

# Chapter 8

## Cultural Domains and Class Structure: Assessing Homologies and Cultural Legitimacy



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### Introduction

It is well known that the figures representing the French social space in *Distinction* (Bourdieu 1979) are based on several partial analyses. This means that one of Pierre Bourdieu's central hypotheses – the structural homology between social and cultural spaces as wholes – was not empirically tested by way of correspondence analysis (although Bourdieu did perform such an analysis for the bourgeoisie and petite bourgeoisie). Furthermore, many of the sociological discussions of cultural practices which have appeared since the publishing of *Distinction* use data describing a single taste domain, often music. This is beginning to change, as large-scale surveys have been conducted for Australia (Bennett et al. 1999), Norway (Rosenlund 2000), Porto in Portugal (Borges Pereira 2005), Aalborg in Denmark (Prieur et al. 2008), Great Britain (Bennett et al. 2009) – but not for France. Furthermore, as it has never been empirically tested, it is not obvious that cultural tastes constitute a homogeneous universe of practices. They can be structured by domains, depending on the relative autonomy of their respective fields of production: taste in music is not necessarily distributed in the same way as taste in books, and their relation to the social space may also differ. The French survey on cultural practices *Pratiques culturelles des Français* (Pratiques Culturelles des Français 2008)<sup>1</sup>, enables new implementations and tests of these hypotheses through empirical analysis.

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<sup>1</sup>See all details here: <http://www.pratiquesculturelles.culture.gouv.fr/doc/08methodologie.pdf>

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We first tested empirically the hypothesis of a homology between different domains of the most detailed tastes in the dataset – TV, reading, cinema and music. Multiple correspondence analysis (MCA) allows us to *compare* the four tastes' spaces, while multiple factor analysis (MFA) is employed as a method to *test* their homology.

Further analyses deal with the homology between these tastes' spaces and the whole space of social positions. Indeed, quantitative works often conclude that the cultural practices that are most associated with social class are also distributed by age and by sex (Philippe 2003; Bennett et al. 2009; Christine 2011; Octobre 2011; Christin 2012; Roose et al. 2012). The assumption is sometimes made that, today, the distribution of tastes is structured equally by age and sex and by social class (Bennett et al. 2009), and even that we can observe the weakening of cultural class divisions in favour of generational cultural divisions (Hervé and Michel 2009). In order to shed some light on this question, we untangled the web of factors – e.g. education, sex and age – structuring lifestyles in France by using several geometric data analysis techniques (Le Roux and Rouanet 2004), including standardized factor analysis (Bry et al. 2015). The research questions we intend to answer include: has age supplanted class membership in importance? If this is the case, should it be interpreted in terms of each individual's actual age, or with regard to their membership of a generational group? Has the opposition between economic and cultural capital lost its relevance? And is the axis ordering volumes of capital a good proxy for the scale of cultural legitimacy, as is usually postulated by sociologists?

Finally, after exploring these issues at the scale of the whole social space, we ask whether the results apply to a smaller scale by 'zooming' in on different social classes using class specific analysis (CSA). Does the level of heterogeneity in social classes' tastes increase at the higher levels of the social space, due to a broader range of practices among the upper classes (Peterson and Kern 1996)? Does the opposition between legitimate and popular culture organise the symbolic antagonism between classes from opposite ends of the social space? If so, is it invariably the same tastes that transmit this opposition?

The present chapter offers a set of results, albeit without going into great detail. Our goal is merely to present a sociological approach comprising statistical tools taken from the geometrical data analysis family, and sometimes elsewhere. Statistical algorithms are chosen (or created) to answer a sociological question depending on what exactly they *do* with data. First, each question demands an exploration of the tools to be chosen or created; the best tools are rarely the most obvious, and the answer will not be preordained (a MCA for representing a social space, a hierarchical clustering analysis for quickly obtaining a typology, and so on). Second, most questions are better dealt with if several tools are used, as each tool offers a very specific and narrow view on data, and rarely corresponds exactly to the sociological question. Statistical tools – whether geometrical or inferential – only describe data by reducing and organising information (as do algorithms) in multiple ways, and offer only partial clues (and only sometimes convincing ones) to help develop a sociological explanation of the statistical observations.

## The Homology Between Domains of Practices

The fact that cultural tastes constitute a homogeneous universe of practices cannot be taken for granted. They are structured by cultural domains, depending on the relative autonomy of fields of production specialised in a particular type of symbolic good. Tastes in music are not necessarily organised in the same way as tastes in television, since the field of music operates in a quite different way from the field of television, and the social uses of music are different from the social uses of television. Thus the hypothesis of a structural homology between each of the fields in question, which would represent the main statistical proof of the relative homogeneity of consumption habitus, should be tested empirically.

Several methods are possible. The first is to perform four separate Multiple Correspondence Analyses (MCA) – that is to say, one for each domain of practices – and to compare their structuring factors and the distribution of categories. This method has the advantage of respecting the specific structuring principles in every domain: it accounts for these principles with no interference from the other domains. But it is really only appropriate for an initial investigation: the four domains are *roughly* similar. It is difficult to go beyond a superficial comparison – with the naked eye, so to speak – of the four series of plots (of individuals and/or categories) and any potential aids to interpretation; the coordinates of the taste variables and the correlations between the variables which determine social position are not strictly comparable from one domain to another, as they are produced by distinct processes of MCA.

The second method is to perform a single MCA combining the four groups of variables. This has the advantage of allowing a direct comparison: the categories are scattered on the same plot, and aids to interpretation rank the variables and categories of the four domains all together. However, there is no assurance that the domains will contribute to the results of the MCA in a balanced way. A domain can have more weight, dominating others – for example due to a greater number of variables – which is not justified from an analytical point of view: we want instead for all domains to contribute equally to the construction of the space of tastes.

We turn therefore to a third method, multiple factor analysis (MFA), which was developed by Brigitte Escoffier and Jerome Pagès in the 1980s (Escoffier and Pagès 1990, 2008; see also Baier & Schmitz in this volume). It fruitfully combines the benefits of the previous two approaches: from the same data set, it balances the contributions of several groups of variables (here the four domains of taste) to the construction of the space. In this way it accounts for the correlations *within* each domain and *between* whole domains, whereas MCA does not allow us to weigh up the influence of each group of variables; this is thus a way to superimpose the four spaces of tastes over one another. Technically, MFA involves performing a separate MCA for each domain, combining individuals' coordinates on the axes of the MCA, resulting in a principal component analysis (PCA) from these coordinates weighted by the variance of the first axis of the domain. We can then switch between observing each isolated space (by 'deleting' the others) and the global space of the four domains all together (Fig. 8.1).

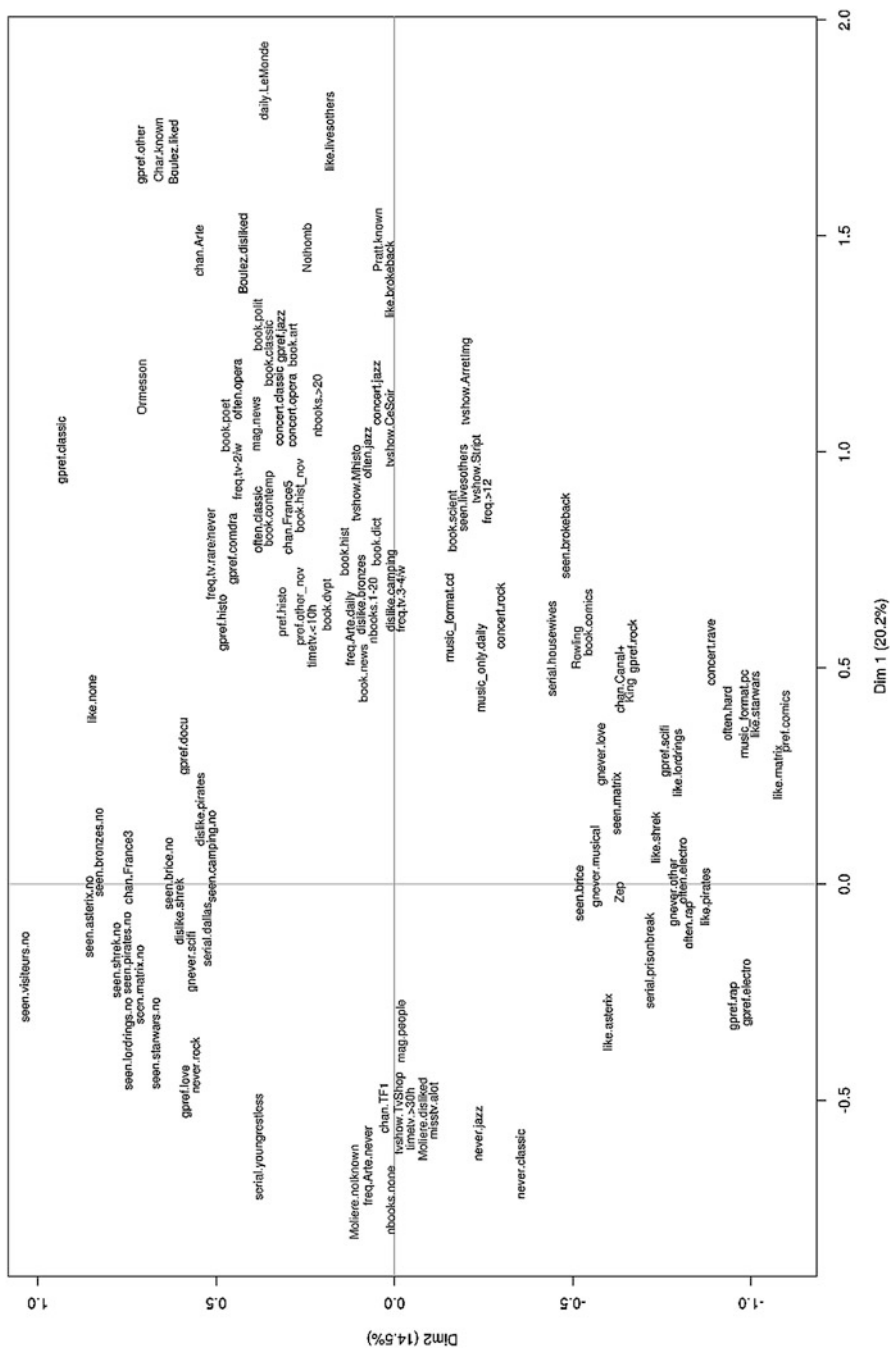


Fig. 8.1 MFA of the tastes in music, cinema, television, and reading

It is worth mentioning that all the correspondence analyses performed here are ‘specific’. This will set some categories of variables as ‘passive’ so that they do not contribute to the construction of the space, especially in the case of ‘junk’ categories such as ‘other’ or ‘not specified’, or categories with low frequencies; these might weigh artificially on the construction of the space (Le Roux and Rouanet 2004). We used R software and the GDAtools package, which has all the geometric data analysis tools used here (MFA, specific MCA, CSA, ellipses, and so on. <http://cran.r-project.org/web/packages/GDAtools/index.html>).

The comparison of the four ‘universes’ of tastes constructed by the MFA confirms the overall homology between the four spaces (Robette and Roueff 2017). This comparison relies less on the plots than on the selection of the most significant categories (by axis and by domain). For a given axis, the categories are considered ‘notable’ if their coordinates are greater than 0.5 or less than  $-0.5$ , meaning that the category is at a remove of at least 0.5 relative to 0: this is a “rule of thumb” suggested by Le Roux and Rouanet (2010: 59) for categories projected as supplementary. Due to the two-stage process of the MFA (separate MCAs and then PCA), taste variables are considered as supplementary from a statistical point of view (even if they remain active from an interpretive point of view), hence the use of this rule of thumb rather than of the contributions to axes (valid with active variables only). Bolded categories are those whose coordinates on the axis are greater than 1 or less than  $-1$ : we consider these categories ‘highly notable’.

Axis 1 combines, for the four domains, categories of intensity of practice (high on the right side, low on the left side) and categories of taste that can be interpreted as bourgeois (to the right) or popular (to the left). This is confirmed by the projection of individual social characteristics as supplementary variables. The respondent’s own educational level “explains” 31% of the variance of axis 1, their PCS (i.e. the French *profession et catégorie socioprofessionnelle*) 29%, the mother’s educational level 16% and the PCS of the head of household 16%. Age explains 28% of the variance of axis 2, and sex 9%.

For the four domains, the most notable categories are often ones that denote singular works rather than cultural genres (Table 8.1) – which is probably due to their rarity, but is also an indication of the strength of the interpretation (Robette and Roueff 2014). They are also all grouped on the right, suggesting legitimate, bourgeois tastes, while the left side exhibits far fewer notable categories. Thus, the axis objectivizes proximity vs remoteness to culture in general, and to bourgeois culture in particular – on the left, the only notable positive categories are TF1 (the main commercial TV channel), the soap opera *Les Feux de l’Amour* (*The Young and the Restless*), teleshopping programmes and gossip magazines.

As for axis 2, it is not related to intensity of practice (Table 8.2), with the exception of the category *never or seldom television*. On the other hand, it is notably associated with taste categories, especially for singular works. The four domains exhibit similar overall profiles: at the bottom of the Figure are emerging (new) tastes, at the top are established (old) tastes.

The advantage of MFA is not only its ability to confirm the homology between the four domains, but also that it allows us to study any potential small variations. Indeed, this approach ensures that these variations do not result from an imbalance

**Table 8.1** Notable (and highly notable) categories for axis 1, by domain

Axis 1	Left	Right
Reading	Nb books read = none, don't know Molière, don't like Molière, read people magazines	<b>Read Le Monde, know Char, read Pratt, read Nothomb, read politics, art and classic books, ever read d'Ormesson, nb books read &gt; 20, read news magazines, read poetry</b> , read historical, contemporary, science or history books, dictionaries, self-help books, other genres of novels, nb books read 11–20, prefer history books, ever read Rowling, read news books
Cinema	–	<b>Like The Lives of Others, preferred genre = other, like Brokeback Mountain</b> , have seen The Lives of Others, more than 12 times a year, have seen Brokeback Mountain, comedy-drama, dislike Camping, dislike Les Bronzés, like historical movies
Music	Never listen to classical music or jazz	<b>Like Boulez, don't like Boulez, preferred genre = jazz, often listen to opera, jazz concerts, classical concerts, opera concerts, preferred genre = classical</b> , often listen to jazz or classical, rock concerts, CD format, preferred genre = rock, rave parties, music only every day
Television	Never Arte, like The Young and the Restless, week time >30 h, teleshopping, miss TV a lot, TF1	<b>Arte, Arrêt sur Images, Ce Soir ou Jamais, Strip Tease</b> , 1–2 times a week, Mercredis de l'Histoire, France 5, rarely/never, 3–4 times a week, Arte every day, week time <10 h, Desperate Housewives

**Table 8.2** Notable (and highly notable) categories for axis 2, by domain

Axis 2	Bottom	Top
Reading	<b>Preferred genre = comics</b> , ever read Stephen King, Zep, read comics, ever read Rowling	Like d'Ormesson, know Char
Cinema	<b>Like Matrix, like Star Wars</b> , like Pirates of the Caribbean, gims autre, like The Lord of the Rings, preferred genre = science-fiction, like Shrek, have seen Matrix, have seen Astérix et Obélix, never watch romance or musical movies, have seen Brice de Nice	<b>Haven't seen Les Visiteurs</b> , aime aucun, haven't seen Astérix et Obélix / Les Bronzés / Shrek / Pirates of the Caribbean / Matrix / The Lord of the Rings, preferred genre = other, haven't seen Star Wars / Brice de Nice, dislike Shrek, preferred genre = documentaries, preferred genre = romance, never watch science-fiction, dislike Pirates of the Caribbean, haven't seen Camping, preferred genre = historical movies
Music	Computer format, preferred genre = electronic or hip hop, often listen to heavy metal, rave parties, often listen to hip hop or electronic, preferred genre = rock	Preferred genre = classical, like Boulez, never listen to rock
Television	Prison Break, Canal+	France 3, Arte, Dallas, rarely/never

of contributions of each domain, as they were standardized on the first axis: the comparison is based on a statistical foundation.

Thus, for axis 1, the differences between domains concern the presence, for movies only, of two categories of distaste on the left side (distaste for the lowbrow comedies *Camping* and *Les Bronzés font du ski*), the presence, for TV and reading only, of positive categories on the right side, and above all the absence of categories on the right side for movies only. Distaste for the music of the composer Pierre Boulez, on the left side, can be interpreted differently: this category is very close to the one of taste for Boulez, so it is the fact of knowing Boulez and thus being able to express a taste or distaste for his music which is distinctive. The same phenomenon is observed by Duval (2011) and Savage and Gayo (2011). For the category *cinema*, all movies' categories on the right side have coordinates lower than 0.5: individuals who are distant from bourgeois culture are more likely to express a taste for romance or action movies, *Titanic* or *Les Bronzés font du ski*; however, these categories are not notable, probably because they are common, in contrast to more distinctive expressions of tastes such as not reading books; disliking jazz; never watching Arte (the main cultural TV channel) but often TF1 (the main commercial TV channel); or enjoying gossip magazines or *Les Feux de l'Amour* (*The Young and the Restless*), where the distances are all much greater. Cultural tastes that stray from the bourgeois legitimacy are more likely to be weakly held; cultural tastes which can be classified as 'legitimate' are also more likely to be strongly held.

For axis 2, the differences between domains are visible only in the predominance of the categories taste in movies. Notable here is the presence of many categories of *no activity*, particularly at the top of the axis: the fact of not having seen these films can be thought of as a form of classifying, even if we cannot consider these categories as expressions of distaste. However, axis 2 is not a replica of the axis 1 opposition between bourgeois and popular tastes. Television tastes at the bottom are not necessarily those with the largest audience, but are popular with young respondents. One can even determine details such as the fact that the commercial channel Canal+ and the American serial drama *Prison Break* are favoured in particular by relatively young graduates. Conversely, the established series *Dallas* is at the top of the space. Among other emerging tastes appear comics in the reading category, and for the genres electro, rap, hard and rock for music (while tastes for international varieties and French varieties are specifically popular, at the right of axis 1, and not distinctive on axis 2). Finally, movie tastes at the top of the axis can mostly be characterised by their remoteness to the movies and genres to be found at the bottom (action movies, science fiction, comedy); those at the top include the taste for documentary and historical films, but also for romance movies. It is especially evident in the cinema category that axis 2 opposes simultaneously emerging to established tastes, as well as male to female tastes. A gendered pattern of opposition can be established, for example, regarding a lack of interest in romance or musicals and a lack of interest in science fiction. Similarly, when one lowers the threshold for notability with this interpretation in mind, other gendered categories can also be found in the categories reading and television: the female taste for reading the

romantic *Harlequin* paperback series vs. the male taste for the celebrity talkshow *La méthode Cauet*, for example.

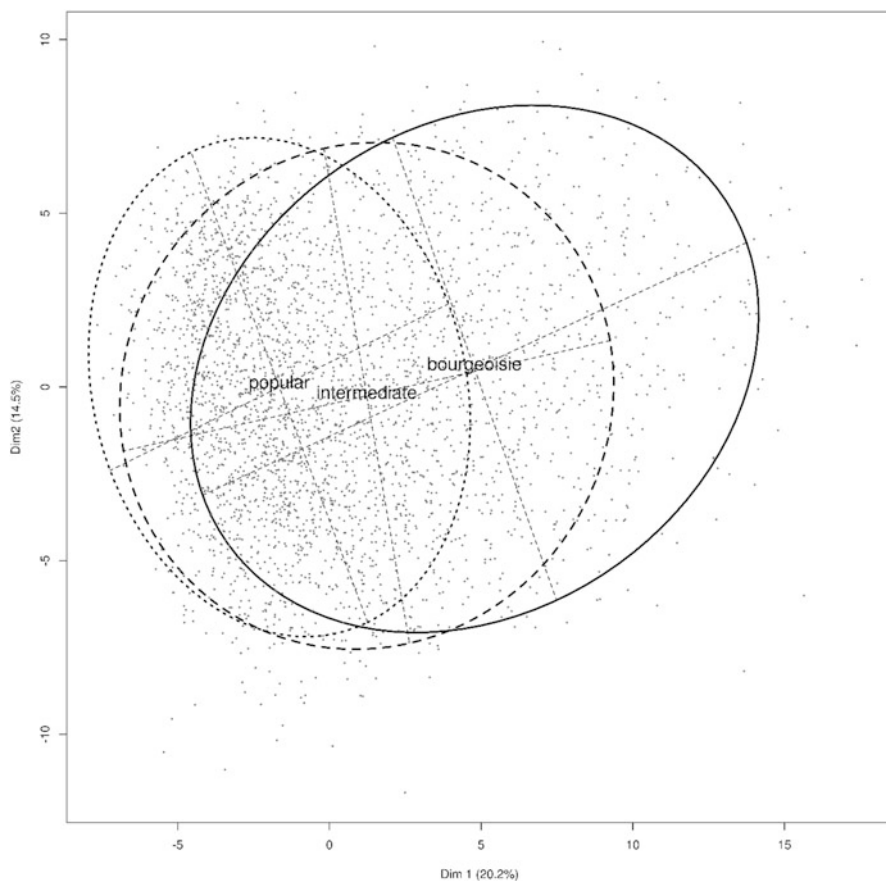
## The Homology Between Social Space and the Space of Tastes

### *The Homology Between Class Tastes*

A level of structural homology has been established for tastes. What about social properties? We will not examine in detail here the homology between the space of tastes and the social space as a whole – instead, we will return to this overarching theme later, refining the basic verification of the presence of homology by adding supplementary variables correlated to the first two axes. We are first interested in the spaces of social classes: are the cultural universes of the bourgeois, intermediate and popular classes structured by the same principles? It may be the case that correspondence analyses, which give more weight to rare categories (thus, here, to the bourgeois classes), combined with a relatively ‘legitimistic’ questionnaire specifically detailing the practices which the dominant perspective defines as cultural, lead to a space entirely defined by the properties of the bourgeois classes. We intend to show that this is not the case, or rather that the undeniable bias produced by the questionnaire and the technique must be interpreted differently. On the one hand, it is essentially the distance to legitimate culture that is being measured, even if one does not measure that exclusively. We will point out some clues of the relative autonomy of popular tastes, organised according to other logics than merely their relation to legitimate or intellectual culture (Grignon and Passeron 1989; Fabiani 1995). On the other, however, it is possible *by this very method* to observe how the distribution of cultural tastes are similar from one social class to another, even for the popular classes: legitimate culture produces a scale of legitimacy that organises, at least in part, the tastes of all social classes, including those social groups which are the most remote from the bourgeois centre of the production of legitimacy. The benefit of such an analysis is therefore again to observe both the overall replication of the same structure and local variations within the overall structure.

In conducting such a comparison, the difficulty is similar to that encountered in the case of homologies between cultural domains: how can we avoid both the separate construction of specific spaces for each class – which would thus be statistically incommensurable – and the imbalance of respective weights of the classes? With this in mind, as an initial approach we plot on the cloud of individuals of the overall MFA the ellipses of concentration of the subpopulations corresponding to each class (Fig. 8.2). For the convenience of this cursory review of results, social classes are simply defined based on occupational categories (the French *catégories socio-professionnelles* (CSP), as defined by INSEE): the bourgeoisie category is *cadres* (executives), meaning intellectual professions, and managers of companies





**Fig. 8.2** Ellipses of concentration of social classes (on MFA cloud of individuals)

with more than ten employees; for intermediate groups, the category is *profession intermédiaires* (middle employees), which includes craftsmen, and retail traders; the category for the popular classes encompasses lower-level employees and labourers.

While the distribution of individuals on the axis 2 is relatively similar from one class to another, the dispersion on axis 1 – which indicates both intensity of cultural practices and proximity to legitimate culture – increases with the volume of capital. This is unsurprising, but we must also consider that there is a non-insignificant dispersion within the working classes themselves – and therein lies one of the interesting facets of the ellipses. The popular classes are not only non-consumers of bourgeois culture, with some class fractions exhibiting oppositions according to their relationship to bourgeois culture – bourgeois culture really is the heart of legitimacy, scaling taste in the overall social space even though it does not exhaust all the dimensions. In other words, we observe here an index of the social authority or the symbolic power of the bourgeoisie in cultural matters.

**Table 8.3** Contributions to social class specific MFA axes of the domains of tastes (%)

Classes	Axes	Music	Movies	Television	Reading	Total
<b>Bourgeois</b>	1	21,6	<b>35,5</b>	22	20,9	100
	2	14,3	<b>54</b>	26,1	5,6	100
<b>Intermediary</b>	1	<b>27,7</b>	23,8	18,3	<b>30,2</b>	100
	2	16,7	<b>69,4</b>	7,2	6,7	100
<b>Popular</b>	1	28,7	<b>36,6</b>	11,8	22,9	100
	2	<b>42,1</b>	15,8	15,7	26,4	100

Reading: for popular classes, music contributes to 42,1% of the construction of axis 2

To go further, we turn to class specific analysis (CSA), because it helps to build a space for a subpopulation taking into account the distribution of categories in the subpopulation *and* in the total population (Le Roux and Rouanet 2004). It is particularly important, when constructing the space of a social class, to bear in mind the fact that this space does not exist in isolation, but is part of a broader space – that is, defined in relation to the rest of the population. In our case, we construct the space of tastes of active individuals in a given social class according to the space of the entire population in the survey. We build the CSA from the global MFA, to continue to compare the four domains of taste and the social classes simultaneously. We can then study – in addition to the plots – the contributions to the axes of each domain according to social class, the coordinates of the supplementary variables describing social properties (such as degree or income, again according to social class), and finally the categories which contribute the most to the axes, both by domain of taste and social class. These data enable us to describe in detail each class's tastes, and the way in which the different domains of tastes are structured for each social class. However, their interpretation must be informed by both sets of previous results. For lack of space, we only present the most interesting results.

First, we compare the contributions of the variables of each cultural domain to the first two axes of the CSA of each social class, built from the global MFA (Table 8.3).

For the bourgeois classes, the contributions of the four domains are relatively balanced on axis 1: internal differentiations in the bourgeois classes involve all cultural tastes. The relative prominence of movies on both axes is, however, notable. It is probably related to the distinguishing effect of even going to the cinema: the most established part of the bourgeois classes distinguishes itself by its distance from the cinema. Moreover, axis 1 is essentially correlated with cultural capital indicators (table with  $\eta^2$  available from authors): the interviewee's PCS summarizes 10% of the variance, the mother's educational level 9.8%, the interviewee's own educational level 9%, and the father's PCS 6.8%. Income and assets are negligible. There is also a slight effect of the distinction between public and private sector (3% of the variance), which is absent (or almost) in the other social classes: it may be the result of the presence in this class of occupations dealing directly with information and

entertainment, and the scientific and teaching professions (except for primary and secondary education). The second axis, meanwhile, is clearly associated with age (16.5% of the variance).

On axis 1 (Table 8.3), the intermediate classes are differentiated primarily by reading tastes and then, in descending order, by music, movies, and television tastes: it seems safe to say that there is a capital composition effect here, the volume of cultural capital having perhaps the strongest distinguishing effect in this central region of social space – where the boundaries between graduates and non-graduates and between durations in higher education are the most significant. Meanwhile, axis 2 is constructed mainly by cinema, movies thus being more associated with variations in sex and/or age than with variations in capital in the middle of the social space. Indeed, the correlations (i.e.  $\eta^2$ ) between variables which determine social position support these interpretations. The variance on axis 1 is can mainly be explained by the respondent's own educational level (17.8%), followed far behind by the mother's educational level (8.6%), the father's PCS (7.4%) and age (5.9%). The variance of axis 2 is summarized first by age (17.2%), then by sex (9.4%).

For the popular classes, they are separated, on axis 1, primarily by their relationship to movies, and then by music and reading (in that order); on the axis 2, they are distinguished mainly by taste in music and, secondarily, reading (Table 8.3). Cinema and reading are less accessible than television and music, for rather different reasons: visits to the cinema are determined by their economic cost and the respondents' leisure habits; reading is determined by one's ability to 'read codes'. In addition, music contributes here strongly to the axis associated with age: juvenile music and ancient music could constitute a significant division within the popular classes. In fact, again, the variance of the axis 1 is summarized not only by the respondents' educational level, but also (indeed primarily) by age – which dominates axis 2 as well.

Note also that television seems the least distinguishing practice on axis 1, and less and less when passing from the bourgeois to the popular classes, as if the distinctive consumption (and absence of consumption) of television only existed among those most endowed with cultural capital. Following the same logic, on axis 1, it is among the intermediate classes that reading contributes the most and that movies contribute the least: reading practices, highly correlated to school experience, seem to have a considerable distinctive influence in an area where variations in cultural capital are at their strongest (it is also the case, as we have seen, among the intermediate classes that education correlates most strongly with axis 1). Conversely, the relationship to cinema, less framed by educational institutions and more correlated with age (and sex) than with education, exhibits comparatively little variance.

Another noteworthy variation is the fact that the male/female balance of tastes differs from one class to another. Sex has little structural influence among the bourgeois classes (whatever the axis), but it is correlated with age on axis 2 for the intermediate classes and it is also present, albeit secondarily, on the first two axes for the popular classes. The popular classes are thus distinguished by a strong association of sex, age and cultural capital effects (via education on axis 1 and SES on axis 2) in the structuration of their tastes, while for the other classes cultural

capital seems to be clearly distinct from age (and sex in the intermediary classes). We will return to this discussion using other methods.

## **The Scale of Cultural Legitimacy: A Truly Multidimensional Social Space**

### *An Empirically Grounded Scale*

We now proceed to further analyse the homology between social space and the space of tastes. Our initial approach involves an exploration of the scale of cultural legitimacy. Usually, the first axis of factorial spaces of tastes is considered a satisfying representation of this scale, because this axis is correlated with indicators of economic and cultural capital. We will establish that this is a good proxy, but also that it is worth going into detail.

We have tested elsewhere several techniques for constructing scales of legitimacy empirically (Robette and Roueff 2014). One point must be retained here. The mutual ranking of tastes and social positions varies significantly according to their indicators: for tastes, indicators of participation, of abstract claims, of knowledge, all related to artistic genres or to individual artists or works; for social positions, indicators of income, of degree, of occupational category (and sometimes of age, and of racial or sexual self-identification). One of the main benefits of geometric data analysis (GDA) is that it enables the combination of these various indicators in order to study the structuring effects of their interactions. Rather than choosing only one, or considering them as competing and ranking their specific effects, GDA is able to better account for the artificiality of statistical variables: any indicator is only an approximation of reality, and techniques that calculate their interactions' effects offer to minimize this approximation.

### *A “U” Shape: A Multidimensional Scale*

On the MFA of tastes, cultural and economic capitals are highly correlated with the first axis, and age and sex with the second axis: the latter are of lesser weight, but still important (Fig. 8.3). Besides, it has been established that cultural and economic capitals are not completely independent from age and sex. One can then expect that indicators of social class will not be strictly aligned with axis 1, and that indicators of sex and age will not be strictly aligned with axis 2. This presents us with a simple question: which social space is the space of tastes homologous with? Is the social space the space of class relations only, or do class relations interact with other power relations such as those of age and sex? One way to translate this question

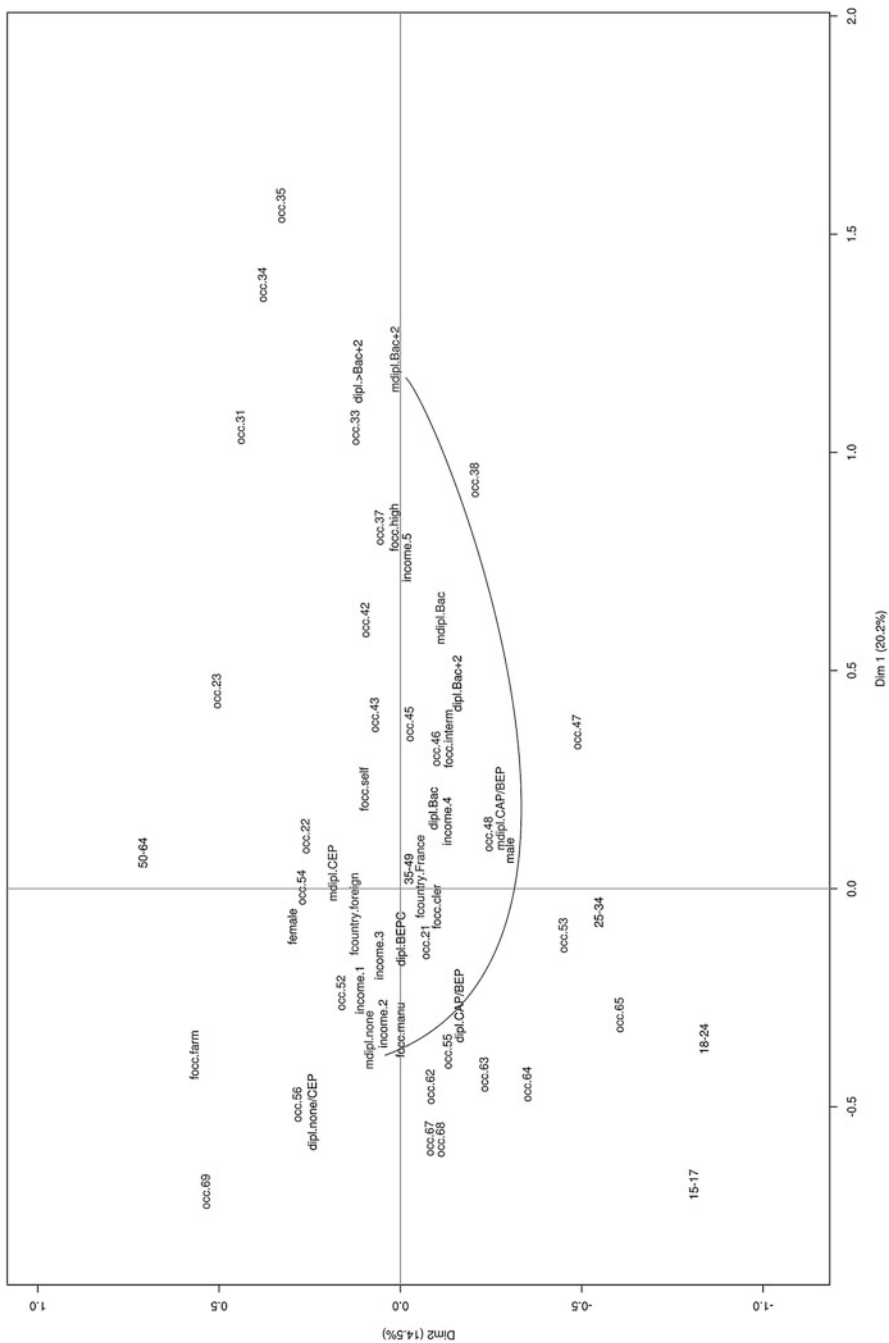
into a statistical inquiry involves looking at the exact shape of the scale of cultural legitimacy, beyond the proxy of axis 1.

All class indicators form a curve, more precisely an elongated U, or bell curve, from north-east to north-west, through the south of the geometrical plane. In addition, the most elongated variables according to this U are those indicating cultural capital. The distribution of the occupational categories (CSP) is less obvious, because we used detailed categories (see legend under Fig. 8.3). Thus, more typically female categories are at the top of the figure (lower-level employees, personal services, mid-level social sector employees, primary school teachers, etc.); more typically male categories are at the bottom (engineers, labourers, trained manual workers . . .). Still, following the U, one finds workers and employees, then mid-level occupations, then higher-level professionals.

This observation in mind, the bell curve appears more clearly than before on the space of tastes (Fig. 8.1). In the upper right (or north west?) of the figure, we see the absence of participation and the most shared, established (old) and female tastes. In the upper left, we find the highest degrees of participation and legitimacy. The bottom of the curve (and thus the middle of the U) is neither lowbrow nor highbrow, but characterised by emerging and male tastes. In summary, the dominant scale of cultural legitimacy, defined through the homology between the distribution of capitals and the distribution of tastes, forms a bell curve corresponding simultaneously to the power relations of class and to the power relations of sex and age. This does not challenge the usual approximation through which the scale is identified with the first axis of factorial analyses, or with the simple cross-tabulation of social positions and tastes. These remain good proxies. But we demonstrate here that the scale of cultural legitimacy is structured not only by social positions, but also by positions of sex and age, without any linear effect of the interaction of these last two variables. This point might be explored further, through the study of structural effects and then the study of interactions between the variables class, sex and age.

### *Studying Structural Effects*

However, a more precise and refined exploration is possible thanks to regression analyses, if well used. Regression modeling and GDA are usually considered to represent two opposing, incompatible statistical ‘philosophies’ (see introduction of this volume). Adherents of the one approach might claim that regression modelling is able to uncover causal relations beyond the observed correlations, while the GDA is only really useful for inductive description or exploration of data. Those on the other side would argue that the former method merely imitates experimental sciences, their protocols for purifying the contexts of observation, and their quest for the strongest causal effect, while the latter respects both the multidimensionality of sociological explanations, and the inexhaustibility and historicity of social contexts. However, from a statistical point of view, both sets of techniques are based on



**Fig. 8.3** Projection of social characteristics on the MFA of tastes

Prefix “occ” stands for interviewee’s occupation, “dipl” for interviewee’s diploma, “m dipl” for mother’s diploma, “focc” for father’s occupation, “fcountry” for father’s country of origin. The categories for interviewee’s occupation are: 21 = craftsman, 22 = shopkeeper, 23 = business owner, 31 = professional, 33 = public sector executive, 34 = teacher, 35 = information, art and show business, 37 = administration or trade business executive, 38 = business engineer or technical executive, 42 = primary school teacher, 43 = health or social service intermediate occupation, 45 = public sector administrative intermediate occupation, 46 = business administrative and trade intermediary, 47 = technician, 48 = foreman, 52 = public sector clerk, 53 = policeman or serviceman, 54 = business administrative clerk, 55 = trade clerk, 56 = private service worker, 62 = industry skilled worker, 63 = craft skilled worker, 64 = driver, 65 = handling, storage and transport skilled worker, 67 = industry worker, 68 = craft worker, 69 = farm worker

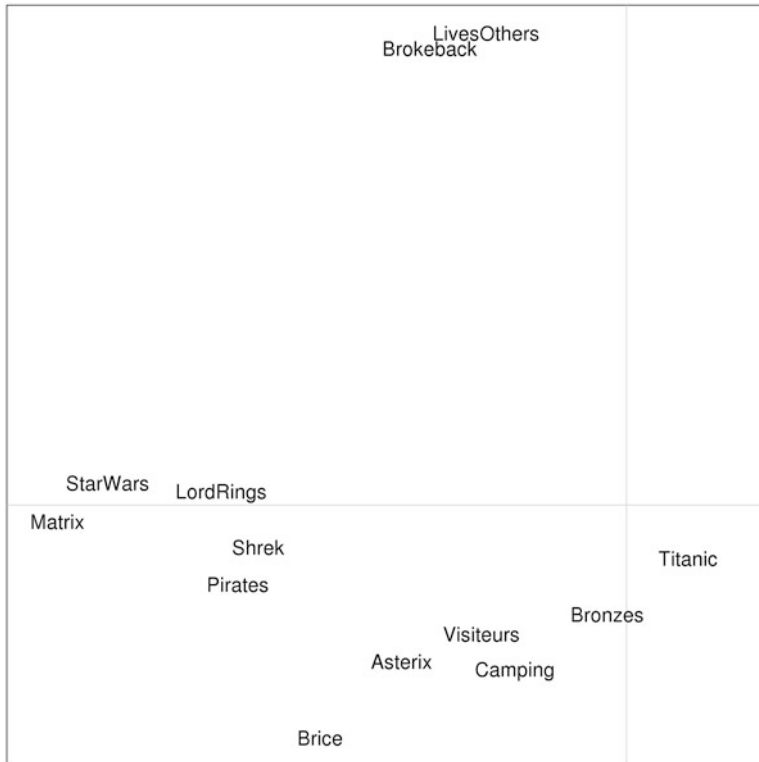
the same mathematical principles: correlations between variables (for PCA and linear regression) or simple cross-tabulations (for MCA and logistic regression). From an epistemological point of view, both approaches face the same possibilities and limitations: for instance, they may reveal correlations and hidden structures, which can only be interpreted as ‘clues for causality’, but never as ‘mathematical evidence’.

We then propose a method to use regression analysis in the framework of GDA in order to study structural effects. Another method already exists, enabling the visualisation of the results of a regression by projecting the multidimensional space constructed from the independent variables of the model, and then the dependent variable as a supplementary: the global and partial effects of the independent variables can thus be compared (Rouanet et al. 2002). We call our method *Standardized Factorial Analysis* (Bry et al. 2015). This name is derived from the standardization methods used in demography (Léridon and Toulemon 1997; Deauvieux 2011). It is able to standardize a factorial space by one or more variables whose effect is isolated (i.e. controlled) through a linear regression. More precisely:

- First, we start with a traditional correspondence analysis (MCA, PCA, MFA, etc.), designed to build a new data table (called C) with the coordinates of the individuals on each axis of this analysis (here MCA). This results in the table Individuals x Coordinates, with  $i$  rows and  $p$  columns ( $i$  is the number of individuals and  $p$  is the number of principal components of the MCA). At this stage, one can choose to retain only the first principal components, those that contain the most information.
- Then,  $p$  linear regressions are performed, i.e. one for each column of the previous table C. The coordinates of the individuals of the MCA (i.e. the variables of C) are used one after the other as the dependent variable, with (for example) sex and age as independent variables.
- The residuals are retained for each of the regressions; resulting in a new table (called R) with  $i$  rows and  $p$  columns. The quantitative variables of R correspond to the coordinates of individuals in the initial MCA, net the sex and age structure.
- A PCA is then performed on table R, which provides a new cloud of individuals, i.e. a new space.
- The variables that were used to build the original MCA are then projected onto this space as supplementary variables: what appears is the factorial space of originally active variables, net the sex and age structure of the population. To the extent that the PCA is not performed directly on the variables of the original MCA, one cannot obtain the contributions of these variables. However, all other tools for the interpretation of supplementary variables may be used ( $\cos^2$ ,  $v$ -test,  $\eta^2$ ).

For a short illustration, Figs. 8.4 and 8.5 show the space of tastes for movies before and after the standardization of age and sex – knowing that the first axis, correlated with the volume of capitals, reflects the intensity of practice (high at left, low at right) and that the second axis, correlated with age and sex, reflects – apparently – the legitimacy of tastes (Bry et al.). The surprise with the traditional





**Fig. 8.4** The movies « especially liked » in the space of tastes for cinema (axes 1–2; « classical » MCA)

MCA (Fig. 8.4) is to see *auteur* movies in the centre of the first axis: legitimate taste is related to a less intense practice than a taste for Hollywood action and science fiction movies.

However, after performing the SFA (Fig. 8.5), the result is clear. Both figures present the three same groups of relatively similar films. Now, though, the French comedies have slightly moved to the right of the first axis. Moreover, the two *auteur* movies are now at the extreme left of the graph, at the same level of intensity as the action and science fiction movies. The comparison of the two spaces, one with structural effects and one without, thus shows that highbrow *cinéastes*' practices are as intense as those of action-movie lovers when sex and age are equivalent. Or, to put it differently, the observed association between the taste for art films and a relatively limited level of practice is the result of the sex and age structure of the population, as women and older people tend to watch fewer movies in general, while at the same time having more legitimate tastes.

SFA also raises a more general set of questions. The many applications we have attempted all point to the same phenomenon: when structural effects are neutralized,



**Fig. 8.5** The movies « especially liked » in the space of tastes for cinema (axes 1–2; Standardized Factor Analysis)

the initial multidimensional space remains almost the same in its general pattern. Some categories may move, such as *auteur* movies in the example shown here, but the overall structure of the cloud of categories and the interpretation that can be given of its different factors survive the neutralization, including when controlling for several highly explanatory variables (such as social class, sex, age, and educational level). This probably illustrates a more general epistemological assumption: social determinisms observed through statistical variables, even when well established, are probabilistic and not mechanical, and moreover they are partial in the sense that they produce their effects only when associated with each other.

## Conclusion

In this chapter, we have tested several hypotheses related to the social differentiation of lifestyles: whether there exists a structural homology between the entirety of the social and cultural spaces as wholes, by categorising four cultural domains (TV, reading, cinema and music); whether the same structural homology applies at the scale of the different social classes; and the extent of the associations between the factors structuring lifestyles (volume and composition of capital as well as sex and age).

While the results are not analysed in full detail here (although they are in other papers, see Robette and Roueff 2017, 2018), we have argued for the use of unusual or innovative statistical tools – such as MFA, CSA and SFA – which could open new avenues for future investigations in the field of lifestyles and cultural tastes and practices.

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