Fields and networks: correspondence analysis and social network analysis in the framework of field theory

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Abstract

Pierre Bourdieu advocated relational thinking and a relational methodology. Nevertheless, he rejected social network analysis as a suitable technique for analyzing fields and he prescribed correspondence analysis. There are no fundamental technical differences between the two methods: social network analysis can produce spatial diagrams that are very similar to correspondence maps. Bourdieu’s problem with network analysis concerns the kind of relations that should be analyzed: objective relations instead of the interpersonal relations usually studied in social network analysis. This paper discusses the differences between the two types of relations and it argues that interpersonal relations mediate and transform the effect of objective relations. Network analysis is needed for investigating this process, which may help to further integrate Bourdieu’s field theory and theory of practice.

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1. Introduction

Relational thinking is an important concept in Pierre Bourdieu’s sociological theory. According to Bourdieu, social structure is a system of relations and differences instead of a set of attributes or ‘essences.’ Subjects, whether they are persons or institutes, derive their social meaning from their positions with respect to one another in a social field and not from their intrinsic characteristics.

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In his empirical research, Bourdieu uses correspondence analysis for analyzing and visualizing social fields. He explicitly states that this technique satisfies the requirements of relational thinking (Bourdieu and Wacquant, 1992: 96–97). He rejects another class of relational methods, viz., social network analysis. Nevertheless, several researchers have used social network analysis in their efforts to apply and test Bourdieu’s field theory (for applications to the arts and literature, see Anheier et al., 1995; Gerhards and Anheier, 1989; Giuffre, 1999, 2001; Kenyon, 1992; De Nooy, 1991, 1999). This raises the question whether social network analysis is compatible with Bourdieu’s theory. Can social network analysis be used for applying, testing, and developing field theory?

In this paper, I attempt to answer this question. First, I compare correspondence analysis with social network analysis. Because methods formalize theoretical arguments, they provide a formal way for comparing theories. Second, I present Bourdieu’s objections against social network analysis, and, finally, I discuss ways in which social network analysis can be used in the study of social fields. Followers of Bourdieu should not reject network analysis as a tool for investigating social fields, I argue, but network analysts should not reduce structure to interaction.

2. Two techniques

What is so special about correspondence analysis that Bourdieu prefers it to all other analytic techniques? In this section, I compare correspondence analysis and social network analysis from a technical point of view. I limit my discussion to the technical details that are needed for drawing a comparison and for understanding the link between field theory and correspondence analysis. For a full technical account I refer the reader to the available handbooks (e.g., Weller and Romney, 1990; Greenacre, 1993; Greenacre and Blasius, 1994; on correspondence analysis; Scott, 1991; Wasserman and Faust, 1994; Degenne and Forsé, 1999; on social network analysis).

2.1. Correspondence analysis

Correspondence analysis is a technique for investigating the associations among a set of qualitative or categorical variables. Measures of association such as Cramer’s V reflect the strength of the association among qualitative variables, but they do not disclose its content: which combinations of categories occur and which do not. In order to determine the content of the association, one has to inspect the cells in a cross-tabulation of the variables. Table 1, for instance, shows the cross-tabulation of Parisian professors by their universities and by the type of preparatory class they attended. This fictitious example mimics Bourdieu’s analysis of the academic field in Homo Academicus (Bourdieu, 1984; I will refer to the English translation: Bourdieu, 1988).

Cramer’s V indicates that there is a moderate association between the type of preparatory education and the affiliation to a particular university. The cells of
Table 1 display the observed number of professors with a particular affiliation and preparatory education, as well as the expected number (in italics) under the assumption that the two variables are statistically independent. Cells with striking differences between the observed and expected frequencies represent combinations that occur relatively often or relatively seldom. We see, for instance, that the professors of the Sorbonne University received their education relatively often at the lycée Henry IV or at one of the ‘minor’ provincial lycées, but relatively few of them attended preparatory classes at other lycées in Paris, and none did not attend a preparatory class at all.

In a relatively small table such as Table 1, it is quite easy to determine the content of the association. In larger tables containing many variables, it is much more difficult to do this. In essence, correspondence analysis helps to understand the content of the associations among variables by visualizing them. Categories that co-occur relatively often are drawn closely together in a map, whereas categories that exclude one another, that is, which co-occur relatively seldom, are drawn far apart. Fig. 1 shows the results of a correspondence analysis\(^1\) of the data summarized in Table 1. It is easy to see that the Sorbonne draws its professors relatively often from the lycée Henry IV or at one of the ‘minor’ provincial lycées, but relatively few of them attended preparatory classes at other lycées in Paris, and none did not attend a preparatory class at all.

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\(^1\) The procedure Correspondence Analysis was used from the SPSS software package. Fig. 1 shows the first two dimensions of the symmetric map of rows and columns.
Unless the number of variables and categories is very low, two or three dimensions are insufficient for a perfect display of the associations. Then, correspondence analysis simplifies the associations between categories of different variables by computing the usually two or three-dimensions that optimally represent them. This is done by a mathematical technique (singular value decomposition) that is also used in principal component analysis, hence correspondence analysis is sometimes called factor analysis of correspondences. As in principal component analysis, percentages, which are usually printed near the axes, tell how well the chosen dimensions reflect the data. In my example the horizontal axis covers 57.2% of the ‘true distances’ among the categories in Fig. 1. This percentage, which is also called the quality of the solution, is high because there are few categories in the example. With more variables and categories the quality drops quickly, for instance, to 5.17% for the first axis in the correspondence analysis of the affiliations and characteristics of professors at the Parisian arts and social sciences faculties in *Homo Academicus* (Bourdieu, 1988: 80).

In contrast to principal component analysis and other multidimensional scaling techniques, correspondence analysis uses qualitative data instead of quantitative data. As a result, correspondence analysis has some interesting properties which are
important to Bourdieu’s field theory. A closer look at one of Bourdieu’s applications of correspondence analysis may clarify the ways in which theory and method are intertwined.

In *Homo Academicus*, Bourdieu uses an advanced type of correspondence analysis which maps the categories of the variables as well as the respondents. In his book, Graph 2 (ibid. 80) maps the universities, professional affiliations, and background variables of Parisian professors, whereas Graph 7 (ibid. 276) displays the positions of the professors in a two-dimensional space. This type of multiple correspondence analysis is normally obtained by applying regular correspondence analysis to a special data matrix, which is called the indicator matrix or super indicator matrix (Greenacre and Blasius, 1994: 151). As we will see later, this data matrix is identical to a particular type of matrix used in network analysis, so it offers a bridge between the two techniques.

Table 2 displays part of the indicator matrix associated with the data set summarized in Table 1. Each respondent—a (fictitious!) Parisian professor in our example—is represented by a row. Apart from the professor’s name, which is merely a label, the columns represent the categories of the original variables. The original variable ‘university’, for example, is replaced by a set of new variables, each representing a particular university or category of universities. Either a professor has a position at a particular university, which is indicated by a one, or he has not, as indicated by a zero. Note that the former categories have become variables on their own, which illustrates the fact that correspondence analysis operates on concrete properties rather than on more or less abstract variables.

This is in line with Bourdieu’s theoretical emphasis on the importance of distinctive properties. His theory and methodology are relational in the sense that the relations between properties are important. The fact that one property usually entails another and excludes a third is deemed socially meaningful. The professors of the Collège de France, for instance, attended preparatory classes at lycées in Paris but as a rule not in the provinces. People are supposed to think in terms of distinctive properties or intuitively recognize them.

The indicator matrix can be transformed and analyzed in order to obtain a map of the correspondences between the categories or columns. To this end, the indicator matrix is translated to a square symmetric matrix in which the categories represent the rows and the columns. The cells contain indices of association measuring the extent to which two categories are found simultaneously or exclude one another. In the French tradition of correspondence analysis, chi square or chi square based indicators are used. In the example (Table 3), I divided the observed minus expected frequencies by the expected frequencies for the co-occurrence of two categories for illustrative purposes. Note that this transformation is the basic component of all chi square indices. The observed and expected frequencies are identical to those presented in Table 1. If a combination of categories occurs more frequently than expected by chance, the subtraction of the expected frequency from the observed

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2 In the American tradition, a geometric transformation is favored (Weller and Romney, 1990: 60).
Table 2
Part of a (fictitious) indicator matrix

<table>
<thead>
<tr>
<th>Professor</th>
<th>Collège de France</th>
<th>Sorbonne</th>
<th>EPHE 4 and 5</th>
<th>Louis-le-Grand</th>
<th>major provincial</th>
<th>other Paris</th>
<th>other provincial</th>
<th>No prep. class</th>
</tr>
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<td>1</td>
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<td>0</td>
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<td>...</td>
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</table>
Table 3
Square matrix of associations among categories

<table>
<thead>
<tr>
<th>C. de France</th>
<th>Sorbonne</th>
<th>Nanterre</th>
<th>EPHE 6</th>
<th>EPHE 4 and 5</th>
<th>Le-Grand</th>
<th>Henry IV</th>
<th>Major prov.</th>
<th>Other Paris</th>
<th>Other prov.</th>
<th>No prep.</th>
</tr>
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<tr>
<td>C. de France</td>
<td>1.00</td>
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<td>-</td>
<td>-</td>
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<td>-1.00</td>
<td>1.63</td>
<td>0.25</td>
<td>-1.00</td>
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<td>Sorbonne</td>
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<td>1.00</td>
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<td>-</td>
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<td>-1.00</td>
<td>1.00</td>
<td>-</td>
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</tr>
<tr>
<td>Henry IV</td>
<td>-1.00</td>
<td>1.31</td>
<td>0.43</td>
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<td>-1.00</td>
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<tr>
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<td>2.33</td>
<td>0.67</td>
<td>-1.00</td>
<td>-1.00</td>
<td>0.25</td>
<td>-1.00</td>
<td>1.00</td>
<td>-</td>
</tr>
<tr>
<td>Other Paris</td>
<td>1.63</td>
<td>0.31</td>
<td>-1.00</td>
<td>-1.00</td>
<td>-1.00</td>
<td>-1.00</td>
<td>-1.00</td>
<td>-</td>
<td>-1.00</td>
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<tr>
<td>Other prov.</td>
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<td>1.31</td>
<td>-1.00</td>
<td>-1.00</td>
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<td>-1.00</td>
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<tr>
<td>No prep.</td>
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<td>-1.00</td>
<td>0.67</td>
<td>2.75</td>
<td>0.67</td>
<td>-1.00</td>
<td>-1.00</td>
<td>-</td>
<td>1.00</td>
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</tr>
</tbody>
</table>

*aNo association possible because categories within a variable exclude one another.*
frequency yields a positive number, whereas infrequent combinations yield negative outcomes.

The division by the expected frequencies ensures that relative differences instead of absolute differences between observed and expected counts are taken into account. The absolute differences are not very meaningful; if a category occurs frequently, a small difference between observed and expected frequencies does not indicate a strong association, but the same difference is important in the case of an infrequent category. It is an important characteristic of correspondence analysis that scarce or exclusive properties may exert a profound influence on the relations between categories, which very nicely suits Bourdieu’s ideas on the distinctive effect of rare properties.

The square matrix is subjected to singular value decomposition and it is rescaled. The loadings of the categories on the dimensions can be used as co-ordinates in a plot such as Fig. 1. In this plot, positive associations between categories (or frequent combinations) are represented by smaller distances whereas negative associations (or infrequent combinations) are represented by larger distances. In the interpretation of the dimensions, eccentric categories must be taken into account because categories situated farther away from the origin of a dimension characterize that dimension more than categories near the origin (e.g., lycée Louis-le-Grand). According to Bourdieu, the dimensions represent the objective social structure, i.e., the distribution of the relevant types of capital or power. The exact location of particular properties, organizations, and persons may vary from time to time, from field to field, or from society to society, but the underlying dimensions, Bourdieu argues, are always the same. The results of his analyses repeatedly show that the dimensions represent the differential possession of social, cultural, or economic capital.

In a similar fashion, the rows or respondents, in this example the professors, can be positioned in a two or three-dimensional space. Professors who share relatively many properties or affiliations are drawn closely together but far from the professors with whom they do not share any properties. The map of respondents can be superimposed on the map of properties because the underlying dimensions are the same or rather because the positions of the properties are defined on the respondents and vice versa. This is called a symmetric joint map (Greenacre and Blasius, 1994: 17–21). It is visually attractive, but it cannot be interpreted as easily as one would intuitively expect. In the symmetric map, the distance between a respondent and a property does not reflect the underlying association as accurately as the distance between two respondents or between two properties. The joint map is literally a

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3 In the example, the difference between observed and expected frequencies is equal (0.4) in the combinations of, on the one hand, professors from the Sorbonne with a preparatory class at lycée Louis-le-Grand (2 observed, 1.6 expected) and, on the other hand, EPHE 6th section professors with a preparatory class at a major provincial lycée (1 observed, 0.6 expected, see Table 1). Because there are more Sorbonne professors than professors of the EPHE 6th section in the example, the absolute difference is more telling in the case of the latter. The numbers in the square matrix (Table 3) reflect this: 0.25 for the Sorbonne – Louis-le-Grand combination versus 0.67 for the EPHE 6th section — major provincial lycée.
superposition of two spaces. We should interpret each space separately but differences in one space, e.g., the space of properties, correspond to differences in the other space, e.g., the space of respondents. Therefore, respondents and properties that are positioned near each other probably ‘correspond,’ although we cannot tell exactly how well.

In my opinion, this technical feature of joint correspondence maps is closely related to the notion of homology in Bourdieu’s theory. Homology, which he describes as “resemblance in difference” (Bourdieu, 1988: 178), may be regarded as the projection of one space onto another, which is deemed possible because they reflect the same basic (i.e., objective) relations, namely, the distribution of different kinds of capital or power. I should note that Bourdieu uses homology in his comparisons between different fields, whereas my example of correspondence analysis superimposes two types of objects, viz., respondents and properties, within one field—the academic field. A symmetric joint map from a simple correspondence analysis of Table 1, however, would join a space of universities and a space of educational backgrounds, thus combining the academic field and the social field in a way that is compatible with Bourdieu’s theoretical use of homology.

2.2. Social network analysis

Now that I have sketched correspondence analysis, I turn to social network analysis. What is social network analysis and is it similar to correspondence analysis? Defined broadly, social network analysis is the analysis of a set of relations among objects. In a graphical representation of a network, which is called a sociogram, objects (vertices) are represented by points, circles, boxes etc., and relations are drawn as lines connecting pairs of vertices. In social networks the vertices usually represent persons, organizations, or countries, and the lines identify interaction, exchange, opinions, perceptions, etc.

Affiliations between people and organizations, like the links between professors and universities or secondary schools in my example, are a common research topic in social network analysis. In fact, the indicator matrix (Table 2) is one of the ways to store the data of an affiliation network. It can be interpreted as a network as follows: Each row (respondent) and each column (organization) identify a vertex in the network. Cell values indicate the absence (zero) or presence (nonzero) of a line between the row and column vertices and, optionally, the type or value of this line. In Table 2, for example, the first row identifies professor Dumézil, who is a professor at the Sorbonne (there is a one in the first column) and who attended a preparatory class in Paris. In Fig. 2, which is a sociogram of the network, there are lines between Dumézil on the one hand and the Sorbonne and the other Parisian schools on the other hand. This simple example shows how properties, which are subjected to correspondence analysis (having a post at the Sorbonne), can be treated as relations (an affiliation between a professor and the Sorbonne) in network analysis.

Fig. 2 shows remarkable similarities with the correspondence map of Fig. 1 with respect to the positions of the organizations. This is not a coincidence because the sociogram is based on the same data and an optimization technique was applied that
is based on more or less the same principles as singular value decomposition in correspondence analysis: vertices which are connected by lines are drawn closely together whereas unconnected vertices are ‘pushed’ apart. The optimization technique is a so-called spring embedder, which treats the lines of the network as springs with a particular elasticity and strength. The procedure searches for a situation in which the system of springs is in a stable situation. Brandes (2001) shows that the technique used here- the spring embedder developed by Kamada and Kawai (1989)- is based on an algorithm which is very similar to the algorithm of multidimensional scaling.

In contrast to correspondence analysis, spring embedders do not indicate the fit of the layout and they do not compute dimensions, which are drawn horizontally or vertically. Fig. 2, for example, was reflected and rotated before its orientation matched the correspondence map of Fig. 1. Therefore, the researcher has less to go by in interpreting the resulting pattern. This is a disadvantage if one is interested in finding the underlying dimensions. In that case, it is better to apply singular value decomposition, or its kin eigen value decomposition, on the network. This requires, however, a transformation of the network like the transformation to a square matrix in correspondence analysis.

In network analysis the rectangular indicator matrix represents a special type of network, viz., a two-mode network. A two-mode network contains two classes of vertices such that all lines are found between vertices of different classes. In our example, the professors constitute one class and the organizations (universities and secondary schools) are collected in the other class. Professors or organizations are
The two-mode network can be transformed into two different one-mode networks: a network of organizations and a network of professors. In essence, the transformation is simple. If two organizations are linked to the same professor in the two-mode network, the one-mode network contains a direct line between the two organizations. If they share two or more professors, this line has a value (multiplicity) of two or more. The matrix of the one-mode network is square because the organizations (or professors) now identify the rows and the columns.

Table 4 shows the matrix of the one-mode network of organizations. One professor of the Collège de France attended a preparatory class at the lycée Louis-le-Grand. In Fig. 2, we can see that this is (the fictitious) Lévi-Strauss. The numbers along the diagonal of the matrix indicate the number of professors affiliated to each organization. In our example, seven professors held a position at the Collège de France (cf. Table 1). Although the matrix contains different numbers than the square matrix in correspondence analysis (Table 3), it is quite similar.4

This matrix can be normalized by a chi square or geometric transformation like the one used in correspondence analysis and, afterwards, it can be subjected to singular value decomposition provided that the network is connected, that is, it does not contain isolated vertices or unconnected parts. Note that this provision also holds for correspondence analysis (Weller and Romney, 1990: 72). The component loadings can be used as coordinates in a map and the map of organizations can be combined with the map of professors in exactly the same way as in correspondence analysis.

We may conclude that there are no fundamental technical differences between correspondence analysis and social network analysis. This is reflected by the fact that some software packages for social network analysis include correspondence analysis, e.g., Ucinet, or eigen value decomposition, e.g., Ucinet, Pajek, and MultiNet.5 In addition, layout optimization techniques, which are peculiar to network analysis, are based on more or less the same algorithms as multidimensional scaling techniques. As a consequence, the type of weighting implied by Bourdieu’s notion of relative differences and the superposition of maps, which is connected to his notion of homology, are also possible in social network analysis.

Nevertheless, Bourdieu explicitly rejected social network analysis as a suitable methodology. At that time the visualization capabilities of software for network analysis were not as advanced as they are now, so it was not yet a very effective exploratory tool. His main objection, however, was theoretical rather than technical. Network analysts focus on interaction and exchange, whereas Bourdieu is principally interested in background characteristics that signal the possession of different

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4 In fact, it is identical to the Burt matrix in correspondence analysis (Greenacre and Blasius, 1994: 148).
Table 4
One-mode network of organizations

<table>
<thead>
<tr>
<th></th>
<th>C. de France</th>
<th>Sorbonne</th>
<th>Nanterre</th>
<th>EPHE 6</th>
<th>EPHE 4 and 5</th>
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<th>Major prov.</th>
<th>Other Paris</th>
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*No line possible because one university and one school were selected for each professor.
kinds of capital, e.g., social status of the parents and the type of education received. Bourdieu and network analysts have different kinds of relations in mind when they think of social structure, as we will see in the next section.

3. Structure versus interaction

Bourdieu’s rejection of social network analysis stems from his objections against symbolic interactionism and against Max Weber as its precursor, notably in his sociology of religion (Bourdieu, 1971, 1987, 26). In sharp contrast to Weber, Bourdieu distinguishes between structure and interaction (Bourdieu and Wacquant 1992: 113–114). Structure refers to the network of ‘objective’ relations that are the final object of his sociology because they fundamentally structure society. In contrast, interaction refers to activities by subjects, which establish ‘intersubjective relations’ (Bourdieu’s term). Symbolic interactionists and social network analysts usually investigate the latter kind of relations; they equate structure to a network of intersubjective relations. The different meanings of ‘structure’ and ‘relation’ have caused several misinterpretations. For instance, network analysts have mistaken Bourdieu’s objective relations for intersubjective relations such as friendship, which can be measured ‘objectively’. In order to avoid confusion, I will use the word network to refer to intersubjective relations and I will reserve the word structure for objective relations in this paper.

In my opinion, Bourdieu points out two fallacies in the study of interaction and intersubjective networks: mistaking consequences for causes and disregarding time and history. I will present the two objections now. In a subsequent section, I will address the question whether social network analysis can overcome these objections and contribute to the development of field theory.

According to Bourdieu, power relations structure society or, to be more precise, they structure each field within society and the relations between fields. Power relations are linked to the possession of capital: people or institutions with more capital, especially more capital of the right type (economic, social, cultural, or symbolic capital), have more power. Note that the relative amount of capital is important rather than the absolute amount, which is characteristic of Bourdieu’s relational thinking. Differential possession of capital is called an objective relation because it exists outside the subject’s intentions and cognition; it is a force operating on the subject, which the subject has to cope with consciously or unconsciously. Objective functions are latent, that is, they are not directly visible, but they can be extracted by means of correspondence analysis.

In contrast, the intersubjective relations studied by symbolic interactionists or social network analysts are manifest relations. According to Bourdieu they result from the underlying power relations or objective relations; they are the consequences rather than the sources and causes of social structure, so they should not be the ultimate objects of investigation. The power relations exist even if there is no interaction and this fact escapes the attention of symbolic interactionists or social network analysts. Moreover, certain social phenomena can only be understood as
the result of structural similarities between fields (homologies), which do not require interaction or exchange between the fields.

Charismatic leadership, for instance, should not be seen as a special kind of interaction between a gifted leader and his or her followers. Bourdieu argues that charismatic leadership results from a homology between different fields, for instance, the social field and a professional field. In contrast to Weber, Bourdieu stresses the similarity of the positions held by the prophet in the religious field and his followers in the social field: both are dominated. The prophet leaves the religious hierarchy because it offers no room for his ambitions. His statements, which contest the existing order, strike a sympathetic chord among the part of the laity that cannot realize its ambitions in the social field. No direct relation between prophet and devotees is required because what matters is that the latter find a “justification of their existence as occupants of a particular position in the social structure” (Bourdieu, 1987: 124) in the discourse and position of the prophet.

It is important to note, however, that Bourdieu’s theory has changed in this respect. At first, Bourdieu (1971) postulated transactions between a professional field and the social field, but he explicitly replaced transactions by the notion of homology later on: “I now (in 1985) believe that only the logic of the structural homology between positions occupied within the field of ‘professionals’ and positions occupied in the social field is capable of accounting for intersections of supply and demand that owe nothing- or at least very little- to calculations, whether of a more or less cynical nature, or to transaction understood as a conscious adjustment to demand.” (Bourdieu, 1987: 135 n. 5). Clearly, Bourdieu turns away from an anthropological approach focusing on social relations and exchange between individuals (e.g., Bourdieu, 1972, 1977) towards a sociology based on objective relations. It is tempting to assume that his adoption of correspondence analysis is relevant to this theoretical change.

Bourdieu’s second objection to symbolic interactionism concerns its exclusive focus on the present, which entails a denial of the past. Symbolic interactionists grant the person a lot of freedom in assigning symbolic value to the actions and interactions that s/he perceives. According to Bourdieu, however, this freedom is very limited because the symbolic value of behavior is strongly guided by categories of perception that originated in the past and that have been transmitted from generation to generation through processes of socialization. Symbolic values, therefore, are largely fixed and linked to social positions and contrasts. History determines the power relations within a field and the categories that agents use for classifying themselves and each another.

When a professor of philosophy qualifies his student’s essay or presentation as ‘vulgar’ or ‘servile’, he uses words that have been used by the bourgeois to (de)classify the petty bourgeois for a long time. It is not a coincidence that these epithets are applied mainly to students of lower social origins (Bourdieu, 1988: 195 ff). The classification has become part of the professor’s habitus, that is, it has become a category of perception. Applying the classification in his practice as a teacher, the professor plays a part in its social reproduction. In their focus on the present, symbolic interactionists overlook the social origins and reproduction of symbols and
meanings. Network analysts limiting their attention to interaction miss the same point according to Bourdieu.

4. Network analysis in the framework of field theory

Bourdieu criticized social network analysis because it confused structure with interaction. This does not mean that social network analysis cannot be used in research grounded on his field theory. It can, provided that the analyst understands the role of interaction and intersubjective relations in Bourdieu’s theory. In this section, I will summarize the ways in which researchers have used intersubjective relations and network analysis for testing Bourdieu’s field theory (Section 4.1), and I will propose new applications based on network analytic techniques that have been developed recently (Section 4.2).

4.1. Reconstruction of a field

Bourdieu used properties of people or organizations as data for his relational analyses because of their availability and not out of a theoretical necessity (Bourdieu and Wacquant, 1992: 230). It is quite plausible that people who are involved in a field recognize power relations from attributes and from intersubjective relations: acts of submission are just as telling as emblems of power. Thus a researcher may use data on intersubjective relations for assessing the amount and distribution of particular species of capital. If Bourdieu argues that interaction is driven by the distribution of types of capital, the former can be used to measure the latter.

This is exactly what most network analysts working from a Bourdieuan perspective have been doing. Although economic and cultural capital is most easily measured by means of attributes, such as monetary property, type of education, or social background of the parents, social capital has frequently been gauged from the relations that people or organizations are involved in. Bourdieu gives every reason for this approach when he defines social capital as “the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu and Wacquant, 1992: 119). Here, Bourdieu really seems to have in mind the kind of intersubjective relations studied in social network analysis. Although the relations may stem from a distant past, it is quite likely that they must have significance or ‘survive’ in the present, which is the favorite time of network analysts, in order to function as resources.

In social network analysis, two approaches towards social capital can be distinguished. One approach, represented by Lin (2001) and Boxman et al. (1991), stresses the quality of the resources accessible through intersubjective relations, whereas the other approach, represented by Burt (1992), focuses exclusively on the pattern of relations. Although the former approach is inspired by rational action theory, which is not exactly Bourdieu’s cup of tea, it is probably closer to his ideas than the purely structural approach because the former takes into
consideration indicators of economic or cultural capital owned by a person’s contacts.

Relational indicators of social capital are used as variables in statistical analyses, e.g., as independent variables explaining the position or success of a person or organization in a field. If recoded into a limited number of categories, they can also be used in a correspondence analysis, as Albrecht (2002) has shown, which is an elegant way to remedy the absence of social capital in Bourdieu’s own correspondence analyses.

The fourth type of capital, symbolic capital, is also a good candidate for a network analytic approach. If symbolic capital refers to prestige, for instance, “the capital of scientific prestige” in the academic field (Bourdieu, 1988: 40 ff. and 234–237), its measurement can be based on a classic assumption in social network analysis, viz., that asymmetric relations express (or even constitute) social prestige. A prestigious person or organization will receive relatively many positive choices but return few. In the academic field, citations offer a well-known example, but we may also use the flow of professors through universities as a measure of prestige because they generally move up (comp. De Nooy, 2002a). An important advantage of these relational approaches to prestige is that they do not require a more or less arbitrary categorization of organizations or events according to prestige by the researcher.

Social network analysis offers a range of prestige indices, which either calculate the prestige of single persons and organizations on a continuous scale (Wasserman and Faust, 1994: Ch. 5) or assign all persons or organizations to a limited set of discrete levels (De Nooy et al., in press: Ch. 9). The stratification into discrete levels is usually established by means of blockmodeling, a technique clustering people or organizations in such a way that the relations within and between the clusters (the ‘blocks’) exhibit particular patterns (Wasserman and Faust, 1994: Ch. 9, 10, and 12). The clusters are thought to represent different social positions.

The analysis of the literary field by Gerhards et al. (Gerhards and Anheier, 1989) offers a nice example of this approach. They investigated social relations such as friendship among the writers living in Cologne, Germany. According to their results, the writers can be partitioned into four clusters (elite, junior elite, periphery, and light literature writers), which exhibit the pattern of a standard center-periphery blockmodel: the elite and junior elite constitute a tightly connected center surrounded by a periphery of writers draped around the center in the sense that peripheral writers are connected to central writers rather than to their colleagues in the periphery. According to Gerhards et al., this center-periphery pattern reflects the unequal distribution of symbolic capital (or prestige), which Bourdieu also found in his analysis of the French literary field (Bourdieu, 1983). The writers of ‘light literature’ constitute a separate cluster which is not connected to the center or the periphery. This structural gap represents the difference between legitimate and illegitimate forms of literature (high versus low culture).

As a second step, Gerhards et al. include the clustering of writers according to their blockmodel as a categorical variable in correspondence analysis. This analysis corroborates the interpretation of the blockmodel in terms of symbolic prestige or literary capital. We should note that Gerhards et al. interpret the results of the final
correspondence analysis as the macro-structure of the literary field; the blockmodel of intersubjective relations merely serves to measure the distribution of cultural capital. This is important because we should not mistake the blockmodel for the structure of objective relations investigated by Bourdieu.

4.2. Fields and the logic of practice

Field theory stresses the importance of the past and it focuses on objective relations within the wider social field. Does this mean that current intersubjective relations within a particular field, e.g., the literary field, have no impact or theoretical relevance other than that they indicate the distribution of symbolic capital? I do not think so. Intersubjective relations are instrumental to the creation and distribution of symbolic capital as pointed out by Bourdieu in his theory of practice. Combining field theory and practice theory, I argue, we must acknowledge that a field’s structure does not merely reflect objective relations. Interaction or intersubjective relations, which have a dynamic of their own, at least mediate and transform the forces of objective relations. Social network analysis is needed to clarify their role.

In his theory of practice, Bourdieu elaborated on the nature of symbolic capital (Bourdieu, 1990, 1998). Symbolic capital emerges in the interplay between properties of groups, such as physical strength or wealth, and categories of perception that induce people to recognize, hence produce the symbolic value of these properties. People acquire the categories of perception during their socialization; these categories become part of their habitus and they accept them as natural, unquestionable categories. Bourdieu stresses that the categories of perception ultimately refer to the differential possession of types of capital— the objective relations in the wider social field— because they serve to legitimize the existing power relations and social inequalities.

Since it is a being-perceived, which exists in the relations between properties held by agents and categories of perceptions (high/low, masculine/feminine, large/small, etc.) which constitute and construct social categories (those above/those below, men/women, large/small) based on union (alliance, companionship, marriage) and separation (the taboo of contact, of misalliance, etc.), symbolic capital is attached to groups— or to the names of groups, families, clans, tribes— and is both the instrument and the stakes of collective strategies seeking to conserve or increase it as well as individual strategies seeking to acquire or conserve it, by joining groups which possess it (through the exchange of gifts, companionship, marriage, etc.) and by distinguishing themselves from groups which possess little or are destitute (stigmatized ethnic groups). (Bourdieu, 1998: 103–104).

The cited sentence summarizes the dual nature of symbolic capital: properties and categories of perception. It also highlights the role of intersubjective relations, such as exchange and marriage, in the struggle for symbolic capital. Because symbolic capital is connected to groups or to the names of groups,
alliances with groups through social ties are effective weapons in this battle. Thus, Bourdieu incorporates and transforms the legacy of Marcel Mauss (gifts) and Claude Lévi-Strauss (kinship, classifications) in his theory of practice. The rules for this struggle or the strategies employed in this struggle, I think, constitute what Bourdieu calls a logic of practice. The logic of honor (Bourdieu, 1972, 1998: 95) is an example of a logic of practice in a pre-capitalist society. This logic intertwines properties, e.g., the possession of capital, habitus (dispositions or categories of perception), and interaction. The logic of honor refers to the tacit understanding that exchanges within a group, e.g., gifts, must be reciprocated after some time. The group is defined historically, that is, its members learn to associate themselves with the name of a family, clan, or tribe in their first years. This is a typical category of perception that remains unquestioned. In addition, they learn to connect the group name to a set of people, who usually occupy similar social positions. Reciprocal exchanges among this set of people preserve the capital of the group; framing the exchanges as acts of honor mystifies the underlying group pressure restraining the freedom of the group’s members. Thus, group names legitimate social obligations within and between groups, which preserve social equalities and inequalities.

The concept of symbolic capital offers a bridge between field theory and the theory of practice. Field theory focuses on structure at the macro level, especially when it relies on correspondence analysis. It produces a map of an entire field, such as the French academic field, disclosing the general dimensions structuring the field. Practice theory, however, concentrates on the micro level of individual action and interaction very much in the fashion of (cultural) anthropology, examining the descriptions or qualifications that people pass on one another for concepts that refer to class distinctions. The Postscript to Homo Academicus (Bourdieu, 1988) offers an interesting example.

In order to combine the two theories, one has to accept the idea that practice within a field6 is at least partly responsible for the field’s structure. If one would hold on to a view in which the objective relations within the wider social field, that is, the distribution of economic, social, and cultural capital, are the sole determinants of field structure, practice within a field would be irrelevant. Practice only becomes important if interaction, activities, and statements within the current field are able to mediate objective power relations and modify categories of perception. In other words, one has to acknowledge that the structure of a field does not depend exclusively on external power relations and historically fixed categories of perception.

There are empirical results suggesting that interaction within a field affects and is affected by categories of perception. In my research into the Dutch literary field, for instance, I found that classifications according to literary style proposed by literary authors and critics match collective patterns of evaluations published in reviews and interviews (De Nooy, 1991, 1999). Some classifications according to style reflect polarizing groups of writers and others precede polarization. This is completely in

6 Sub-field may be a better term: “the sub-field which people belong to (often overlapping the space of mutual acquaintance and social interaction)” (Bourdieu, 1988: 178).
line with Bourdieu: “operations of classification are operations of co-optation” (Bourdieu 1988: 195). Classifications are tools in strategies of inclusion and exclusion: whom to relate to and whom to isolate. They symbolize and consolidate patterns of inclusion and exclusion because they transform them into identities, which are taken for granted later on. In this perspective, classifications reinforce patterns of relations, which reinforce the classifications thereupon. This self-strengthening process is quite similar to the process captured by the concept of an institutional logic in the school of thought baptized new institutionalism (e.g., see Friedland and Alford, 1991).

In this example, some literary classifications have become enduring categories, which have won a permanent place in histories of literature. Interviews that I conducted with critics, librarians, teachers, and booksellers 10–15 years later (De Nooy, 1993) show that the categories are widely known and respected. There is every reason to assume that some classifications originating from the interaction within the literary field have become enduring categories of perception for people involved in this field. This is not to say that these categories are unconnected to general social categories and power relations in society at large. On the contrary, some literary classifications, e.g., ‘Feminist literature’ quite specifically allude to general categories and to a general social development such as the rise of a politically engaged female readership. The important point is that the patterns of interaction, e.g., the activities of and the actions towards female authors and critics, and their proclamations within the literary field, were essential to the creation of the ‘literary’ classification. In the process, positive or negative symbolic value was attributed to certain characteristics of these authors and their work. In this particular period, the 1970s, a writer’s sex became an issue and structuring principle, inculcating a social distinction into the heads of authors, critics, and readers without calling a spade a spade. However, it does not have to be important in another period or place.

Objective relations, that is, power relations in the broader social field, shape the structure of a field insofar as they influence the interaction within the field. This is the theoretical point that I want to make here. I do not believe in ‘pure’ homology, that is, homologous positions in separate fields as the cause of attraction, agreement, and similar behavior. The aforementioned prophet and his/her followers do not just occupy homologous social positions; they gather and interact, and this they prefer doing in places where they confront (hence interact with) the establishment. Their interaction gives rise to classifications, stigmata, identity, to which other groups react. In my opinion, objective relations are not autonomous forces that directly and continuously affect each field. They become operative when people or organizations take part in the interaction within a field, bringing to bear properties and qualifications characteristic of another field. This triggers a group process, creating winners and losers among the members of the field (micro effect) and repositioning the field with respect to the ‘challenging’ field (macro effect). In the process new symbolic distinctions and values are being created or existing ones are being reaffirmed or discarded.

Therefore, it is important to analyze how, when, and to what extent objective relations affect the interaction and structure of a field as well as the symbolic value of categories and qualifications in a particular period. Correspondence analysis cannot perform this task because it abstracts from the actual interaction among
people and organizations. Network analysis is indispensable here. There is a long tradition of network analytic techniques focusing on individual strategies in creating, maintaining, or breaking intersubjective relations such as friendship, advice, gifts, etc. These techniques do not analyze the overall pattern of a network, as in blockmodeling. They concentrate on the immediate neighborhood of each vertex (actor) in the network: his or her direct contacts. Reciprocity of relations is one of the oldest structural properties analyzed in this tradition: to what extent do actors reciprocate previous choices, gifts, evaluations, and the like? In my study of the Dutch literary field, however, I found a tendency towards deference rather than reciprocity (De Nooy, 2002b, c). The literary field seems to be regulated by a logic of deference rather than a logic of honor based on reciprocity. Does this mean that the literary field tacitly serves to legitimize a social hierarchy?

Recently, techniques have been introduced that analyze the conditions favoring interaction, e.g., the attributes of the sender and receiver involved in a tie. With these techniques, it is possible to test whether interaction occurs mainly between actors who belong to the same social category or who possess a particular amount or type of capital. In other words, these techniques offer the possibility to detect individual strategies as combinations of individual properties, collective classifications, and interaction. With these models, we may, for instance, determine whether and to what extent general social characteristics such as sex, age, amount and types of capital, attract or block interaction with similar and dissimilar alters. In a similar way, attributed properties of individuals, e.g., a particular literary qualification, can be included in the analysis. In other words, objective relations and field specific properties can be included in order to assess their relative importance.

If these factors systematically influence interaction among pairs of actors, patterns of relations emerge at the level of the field or sub-field, e.g., polarization, which are hypothesized to trigger substantive classifications and qualifications. Blockmodeling techniques can unveil these patterns, which can be subsequently compared to the classifications and qualifications in order to determine their association. To what extent do the classifications articulate and reinforce emerging patterns of interaction? The social roots of classifications, however, can also be detected with a special type of network analysis (Galois lattices), which analyzes the duality of categories and the objects that are being categorized (e.g., Mohr and Duquenne, 1997, or Breiger, 2000, who proposes combining Galois lattices with correspondence analysis).

5. Conclusion

Bourdieu advocated relational thinking and relational methods. This does not automatically mean that social network analysis is a proper technique for testing Bourdieu’s theories. The network analyst ought to realize that the objective relations

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7 E.g., p2 models (Lazega and Van Duijn, 1997) and p* models, which may be fitted with standard logistic regression analysis (Crouch and Wasserman, 1998; Seary and Richards, 2000; Wasserman and Pattison, 1996), and SIENA for longitudinal network data (Snijders, 2001).
that are central to Bourdieu’s field theory are different from the kinds of relations studied in network analysis. The objective relations studied by Bourdieu refer to the differential possession of capital: economic, social, and cultural capital. In his theory, the relational aspect is not some kind of exchange or interaction but the fact that relative differences count: do you have more capital, another type of capital, or another property or trait than someone else? This is the reason why Bourdieu prefers correspondence analysis: correspondences are relative frequent combinations of properties. Bourdieu’s field theory is probably influenced by correspondence analysis. The technical complexity of a symmetric joint map, in which two spaces are more or less projected onto each other, translates to homologies between fields as an explanatory principle. The same dimensions, viz., the distribution of the kinds of capital, define the morphology of all fields. That is why people in one field are hypothesized to feel a strong affinity to people occupying similar positions in other fields.

Due to the interrelationships between Bourdieu’s field theory and correspondence analysis, it seems impossible to replace correspondence analysis by social network analysis. In my opinion, however, this is not true. First of all, network analysis can produce the same type of spatial maps as correspondence analysis, using the same data and similar techniques. Second, social network analysis can be used to gauge the amount of social and symbolic capital. Interaction and person-to-person relations, which are studied in social network analysis, play an important role in these two kinds of capital, so network analysis can be used to measure the distribution of these forms of capital.

Most important, however, is network analysis as a link between field theory and practice theory. Analysis of the literary field suggests that the interaction within the field is consequential to its structure and to the classifications and qualifications used within the field. Symbolic values and symbolic capital are created, reaffirmed, or changed in the interaction within a field as described in Bourdieu’s theory of practice. In this paper, it is argued that objective relations may influence interaction within a field: people adjust their relations to their general social characteristics. Subsequently, interaction changes the distribution of symbolic capital, that is, the possession of valued properties as well as the valuation of properties itself. Hence, interaction mediates and transforms the effect of objective relations on the structure of a field. Objective relations do not operate on the basis of mere homology between fields.

Since interaction is a crucial nexus in this view, network analysis is needed for unraveling the processes in which a field is being restructured and symbolic values are (re)produced. Correspondence analysis, which abstracts from the concrete interpersonal relations, cannot perform this task. Therefore, I expect that the application of network analysis will contribute to the development and integration of field theory and practice theory.

References


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