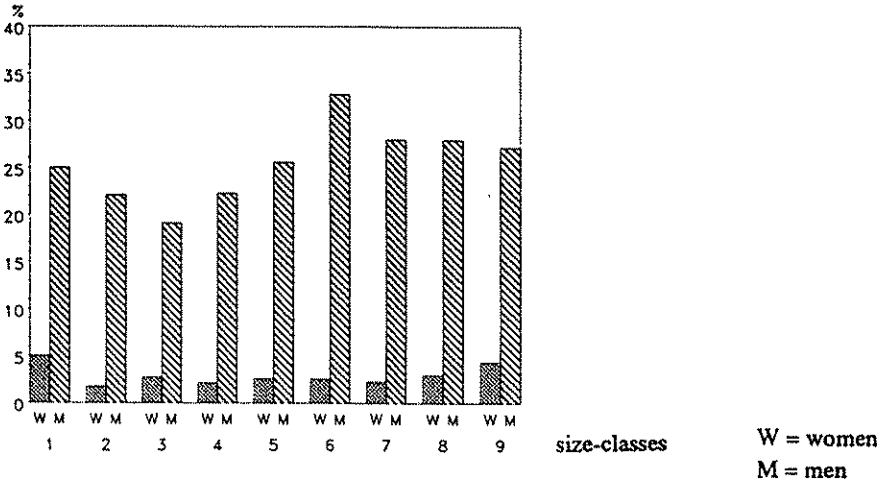


Size classes of the communes where the jobs are located (see fig. 3)

Source: unpublished data of the Austrian census 1981

Fig. 8

The percentage of university graduates in the Austrian work force of "Real estate, law and business services" in 1981 in relation to the size of the communes where the jobs are located

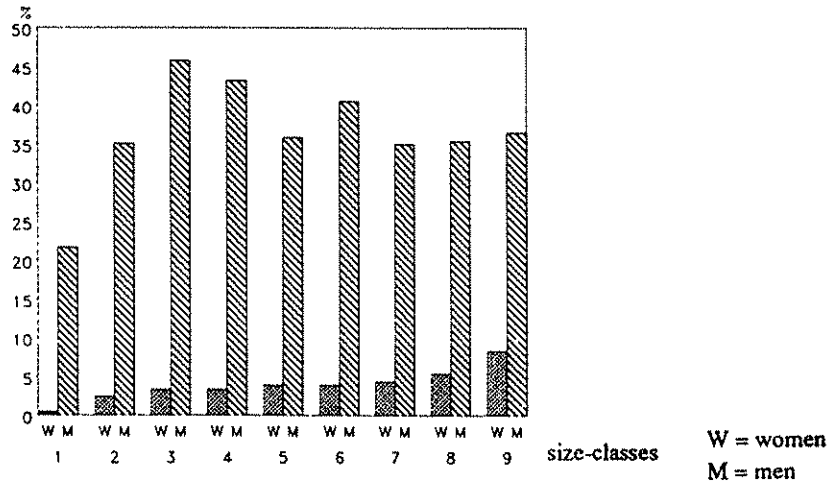


Size classes of the communes where the jobs are located (see fig. 3)

Source: unpublished data of the Austrian census 1981

Fig. 9

The percentage of university graduates in the Austrian work force of "health services and public welfare" in 1981 in relation to the size of the communes where the jobs are located



Size classes of the communes where the jobs are located (see fig. 3)

Source: unpublished data of the Austrian census 1981

Table 3

The proportion of university graduates in the branches "education and research", "health and welfare" and "religious institutions" on the total of university graduates

size-classes of the communes where the jobs are located	proportion of jobs for university graduates belonging to the three branches		
	male	female	total
up to 500 inhabitants	74,2	74,3	74,1
501 - 1.000 inhab.	75,5	89,0	81,0
1.001 - 2.000 inhab.	73,3	87,6	79,3
2.001 - 5.000 inhab.	66,5	87,4	75,4
5.001 - 10.000 inhab.	52,7	82,5	63,9
10.001 - 20.000 inhab.	54,8	82,2	63,9
20.001 - 100.000 inhab.	48,8	78,6	58,0
100.001 - 1 Mill. inhab.	41,2	69,3	49,0
more than 1 Mill. inhab.	30,2	59,4	39,8

Source: special (unpublished) tabulation of the Austrian Census 1981

In the economic classes of the secondary sector the regional concentration of jobs for university graduates and the central-peripheral gradient of the proportion of university

graduates both depend on the size of the organizations (proportion of multi-plant enterprises), on the degree of "uncertainty", on the importance of research and on the demand of face-to-face contacts. Therefore branches like "printing and publishing", "chemical industry" or "electrical and electronic equipment" show a much higher spatial concentration and central peripheral gradient of university graduates than branches like "textiles and clothing", "wood processing" or "construction".

The gap in the disparities of the percentage of university graduates in the work force between the large cities (more than 100.000 inhabitants) and the small communes (below 2.000 inhabitants) has widened in many economic branches during the period 1971 - 1981. A decrease of the central-peripheral disparities occured mainly in branches like "health services and public welfare" and "education and research" i.e. in occupations with only a small amount of "uncertainty" and competition. In Austria these two branches comprised about two thirds of all the employed female university graduates in 1981 and together with "religious institutions" they accounted for more than 87% of all jobs for female university graduates offered in small communes below 5.000 inhabitants.

4. Community size of the place of work and the feminization of professions

4.1. Empirical results

The rank of a city in the urban system not only influences the qualification and job structure of the female labour force but also the proportion of women employed in a specific occupation. This relationship is seen particularly clearly among ubiquitous occupations like elementary school teachers. In most countries a central-peripheral gradient od the percentage of female teachers has been evident since the first detailed statistics from the 19th century.

The statistical correlation, "the larger the community where the school is located, the greater the proportion of women teachers in the elementary schools", will be examined in this paper by studying the data from Austria, Hungary and Baden-Württemberg. Among the three, this correlation was most pronounced in Austria. In Hungary the range of the discrepancy was somewhat narrower. In Baden-Württemberg this correlation was strong over several decades and began to disappear in the 1980s for a variety of reasons (see table 4).

While in the Austrian capital, Vienna, the proportion of women teachers in 1981 had reached 90,3% (1987/88 it amounted to 92,5%), it was only 47,6% in schools located in communities of up to 500 residents, a value passed in Vienna at the turn of the century. This is even more amazing when one considers that in the 1960s and 1970s the closure of hundreds of small schools situated at the farthest periphery at which women teachers were hardly represented should have led to a reduction in the difference.

In 1980 in Hungary the size of the school's community and the proportion of women teachers were also positively correlated, but in comparison with Austria the disparity between the capital city and the small communities was much smaller. Surprisingly, in contrast to Austria, where the discrepancy in the proportion of women teachers was greater for the smaller communities (up to 5.000 inhabitants) and considerably less for those over 10.000 inhabitants, in Hungary the proportion of women teachers varied only slightly among the four community size classes under 5.000 residents.

This can be explained by the much more extensive closure of elementary schools in Hungary in rural areas and in small communities (less than 1000 inhabitants) in Hungary than in Austria. In 1980, 25,1% of all communities in Hungary had no elementary school (in Austria this figure in 1981 was only 8,3%). From the total of 833 Hungarian

communities in size class 1 (up to 500 inhabitants), 69,0% had no elementary school. Because of this extreme closure action, distinctly fewer elementary schools were situated at the far periphery in Hungary compared with Austria. Most of those small communities in Hungary which retained their own elementary school were usually centrally located and had a better infrastructure than those whose schools were closed, and thus they were more "suitable" for women anyway.

Table 4

The proportion of women teachers in Austrian and Hungarian elementary schools by number of residents in the school's community

Number of inhabitants in the commune where the school is located	Percentage of female teachers in elementary schools	
	Austria	Hungary
	1981	1980
up to 500	47,6	59,1
501 - 1.000	63,6	57,0
1.001 - 2.000	70,9	57,5
2.001 - 5.000	75,8	58,1
5.001 - 10.000	79,7	61,7
10.001 - 20.000	81,7	65,5
20.001 - 100.000	85,5	69,5
100.001 - 1 Mill.	87,9	71,7
more than 1 Mill.	90,3	73,8

Source: Special (unpublished) tabulation of the Austrian Census 1981 and the Hungarian Census 1980

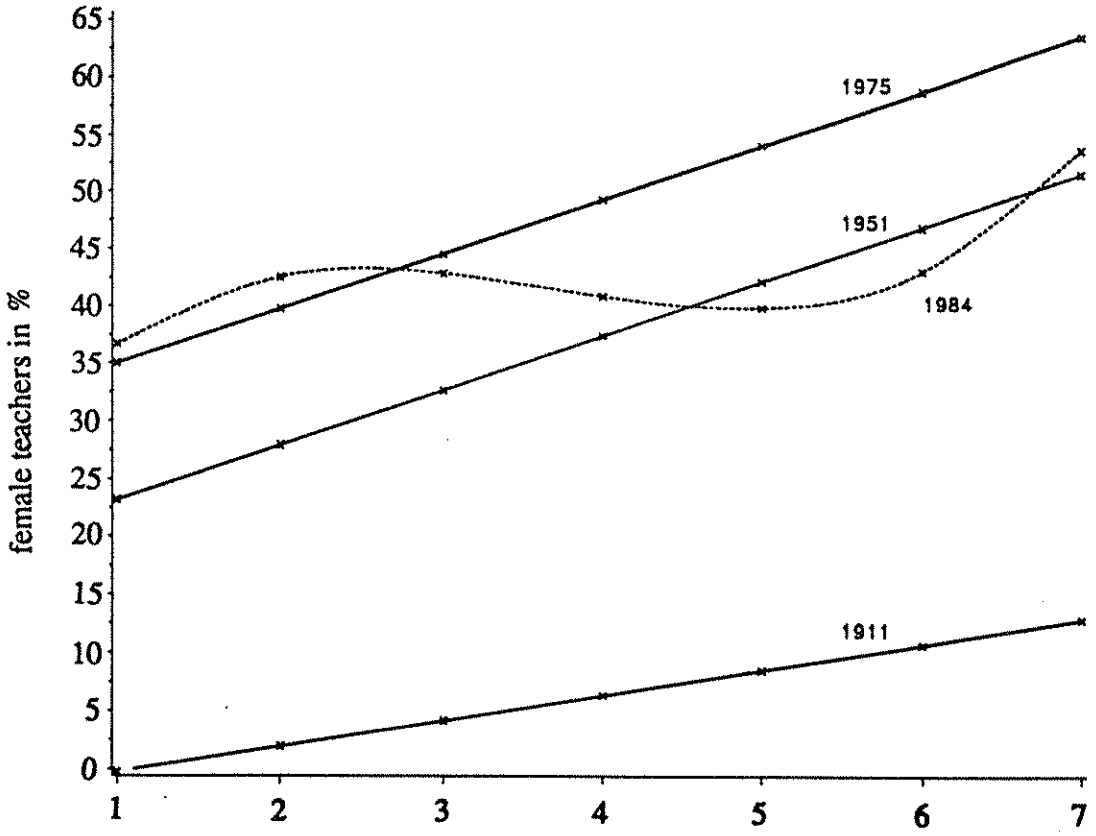
On the other hand, feminization of the career of elementary school teachers in the larger Hungarian cities, in particular in the capital, Budapest, was not so advanced as in Vienna. Although the reasons for the lower proportion of women teachers in Budapest have not been analysed yet, one important factor could be that in large socialist cities the service sector is far less important, so that the career of elementary school teachers was still more attractive for men than in was Western capitals.

Schmude (1988) was able to show that in Baden-Württemberg the relationship between the size of the school's community and the proportion of women teachers in the elementary schools, which revealed for decades, had begun to disappear in the 1980s. Whereas in 1911, 1951 and 1975 an almost linear correlation was seen (r larger than 0,9), by 1984 this relationship was no longer valid and a significant drop in the proportion of women was noted in communities with 1.001-20.000 inhabitants (see fig. 9). This alteration in the linear relationship was caused primarily by external factors, specifically the seriously restricted employment policy followed by the Baden-Württemberg educational authorities.

It remains to be seen whether or not employing more teachers will restore the linear correlation between community size and proportion of women.

Figure 10

The relationship between the size of the school's community and the proportion of women teachers in the elementary schools of Baden-Württemberg



1 < 500 inhab.
2 = 501 - 1.000 inhab.
3 = 1.001 - 2.000 inhab.
4 = 2.001 - 5.000 inhab
5 = 5.001 - 10.000 inhab.
6 = 10.001 - 20.000 inhab.
7 > 20.000 inhab.

Source: Schmude 1988

The social innovation "women teacher" took root over many decades principally in large cities due to several causes, some of which were particular geographical, social, economic and legal conditions. The strong centre to periphery decline in the proportion of women teachers, which has always been present, rose with time to higher percentage values, but the discrepancy between the large cities and the rural, peripheral areas has remained remarkably stable over the past 100 years. In every case in which the discrepancy clearly declined in the 1980s, this could be ascribed less to a "catching up" in the peripheral regions than to outside intervention from the school administration, e.g. not employing any young teachers or radical closure of elementary schools in rural areas.

4.2. Factors influencing the feminization process of the elementary school teaching staff

The factors which positively or negatively affected the feminization process in the career of elementary school teachers or led to regional differences in the proportion of women teachers are diverse and vary in their significance from country to country. Most

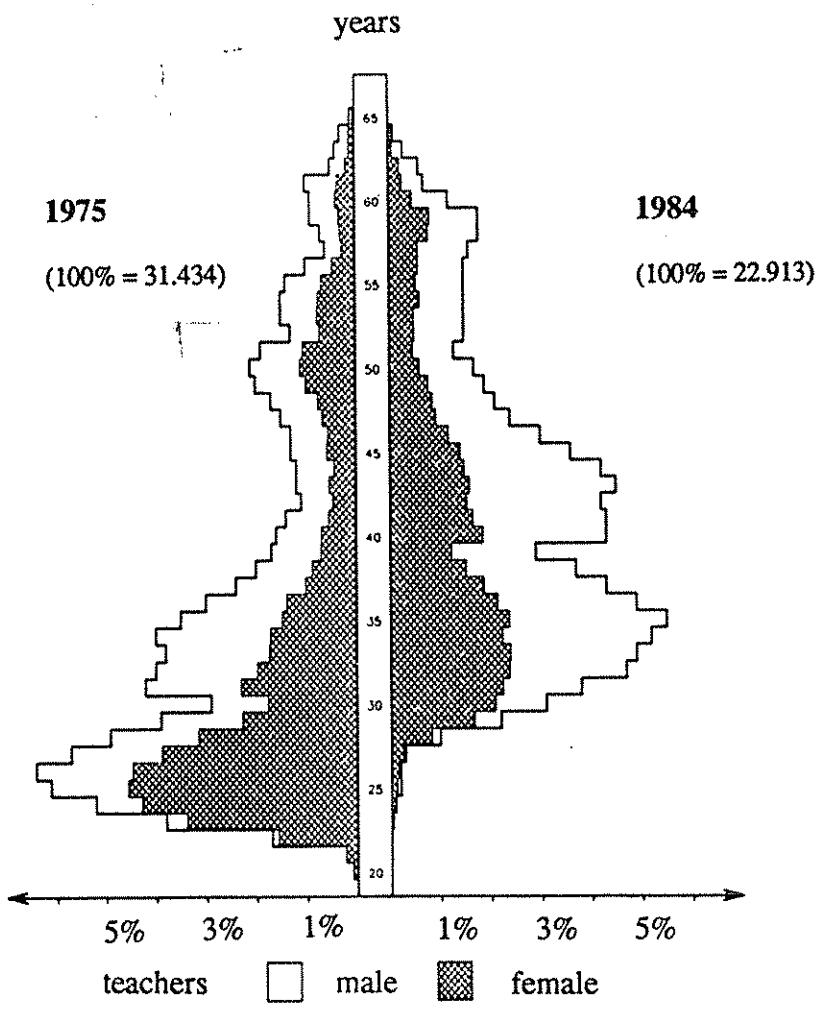
of the factors listed below are closely linked, and thus it is very difficult to analyse them separately.

The demand for teachers

As women have their largest share in the younger age groups of teachers, any change in the demand for teachers or in the employment policy of the school authorities will have serious effects on the feminization of the teaching staff. A great need for teachers in the past had always led to a greater than average proportion of women being employed, while a reduced demand in most cases led to a reversal or interruption in the feminization process. How disadvantageous a policy of reducing the intake of new teachers is for the proportion of women teachers can be seen in an example from Baden-Württemberg (Schmude 1988, p.103): here, the base of the age structure pyramid almost disappeared, leading to a reduction of the proportion of full-time women teachers in elementary schools (Grund- and Hauptschule) from 56,9% to 44,4%.

Figure 11

The age composition of the teaching staff of primary and intermediate schools in Baden-Württemberg in 1975 and 1984



Source: Schmude 1988

Legislative regulations of the educational authorities concerning the employment of women teachers

Until the end of World War I, several European countries had regulations more or less strictly reducing the proportion of women teachers. Part of these legal requirements delayed the feminization process as a whole (e.g. quotas), while another part strengthened the "central-peripheral gradient" in the proportion of women employed (e.g. the ban on employing women in one-class schools). Up to the 1930's, feminization of the teaching profession was hindered in many European countries by the so-called celibacy rule, which stated that no married women would be hired and women teachers must give up their jobs after marriage. In various parts of the German Empire or the Austrian-Hungarian Kingdom until the end of Word War I, only men were legally allowed to teach at one-class, mixed schools. Also in so-called "makeshift" schools, which were poorly equipped and located in rented buildings with usually less qualified, uncertified teaching personnel, only men were permitted to be employed in the 19th century. All these decrees helped to maintain the higher proportion of male teachers in peripheral, rural areas for a long time.

Prestige of elementary school teaching as a career

Labour market research has indicated that the feminization process in a particular career can be linked to the course of its prestige. In many cases a loss of prestige was formerly tied to increasing feminization of an occupation. As a rule, the greater the prestige and/or the higher the financial attraction of a profession, the greater the difficulty faced by women in trying to advance in it. In the social sciences, numerous studies address the prestige of particular occupations, but the fact that the level of prestige of a profession is not the same everywhere has largely been overlooked.

The career of elementary school teacher has indubitably a much greater prestige in peripheral, rural areas than in larger cities. In the former, teaching, along with the ministery, was one of the few occupations requiring further education (secondary school graduation, teaching certificate), and the teacher's functions outside the school (see below) added to the career's prestige.

In rural areas, elementary school teaching was for decades seen as one of the most important careers with advancement opportunities away from the rural background for boys, while for girls in a village higher education was rarely considered. In contrast, in the higher social classes of the large cities, elementary school teaching was seen as an appropriate career for girls but not for boys.

Social differences in the recruitment of male and female elementary school teachers

For decades, proportionally fewer female elementary school teachers came from rural areas and agricultural social classes than their male colleagues, in other words, female teachers were drawn more heavily from an urban background. This has undoubtedly contributed to the urban-rural disparities in the proportion of women teachers. Young female teachers who grew up in urban areas tended to have a greater social distance from the "backwards" peripheral regions with their poorly supplied infrastructure and where more confronted with prejudices from the side of the farmers and villagers than male teachers whose background allowed them to understand rural folk better than a "lady from the city".

Teacher's functions outside the school

The expectations and standards inherent in the role of teacher shift according to the type of region. In contrast to the urban populace, the inhabitants of peripheral, rural areas expected teachers to take on various functions outside the school. In many rural or outlying communities the teacher supplied several services in addition to school lessons (e.g. sexton, mayor, tourist information officer, choir leader, bandmaster, soccer trainer). For most of these extrascholastic activities, the rural population preferred male teachers for various reasons. In large cities, these functions have long been taken over by professionals or by people who were not also teachers, not least because higher standards could be demanded of them.

These differing expectations of teachers have not only had a continuous influence on the filling of posts by local (provincial) school authorities but also led to some women teachers refraining from applying for such a position.

Central-peripheral differences in living conditions

The poorer provision of necessary items for daily living needs, the extensive lack of cultural facilities (cinemas, theaters, libraries, etc.), the usually limited home comforts, the isolation of the school's community from the outside world due to restricted public transport options or dangerous avalanches in winter and the rigid social control from the villagers have all led to a reputation that some far-flung schools are not suited for women and for decades has influenced the application rate from female teachers and the allocation policy of the school authorities. Given these disadvantages, teaching positions in small outlying schools have not been sought by applicants from urban backgrounds and were characterised by a large fluctuation (see Meusburger 1978). Therefore the teachers in these schools were generally younger, less experienced and more poorly paid than those in centrally placed, large community schools. This center to periphery discrepancy in living conditions has begun to shrink in most cases only since the 1960s. Improved public transport facilities to outlying areas and the rise in tourism, with accompanying economic and social changes (= improvement in infrastructure and quality of accommodation, alterations in moral attitudes and behaviour, etc.), have improved the attractiveness of rural teaching posts. In addition, the abandonment of the "residence requirement", which still existed between the two world wars and required that teachers "reside on a permanent basis in the same area as the school" and the dissemination of the automobile among the general public reduced the negative image of several unpopular rural school locations.

5. Conclusion

In the 1990s, the employment and qualification patterns for women will change in many countries at a much faster rate than in the past decades. The great variety of cultural, political, economic and social factors influencing the spatial disparities in the proportion of highly qualified women in the labour force, will also enlarge the demand and importance of the research field "gender and geography". Gender-specific disparities of the labour market should not only be discussed on the sociological and geographical micro-scale, where the theoretical focus is mainly directed to segmentation and discrimination theories but also on the meso- and macro-scale, where organization theory is able to make an important contribution. The size, tasks and structures of organizations, the stability of their environment, their dependence on highly qualified face-to-face contacts, the question whether an organization belongs to a protected labour market or is prone to a hard competition, and the ways in which organizations are regulated and controlled, strongly influence the spatial distribution and the spatial disparities of jobs held by highly qualified women. Last not least, the example of the elementary school teachers shows that a great variety of factors contribute to the central-peripheral disparities of the feminization process. Without a profound knowledge in regional geography and local history these disparities cannot be explained sufficiently.

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