

## Paul Lazarsfeld's Methodological Innovations and Their Importance Today

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Paul Lazarsfeld developed an efficient model of scientific sociological research that used a combination of several quantitative and qualitative methods and approaches. This article discusses Lazarsfeld's general research strategy, which was based on teamwork, his use of the workshop as a method for teaching by doing, and his elaboration model, developed to test important causes of phenomena of scientific interest and their consequences. The article also discusses several new analytical methods and methodologies of social research that he developed: panel analysis, contextual analysis, and latent structure analysis. These methods and methodologies have since given rise to more advanced versions of themselves. Multilevel models were used for a contextual analysis. Latent class analysis is the modern-day successor to latent structure analysis. He also developed an original method that combines qualitative and analytical principles—reason analysis.

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### Lazarsfeld's Reason Analysis as His First Methodological Invention

Paul Lazarsfeld's social research has, since his very first forays into the field, been driven by the desire to answer the question "Why?" His interest in causes and consequences was a background condition to his adult life. His first methodological invention was "reason analysis," which he described under another name in his first methodological paper written in English, "The Art of Asking Why" (Lazarsfeld, 2010/1935). Christian Fleck and Nico Stehr (2010b) put together a large collection of 20 of Lazarsfeld's papers from the years 1929 to 1958, in which they linked his contributions to the reasons for action. Their ambitiously titled book, *Paul F. Lazarsfeld: An Empirical Theory of Social Action—Collected Writings* (Fleck & Stehr, 2010b), with a long introductory study (2010a), brings together Lazarsfeld's papers originally published in English and German.

It is, of course, unusual for any method that has an analytical aim and focus to begin with an individualized approach of interviewing respondents, which is what reason analysis does. In this method, interviewees are asked about the reasons for their decisions and for various reasons how big a role they played or how important various reasons were in their arriving at their decision. People usually have many

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reasons for coming to the decision they ultimately make. This method looks at the order of the reasons that individuals give for their decisions and sees them as a chain of causality, where each such chain could be unique to one individual but can also repeat and be found among a specific type of respondents. Reason analysis starts out as a qualitative method, with a series of questions the ordering of which is almost unique for each respondent and ends up as a quantitative method by identifying different groups whose series of reasons are identical (Jeřábek, 2006, pp. 28–32).

Reason analysis has some disadvantages to “factorial methods,” which are able to more quickly identify the common combination of reasons as influencing factors. Reason analysis also places high demands on interviewers. They usually prefer a uniform interviewing process, but with reason analysis they have to adjust the questions individually for each respondent. We have, however, real examples of the application of reason analysis—for example, in the work of Peter Rossi (1955). Hans Zeisel (1985/1947), in the methodology textbook *Say It with Figures*, present a comprehensive, instructive account of the methodological approach in two chapters, the first of which looks at the creation of an accounting scheme, a sort of decision-making tree, and the second of which focuses on its use in data collection and the interpretation of results (pp. 186–215).

### **Teamwork as an Essential Mode of Empirical Social Research**

Lazarsfeld's model of research work was never individualistic. He liked to work in teams. In almost every case, he practiced a model of empirical research work that was premised on collaboration among researchers. In this approach, the head of the project designs the research and decides on the sampling, determines the framework for the study, and in most cases develops a model that describes the relationships between concepts. The next step is the operationalization of concepts and the construction of variables. Each project needs people who are experienced in questionnaire design and managers who can organize the pilot study and data collection. Then there are the tasks of cleaning, sorting, and tabulating the data. Statisticians perform the statistical analyses, and other team members formulate the findings and conclusions. In the end, if the project was intended to have any practical outcome, there are team members who prepare recommendations for the client. Empirical research work is comprised of each of these segments of specialized work. Theorists and other scholars who tended to work more in libraries or who focused more on drawing connections between the results of other scientists did not understand Lazarsfeld's collaborative style of work. Modern empirical social research, in the mode favored by Lazarsfeld, required collaboration between members of a research team.

Lazarsfeld created research teams in every research institution he founded, including the *Wirtschaftspsychologische Forschungsstelle* (The Research Center for Economic Psychology) he established in Vienna. When he settled permanently in the United States in 1935, he began working for the almost unknown new university in Newark, New Jersey, where he founded the Newark University Research Center. He immediately began organizing collaborative teams to engage in practical research work. The first assignments they worked on were financed by a New Deal program, and he immediately hired students to work on these projects and trained them through a process of learning by doing. When Hadley Cantril, a professor of psychology at Princeton University, and the Rockefeller Foundation offered him the well-paid position of the director of a new research project, he accepted but refused to move from Newark to Princeton.

Having established a research team in Newark, one of his conditions for accepting this job was that he be allowed to remain in Newark and work with his staff on the Rockefeller project there. The Princeton Radio Research Project was an excellent example of productive teamwork. After the project moved to New York, the Office of Radio Research, as it was also known, became affiliated with Columbia University. The style of work and the core members of the research team remained unchanged. This research institution was ultimately renamed in 1944, when it became the famous Bureau of Applied Social Research (BASR).

### **Combining Qualitative and Quantitative Methods and Devices**

In much of the literature, Lazarsfeld is regarded as a quantitative methodologist only. However, his methodological innovations in the field of multivariate data analysis make up only one part of his legacy. His aim was to study the social world using all available means and methods—both qualitative and quantitative.

We can easily present examples to counter this simplistic view. The first such example is the well-known empirical study *Marienthal*. This project, which was also based on teamwork, began in 1931. Lazarsfeld, who was responsible for the methodology of the whole investigation, wrote an instruction manual, *Anweisung zum Marienthal (Instructions for Marienthal)*, in which he proposed combining both qualitative and quantitative methods of data collection, where each corroborates the other's findings. This recommendation was later published in the introduction to the English translation of the *Marienthal* study (Jahoda, Lazarsfeld, & Zeisel, 1974). Marie Jahoda, Lazarsfeld's coauthor and then-wife, later confirmed that Lazarsfeld wrote up these instructions before the research work on *Marienthal* began.

*Marienthal* was one of the first studies to deliberately combine both types of methods. In it we find examples of qualitative approaches (in-depth interviews, essays written by schoolboys and -girls, family menus, and time budgets) and quantitative measurements like the speed at which people walked. The unemployed men were found to walk very slowly, in contrast to women who—looking after their household—walked at a normal pace and almost without stopping.

Lazarsfeld continued to mix quantitative and qualitative methods after immigrating to the United States. Consider the case of two techniques that Lazarsfeld, in his radio research, paired: the program analyzer and the focused interview. Lazarsfeld and Frank Stanton invented the program analyzer in the late 1930s as a tool for the synchronized measurement of responses from several listeners sitting in a studio and evaluating radio programs, indicating which sequences of the program they assessed as well-done and which ones they considered unsuccessful (Jeřábek, 2006, pp. 32–38; 2017, pp. 42–44, 76–79). Around the same time, Herta Herzog invented the focused interview, later codified by Robert Merton and Patricia Kendall (1946; Simonson, 2016, pp. 71–72). The focused interview has been used for individual in-depth interviewing and for focused discussion in a group, both cases with a similar aim: to concentrate (e.g., “to focus”) the discussion on several specific problems that interested the participants and the scientist.

That mix involved using a quantitative method of program analyzer and immediately following it with a qualitative focused interview. This combination of methods was used to pretest radio programs before they were broadcast to listeners. In other cases, quantitative content analysis was combined with individual in-depth focused interviews and standardized questionnaires.

A modern-day version of the program analyzer is the electronic Perception Analyzer, and the focus group methodology is still frequently applied in qualitative evaluations. Later, Merton (1987) cited the historical roots of the focused interview to criticize the technique's subsequent isolation from the kinds of quantitative measures with which it was originally paired in the 1940s and 1950s.

### **The Elaboration Model as a General Strategy of Survey Analysis**

Lazarsfeld and sociologist Samuel Stouffer invented the elaboration method in the 1930s. They published a very short note on the idea in their jointly authored *Research Memorandum on the Family in the Depression* (Lazarsfeld & Stouffer, 1972/1937). In the years that followed, Lazarsfeld developed and refined the elaboration model as a useful principle in quantitative data analysis.

What are the principles of the elaboration model? Why is this method so important for all multivariate analyses in sociology and related social sciences? The main aim of this model is to identify the important, principal causal relations between variables and to distinguish them from accidental or artificial relations that do not represent a relation of cause and effect. This model solves the problem of how to control the influence of the measured variables that are external to the initial relationship between the two variables that we are interested in. This approach compensates for the impossibility of conducting experiments in the social sciences.

James Coleman, Lazarsfeld's former student, highlighted the fact that Lazarsfeld's elaboration model was a successful way of promoting causal analysis in nonexperimental research. In a tribute to Lazarsfeld as a methodologist, he wrote: "Lazarsfeld's development of the elaboration scheme was an attempt to introduce causal asymmetry into cross-tabulation analysis . . . his elaboration scheme . . . became the standard for causal interpretation of survey data for many years" (Coleman, 1972, p. 402).

We need to distinguish what types of relationships and which model of elaboration are valid in a specific case. The "elaboration" approach led to the identification of four different models: replication, explanation, interpretation, and specification models. They differ from each other primarily in terms of the role the test variable plays in the relationship between the two original variables whose relationship is being tested. Lazarsfeld and Kendall (1974/1950) published the study "Problems of Survey Analysis," where they presented in greater detail the principles of the elaboration method. But the process is not finished after one evaluation. The elaboration is a gradual, never-ending search for deeper and more fundamental relationships (Babbie, 1995, pp. 395-412; Jeřábek, 2006, pp. 44-52; Zeisel, 1985/1947, pp. 143-165).

### **Panel Analysis—Lazarsfeld's Analytical Procedures**

Lazarsfeld is not the inventor of the panel study. The term "panel study" generally denotes any data collection that involves the same respondents who are questioned repeatedly in consecutive waves of a survey. Lazarsfeld's important contribution was connected with the tasks that focused on a data analysis of quantitative changes. He worked out the method for quantitatively analyzing changes in the distributions of responses among the same respondents across two waves of a panel data set, which means that he founded "panel analysis" (Lazarsfeld, Rosenberg, & Thielens, 1951). Lazarsfeld outlined three important

panel data analysis procedures: (1) the analysis of turnover tables, (2) the analysis of qualifiers, and (3) the analysis of concurrent changes. Lazarsfeld often referred to the question the last of these three procedures sought to resolve as the problem of the "16-fold table" (Jeřábek, 2006, pp. 38–44).

One of these procedures—"turnover analysis"—focuses on calculating the probability of shifts in attitudes or preferences that are observed in the panel. The next step in the analysis is the study of the specific sub-samples in the panel, which are defined on the basis of their characteristics. The "analysis of qualifiers" refers to the analysis of these parts.

Coleman, one of most influential methodologists trained at Lazarsfeld's BASR, explained the reasons for studying *mutual effects*:

The problem is this: In panel or experimental data, where two dichotomous attitudes are measured at two points in time, two questions arise: Do either or both of the attitudes affect one another? and, How can one measure any effects of these attitudes upon one another? (Coleman, 1972, p. 404)

To answer these questions, a number of students at Columbia tried to develop "mutual effects indices," which were most successfully utilized by Lee Wiggins. Data were tabulated in the form of a 16-fold table (2 x 2 by 2 x 2). The statistical solution was already used, as it existed for continuous variables in physics and in economics. Lazarsfeld's aim was to transform those models for use with dichotomous attributes, which are more common in sociological data (p. 405).

The most famous example of the use of panel analysis by Lazarsfeld was his 1940 study of voting preference formation in Erie County, published as *The People's Choice* (Lazarsfeld, Berelson, & Gaudet, 1944). Among the literature on panel analysis, we should mention especially Coleman's (1981) now-classic monograph *Longitudinal Data Analysis*. Other methodologists who followed the BASR tradition include Leo A. Goodman and Otis Dudley Duncan. Today log-linear models are largely used to solve the main class of problems that Lazarsfeld and his panel analysis identified.

### **Latent Structure Analysis as a Precursor of Latent Class Analysis**

The most famous of Lazarsfeld's contributions to the methodology of multidimensional data analysis is latent structure analysis (LSA). Lazarsfeld formulated the first rough draft of this idea in 1947 in a small, unpublished manuscript. Then, in 1950, he dealt with it more deeply in two chapters of *Measurement and Prediction* (Stouffer, 1950). In a later conference paper, he presented a comprehensive explanation of the main idea behind the method in a manner intelligible even to nonmathematicians (Lazarsfeld, 1969/1954; Jeřábek, 2006, pp. 52–59). Finally, he and Neil Henry (1968) coauthored a detailed mathematically oriented book, *Latent Structure Analysis*.

In a situation where many methods were being proposed for conducting a multivariate analysis of continuous quantitative variables, Lazarsfeld came up with a method that was designed to analyze the kinds of dichotomous, nominal, or ordinal variables that are frequently found in sociology. The nonquantitative

character of the variables and the explicit hypotheses about the assumed relationships distinguish this method from exploratory factor analysis, which was frequently used in the 1960s, when Lazarsfeld finalized the LSA methodology. Confirmatory factor analysis and structural modeling became a part of the toolbox of sociological methodologists much later. The aim of the LSA approach, and what it actually did, was to assign all objects to latent classes, which are groups of objects in which there are no associations between the basic variables.

Today, latent structure analysis is part of a larger group of methods called "mixture models." A direct successor to LSA is "latent class analysis," but this family of methods also includes "latent profile analysis" for continuous variables and "latent transition analysis" for the analysis of panel data.

### **From Contextual Analysis to Multilevel Models**

Many sociologists in different research spheres focus on data that refer to only one type of unit. If we use the interview method, we are focusing on data that refer to individuals. We can also collect sets of data on countries or towns, on companies, or on products. And yet, within the analysis of one type of unit it is also extremely useful to draw on data on higher-order and/or lower-order units. When Lazarsfeld was drawing up the principles of his methodology, such data already existed and were occasionally used. However, the novelty of Lazarsfeld's approach was that he designed a system for using these data in an interconnected manner, so that the data on larger or, conversely, smaller units created a meaningful context for the "core" data on the type of unit that was the focus of the study. This methodology was called "contextual analysis."

In the 1950s, during the period of McCarthyism, Lazarsfeld organized a survey that was conducted among faculty at American universities and colleges. In cooperation with Wagner Thielens Jr., he studied the attitudes and behavior of university professors and lecturers at a time when academic freedom was under threat. Their monograph, *The Academic Mind: Social Scientists in a Time of Crisis* (Lazarsfeld & Thielens, 1958), offers a compelling example of a contextual analysis. In contextual analysis data are gathered from the responses of individuals (e.g., on the threat mentioned by professors or the free-thinking behavior of teachers at better-quality universities) and are analyzed alongside the global characteristics that describe a collective (group) as a whole (e.g., the characteristics of a particular university or college workplace). One example of the findings produced in this kind of analysis is the conclusion that high-quality universities offered a climate supportive of freedom of speech. The teachers in these schools spoke openly. Their liberal ideas more frequently made them targets of accusations of anti-Americanism, but the university administration effectively backed its professors against such accusations.

Lazarsfeld addressed the principles of contextual analysis in a methodological paper he wrote in 1956 with Herbert Menzel (1993/1961), "On the Relationship Between Individual and Collective Properties." They distinguished between absolute, relational, comparative, and contextual variables on the individual level, and analytical, structural, and global variables on the "group" level (Lazarsfeld & Menzel, 1993/1961, pp. 176–180). Lazarsfeld also came up with a question that was crucial in opening up this new field of methodology: How important and how influential is the context (are the contexts) in which the relationship between individual and group variables occurs? The methodology of contextual analysis, first developed by Lazarsfeld, survives today, many years later, in the form of multilevel (statistical) models.

### **Training in the Methodology of Empirical Social Research**

Throughout his professional career, Lazarsfeld also worked to train researchers, and this was something he incorporated into any research he was conducting. Usually, he employed the method of learning by doing in research workshops. Students and younger colleagues of Lazarsfeld participated in his research work, but first he trained them by having them attend courses he taught that focused on important areas of research knowledge and skills. That was his aim, his model, and his practice.

He used these tools and practices for many decades—in Vienna at the first institute; at the research center in Newark and at Columbia; and then also in Oslo and Paris during the sabbatical semesters he spent abroad and at the special UNESCO seminars organized in postwar Europe (Jeřábek, forthcoming). Training research staff was in his view extremely important. Lazarsfeld developed a special model for instructing beginners in working with mass data, sampling methods, preparing questionnaires, interviewing, and using other data collection methods. His conception of empirical social research started with formulating the problem. Conceptualization, operationalization, data collection, and the preparation of the data for analysis: all this required training. He also taught special courses on the use of advanced mathematical methods for multivariate data analyses.

In the years 1948–1949, Lazarsfeld and Merton began work on a proposal for an advanced training center that they submitted to the Ford Foundation, with the aim to secure funds for such center at Columbia, according to the model prepared by Lazarsfeld. Instead, the foundation decided to spend \$3.5 million for an entirely new Center for Advanced Studies in the Behavioral Sciences at Stanford University, but with a different vision. Its aim was to support individual projects of already established scholars and not the sophisticated methodological training envisioned by Lazarsfeld. Though the proposal was unsuccessful, he and Merton later published a shorter version that indicates the scheme's original ambitions (Lazarsfeld & Merton, 1972).

In response to the rejection, Lazarsfeld changed the proposal's priorities and applied for a smaller grant primarily intended to prepare teaching materials for the training of research workers. Over the course of two and a half years, from 1952 to 1954, methodologists at the bureau spent almost \$120,000 on writing and publishing methodological publications alone. *The Language of Social Research* by Lazarsfeld and Rosenberg (1955), Herbert Hyman's (1955) textbook, and the collection *Mathematical Thinking in the Social Sciences*, edited by Lazarsfeld (1954)—which has since been called the first book on mathematical sociology—were all financed and published with the help of this money.

### **Conclusion: Individual Data and Summarizing Patterns**

In the past, sociologists, anthropologists, and political scientists usually explained societies on the basis of the attributes of nations, communities, social classes, natural areas, deviant groups, and other entities as a whole. This situation was changed by scholars such as Stouffer and Lazarsfeld, and even before them by some pioneer figures in the early days of survey research (Petersen, 2012). When these scholars began using mass data on individual items to provide evidence about larger groups, they started to change the model of sociology for the discipline as a whole. Causal statistical reasoning based on mass data offered much more than just a description of these social entities (Jeřábek, 2012, pp. 109–116). Lazarsfeld, as a

mathematician and statistician, was well aware that the main advantage of mass data lies in the patterns of replication of relationships for many individual cases. The relationship is valid for "the whole" (with some probability) because it is valid for most of its parts.

Statistical data analysis was the precondition for the transformation of mass data on individual cases into a statement that can be taken as valid for the whole situation, group, community, state, or society. In the introduction to a collection of Lazarsfeld's works, James Coleman (1982) asked, "And why did this change transform the discipline of sociology, rather than becoming merely an interesting branch of social psychology?" (p. 6). And he explained that "the analysis of individual action in a social context, is a mutation in the discipline which occurred more through Paul Lazarsfeld's work than the work of any other" (Coleman, 1982, p. 7). The statistical generalization of individual changes observed on a mass level and their conversion thereby into socially relevant facts and findings represented an exceptionally important transformation of the discipline, one that changed the model of sociology practiced in the United States and in postwar Europe for decades to come.

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