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Geographical Review, Vol. 70, No. 3 (Jul., 1980), 253-275.

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The Geographical Review

VOLUME 70

July, 1980

NUMBER 3

DISTRIBUTION AND MIGRATION OF FOREIGNERS IN GERMAN CITIES*

JOHN O'LOUGHLIN

THE industrial countries of northwest Europe have experienced heavy immigration of workers and their families who seek a better life since World War II. Because of rapid economic growth, West Germany had a labor shortage until 1973. To meet the need for workers, the German government signed contracts with six Mediterranean countries. These contracts regulated the flow of temporary migrant workers into West Germany. Workers from countries that were members of the European Economic Community were guaranteed unrestricted entrance to Germany. By 1977, West Germany had 3,948,000 foreign residents, or 6.8 percent of its total population. It was estimated that West Germany contained one in three of all foreign workers in western Europe.¹

Even to the casual observer, the impact of foreign workers and their families on the cityscape of West Germany is evident. Signs in public buildings, on public transportation, on billboards, and on shop facades are repeated in several languages, each accompanied by the respective national flag. Radio and television programs in a variety of languages serve the foreigners, while other programming includes German language courses. Governmental and social agencies plead for understanding of the difficulties of foreign workers in their adjustments to German life and ask for persons to assist in language and culture groups. The injection of a large multicultural group that displays different social customs has led to profound changes in the relatively homogeneous German society. The question of integration versus repatriation of the immigrants is frequently raised in the mass media and has produced a flood of sociological analyses of the migrant worker. The issue is colored by politics: each political party or splinter group espouses a position on the question. Because the West

* This research was supported by a fellowship from the Alexander von Humboldt-Stiftung during the 1978-1979 year. I extend thanks to Günther Glebe of the Universität Düsseldorf for his help in locating data and for his general encouragement and to Howard Roepke and Jerome Fellmann who critiqued an early version of this article.

¹ Cheryl Benard, Migrant Workers and European Democracy, *Political Science Quarterly*, Vol. 93, 1978, pp. 277-299, reference to p. 278.

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German economy needs migrant workers even in a time of economic stagnation, total repatriation is out of the question. For the foreseeable future, the dilemma of segregation and integration will persist for the German government and people.

The purpose of this article is to examine the intraurban distribution and the migration of foreigners in German cities. Previous studies have considered regional aspects of the foreign worker immigration but, except for static, descriptive, and microlevel accounts of neighborhood patterns, no attempt has been made to examine distribution of foreigners in a number of cities. Comparative analyses, necessary for the formulation of a general model of foreigner residential development, do not yet exist. This article reports three interrelated analyses. First, intraurban spatial distributions and development of foreigner concentrations for four large cities are examined at the *Stadtteil* or ward scale. By use of segregation indexes and location quotients, the total foreign population is analyzed as well as individual national groups. Second, because interpretation of segregation indexes is hampered by scale considerations, the measures were recomputed for the foreign residents of Düsseldorf by blocks and apartment buildings. Claims by German commentators of increased segregation of foreigners can be evaluated at three scales—neighborhood, block, and apartment house—for which data are available. Third, because the distribution of foreigners is a function of intraurban migration as well as of neighborhood choice when the foreigners first enter a city, their movement between neighborhoods is analyzed and compared with the German population to determine whether divergent patterns are emerging. On the basis of data from Stuttgart, these moves are then related to the socioeconomic and familial composition in the wards of origin and destination.

A dominant question in German popular and academic literature is the level of contact between foreign and native populations. Other than at work, little contact occurs. Obviously the level of interaction is partly a function of spatial integration; if both foreign and native groups live in the same wards and on the same streets, the likelihood of interactions increases. Integration of foreigners into German society is severely hindered by the language barrier and, in the past, by the temporary nature of their stay. Integration is difficult to measure accurately. One of the secondary methods frequently used is the level of spatial segregation between the groups. The basic argument about segregation and assimilation was made by Robert Park, the pioneering urban sociologist. He stated that "human relations can be reckoned, with more or less accuracy, in terms of distance," and that "social relations are. . . frequently and so inevitably correlated with spatial relations and. . . physical distances frequently are, or seem to be, indexes of social distances."² Here the assumption is made that segregation indexes represent a valid measure of social distance.

For a detailed study like this one, accurate microlevel data are needed for several cities during a decade. Although many studies of foreigners in West Germany have used data from the Bundesanstalt für Arbeit, information from this source is not available for the intraurban scale and does not include de-

² Robert E. Park, *The Urban Community as a Spatial Pattern and a Moral Order*, in *Urban Social Segregation* (edited by Ceri Peach; London: Longman, 1975), pp. 21–33, references to pp. 32 and 33.

pendents of foreign workers. Instead data were collected from registration offices in each city. When they change address, foreign residents in Germany are required to complete a form that includes information on nationality, family size, age, sex, profession and previous address. Thus annual updates are available for statistical subunits.

The basic units in this study are city wards. They are comprised of groups of city blocks that vary greatly in size and that are influenced strongly by the spatial and governmental growth of each city. Smaller units—city blocks and individual apartment houses—were used for particular comparative analyses of segregation levels. Data from the registration offices are considered highly accurate, as evidenced by comparison to census figures. Because illegal migration to Germany is infrequent, the data on foreigners are certainly much more accurate than similar data from other countries. Foreigners who are in the military or attached to the diplomatic service are not included.

IMMIGRATION TO WEST GERMANY

Approximately three-quarters of the four million foreigners in West Germany in 1978 came from Mediterranean countries: Turkey (1,118,000), Yugoslavia (630,000), Italy (571,000), Greece (329,000), Spain (201,000), and Portugal (111,000). Individuals from these six countries and Tunisia and Morocco comprise the *Gastarbeiter* (guest worker) component of the foreign population in the Federal Republic. The other one million foreigners came predominantly from other western European countries, North America, and Japan. A clear distinction must be made between the two groups. Throughout this article, guest workers are migrants from countries with which West Germany signed contracts (Turkey, Yugoslavia, Spain, Portugal, Greece, and Italy), while other foreigners are from nonregulated countries. The migrant workers sign a contract for a specific period of time, usually one year with renewals, and are allowed to stay in Germany while they work. Foreigners from nonguest-worker countries, unlike workers from other countries, are not limited to a specific stay in Germany.

Migrant workers are not a new phenomenon in Germany. The industrial boom of the late nineteenth century attracted unskilled laborers from Poland, East Prussia, and Silesia to the cities on the Rhine, the Ruhr, and the Main. After World War II, the vast influx of approximately eight million refugees and expellees from the former German territories in Poland and the Soviet Union and from East Germany provided a large part of the immediate postwar labor needs. But by the late 1950s, a labor shortage existed as a result of continued economic growth, low birth rate and stable population, closure of the West Berlin migration route from East Germany, and increased unwillingness of West Germans to engage in unskilled or menial employment. Continued economic prosperity depended on a supply of relatively cheap unskilled labor, the pool of which was declining in Germany. What started as a short-term economic expedient to ease a labor shortage—the importation of workers from the Mediterranean countries—became necessary for continued long-term growth.³

³ John Salt, *International Labour Migration: The Geographical Pattern of Demand*, in *Migration in Post-War Europe: Geographical Essays* (edited by John Salt and Hugh Clout; London: Oxford University Press, 1975), pp. 80–125.

The German government opened almost four hundred recruitment offices in Mediterranean countries where German employers interviewed and screened workers, doctors examined applicants, contracts were signed, and transport to job sites and accommodations in Germany were arranged.⁴ The workers recruited were young (90 percent under forty-five years old), predominantly male (71 percent), mostly married (70 percent, of whom approximately half were accompanied by their wives), and worked at manual jobs (88 percent).⁵ The annual flow of guest workers rose from 50,000 in 1958 to more than 500,000 in 1965, but a recession in 1966–1967 temporarily halted the trend. The number of immigrants to West Germany peaked in 1970 at 700,000 and declined gradually until recruitment was halted in November, 1973, again during an economic recession. Since that date, the German government has attempted to repatriate guest workers, but, while the number of workers decreased from 2.6 million in 1973 to 1.9 million in 1977, the total number of foreigners showed less change—from 4.3 to 3.9 million—because of the increase in the number of family members who accompanied the workers.⁶

Trends since the 1973 economic recession indicate a decrease in the turnover of foreign workers and a complementary growth in the number of accompanying family members. Limited economic opportunity at home, together with growing seniority, accumulated benefits, and, in some cases, social integration, now keep foreign workers in West Germany. Because 84 percent of foreigners now stay three or more years in the Federal Republic, labor migration can no longer be viewed as temporary (one or two years) but poses a dilemma for the host society: should foreigners be assimilated into German society or should they be repatriated to their native countries?⁷

West German media devote large amounts of attention to the “guest worker problem,” and an often voiced policy is the prevention of ghettos. Because of the variety of nationalities present, efforts to assimilate the foreigners must be directed at each particular group, a situation that requires repetition of services. The immigrants experience difficulty in housing, education, social services, and especially language. These problems are compounded by an indifferent, and sometimes hostile, German public.⁸

FOREIGN WORKERS IN GERMAN CITIES

The initial location of foreign workers is determined largely by their employer, who must guarantee lodging for the recruited worker. Since the recruitment halt of 1973 this factor has decreased importance. Foreign workers are approximately twice as mobile as the German population; one-quarter of

⁴ John Berger and Jean Mohr, *A Seventh Man: A Book of Images and Words about the Experience of Migrant Workers in Europe* (Harmondsworth, U. K.: Penguin Books, 1975), pp. 11–78.

⁵ *Repräsentativuntersuchung 1972: Beschäftigung ausländischer Arbeitnehmer* (Nürnberg: Bundesanstalt für Arbeit, 1973).

⁶ *Statistisches Jahrbuch für die Bundesrepublik Deutschland 1978* (Wiesbaden: Statistisches Bundesamt, 1978), p. 88.

⁷ *Statistisches Jahrbuch 1978*, footnote 6 above, p. 88.

⁸ Stephen Castles and Godula Kosack, *Immigrant Workers and Class Structure in Western Europe* (New York: Oxford University Press, 1973).

them changes residence each year.⁹ Four-fifths of foreigners who change employment do so by choice, and more than half move to increase their income.

Surveys of foreign workers showed that they wish to live close to their jobs and in inexpensive housing.¹⁰ In view of these preferences for price and accessibility, it is not surprising that foreigners choose old, usually late nineteenth-century, neighborhoods with cheap housing. These areas are losing population, particularly young and middle-aged Germans. Inner-city neighborhoods are increasingly composed of old, childless German families and young foreign workers.¹¹ Many foreigners live in redevelopment zones, but rehabilitation of houses has meant the displacement of some foreign families. Chain migration from the Mediterranean countries and succession of German residents by foreigners have raised the foreign-born proportion in some neighborhoods to almost 50 percent.¹²

Although a growing literature on the intraurban location of foreigners exists, most of the work is descriptive accounts of individual neighborhoods. Thus little is known about the foreigners' migration behavior.¹³ A survey of 31,000 foreigners in the Ruhr area found that the most important determinant of a change of residence was a change in job location: 90 percent of the subjects in the survey obtained new jobs and then changed their place of residence.¹⁴

The availability and the quality of guest-worker housing has been a subject of concern to German social scientists since the early 1960s. Until 1974 West Germany had a critical shortage of housing caused by war damage and by the influx of population from former territories and East Germany. Foreign workers compete with low-income Germans for a limited number of cheap dwellings. Despite the widely held impression that many foreign workers live in hostels, barracks, and lodgings provided by their employer, less than 5 percent do so. The majority—87 percent in the Ruhr and 62 percent in a nationwide sample—lived in private dwellings, either as renters or subtenants, and often sublet from their own countrymen.¹⁵ Many writers agree that most dwellings occupied by foreigners are old, are poorly equipped with toilet, cooking, and heating facilities, have high densities of persons per room, are located in noisy and

⁹ Ausländische Arbeitnehmer, Beschäftigung, Anwerbung, Vermittlung; Erfahrungsbericht, 1966 (Nürnberg: Bundesanstalt für Arbeitsvermittlung und Arbeitslosenversicherung, 1966), p. 55.

¹⁰ Maria Borris, Ausländische Arbeitnehmer in einer Großstadt: eine empirische Untersuchung am Beispiel Frankfurt (Frankfurt: Europäische Verlagsanstalt, 1973), p. 159.

¹¹ Paul Gans, Bevölkerungsgeographische Veränderungen in der westlichen Unterstadt Mannheims zwischen 1970 und 1976, *Mannheimer Geographische Arbeiten*, Vol. 2, 1978, pp. 41–84.

¹² Andreas Geiger, Ausländer im Ghetto: eine mißglückte Integration, in *Stadt- und Sozialstruktur* (edited by Ulfert Herlyn; Munich: Nymphenburger Verlagsbuchhandlung, 1974), pp. 157–170, reference to pp. 163–166.

¹³ E. Kolodny and others, *Les Etrangers à Stuttgart* (Paris: Centre National de la Recherche Scientifique, 1977); Wolfgang Schenk, Ausländer, insbesondere ausländische Arbeitnehmer, in der Altstadt von Nürnberg, *Nürnberger Wirtschafts- und Sozialgeographische Arbeiten*, Vol. 24, 1975, pp. 221–234; Folkwin Geiger, Zur Konzentration von Gastarbeitern in alten Dorfkernen: Fallstudie aus dem verdichtungsraum Stuttgart, *Geographische Rundschau*, Vol. 27, 1975, pp. 61–71; and Helmut Schrettenbrunner, *Gastarbeiter: Ein europäisches Problem aus der Sicht der Herkunftsländer und der Bundesrepublik Deutschland* (Frankfurt: Verlag Moritz Diesterweg, 1976).

¹⁴ Karlheinz Hottes and P. Michael Pötke, Ausländische Arbeitnehmer im Ruhrgebiet und im Bergisch-Märkischen Land (Paderborn: Ferdinand Schöningh, 1977), pp. 66–70.

¹⁵ Hottes and Pötke, footnote 14 above, p. 71.

crowded neighborhoods, and are costly compared with similar housing occupied by Germans.¹⁶

Social integration between the immigrant population and Germans does not appear to be successful. While the vast majority of guest workers wants social contact with Germans, language and social barriers prevent it. Contacts are usually limited to the work place. Even on streets occupied by both groups, two independent social networks are present.¹⁷ Significant numbers of guest workers view themselves as the victims of discrimination, particularly at work, but also in accommodation, public service, and education.

Social integration has become more important as foreign workers remain longer in Germany. Integration is strongly related to language facility and to adoption of German cultural norms, which are in turn related to the length of time resident in the host country. No direct evidence is available on the relative ease of integration of different nationalities. According to one study, length of time resident in Germany, education and income levels, and knowledge of the German language determine occupational standing, integration of workplace, and housing proximity, factors that lead to increased private contact with the indigenous population.¹⁸ The role of the government is rather limited but may be most effective in language and professional education for the children of foreign workers.

DISTRIBUTION OF FOREIGNERS IN FOUR GERMAN CITIES

To avoid interpretative difficulties caused by differences of city size, four large cities were selected for analysis. Frankfurt (18.4 percent foreign in 1978), Stuttgart (15.4 percent foreign), Düsseldorf (10.9 percent foreign), and Bremen (4.8 percent foreign) cover the range of foreigner population in German cities. Data on the distribution of foreign populations by statistical subunits are available for each city, and migration data are available for Stuttgart, Düsseldorf, and Frankfurt. The intraurban spatial distribution of the total foreign population, as well as of the major individual national groups, is examined first with emphasis placed on recent patterns and trends.

Each of the four cities showed similar trends in the total number of foreign residents between 1961 and 1978 (Figs. 1 and 2). Rapid growth in the 1960s was temporarily halted during the economic recession of 1966–1967 but continued until 1974. Since that date the number of foreigners has declined or remained constant. Workers return to their homelands at the end of their contracts and are succeeded by the kinfolk of workers who remain in Germany. Frankfurt did not experience the 1974–1977 decline of foreign influx because its continued rapid growth as a service center and resultant demand in unskilled services attracted foreign workers from cities with stagnant or negative economic growth. Guest-worker populations had increased both absolutely and propor-

¹⁶ Ray C. Rist, *Guestworkers in Germany: The Prospects of Pluralism* (New York: Praeger Publishers, 1978), pp. 149–175.

¹⁷ Jürgen Hoffmeyer-Zlotnick, *Gastarbeiter im Sanierungsgebiet* (Hamburg: Christians Verlag, 1977).

¹⁸ Hans-Joachim Hoffmann-Nowotny, *Soziologie des Fremdarbeiterproblems: eine theoretische und empirische Analyse am Beispiel der Schweiz* (Stuttgart: Ferdinand Enke Verlag, 1973).

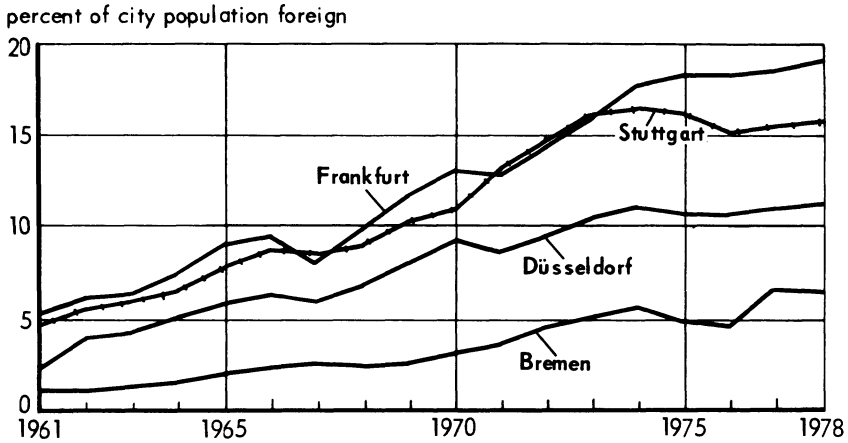


FIG. 1—Growth in foreign population in West German cities.

tionally in relation to total foreign population to 1973 but have declined since because recruitment ended. The greatest increases in the 1960s were made by the new migrant groups, Turks, Greeks, and Yugoslavs, while longtime migrant groups, Italians, Spaniards, and Portuguese, were less affected by governmental regulations. Differences in migrant proportions among the cities are not large, and the temporal trends approximate those for the whole country.

Location quotients that indicate the extent to which each ward departs from the citywide norm were used to map the foreign populations. This method is preferable to the percentage method because the use of location quotients circumvents the problem of ward populations of different size and allows comparisons of foreign groups of different size. The location-quotient method compares the area-by-area distribution of immigrant and total populations, so that a location quotient of 1.0 indicates that the two populations are present in an area in equal proportions to their citywide strength. Quotients larger than 1.0 indicate concentration of the immigrant group, while areas with values less than 1.0 do not have similar concentrations.¹⁹

The spatial distributions of foreigners in German cities display two consistencies—concentration near the city center and near industrial areas (Figs. 3, 4, 5 and 6). In each of the four cities, nineteenth-century housing that surrounds the *Altstadt* or medieval core of the city has a concentration of immigrants. Directional bias (different proportion of foreigners between sectors) exists in areas of similar housing stock. Thus wards north of the altstadts in Düsseldorf and Bremen, west of the altstadt in Stuttgart, and south of the altstadt in Frankfurt have few foreigners. These neighborhoods have retained their social prestige and continue to be occupied by wealthy residents. Away from the pre-1900 city, the locations of harbor and industrial facilities determine the locations of immigrant concentrations. Post-World War II suburban developments contain few foreigners. Each of the four cities displays sectors

¹⁹ Trevor R. Lee, *Race and Residence: The Concentration and Dispersion of Immigrants in London* (London: Clarendon Press, 1977), pp. 171–172.

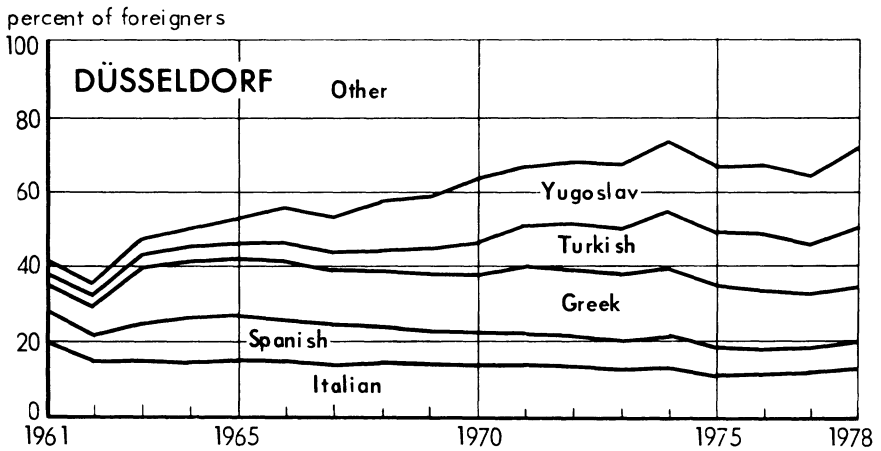
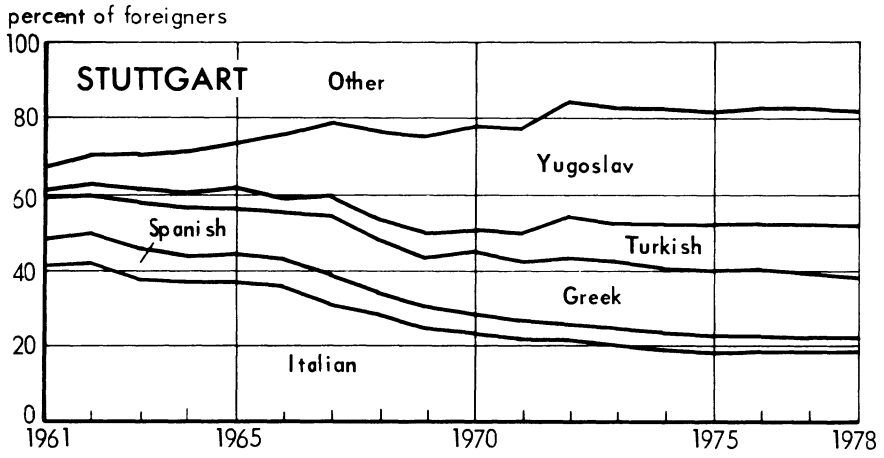
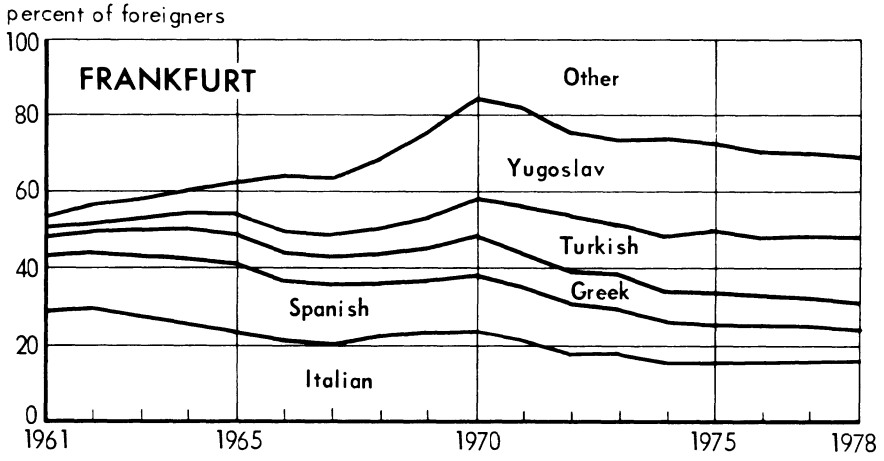


FIG. 2—Foreigners by nationality in Frankfurt, Stuttgart, and Düsseldorf 1961–1978.

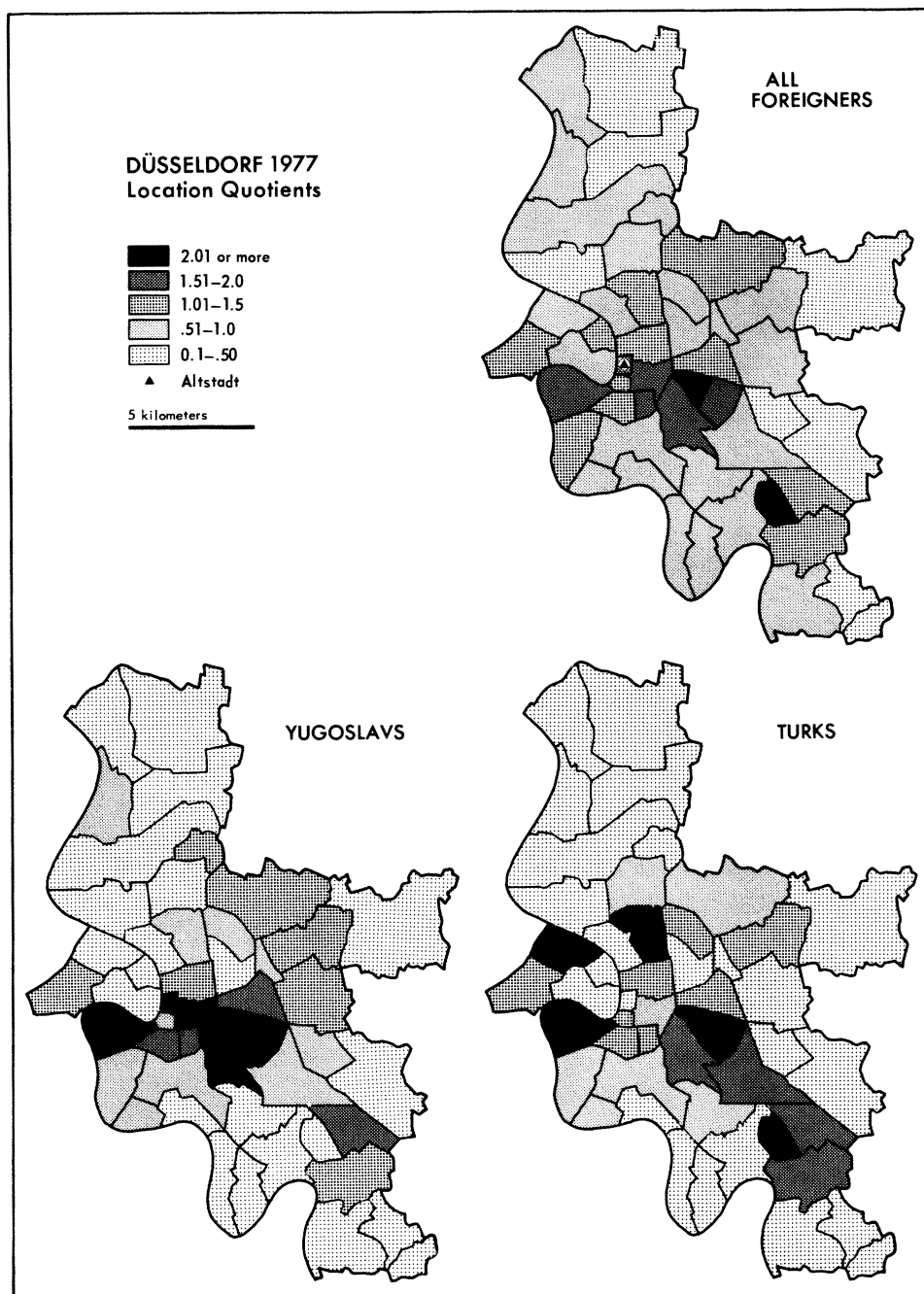


FIG. 3—Location of foreign groups in Düsseldorf.

of concentration—along the Neckar River in Stuttgart, along the Weser River in Bremen, along the Main River in Frankfurt, and along the southbound railroad lines in Düsseldorf.

Because the various nationalities may display differential patterns of con-

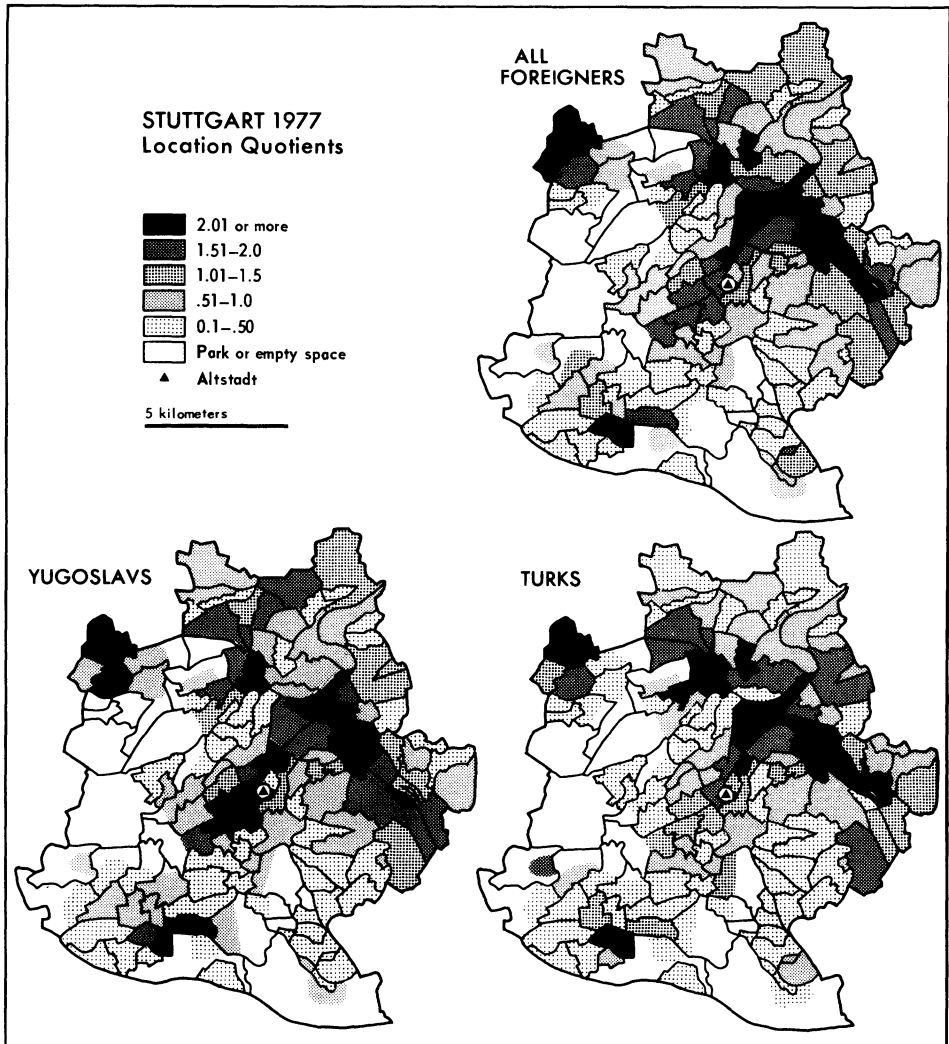


FIG. 4—Location of foreign groups in Stuttgart.

centration and location, the 1977 location quotients of each of the six major guest-worker countries, as well as the nonguest-worker population, were mapped. Because of the similarity of patterns, only the maps of Yugoslavs and Turks are shown for Düsseldorf and Stuttgart (Figs. 3 and 4).

In general, the spatial distribution of individual national groups closely matches the configuration of the total foreign population. Although Yugoslavs show a tendency to congregate in the city center and Turks in the outlying industrial wards, these differences are not of major significance. Inner-city and industrial neighborhoods tend to attract all nationalities, although the strength of concentration may vary slightly.

When foreigners in German cities are considered, not only a social but also a spatial distinction must be made between guest workers and other foreigners.

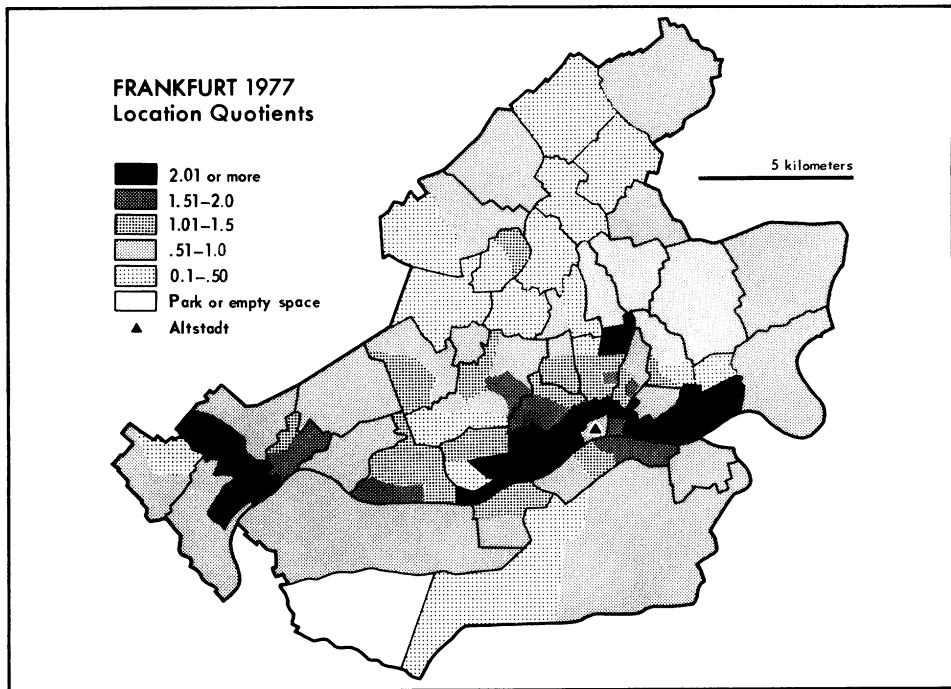


FIG. 5—Location of foreigners in Frankfurt.

The difference in spatial pattern between guest workers and other foreigners is related to different social roles—between high-income white collar and skilled workers from northern Europe and low-income unskilled workers from southern Europe and Turkey. It is undoubtedly easier for the former to obtain good quality housing in wealthy neighborhoods because the nonguest workers can afford it and are not subject to discrimination. The guest workers have less money for accommodations because of their lower pay scales, and more significantly, because of their need to save money for families at home, their desire to accumulate savings for future entrepreneurial projects, and their unwillingness to spend more than a basic minimum for accommodation.²⁰

Mapping of the foreigner populations in the four cities at five-year intervals from 1962 to 1977 showed no significant change in the residential patterns. The location of foreigners in 1962 was basically the same as in 1977. During the intervening years, the immigrant-occupied area did not expand significantly; instead densities in areas occupied in 1962 increased until 1975, after which relative stagnation has occurred.

In one respect, patterns of foreign residential location in German cities fit the classic immigrant-ghetto pattern as described for Chicago. Spatial growth, however, has not been as dynamic as that model would suggest because outward spread from initial cores did not occur. Early immigrants to Germany moved into cheap housing, close to a city center and industry. Later immigra-

²⁰ Salt, footnote 3 above, p. 101.

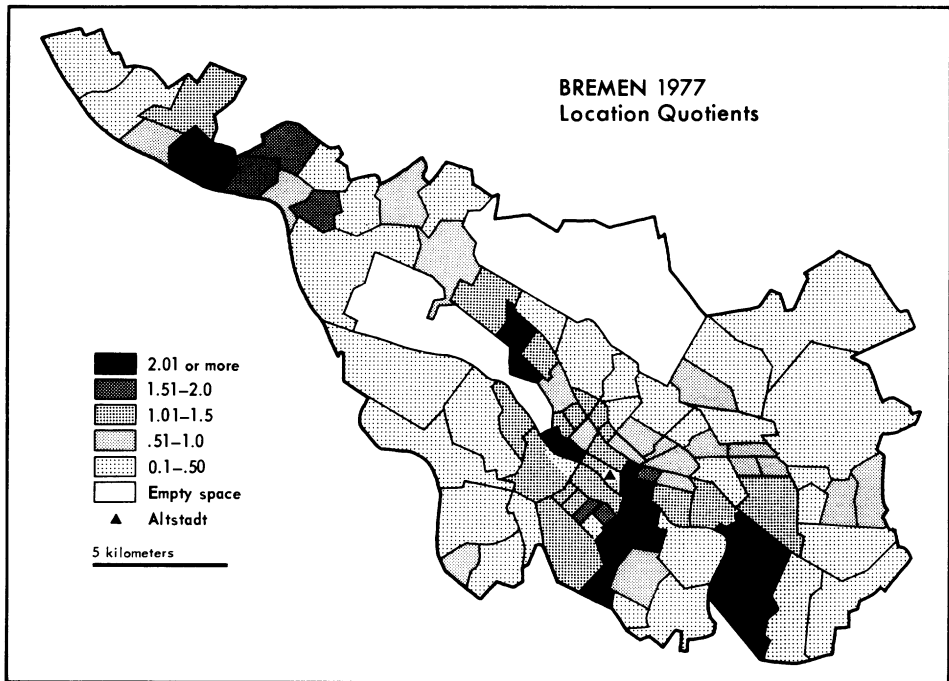


FIG. 6—Location of foreigners in Bremen.

tion reinforced this pattern but, unlike the American situation, foreigners constantly left the country and were replaced by others. Comparable to the American experience, late-arriving immigrant groups such as Turks and Yugoslavs moved to the neighborhoods occupied by earlier migrants like the Italians. Chain migration seems to be particularly strong in immigration to West Germany, particularly to small towns and cities. Thus extended families and friends from Mediterranean rural villages congregate in the same German town or neighborhood.²¹ This process was reinforced by the tendency of German employers to use the same sources in recruitment of employees; the foreign workers of many large German firms are predominantly of one national group.²² Proximity to employment in city-center services and in heavy industry, often in isolated nuclei, is illustrated on the maps of foreigner distribution (Figs. 3, 4, 5, and 6).

Immigrant areas in German cities differ dramatically from the American ethnic ghettos of the early twentieth century in another respect. The German areas are not "zones of transition," characterized by high pathology rates, extremely high densities, dilapidated and deteriorated housing, and low occupational status. In these characteristics foreigner neighborhoods do not diverge far from the norm. Although some individual immigrant concentrations

²¹ Dietrich Bartels, *Türkische Gastarbeiter aus der Region Izmir*, *Erdkunde*, Vol. 22, 1968, pp. 313-324; and Helmut Schrettenbrunner, *Die Wanderbewegungen von Fremdarbeitern am Beispiel einer Gemeinde Kalabriens*, *Geographische Rundschau*, Vol. 21, 1969, pp. 380-388.

²² Salt, footnote 3 above, pp. 106-107.

coincide with redevelopment areas and are characterized by a poor quality of life, most are not. Housing redevelopment and improvement of public facilities occur on a scale unlike any attempted in early American ethnic areas. Both foreigners and the German majority are affected by these changes.

Despite numerous comparisons by German authors, black ghettos in American cities are not comparable to German foreign neighborhoods; they are not characterized by homogeneity of population, by passive governmental authority, by emigration of the indigenous population, or by spatial and social isolation from the rest of the city. Instead the spatial distribution is more similar to that of immigrants to Australian cities after World War II. Similar distributions are present in Dutch, Belgian, and British cities.²³ Isolation and segregation may be present but not at the neighborhood scale; intraneighborhood data (block data, for instance, and even house data) are necessary for examination of this issue.

SEGREGATION OF FOREIGNERS AT DIFFERENT SCALES

A segregation index, developed by Otis D. Duncan and Beverly Duncan for the analysis of the segregation levels of American social groups, has been widely used in the measurement of spatial separation.²⁴ The index is based on the assumption that two groups live in spatial subunits in the same proportions as their citywide total. The minority population of each subunit is divided by the total number of that group in the city, and from this ratio, the ratio of the majority population of the ward divided by the total majority population in the city is subtracted. Half the total of the absolute value of the difference gives the index, which varies from 0 (total integration) to 100 (total segregation). An index of 50 can be given the interpretation that 50 percent of the minority population would have to be reallocated among the wards to achieve a distribution similar to the majority population. Similarly computed, indexes of dissimilarity measure segregation between two subpopulations.

Indexes of segregation and dissimilarity were calculated for Bremen, Stuttgart, and Düsseldorf. The indexes were calculated to document any changes that occurred in the period of immigrant population increase from 1968 to 1974 and the period of stagnation or decline from 1974 to 1977.

Both segregation and dissimilarity indexes are subject to scale limitations. As the unit becomes smaller, for example, from ward to block, the indexes increase in size, an indication of greater segregation.²⁵ In this study, the indexes were calculated at the ward scale for the three cities and then recalculated by block and by apartment building for Düsseldorf. By this approach,

²³ Urban Social Segregation, footnote 2 above; P. Drewe and others, Segregation in Rotterdam: An Explorative Study on Theory, Data and Policy, *Tijdschrift voor Economische en Sociale Geografie*, Vol. 66, 1975, pp. 204–216; W. DeLannoy, Residential Segregation of Foreigners in Brussels, *Bulletin, Société Belge d'Études Géographiques*, Vol. 44, 1975, pp. 215–238; and Lee, footnote 19 above.

²⁴ Otis D. Duncan and Beverly Duncan, A Methodological Analysis of Segregation Indices, *American Sociological Review*, Vol. 20, 1955, pp. 210–217; and Robert I. Woods, Aspects of the Scale Problem in the Calculation of Segregation Indices: London and Birmingham, 1961 and 1971, *Tijdschrift voor Economische en Sociale Geografie*, Vol. 67, 1976, pp. 169–174.

²⁵ F. W. Boal, Urban Residential Segregation, in *Social Areas in Cities*, (edited by David T. Herbert and R. J. Johnston; London: John Wiley & Sons, 1976), Vol. 1, pp. 41–79; and T. P. Jones and D. McEvoy, Race and Space in Cloud-Cuckoo Land, *Area*, Vol. 10, 1978, pp. 162–166.

segregation levels can be identified at various scales, and the utility of each scale evaluated. With respect to city comparison, the indexes cannot be compared directly because the number of wards in each city varies from 49 to 142.

At the ward scale, all indexes of dissimilarity fell in the 20 to 43 range in 1977, low values in comparison with other Western multicultural societies (Table I). Calculations for earlier years indicated similar values for each group. I

TABLE I—SEGREGATION INDEXES 1977

NATIONAL GROUP	BREMEN (N = 89)	DÜSSELDORF (N = 48)	STUTT GART (N = 142)
Turkish	40.0	27.4	35.5
Greek	44.5	28.8	36.7
Yugoslav	40.1	26.4	28.4
Italian	31.2	23.9	26.8
Other foreigners	13.3	12.0	14.2
All foreigners	26.7	16.8	28.4

conclude that certain German population trends—an increasing foreign population to 1974 and continuous immigration and emigration—have not appreciably affected the level of spatial segregation at the ward level. Departing foreigners were replaced in the same wards by newcomers, and German population declines in the inner-city were not sufficient to influence the dissimilarity indexes.

An expected difference between the indexes of the “new” guest-worker groups (Greeks, Turks and Yugoslavs) and the “old” group (Italians) materialized. In all three cities, the segregation indexes for Italian households indicate more even distribution. The indexes for Yugoslavs and Greeks, however, were not consistently lower than those for Turks (Table II). This result appears to contradict surveys of German attitudes toward immigrants which reported that Turks were considered the most “foreign” group and were frequently the victims of ethnic stereotyping and of prejudicial attitudes.²⁶ In these cities, the spatial segregation of Greeks is higher than that of Turks.

The indexes of dissimilarity among guest-worker groups do not vary significantly. In general, the segregation of foreign nationalities from each other is lower than their segregation from the German population (Table I). The same type of housing in the same neighborhoods is attractive to all foreign workers. Increased numbers of family members, more money allocated to housing by the immigrants, and diminished feelings of temporary residence led to a similar search for housing by all guest-worker groups.

Of particular interest is the spatial segregation of foreigners who are not from the guest-worker countries, classified as “other foreigners” (Table II). As expected, because of higher social status and greater cultural similarity to Germans, their distribution matches the German population, and their segregation is lowest of all foreign groups (Table I). This trend is not confined to Germany but also occurs in Rotterdam and Brussels.²⁷ The overall distribution of non-

²⁶ Edeltrud Meistermann-Seeger, *Kölner und Deutsche, in Leben als Gastarbeiter* (edited by Karl Bingemeyer, Edeltrud Meistermann-Seeger, and Edgar Neubert; Opladen: Westdeutscher Verlag, 2nd ed., 1972), pp. 35–40.

²⁷ Drewe, footnote 23 above; and DeLannoy, footnote 23 above.

TABLE II—DISSIMILARITY INDEXES FOR STUTTART AND DÜSSELDORF 1977^a

DÜSSELDORF \ STUTTART	STUTTART					
	German	Turkish	Greek	Yugoslav	Italian	Other foreigners
<i>German</i>	—	38.9	42.7	25.5	35.5	10.6
<i>Turkish</i>	32.0	—	27.7	24.1	20.6	32.7
<i>Greek</i>	29.1	23.9	—	26.9	27.0	38.8
<i>Yugoslav</i>	29.9	21.6	26.5	—	12.7	20.3
<i>Italian</i>	26.4	26.8	32.1	22.0	—	30.2
<i>Other foreigners</i>	11.9	33.7	29.0	22.5	26.1	—

^a Dissimilarity indexes for Stuttgart are in roman; indexes for Düsseldorf are in italic.

TABLE III—DISSIMILARITY INDEXES DÜSSELDORF BLOCKS AND OBERBILK APARTMENT BUILDINGS 1977^a

OBERBILK APARTMENT BUILDINGS \ BLOCKS	BLOCKS					
	Turkish	Greek	Yugoslav	Italian	Spanish	Other foreigners
<i>German</i>	68.6	64.5	61.9	64.9	70.4	47.8
<i>Turkish</i>	—	57.2	54.0	60.5	63.7	63.7
<i>Greek</i>	71.6	—	56.9	60.2	64.0	55.6
<i>Yugoslav</i>	100.0	82.2	—	56.5	58.4	51.6
<i>Italian</i>	80.9	88.9	73.5	—	66.3	59.8
<i>Spanish</i>	87.4	95.5	96.8	98.5	—	63.2
<i>Other foreigners</i>	80.1	88.2	74.5	87.2	99.2	—

^a Dissimilarity indexes for Düsseldorf blocks are in roman; indexes for Oberbilk apartment buildings are in italic.

guest-worker foreigners is characterized by dispersion and by segregation from the guest-worker groups equal to that of the indigenous German population.

It is possible that strong segregation may exist but is not reflected on a ward scale. Dissimilarity and segregation indexes were recomputed for the foreign groups in Düsseldorf at two additional scales. At the block scale, the levels of segregation and dissimilarity are double those for the Düsseldorf wards. The relative positions of the indexes for intergroup segregation match those for the larger units (Table III). What appeared as low levels of segregation at the ward scale shows significant segregation at the block scale. The block scale is important because it measures visual and personal contact between groups. For groups that are numerically small, a unit larger than a block is especially inappropriate.²⁸ The segregation levels give support to concern about the segregation of immigrants in German cities. Although there is no evidence of increasing segregation at the ward scale, lack of longitudinal data precluded testing of this proposition at the block scale.

Although block-segregation levels might be more meaningful in North American and British cities where single-family housing predominates, in German cities an additional level—apartment buildings—has even greater significance. Most foreigners live in apartment buildings, as does the majority of German urban residents. An examination of segregation at this scale provides

²⁸ J. Catex and T. P. Jones, *Ethnic Residential Space: The Case of Asians in Bradford*, *Tijdschrift voor Economische en Sociale Geografie*, Vol. 70, 1979, pp. 86–97.

a measure of spatial segregation at the smallest unit of measurement. The area chosen for analysis was Oberbilk, a representative immigrant area close to the railroad station in Düsseldorf. The segregation indexes for the Oberbilk blocks are similar to those for the whole city. Immigrants in this sample of blocks are no more or no less segregated than their fellow countrymen elsewhere in the city. The number of apartment buildings in an eight-block contiguous area totalled 149. Unfortunately the German population could not be obtained so that only dissimilarity indexes among the immigrant groups could be computed.

The range of the dissimilarity indexes, 71.6 to 100, indicates almost total segregation among the groups (Table III). Foreigners in each apartment building are predominantly or exclusively of one group. This pattern occurs because knowledge of vacant and available dwellings is passed from one immigrant to fellow countrymen, often friends or relatives. Computation of dissimilarity indexes for the data displayed in a study of Tamm, a small town near Stuttgart, revealed values from 65 to 100 for apartment buildings.²⁹ An increase in segregation of foreigners in German cities occurs with increasing scale. Comparison of segregation indexes for minorities in Germany and those in other Western countries indicates that immigrants in German cities are less segregated than blacks in American cities or Catholics in Belfast and show segregation levels similar to ones for French speakers in Montreal and Brussels, or "new" Commonwealth immigrants in British cities.³⁰

Spatial integration between the immigrants and the indigenous German population is a function of three factors: ethnic affiliation, discrimination on the basis of ethnicity, and socioeconomic status of the immigrant group.³¹ Ethnic affiliation refers to the level of segregation desired by the newcomers and helps them to cope with the trauma of a new environment. In general, ethnic identification decreases with increased socioeconomic status and generational change. Responses to surveys on the desire of immigrants to live among Germans consistently show a large majority in favor of residential integration. The majority wanted to reside both with its own national group and among the Germans; 21 percent wished to live exclusively among the Germans. Only 5 percent wanted to live exclusively with their fellow immigrants.³² At least for the first generation of foreign workers, feelings of exclusion toward Germans can be discounted as a major cause of the differences in residential location that exist between the two groups.

Evidence exists to support the two other possible causes of foreigner segregation. Although foreigners receive the same income as Germans for equal work, foreigners have lower earnings because of their employment in unskilled jobs near the bottom of the occupational structure. This circumstance alone would probably produce some segregation based on income. If other factors were constant, a distribution of foreigners similar to that of low-income Ger-

²⁹ Geiger, footnote 13 above, p. 63.

³⁰ James B. Kenyon, Patterns of Residential Integration in the Bicultural Western City, *Professional Geographer*, Vol. 28, 1976, pp. 40-44; and Woods, footnote 24 above.

³¹ Karl E. Taeuber and A. F. Taeuber, *Negroes in Cities: Residential Segregation and Neighborhood Change* (Chicago: Aldine Publishing Co., 1965).

³² Borris, footnote 10 above, p. 159.

mans would be expected. However, the zero-order correlation coefficient between the foreign percentage and the percentage of the work force engaged in blue-collar occupations in Düsseldorf was +0.246 in 1970. Obviously factors other than occupational status explain the distribution of foreigners.

The average income of foreigners is lower than the German average, and the disposable income of foreigners for housing is significantly lower because of deduction of savings for the return home and for money sent home to the family. Since 1974 this deduction has undoubtedly declined as immigrants remain longer in Germany and are often joined by their families. Consequently a wider spatial search for housing and a movement away from rooming houses to apartments might be expected.

A third possible cause of segregation is discrimination against foreigners by Germans, especially landlords. The problem is difficult to assess because the practice is often covert. Surveys of foreigners have consistently revealed their feelings of discrimination.³³ Discrimination will only be reflected in spatial segregation if the willingness of landlords to rent to foreigners varies between wards. There is a little evidence for this proposition. Instead the process of the search for housing is strongly related to the interaction of new foreigners with their fellow countrymen. A study of Frankfurt showed that the second move of guest workers from their initial location in their city is to a more segregated neighborhood. On the basis of German attitudes to foreigners, it is evident that the Turks are viewed most negatively and Italians and Yugoslavs most positively. How these attitudes are reflected in landlord action is difficult to assess, but evidence indicated the existence of a dual housing market in Frankfurt, at least.³⁴

HOUSEHOLD LOCATION AND INTRAURBAN MOVEMENT

The level of spatial separation between Germans and foreigners is dynamic. If both groups have different directions of movement, segregation will increase. An examination of movement within the city by each group is necessary for the determination of future segregation and for the possible development of ethnic enclaves.

Five components of movement determine the spatial pattern of population change through migration: intraward migration, out-migration to other wards, migration to destinations outside the city, in-migration from other wards, and in-migration from outside the city. For relative population changes of Germans and foreigners, I examined the patterns of intraurban flows and of initial location of persons who migrate to the city. Complete matrices of interward flows for Germans and foreigners were provided for Stuttgart, and the analysis was repeated for three years—1975, 1976, and 1977. Because the year-to-year pattern is similar, an important consideration indicating that short-term movement of the populations is invariant, only the 1977 analysis is reported here. General trends in Stuttgart were compared with those of Düsseldorf in an attempt to present a general picture for large German cities.

³³ Ursula Mehrländer, *Soziale Aspekte der Ausländerbeschäftigung* (Bonn-Bad Godesberg: Verlag Neue Gesellschaft, 1974), pp. 194–199.

³⁴ Rist, footnote 16 above, p. 163.

For Düsseldorf and Stuttgart the migration rate for foreign workers was approximately three times higher than for Germans. In 1977 the German migration rates were 11.8 percent in Düsseldorf and 9.5 percent in Stuttgart, and the migration rates of foreigners were 36.2 percent and 28.7 percent respectively. The higher rate for foreigners is not surprising; such high mobility is characteristic of immigrant groups, especially ones that are mainly low-income families. In the German context, the rate is exaggerated by the temporary nature of a foreigner's stay, frequent job changes, and housing choice based on conditions of employment. It is noteworthy that the 1977 rate was lower than the annual rates immediately after the halt of recruitment in 1973 when many guest workers were repatriated.

TABLE IV—COMPONENTS OF POPULATION CHANGE BY MIGRATION IN STUTTGART 1975 AND 1977

GROUP	TOTAL POPULATION	PERCENTAGE	MIGRATION INTO CITY	MIGRATION FROM CITY	RATIO OF IN TO OUT MIGRATION	MIGRATION WITHIN CITY	TOTAL MIGRATION (%)	MIGRATION IN SAME WARD	INTRA-URBAN MIGRATION (%)
1975									
German	514,454	84.1	24,716	31,846	.776	21,343	40.1	11,343	53.2
Foreign	97,842	15.9	15,018	21,903	.685	11,515	34.4	7,151	62.1
1977									
German	495,850	84.8	25,574	28,833	.886	18,535	39.1	9,882	53.3
Foreign	88,827	15.2	16,914	17,049	.992	8,505	33.2	5,612	65.9

Detailed migration data for Stuttgart allow further examination of aggregate migration statistics for 1975 and 1977 (Table IV). For both German and foreign groups the number leaving the city exceeded newcomers in both years, although the ratio is close for foreigners in 1977 when their movement readjusted to pre-1973 trends. Intraurban movement as a proportion of total migration is consistently lower for Germans. Significantly for spatial clustering, the rate of relocation in the same ward is higher for foreigners: their movements have disproportionately shorter distances, a function of social status and knowledge space. Lack of disposable income limits the choice of accommodations. Low-income housing tends to be confined to a relatively few wards; consequently a migrant resident in these wards will look for alternative housing in this zone. The search space for new housing is mainly confined to the wards where the migrant is familiar, where he has traveled, and where friends and relatives live.³⁵

The citywide aggregate trends must be disaggregated by spatial units to discern intraurban flows. The basic question was: do foreigners and Germans leave and enter the same neighborhoods, both in geographical and social space?³⁶ In the case of Stuttgart, by the examination of moves by Germans and foreigners in community and geographical space inferences can be made about

³⁵ John R. Clark, *Turkish Cologne: The Mental Maps of Migrant Workers in a German City*, *Michigan Geographical Publications No. 19*, Ann Arbor, 1977.

³⁶ John S. Adams and Kathleen A. Gilder, *Household Characteristics and Intra-Urban Migration, in Social Areas in Cities*, footnote 25 above, pp. 159–192.

future trends, implications for concentration or dispersal of the immigrants, and reasons behind these trends.

Zero-order correlations of the in-migration and out-migration rates for foreigners and Germans in 1977 showed moderately positive values in all instances. Both groups were leaving and entering the same wards in Düsseldorf ($r = .48$ for in-migration, $.48$ for out-migration) and Stuttgart ($r = .24$ for in-migration and $.42$ for out-migration). Of more interest is the geographical distribution of each of the flows. Mapping the first locations of foreign and German newcomers revealed that foreigners in Stuttgart showed a slightly greater tendency to locate in outer industrial wards, while their first residences in Düsseldorf were more concentrated near the city center. For in-migration to the cities, the choice of neighborhoods of both groups is not significantly different.

Transaction-flow analysis was used to identify salient flows in Stuttgart, those channels of movement that are significantly greater than would be expected based on total interward movement. Plotting every interward and intraward flow would result in a map that included numerous insignificant movements. A salient flow had to include at least eighty people for the German population and thirty for the foreign population and could be intraward or interward. The resulting maps revealed relatively few strong channels of movement; most moves were short and not strongly oriented in any direction (Fig. 7). Each group displayed a 2:1 ratio of flows in the same ward to those between wards, a situation that indicates the dominance of short distance moves in German cities. Similar findings have been reported for Freiburg/Breisgau and Ludwigshafen, but unlike these cities, Stuttgart does not display clear grouping of interward links or directional bias.³⁷ A clear reciprocity of flows for Germans among five wards in the center of Stuttgart is only partly reflected on the foreigner map. The most important conclusion of this analysis, confirmed by a repeated study of the 1975 moves, is that Germans and foreigners are not limited in their choice of destinations in Stuttgart and that no significant difference in their flows is apparent. The majority of moves for both groups is in the pre-1945 city because the bulk of the population still lives there; suburban developments, although they attract increasing numbers of people, are not yet as important in German intraurban migration as in North American and British cities. There is no evidence of a movement of foreigners to specific wards and of Germans from those wards, a succession process that was identified on a small scale in Kreuzberg in Berlin and Westliche Unterstadt in Mannheim.³⁸ As long as the movement is not to destinations different from those of Germans, dominance of certain enclaves by foreigners cannot occur.

Although movements in physical space do not differ, the possibility exists that Germans and foreigners may exhibit different migration patterns in community space. For Stuttgart, the fifty wards were grouped into quartiles of social status and family status. These measures are the first two dimensions of

³⁷ Wolf-Dieter Sick, Die innerstädtische Mobilität in Freiburg/Breisgau, in *Festschrift für Wolfgang Meckelein* (edited by Christoph Borcherdt and Reinhold Grotz; Stuttgart: Geographisches Institut der Universität Stuttgart, 1979), Band 93, pp. 257–266; and Paul Gans, Das Entropiekonzept zur Ermittlung räumlicher Eigenschaften von innerstädtischen Wanderungsflechtungen am Beispiel Ludwigshafen/Rhein, *Erdkunde*, Vol. 33, 1979, pp. 103–113.

³⁸ Hoffmeyer-Zlotnick, footnote 17 above; and Gans, footnote 11 above.

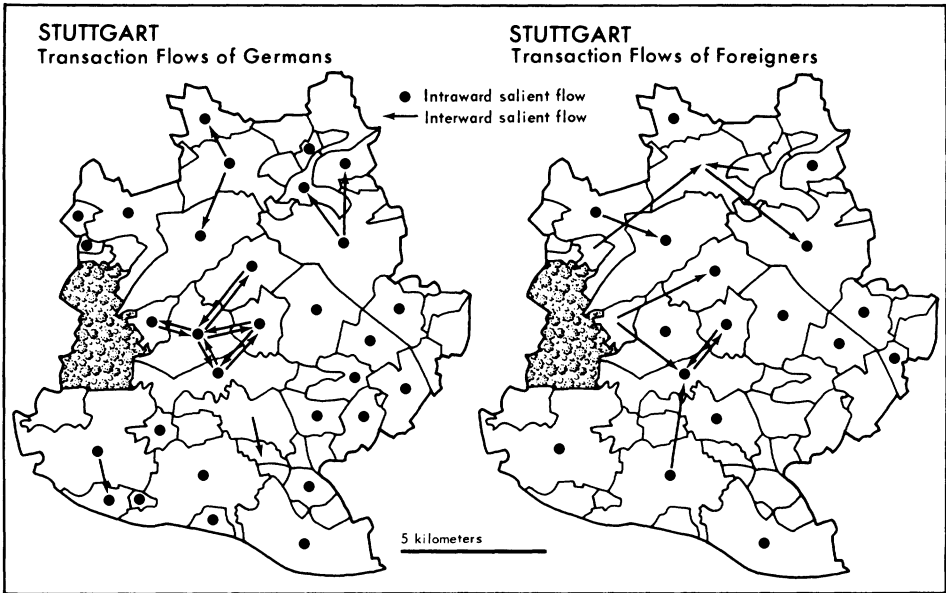


FIG. 7—Intraurban migration flows of Germans and foreigners in Stuttgart.

a principal components analysis of thirty-two socioeconomic and housing variables from the 1970 census. Social status is a composite measure of educational level, occupational status, and housing size and quality; status from highest to lowest is arrayed by ward. Highest family-status wards have large proportions of nuclear families, children, high birth rates, and high proportion of owner-occupied units, while low family-status wards show concentrations of single individuals, renters, and low-rent dwellings. Flows to and from each quartile of wards to the other three quartiles were calculated for both matrices, and the proportions were entered for each cell (Tables V and VI). Comparisons of the cell values for Germans and foreigners reveal the extent to which both groups move from and to the same type of community.

Analysis of the flow proportions among groups of wards based on social status revealed that approximately half of all movement was in the same group. Analysis of the Stuttgart data concurs with a conclusion for North American cities—almost 80 percent of intraurban moves are in tracts of the same or adjacent social classes.³⁹ With one exception, the proportions of Germans and foreigners leaving and entering each group of tracts are very similar. The exception (from social status group 4) shows that approximately one-third of foreigners leaving residences in tracts of this group went to other residences in the same or similar tracts, while four of five Germans did so. Because these tracts are the poorest in the city and are characterized by low quality but high-density housing, this comparison suggests that the movement space of German residents of these neighborhoods is largely limited to other poor quality hous-

³⁹ James W. Simmons, *Changing Residence in the City: A Review of Intra-Urban Mobility*, *Geographical Review*, Vol. 58, 1968, pp. 621–651.

TABLE V—MOVEMENTS OF GERMANS AND FOREIGNERS BETWEEN WARDS OF DIFFERENT SOCIAL STATUS, STUTTGART 1977^a

FROM	TO	Social Status 1	Social Status 2	Social Status 3	Social Status 4	Total From
Social Status 1 (high)		.445	.279	.215	.061	5,180
Social Status 2		.437	.230	.268	.064	1,927
Social Status 3		.156	.600	.154	.090	7,513
Social Status 4 (low)		.109	.523	.280	.088	3,393
Total To		.153	.338	.376	.131	8,392
		.066	.364	.463	.107	6,082
		.025	.076	.094	.803	7,332
		.071	.171	.439	.318	2,715
		3,885	11,902	8,707	3,923	28,417
		2,056	5,388	4,241	2,432	14,117

^a Flows of Germans are above the lines; foreigners below the lines.

TABLE VI—MOVEMENTS OF GERMANS AND FOREIGNERS BETWEEN WARDS OF DIFFERENT FAMILY STATUS, STUTTGART 1977^a

FROM	TO	Family Status 1	Family Status 2	Family Status 3	Family Status 4	Total From
Family Status 1 (high)		.390	.128	.328	.155	2,746
Family Status 2		.219	.061	.502	.218	680
Family Status 3		.088	.413	.316	.183	2,679
Family Status 4 (low)		.042	.386	.319	.251	835
Total To		.114	.097	.443	.345	14,098
		.038	.037	.636	.287	7,738
		.069	.068	.217	.646	8,894
		.038	.050	.347	.565	4,864
		2,963	2,784	13,597	9,073	28,417
		473	960	7,037	5,647	14,117

^a Flows of Germans are above the lines; foreigners below the lines.

ing areas; foreigners show disproportionate movement to other neighborhoods. With few exceptions, most intraurban migrations by Germans are determined by the physical unit itself: the nature, the size, the quality, the price, and the situation of the apartment are related to choice.⁴⁰ In the same ward, better dwellings affordable by a low-income family will become available; consequently it is not surprising that a large majority does not leave low social

⁴⁰ V. Baehr and others, *Bevölkerungsmobilität und kommunale Planung* (Stuttgart: Karl Krämer Verlag, 1977).

status neighborhoods. For foreigners the housing market operates in a different fashion. Often they search for a room rather than an apartment, and their subtenancy rate is much higher than the German average. Rooms for rent are scattered in all but the most expensive neighborhoods. Thus flows of foreigners would not be expected to duplicate German flows because both groups often are looking for different types of housing.

The fifty wards of Stuttgart were also classified in quartiles on the basis of family status. Analysis of the two flows showed no major discrepancy between them, and those differences that were present, such as those from group 1, are easily explained by the higher proportion of single individuals and men without their families in the immigrant population (Table V). For these individuals, location in buildings and neighborhoods with the amenities needed by children is superseded by location decisions based on distance to work and on availability of desired housing. Because the wards placed in groups 3 and 4 are much larger (predominantly inner-city) than those in groups 1 and 2, the majority of moves occurs within them. New wards on the fringes of the city are small and incorporate recent housing developments. In this instance, a detailed subdivision of the six large pre-1900 wards is needed for a more comprehensive analysis of flows in family-status space. The heterogeneity of large wards means that they could contain simultaneously blocks of high-status and low-status families.

This analysis of Stuttgart intraurban movement shows that there is no basis for claims of invasion and succession—foreigners enter the neighborhoods from which Germans depart. Although this process leads to the development of immigrant ghettos and may be present at the apartment house or street scale, evidence is not yet present at a ward scale. Future trends in Stuttgart depend not only on total in-migration of foreigners to the city, a pattern now increasing again after declines from 1974 to 1976, but also on attitudes of foreigners and German landlords toward integration.

CONCLUSION

Twenty-five years of immigration have produced critical economic and social questions in West Germany. Cost-benefit analyses of the migration are constrained by the difficulty of measuring social costs of adaptation in West Germany. Even though only 9 percent of unemployed workers in Germany are of foreign origin and there is little correlation between location of foreigners and high unemployment, fears of a pool of chronically unemployed foreigners persist. Individual foreign workers prosper in Germany, and on their return to their native country many of these workers invest their savings in small businesses; however, obstacles to further migration may lead to increased resentment and social unrest in the poor countries of southern Europe.

Measures are being implemented to prevent concentration of foreign workers. Beginning in 1975, a halt on immigration of foreigners to the cities and counties of Bavaria and Baden-Württemberg with foreign populations of more than 12 percent was implemented. By 1977, forty-five cities, including West Berlin, Hanover, Cologne, Munich, and Frankfurt, had exercised the prerogative of preventing further immigration.

The consequences of rigorous enforcement of an exclusion policy for individual German cities and individual foreign communities are obvious; immigration and interurban and intraurban migration, relatively free to the present, will be drastically curtailed and directed. More evidence of local settlement and of household movement in a longitudinal study and for a sample of German cities is necessary before definitive statements can be made on ghettoization trends, invasion/succession processes, and spatial integration. The guest-worker problem remains one of the major social issues in German society and is made even more significant by German population decline and by high birthrates among immigrants. Segregation increases dramatically as the unit of measurement decreases so that almost total segregation is present between apartment buildings. German efforts toward resolution of the guest-worker problem are not only instructive for other European governments faced with similar dilemmas but also for any society with cultural and social minorities.