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Pioneers and gentrifiers in the process of gentrification

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In the gentrification literature, a common distinction refers to the supply and the demand side. Studies of the supply side focus on theories such as rent gap and value gap or describe actions of urban and national policy-makers, real estate agents and investors. On the demand side authors analyse the actors involved in the process: gentrifiers. This group, however, as our review of the literature reveals, is neither clearly defined nor sufficiently differentiated to adequately investigate the process of gentrification. In order to investigate the process of gentrification, we propose a differentiated classification of demand groups of pioneers, gentrifiers and others, and suggest operationalisations which are compatible both with typologies in the literature and stage models of gentrification. We apply this classification of social groups and test hypotheses derived from stage models. The data base is a large panel study ($N = 1009$) in two residential areas of Cologne, Germany, that are in different stages of gentrification. The results support our hypotheses and demonstrate the usefulness of the classification.

Keywords: gentrification; pioneers; gentrifier; dwelling panel; Cologne

Introduction

In studies of gentrification, authors distinguish between different actors: some of them driving the process, for example, 'pioneers' and gentrifiers, and others described as victims, such as displaced households (Atkinson, 2000, 2001). As case studies indicate (cf. the contributions in Atkinson & Bridge, 2005), different social groups and corporate actors such as real estate agents (e.g., Bridge, 2001), investors, banks, public utility suppliers, local organisations of residents, urban planners, urban and national policy-makers, are also involved in the gentrification process. On the demand side, the initial phase of the process is driven by pioneers, described as young and well-educated persons with low incomes. Typical pioneers are students and not yet established artists searching for cheap accommodation close to the city centre. Pioneers live in various types of households, but have no children. Gentrifiers are somewhat older than pioneers, they have a better income, and they

are more risk-averse than pioneers. Gentrifiers might live alone or in dual-earner households and enter the area after the pioneers have discovered the neighbourhood (Ley, 1981, 1996). Super-gentrifiers, on the other hand, are the last ones to enter the neighbourhood and belong to the group of top earners.

Our analysis in this paper is concerned with these specific groups as well as the changes in the social composition of a gentrifying neighbourhood. We focus on the demand side and use micro-level data. This lies in contrast to the majority of studies conducted, which are done at the macro-level. The advantage of using micro-level data is that each respondent in the study area can be assigned to pre-defined groups, such as a gentrifier, pioneer, long-term resident or any other category. If, for example, gentrifiers are described as young, medium-income and childless individuals, we can define threshold values for these (and other) variables and calculate if she/he falls into this category or into another one. In contrast, when using macro-level data one only knows the share of young, for example, 18−35 years old or medium-income persons, if these data are available from the census.

Although there are many descriptions of these groups, there are no operational classifications. We will close this gap in the literature and pre-define the social groups by socio-demographic characteristics based on prior research experiences (see below). We first review the literature for descriptions of the demand groups and of their shares in different stages of gentrification. In the following section we suggest a typology. The results of an empirical application, a study with 1000 face-to-face interviews in two residential areas of Cologne, Germany, are then presented. We conclude with suggestions for more cumulative empirical research on the micro-level.

Gentrification theory and social groups

Theories of gentrification distinguish between supply and demand sides (Berry, 1985; Hamnett, 1991; Hamnett & Randolph, 1986; Lees, Slater, & Wyly, 2008; Smith, 1986). Whereas actors on the supply side, such as landowners, owners of residential buildings, investors, real estate agents (e.g., Logan & Vachon, 2008), national and local governments (Hackworth & Smith, 2001; Lees, 2003; Wyly & Hammel, 1999) etc., are quite well described, the demand side is not so well explored. The demand side is identified either by (1) the profession or social group, or (2) their attitudes, or (3) their socio-demographic characteristics.

Among the groups defined by their *occupation* or *profession* are persons in creative jobs, such as artists (Butler, 1997; Douglas, 2012; Jager, 1986; Ley, 1996, p. 194 ff.; Lloyd, 2005; Zukin, 1982, 1987, 2010) or students (Smith, 2005). Other groups mentioned in the literature are professionals and managers, all having a high level of education and high incomes (Butler, Hamnett, & Ramsden, 2008).

With respect to the labour and housing market, 'studentifiers are similar to artists and other creative workers, and may be viewed as the ground-breakers for

gentrification activity' (Smith, 2005, p. 76). 'Marginal gentrifiers' can also be included in this group (Rose, 1984, 1989), such as professional women and single-parent households enjoying the service amenities lacking in the suburbs (Ley, 1996, p. 34). As Butler (1997, p. 15) states: 'The biggest change was the growth of the "credential based" occupations and the number of women participating in this group.' More generally, due to 'educational expansion', more women now work in better positions, often resulting in more double-earner households depending upon the central city social infrastructure.

There are several ways to classify the social groups involved in the process of gentrification. First, when operationalising demand groups only by *occupation*, some of them, e.g., top managers and students, are easy to describe by indicators such as income and education; these indicators being highly correlated. For example, all students have finished school with a university entrance degree, a large majority of students have a low income and almost all of them are young and childless. However, for the majority of occupations we can infer neither income nor age group. For example, most artists have low, but some very high incomes. Even if census data would provide us with the average income of this group, it would not be possible to judge how many of the respective artists belong to the (childless) pioneers, to the gentrifiers, or to the group of others.

Second, if groups are defined by their *attitudes*, risk is the most often mentioned characteristic: pioneers or early gentrifiers are supposed to be more 'risk-oblivious' (Clay, 1979, p. 57; Lees et al., 2008, p. 34; Ley, 1996, p. 58), whereas later gentrifiers and especially super-gentrifiers are risk-averse (Berry, 1985, p. 78; Clay, 1979, pp. 31−33; Ehrenhalt, 2012, p. 50; Lees et al., 2008, p. 31).

Pioneers moving into a working class neighbourhood are facing the risk it may still go down, because owners will disinvest. Gentrifiers move into the area when pioneers and changes in the infrastructural facilities have turned the area into an attractive neighbourhood; hence, investment in a house or condominium now bears only a small risk. Under this premise, some authors have designated pioneers as 'early gentrifiers' accepting relatively high risks (Berry, 1985, p. 78; Gale, 1980, pp. 105−109). At a very late phase, super-gentrifiers (cf. Butler & Lees, 2006; Ley, 1996), sometimes also named 'ultra-gentrifiers' (Alisch & Dangschat, 1996), move into the neighbourhood. Finally, we may add one group which is often listed among the early gentrifiers: homosexuals. They are assumed to move into the neighbourhood mainly because of the plurality of norms and the tolerance prevailing in the area (Brown-Saracino, 2009, pp. 118−119; Lees et al., 2008, p. 24; McDonald, 1983; Rose, 1984).

The classification of Brown-Saracino (2009, p. 13), for instance, is based on attitudes. She distinguishes three types of gentrifiers: (1) pioneers, seeking economic gain, but feeling threated by old-timers, (2) social homesteaders, who put less value on preservation and have good contacts with old-timers, and (3) social preservationists, who are highly interested in preserving authentic conditions and are very favourable towards old-timers. Classifications based on attitudes or risks

require survey data, and the operationalisation of the variables varies by study. Further, to know whether households are risk-averse will not allow us to allocate them to social groups. Another drawback is that data of this kind are not collected in census studies. Thus, if we are interested in a classification of groups by statistical data we have to renounce attitudinal data.

The third approach to distinguishing social groups is based on *socio-demographic* characteristics. The advantage of indicators such as age, income, number of children and educational level is that they are reliable measures for the entire population and that they are relatively easy to evaluate. These indicators are also used in stage models of gentrification (see below).

Aside from such examples, the most often mentioned socio-demographic concept is the 'new middle class' (Bridge, 1995, 2001; Butler, 1997; Logan & Vachon, 2008; Renner, 1978; Smith & Williams, 1986). Although many scholars refer to this group, there are no precise definitions. To provide a better definition of this group, Butler (1997) in his extensive discussion of the middle class concept refers to Renner's (1978) term 'service class.' Butler (1997, p. 19) shows how the debate over the middle class has moved away from the service class concept to the concept of middle class − without arriving at a consensus over a definition. He concludes: 'What is certain though is that new divisions are emerging in social structures; it is not clear whether we can still relate these and their potentialities for action to the actor's position in the occupational structure nor is it clear whether nationally-based class structures themselves remain analytically and empirically useful in the context of the renewed globalization of capital' (Butler, 1997, p. 32).

Ley (1996, p. 35), one of the major proponents of gentrification by the middle class, describes gentrifiers as 'well educated, upwardly mobile in a public- or, perhaps less commonly, a private-sector occupation in a professional or managerial capacity, single or living with a working partner, and with adequate discretionary income to engage in the rituals of the culture consumption, expressing the canons of good taste in a designer market-place.' In Ley's analyses of gentrification in six Canadian cities, he operationalises this concept with two indicators: percentage in quaternary occupations and with university education (1996, pp. 83, 88).

Similarly, Bridge (2001) defines the new middle class by their capability as 'taste-makers.' Based on Bourdieu's distinction between cultural and economic capital, he argues that persons with high cultural capital move in first, followed by those with high economic capital. 'In this sense, "taste" has been converted into "price"', and 'low paid professionals (teachers, academics, nurses) are followed by higher paid professionals' (2001, p. 93). He further outlines: 'New middle-class gentrifiers recognise the need for a historical marker but also need to be at the edge of taste-making. This balance of the old and the new is at the heart of the socially differentiating nature of the gentrification aesthetic' (p. 94).

Although these examples demonstrate how Bourdieu's (1983, 1984) theory can be applied to the analyses of gentrification, it is difficult to classify neighbourhoods

by their (average) cultural and economic capital, or by using indicators such as life-style or interior house styles. This information is insufficient to decide on how many gentrifiers and how many pioneers live in the area. The opposite method seems more promising: to classify the residents of the neighbourhood into social groups, and then locate each respondent in the 'social space' by correspondence analysis (Blasius, 1993; Bourdieu, 1979/1984).

Aesthetics as a differentiating feature of the 'new' middle class has been mentioned by other authors (Butler, 1997; Ley, 1996, p. 18). Zukin (1982, 2010) posits that gentrification is driven by a search for authenticity, encapsulated and symbolised in the old, i.e., Edwardian and Victorian, buildings, be they residential or industrial, converted into lofts. Zukin (1987, p. 131) thus views gentrification as a movement 'toward the social diversity and aesthetic promiscuity of city life.' Jager (1986, p. 80) argued in a similar way: 'the middle classes have to defend themselves against pressures from the dominant classes and … must continue to demarcate themselves from the lower classes.' Distinction is gained by aesthetics: 'The ambiguity and compromise of the new middle classes is revealed in their aesthetic tastes. It is through facade restoration work that urban conservation expresses its approximation to a former bourgeois consumption model' (Jager, 1986, p. 80). Therefore, they have to reject mass culture (Douglas, 2012). The arguments of many authors converge in defining the gentrifying middle class(es) by their aesthetics and interest in authenticity as expressions of 'incorporated cultural capital' to use Bourdieu's term. But although they have different lifestyles, according to Bourdieu, the classification should include the economic capital.

Our review so far shows that there are many descriptions of gentrifiers and pioneers, but none of these satisfies methodological rules of classification: definition of the concept, variables and their operationalisation. Our aim is to contribute to a theory-based, quantitative stage model of the gentrification process. To describe the process we need reliable indicators.

Social groups in the process of gentrification

The problem of typologies of gentrifying groups is complicated by the fact that we study a process. Therefore, we have to allocate the shares of the classified groups to different stages in the process. As many authors have stated, the in-moving group is not homogeneous. Evidence comes from stage models of gentrification (Beauregard, 1990; Berry, 1985; Clay, 1979; Gale, 1980; Kerstein, 1990) and from many case studies (e.g., the examples in Atkinson & Bridge, 2005). They converge in the following assumptions:

- share of minorities decreases
- share of working-class households decreases
- average income of residents increases

- share of residents with higher education increases
- share of residents with managerial and professional jobs increases
- earlier groups are risk-oblivious, later ones risk-averse.

The process of gentrification is described by a continuous change in the directions mentioned above. Depending on the culture and the law of a country, the process can take just a few years or a couple of decades. In Germany, rents of dwellings are usually based on unlimited contracts, and rent increase is limited by law (currently 20% within three years and not above an area-specific threshold value); hence, the share of displacement caused by gentrification is relatively low (Blasius, 1993). In contrast, in the USA and UK, the level of rents is mainly determined by the market, and displacement caused by gentrification is high (Atkinson, 2000; Betancur, 2011; Slater, 2009). Moreover, the process is more visible in Victorian row houses (Canada, UK, USA) than in five-storey multi-family buildings (France, Germany), with visibility presumably accelerating the process.

To describe the Cologne or German housing market, three crucial differences to the British, Canadian or US housing market should be noted. First, Germany is still a country of renters (49% of households in 2010). Second, gentrification does not occur in two-storey Victorian row houses, but in five-storey multi-family buildings constructed around 1900 (art nouveau style). Third, we do not observe a significant number of house buyers in gentrifying areas. Instead we observe conversions of rented apartments into condominiums, i.e., apartment ownership. This tenure transformation to owner-occupied dwellings was also observed by Carpenter and Lees (1995) in a gentrifying area of London, Barnsbury, and in Paris, Le Marais. Some of the most important ways of classifying social groups are indicators such as age and income. Since there are no objective thresholds, it is arbitrary to split the households into distinct groups. For example, in operationalising 'high paid professional' (Bridge, 2001, p. 91), how much does she/he earn exactly? Further, in addition to living alone and with a partner, there may be other adults living in the same household? Furthermore, what should be the age threshold: how old can someone be classified as 'young urban professional?' (Zukin, 1998, p. 831).

It is a necessary and challenging task to classify groups in order to advance gentrification theory. To this end, we turn to earlier descriptions of gentrifiers (Clay, 1979; Grier & Grier, 1977; Ley, 1981), resumed by Ley (1996, p. 35): 'middle-class households … small and usually childless; often unmarried; primarily under 35 years of age; employed overwhelmingly in the advanced services, that is, the quaternary category of professional, administrative, technical, and managerial occupations; highly educated, with a majority having at least one university degree; receiving moderate or high incomes despite their youthful age; and containing small portions of racial or non-English-speaking minorities.' To operationalise this definition, we need a categorisation on the micro-level requiring, among other things, a distinction on whether the class of gentrifiers (and pioneers) is allowed to have a

child (or children) and/or be married or not. We also need to discern how much she/ he (or the household) has to earn (is allowed to earn) and the age threshold.

Suggesting a typology

Our review demonstrates that, if we wish to classify groups, we have the choice between profession, socio-demographic indicators, and attitudes. Our study is based on socio-demographic variables, because this seems to be the only way to define criteria that can be used in future studies leading to cumulative evidence. As it holds for all survey data, they may be plagued with forms of social desirability and we have to expect missing values, especially with respect to income. We are aware, that any classification based on socio-demographic criteria is somewhat arbitrary, but in our view it is the only way to achieve reliable indicators for describing the process of gentrification. It is neither possible from macro indicators nor from qualitative interviews to estimate the share of gentrifiers, pioneers and others in a neighbourhood.

To arrive at a classification of residents in gentrifying areas, we return to stage models and case studies. A literature review revealed that four groups are mentioned: (1) the indigenous population, a heterogeneous group encompassing the pre-gentrification residents: the elderly, working class residents, ethnic minorities; (2) pioneers, who are supposed to enter the area first; followed by (3) gentrifiers, followed by (4) super-gentrifiers.

The characteristics most often used to distinguish between social groups are age, household size, education and income. Income is perhaps the major indicator for describing the process of gentrification, because a household's decision on housing mainly depends on which house/flat they can afford. Education and taste do not suffice when the income is too low for renting or buying a preferred residence.

We specify four methodological criteria for our typology. First, all typologies are based on threshold values. When 'moving' from one category into another one, the respective person (or household) may 'automatically' change the assigned type. Income, for example, will increase after graduating from university and finding the first job. While students are usually classified as pioneers, young academics in a good job are usually classified as (early) gentrifiers. Similarly, persons change category if they have a child. This problem is inherent in all typologies.

Second, the typology should be flexible for modifications; the job description might be included as additional indicator, especially if income is not available. Furthermore, the level of income in the country has to be considered. For example, when comparing students' income the lowest 10% in Switzerland would belong to the highest 30% in Germany and the lowest 10% in Germany would belong to the highest 30% in Turkey.

Third, if we wish to describe the demand side by group, either driving the process of gentrification or being victims of it, 'automatic' changes do not spoil the

typology: we simply stick to our types, and the pioneer may now be a gentrifier. The descriptive power of the typology thus remains.

Fourth, the dynamic process of gentrification includes cases where a gentrifier becomes a pioneer. This is the opposite of the expected direction, but it will happen in some cases, for example, when a person is young and well educated, but has lost their job.

As the entire process of gentrification is dynamic, assigning households to the different groups living in a gentrified area is not constant. For example, if a pioneer household crosses the income border because of starting a new (or better paid) job, she/he 'automatically' turns into a gentrifier and if a gentrifier crosses the age threshold, she/he turns into the category 'others.' But this is no object for the typology, because all typologies rest upon the premise that definitions are conventions among scholars, the methodological criterion is whether a particular definition is fruitful or not.

To sum up, the classification has heuristic value: a consistent finding is that there are significant differences among the groups. Having explicated the vague typologies prevalent in the literature, we arrive at an operationalisation and a derived classification shown in Table 1. Early versions of this classification were introduced by Dangschat and Friedrichs (1988) and by Blasius (1993) in their studies of gentrifying neighbourhoods in Hamburg and Cologne. Other German researchers (e.g., Glatter & Killisch, 2004; Krajewski, 2006; Thomas, Fuhrer, & Quaiser-Pohl, 2008; Wiest & Hill, 2004) have also applied versions of this typology (summarised by Holm, Bernt, & Rink, 2010) and reached very similar results to ours.

We define a person, or better, the household, as a pioneer, when she/he is up to 35 years and has a university entrance degree or at least 12 years of schooling. The size of the household is not important, a pioneer can live alone, with her/his partner,

Table 1. Classification of groups (typology).

Characteristic	Pioneers	Early gentrifiers	Established gentrifiers	Others	Elderly
Age	≤35 years	≤45 years	≤45 years	≤64 years	>65 years
Years of schooling	12 years	No definition	No definition		
Household size	Any	2 pers., max. one child	2 pers., max. one child	No pioneers or gentrifiers	By age criteria, no pioneers or gentrifiers
Children	No	Max. 1	Max. 1		
Income[*]	<1.500 €	≥1500 to <2500 €	≥2.500 €		

[*]Household equivalence income, calculated by OECD scale: first adult = 1.0, other persons ≥ 15 years = 0.5, below 15 years = 0.3.

or share the apartment with friends, but she/he cannot live with his/her parents, neither are children allowed. As a threshold for income we use less than 1500 euro per month for a single person, which is close to the median income in Germany. For any further person of 15 years and older, we add another 750 euro, which corresponds to the equivalence income using the OECD (2009) criteria. If the variable income is not available because the respondent refused to answer this question, one can use the indicator 'student' as a proxy for classifying a person as a pioneer, if we know she/he has no children and does not live with his/her parents.

The second group is gentrifiers. They have a higher age and a higher income than the pioneers. Many of them have an academic education, but this is not a decisive criterion. In the literature there is a distinction between gentrifiers and super-gentrifiers, sometimes also called super-rich financiers (Zukin, 2010), but by definition the total of this group is very small and only a few of them live in a gentrified area. In qualitative research it may be interesting to ask about lifestyles, but the group is too small for separating its members in quantitative research. For this reason, we distinguish two groups of gentrifiers by their income: early and established gentrifiers. Thereby, we assume that most of the lower income gentrifiers move in earlier than the higher income gentrifiers since the latter are more risk-averse. Both groups may live alone or with their partner, they may have one child but not two or more. Both groups, pioneers and gentrifiers, include migrants or minorities if the respective persons fulfil the defined criteria.

The remainder of the residential population can be subdivided into different groups, depending on the specific aspect one wishes to study, for example, native and migrant groups. In this paper, we differentiate between two groups: those older than 65 years ('elderly'), mainly including households that have been residing in the area for many years or even decades, and the remainder of the population (neither pioneers nor gentrifiers), which we call 'others.' It should be noted that this typology was developed for German cities. It is variable, for example, as the income thresholds have to be adjusted to the economic conditions in cities of different countries.

Data

To test our classification, we use data from a survey in two neighbourhoods in Cologne, Germany. Both are located at the right side of the river Rhine, separated from the downtown area on the left side of the river. Both are former working class areas: Cologne-Deutz (abbreviated: CD) is closer to the city centre and has a population of 15,300 (in 2010), and Cologne-Mülheim (CM) with a population of 41,000 (in 2010). Since it is closer to the city centre and due to a more homogeneous structure of buildings from the end of the nineteenthcentury, CD experienced gentrification earlier (around the late 1990s), while CM started in about 2005. Both areas predominantly feature residential buildings of five storeys, built around 1900 (typically art nouveau).

Our classification, based on a number of individual and household characteristics, in combination with the dwelling panel, allows us to study the changes in shares of each group over time. We can thus test our assumption that the areas are in different stages of the process of gentrification.

Our survey is based on a random sample of residents drawn from the Population Register of Cologne; it comprises 602 interviews in CD and 407 interviews in CM. Interviews were done face to face; fieldwork was done in mid-2010, the response rate was 45.7%; for more details see Friedrichs and Blasius (2014).

Hypotheses

Based on findings reported in the theory section, we formulate hypotheses referring to the groups in general and differentiated by neighbourhood. Note that we assume the neighbourhood CM to be in an earlier phase of gentrification than CD.

H1: Since the process in CD started earlier, their share of early and established gentrifiers should be higher than in CM.

H2: Established gentrifiers pay higher rents than early gentrifiers and they pay higher rents than pioneers.

H3: Established gentrifiers have larger dwellings than early gentrifiers, and they have larger dwellings than pioneers.

H4: Among the established gentrifiers there are more owners than among the early gentrifiers and the pioneers.

H5: Pioneers move into the neighbourhood first, followed by gentrifiers, hence they should have lived longer in the area.

The latter assumption is derived from Clay's (1979) stage model and the double invasion−succession model (cf. Dangschat, 1988, p. 281). However, this hypothesis is not supported by the results of former German studies (cf. Blasius, 1993; Dangschat & Friedrichs, 1988). The possible explanation is that many pioneers changed to early gentrifiers without changing the dwelling in which they live.

Results

Our hypotheses address differences among groups. Using the classification in Table 1, we have 10.6% pioneers, 12.2% early gentrifiers, 8.1% established gentrifiers, 49.8% others and 19.3% elderly (persons 65 and older) in the data-set (cf. Table 2). Fifty-one persons could not be classified, because income was missing. Using the job position and housing indicators we could only classify two persons as pioneers and two other persons as established gentrifiers. This shows the limited practical help of these indicators for a reliable classification. Since all of the 47 persons who could not be allocated to one of the social groups are below 45 years, and since all of them have no or one child (otherwise they would have been classified as 'others' or as 'elderly'), many of them will belong to either the pioneers or the

Table 2. Pioneers, gentrifiers, others and elderly in the two neighbourhoods of Cologne, in per cent.

Area	Pioneers (N = 102)	Early gentrifiers (N = 117)	Established gentrifiers (N = 78)	Others (N = 479)	Elderly (N = 186)	Total (N = 962)
Mülheim	10.6	9.8	7.0	54.4	18.3	388
Deutz	10.6	13.8	8.9	46.7	20.0	574
Total	10.6	12.2	8.1	49.8	19.3	100.0
Statistics			$\text{Chi}^2 = 7.2$, df $= 4$, n.s.			

gentrifiers (early and established). It follows that the share of pioneers and gentrifiers is somewhat underestimated.

As already stated, we assume the process of gentrification to be more advanced in CD than in CM. Therefore, we expect more gentrifiers (early and advanced) in CD than in CM. Data in Table 2 support this assumption only partially; the shares of early gentrifiers and of established gentrifiers are higher in CD than in CM, while CM has more 'others,' but the differences are not significant on the 5% level.

To test our classification, Table 3 shows the cross-tabulations of the types by socio-demographic characteristics. For some of the variables the distribution is

Table 3. Socio-demographic characteristics of groups, in per cent.

	Pioneers	Early gentrifiers	Established gentrifiers	Others	Elderly	Total
Sex						
Female	54.9	52.1	42.3	47.0	48.4	48.3
Male	45.1	47.9	57.7	53.0	51.6	51.7
N	102	117	78	479	186	962
			$\text{Chi}^2 = 3.9$, df $= 4$, n.s.			
Education						
9 years	0	2.6	0	20.2	53.6	20.5
10 years	0	9.4	6.4	23.8	21.5	17.6
12/13 years	70.6	35.9	17.9	19.5	7.2	24.6
University	29.4	52.1	75.6	36.5	17.7	37.3
N	102	117	78	471	181	949
			$\text{Chi}^2 = 372.1$, df $= 12$, $p < .001$, CV $= .36$			

(*continued*)

Table 3. (*Continued*)

	Pioneers	Early gentrifiers	Established gentrifiers	Others	Elderly	Total
Children						
None	100	79.5	92.3	57.9	95.2	75.0
1	0	20.5	7.7	19.5	4.8	13.8
2	0	0	0	19.5	0	9.7
3+	0	0	0	3.1	0	1.8
N	102	117	78	477	186	960
	Chi^2 = 192.7, df = 12, p < .001, CV = .26					
Equivalent income						
−499	14.7	0	0	8.1	2.6	6.1
500−999	45.1	0	0	23.9	22.7	20.9
1000−1499	40.2	0	0	28.0	29.2	23.4
1500−1999	0	57.3	0	15.6	22.1	19.1
2000−2499	0	42.7	0	7.9	10.4	11.4
2500−2999	0	0	39.5	6.9	5.8	7.8
3000+	0	0	60.5	9.6	7.1	11.2
N	102	117	76	418	154	867
	Chi^2 = 724.8, df = 16, p < .001, CV = .46					
Employment						
Full-time	43.3	81.2	89.7	52.9	1.6	48.4
Part-time	7.1	8.5	6.4	19.4	2.2	12.3
Student/pupil	44.4	6.8	1.3	5.4	0	8.3
Unemployed	5.1	1.7	1.3	6.2	0	3.9
Pensioner	0	0.9	0	8.6	92.5	22.5
Housewife/-man	0	0.9	1.3	7.5	3.8	4.7
N	99	117	78	465	186	945
	Chi^2 = 906.0, df = 20, p < .001, CV = .49					
Occupation						
White-collar	82.6	74.8	69.9	62.3	33.3	67.0
Blue-collar	6.5	2.9	0	11.2	0	7.7
Civil servant	2.2	5.8	5.5	1.5	33.3	3.2
Civil s., high	2.2	5.8	13.7	5.5	16.7	6.5
Self-employed	6.5	10.7	11.0	19.5	16.7	15.6
N	46	103	73	329	6	557
	Chi^2 = 59.5, df = 16, p < .001, CV = .16					

simply the result of the type definitions: pioneers have at least 12 years of school-ing, otherwise they would not be university level; they are not allowed to have chil-dren; their equivalent income is relatively low, and they include no pensioners but many students. Early and established gentrifiers have no or only one child; both include a high share of full-time employed persons and a high share of white-collar jobs (occupation is only shown for persons with full-time and part-time jobs). Com-paring both groups, the income from established gentrifiers is higher by definition than the income from early gentrifiers; further, both their education and their job position are better than the education and the job position of others and the more elderly. Table 3 also shows that there are fewer established gentrifiers than early gentrifiers having a child; established gentrifiers are probably even more career-ori-entated than early gentrifiers. And as expected, there is no significant difference between males and females.

Table 4 shows the housing conditions for the five groups within the two neigh-bourhoods (two-way analysis of variance [ANOVA]). The distribution of rent level, size of dwelling (measured in square metres) and rent by square metres differ statis-tically significantly among the five groups, while the effect of the area is not signifi-cant. Most of the findings are in the expected direction. For example, established gentrifiers pay the highest rents in both neighbourhoods, followed by the early gen-trifiers and others, while the elderly pay the lowest rents. Contrary to our hypothe-sis, established gentrifiers in CM pay higher rents per square metre and have larger dwellings than their counterparts in CD. This can be explained by the higher standard deviation for the established gentrifiers; CM has a few new residential buildings with very high rents per square metre.

Table 4. Monthly rent (€), size of dwelling (sqm) and monthly rent per sqm (€), by neigh-bourhood and group, average values (standard deviations), solutions of two-way ANOVAs.

Group/statistics	Cologne-Mülheim (CM)			Cologne Deutz (CD)		
	Size	Rent	Rent/sqm	Size	Rent	Rent/sqm
Pioneers	62 (17)	597 (163)	9.97 (1.83)	57 (25)	595 (271)	10.65 (2.53)
Early gentrifiers	68 (16)	629 (187)	9.60 (1.83)	68 (20)	682 (196)	10.45 (1.77)
Establ. gentrifiers	86 (31)	861 (369)	10.74 (2.89)	82 (24)	806 (264)	10.28 (1.69)
Others	75 (29)	627 (240)	9.24 (1.74)	84 (31)	715 (279)	9.25 (2.30)
Elderly	68 (20)	534 (139)	8.21 (1.49)	82 (29)	630 (245)	8.54 (1.97)
Statistics	Size		Rent		Rent/sqm	
Area (F, sig, p, eta^2)	1.8, n.s.		2.7, n.s.		2.4, n.s.	
G-P (F, sig, p, eta^2)	15.0, <.001, .06		11.8, <.001, .06		19.4 <.001, .09	
IA (F, sig, p, eta^2)	3.1, <.05, .01		1.6, n.s.		1.5, n.s.	
Model	10.4, <.001, .09		7.1, <.001, .08		10.7, <.001, .11	

The inter-group differences in CM are clearly higher than in CD. This is due to the fact that CM is just experiencing the onset of the process while CD is in an advanced stage. Since in Germany most renters have unlimited contracts and landlords are restricted on increasing rents for sitting tenants, the greatest increase in the rent level over time occurs when a new household moves in. However, it is also possible to raise rents after modernisation, e.g., after installing a new bathroom or a new and more energy-efficient heating system. If the rent is substantially increased after a substantial modernisation measure, which in Germany means more than 30%, renters have to choose between moving out of the dwelling, which has the drawbacks of relocation expenses, leaving the area and finding a new dwelling with conditions that are similar to the current ones and at the same time affordable, or accepting the new rent level. For the above-mentioned reasons most residents stay in their dwellings, accepting the higher costs and reducing other expenditure for example on cars and holidays (cf. Blasius, 1993). To sum up, the empirical results support our hypotheses and the heuristic values for classification. Altogether, it is not the area (CM vs. CD) that accounts for significant differences, but the social groups, and to a certain extent, their interaction with area.

Table 5 shows the share of owners in both neighbourhoods for the five groups. As predicted, in both neighbourhoods the share of owners is higher among established gentrifiers than among early gentrifiers than among pioneers. However, there is also a high share of others and elderly being owners. The high share of the others can be explained by the fact that many of them have children, i.e., they are less flexible in changing the area they live in, they are settled and not willing or able to move. Further, the age of the others and the elderly is, by definition, higher than the age of the gentrifiers and the age of the latter is higher than the age of the pioneers. These social groups are in different phases of their life cycles and persons become settled with increasing age and will not move to another city.

These findings lead to the conclusion that our assumptions on gentrification have to be modified. We may have to include high-earning persons older than 45, or those having more than one child in the group of gentrifiers. They may have

Table 5.   Renters and owners, by neighbourhood and types, in per cent.

	Mülheim					Deutz					
Tenure	P	G1	G2	Others	Eld.	P	G1	G2	Others	Eld.	Total
Renter	97.5	81.6	77.8	80.1	76.1	98.4	93.7	84.0	78.3	78.3	82.3
Owner	2.5	18.4	22.2	19.9	23.9	1.6	6.3	16.0	21.7	21.7	17.7
N	40	38	27	211	71	61	79	50	267	115	959
					Chi^2 = 31.5, df = 9, $p < .001$, CV = .18						

Note: P = pioneers, G1 = early gentrifiers, G2 = established gentrifiers.

entered the area as pioneers or earlier gentrifiers belonging to the group of risk-oblivious persons who started the process of gentrification, and over time got attached to the neighbourhood they live in. Having finished the university, having a job and a (higher) income, they turn into gentrifiers by definition. After having the second child they transfer to the group of others, and with increasing age they will become allocated to the category of elderly. In this case, gentrification is a long-term process, at least in Germany and in countries where renters have unlimited and relatively protected contracts.

Figure 1 shows the spatial distribution of the social groups in both neighbourhoods of Cologne; only micro data allow us to localise households in the study area. For simplicity, we do not distinguish between early and established gentrifiers and between 'others' and 'elderly.' As Figure 1 shows, the three social groups are quite strongly separated. For example, in the south of CM there is a group of (established) gentrifiers living very close to the river Rhine. What clearly emerges is that gentrification occurs to a different extent in small sub-areas. Comparing both areas we notice that the spatial clustering shows some pattern. For example, the area in CM very close to the river Rhine has only new inhabitants. The same holds for other
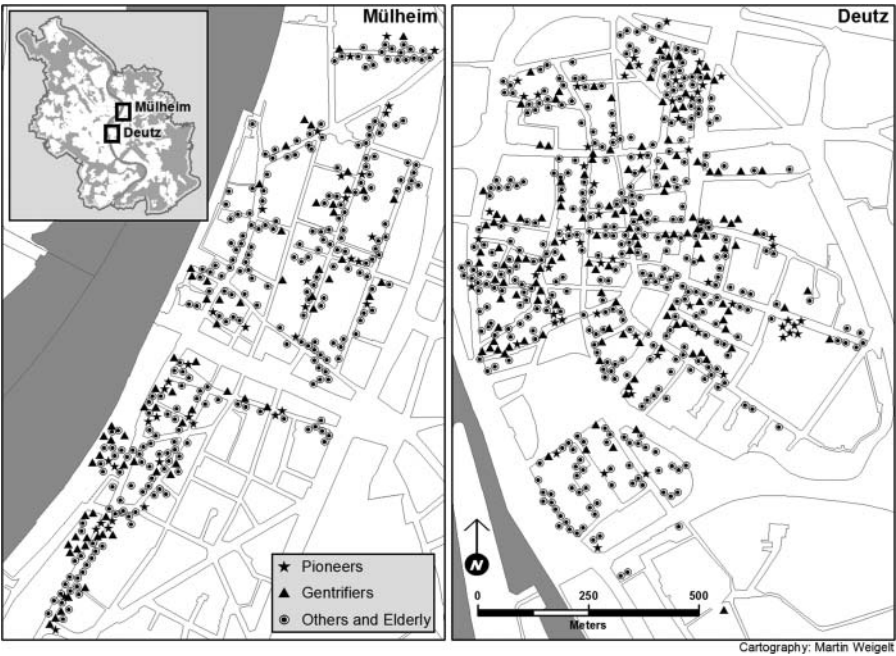

Figure 1.   Spatial distribution of 'pioneers,' 'gentrifiers,' 'others and elderly' in the two neighbourhoods of Cologne.

Table 6. Pioneers, gentrifiers, others and elderly, by period of moving in, in per cent.

Period of moving in	Pioneers	Early gentrifiers	Established gentrifiers	Others	Elderly	Total
−1991	0	0	2.6	20.8	70.5	24.0
1992−2001	5.9	14.5	10.3	23.5	14.2	17.7
2002−2006	17.6	25.6	32.1	28.5	10.4	23.8
2007−2011	76.5	59.8	55.1	27.3	4.9	34.5
N	102	117	78	477	183	957

$\text{Chi}^2 = 415.0, df = 12, p < .001, CV = .38$

parts of the street. The influx is spatially selective and not only established gentrifiers move into the new area but also pioneers and early gentrifiers.

Table 6 allows us to test hypothesis 5. When cross-tabulating the five social groups with the year of moving into the area, we see that 76.5% of the pioneers, 59.8% of the early gentrifiers, 55.1% of the established gentrifiers, but only 27.3% of others moved in between 2007 and 2011. However, this applies only to 4.9% of the elderly. As already shown in previous studies for Hamburg (Dangschat & Friedrichs, 1988) and Cologne (Blasius, 1993), fewer gentrifiers than pioneers have entered gentrified neighbourhoods in the last five years.

Discussion and conclusion

To arrive at a classification we had to select variables and to define categories for these variables. As in every classification, both operations are somewhat arbitrary, if they cannot be grounded in theoretical reasoning. Relevant literature sources only provided vague descriptions such as 'young urban professionals' (Zukin, 1998, p. 831), but again: what does 'young' and what does 'urban professional' exactly mean and can these terms be operationalised? In general, all such classifications are unsatisfactory, since they are based on somehow systematised observation, but not on reliable measurements, they cannot be empirically validated.

We have suggested a classification of demand groups in the process of gentrification: pioneers, early gentrifiers and established gentrifiers. This classification has the advantage of empirical validation and is flexible. Further, our classification contributes to the operationalisation of a theory of gentrification that can be tested with micro-level data. One may differentiate the gentrifiers in a different way or one may consider them as single group and/or one may subdivide the 'others' into two or more groups, e.g., by ethnic status. Another question concerns the children: Why should pioneers have no children or gentrifiers only one, and why not choose the status of a household when entering the dwelling and keep them in the category even when threshold values pertaining to a different category are exceeded?

According to our classification, which was derived from the literature, a pioneer changes social group when she/he exceeds the income threshold. For example, after a month she/he receives a higher salary, but nobody changes his/her lifestyle from one month to the next.

We can now summarise some of the remaining problems. First then, how can we understand 'automatic' transitions, such as, for example, from pioneers into gentrifiers, when the income exceeds the respective threshold? If gentrification does not continue, pioneers would become 'others.' Is this a tolerable or fruitful approach? Second, should gentrifiers be differentiated by, for example, income or tenure status? This may be more important in German studies than in North American and Canadian ones since in the latter countries we find much higher shares of homeowners than in the former.

We split the population of a gentrified area into five groups: pioneers, gentrifiers, established gentrifiers, others up to 64 years and the elderly. But typologies may have to be adjusted to historical phases of the process. Evidently, the group of gentrifiers can be further differentiated, depending on the historical period of gentrification and the country under study. Lees (2000, p. 397) states that 'gentrification today is quite different from gentrification in the early 1970s, late 1980s and even the early 1990s.' Similarly, Hackworth and Smith (2001, p. 46) distinguish between three historical phases of gentrification. If these would indeed involve new demand groups driving the process − except for the already mentioned super-gentrifiers or super-gentrification (Butler & Lees, 2006) − we will then have to expand the typology.

Further research may more fruitfully concentrate on the very early phase of gentrification, surveying both the initial residents and the pioneers. Data could be complemented by expert interviews of bankers, real estate agents, shopkeepers and neighbourhood associations (if available). We have presently only little information about thresholds in the process of gentrification. It could be critical to know, for example, at what point the growing share of gentrifiers begins to involve the displacement of (1) the initial residents ('others' and 'elderly'), and, (2) the pioneers? Furthermore, is there a point in the process of gentrification at which the process becomes irreversible? There are a number of points raised by the establishment of such thresholds that are salient to the potential management of gentrification processes. The major policy implication of our findings, at least, is that if the city wishes to intervene in the process of continuing gentrification this would mean applying some sort of 'Milieu Conservation Regulation' as found in Germany. This is a policy instrument that would allow the urban planning department to stop conversions of dwellings into condominiums and to exert greater control over rent increases.

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