

## Socio-cultural economics and Q- methodology: A new challenging interplay between values, preferences, and behaviors

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**Abstract:** This study highlights the transformative potential of Q methodology in socio-cultural economics, bridging subjective experiences and mathematical analysis. By integrating values, preferences, and behaviors, Q methodology offers a different approach to understanding cultural dynamics, revealing hidden dimensions of choice, motivation, and value systems. Through Q's structured sorting and person-centered factor analysis, it captures diverse perspectives and the intensity of preferences, enabling deeper insights into cultural and economic behaviors. While its generalizability may be limited, Q's ability to amplify marginalized voices and uncover implicit narratives makes it a valuable complement to traditional methods. Applications in preference elicitation, local economic assessments, and behavior modeling demonstrate its relevance and position Q methodology as a powerful tool for reshaping how we analyze and understand the socio-cultural dimensions of the economy.

**Keywords:** Q Methodology, Q sorting, Socio-cultural dynamics, Socio-cultural economics.

### 1. Introduction

The increasing focus on qualitative research by socio-cultural economists underscores the potential for tension between the methodological frameworks of conventional economics and those linked to qualitative inquiry. This paper examines Q methodology as both an alternative and a complement to quantitative approaches in socio-cultural economics. It integrates the in-depth subjectivity of qualitative methods with mathematical tools linked to factor analysis. The study posits that Q methodology could attract socio-cultural economists seeking a deeper comprehension of choice, motivations, values, and subjectivity, all while maintaining the theoretical framework of economics (Watts & Stenner, 2012).

The study begins by examining the characteristics of socio-cultural economics and the recent surge in interest surrounding qualitative methods. It then advances to advocate for Q methodology, outlining various potential applications within the realm of socio-cultural economics. The stages of a Q study are outlined, followed by an examination of the approach's strengths and weaknesses. A glossary is included at the end of the paper to clarify the unique terms used in Q methodology.

#### 1.1. Q Methodology and Socio-Cultural Economics

In socio-cultural economics, the discipline is shaped by two fundamental influences: economics and the socio-cultural sciences. Economics provides the foundational principles and theories for socio-cultural economists, with a primary emphasis on exploring the interplay between cultural values, social structures, and economic systems to influence societal outcomes (Rabie, 2016). The growth of socio-cultural research linked to case studies, field experiments, and cross-cultural analyses demonstrates the interplay between economic principles and cultural contexts in shaping behaviors, inequalities, and institutional dynamics (Bhattacharjee, 2012; Paulson, 2017; Rabie, 2016).

Socio-cultural economics, while grounded in a positivist tradition common to various fields, has progressively acknowledged the importance of adopting more interpretative methodologies. This change arises from evidence that questions the basic principles of economic theory, prompting more profound investigations into the contextual significance of data. For example, studies on cultural preferences and social value systems frequently yield inconsistent or seemingly irrational outcomes, making them challenging to align with traditional economic models. The increasing integration of qualitative methods with quantitative data collection has been propelled by these challenges. Moreover, socio-cultural economists have emphasized the essential importance of social structures, cultural norms, and institutions, while recognizing the constraints of solely rational decision-making models. As a result, the established theoretical framework is facing growing examination, especially regarding the principles of methodological individualism and the concept of *\*homo economicus\** (Cohen, 2014). The methodological toolkit has notably expanded, integrating qualitative approaches to effectively tackle these challenges (Dey, 2003; Hughes, 2014). Nevertheless, the utilization of qualitative "alternatives" within the largely positivist realm of socio-cultural economics may lead to a significant separation between economic methodologies and theoretical frameworks. In response to this tension, various researchers have adopted a range of theoretical perspectives, such as critical realism and subtle realism (Bagchi-Sen & Lawton-Smith, 2006; Hughes, 2014).

Q methodology has several key characteristics in common with qualitative inquiry: it is "self-referent," which means researchers do not impose a priori constructs on respondents; it allows for the elicitation of subjective opinions, beliefs, and values; and it requires only small samples to uncover the rich diversity of perspectives on a given topic. However, Q methodology's data collecting and analysis techniques differ from standard qualitative methodologies. It specifically uses the mathematical method of factor analysis to uncover underlying patterns in the data. This combination of mathematical and statistical methodologies increases Q methodology's potential acceptance inside the quantitative framework of socio-cultural economics (Watts & Stenner, 2012).

## 2. Prospective Domains of Application in Socio-Cultural Economics

Q technique has been employed in several socio-cultural research investigations, including the analysis of cultural views of well-being and interpretations of social equality. Leveraging its strengths, we propose three principal domains for the effective application of Q methodology in socio-cultural economics: revealing varied cultural and social preferences; incorporating local and contextual cultural elements into socio-economic analyses and case study frameworks; and developing and enhancing models that consider the interaction of cultural norms, social behaviors, and economic systems (Becker, 1962; Rakhmeeva & Chesnyukova, 2024).

### 2.1. Preference Extraction

There is increasing acknowledgment that conventional economic methods for uncovering human preferences also influence their characteristics and structure. Economic methodologies, such time-trade off, visual analogue scales, and standard gamble, frequently impart an illusion of precision and accuracy, despite the fact that the measurements employed to establish statistical correlations may be incorrect, flawed, or, in extreme cases, devoid of value. The study asserts that Q provides a method for preference elicitation that reduces researcher bias, enabling participants' perspectives to be expressed in a distinctly distinctive manner (Rakhmeeva & Chesnyukova, 2024).

However, if elicitation approaches are to be useful to socio-cultural economists—for example, in determining cultural policy goals or guiding resource allocation—they must go beyond just gathering comments about the characteristics of a possible cultural service or initiative (Romero, 2022). These techniques should also provide information about the intensity of preferences, which reflects the depth of individual or communal commitment to specific cultural values or objectives (Kahneman, 2011). Furthermore, preferences must be elicited in suitable socioeconomic and cultural contexts, while taking

into account the opportunity costs of resource allocation and the marginal trade-offs involved in decision-making (Throsby, 2001).

Q method offers a distinct benefit in this regard, as factor loadings indicate the strength of association with individual opinions, allowing for a more sophisticated investigation of preference intensity (Bhattacharjee, 2012). This approach is consistent with the requirement to examine the subjective components of socioeconomic activity, which frequently resist reduction to simply quantitative measures (McKeon & Thomas, 1988). Q approach, by including concepts of opportunity costs and marginal replacement into the formulation of instructions, can replicate the trade-offs experienced in real-world decision-making processes, increasing its application to socio-cultural economics.

Despite its potential, understanding Q data is fundamentally complex, necessitating careful consideration of subjective and environmental factors. Nonetheless, this complexity may produce more profound insights than the quest of objectivity, which is frequently emphasized in conventional methodologies and risks oversimplifying the interplay of cultural, social, and economic aspects (Dryzek, 2005). A more moderate use of Q in preference elicitation is scenario construction to assist traditional procedures like discrete choice trials (Ryan & Deci, 2001). These scenarios often necessitate the inclusion of a small number of qualities, which is guided by literature reviews, qualitative investigations, expert panels, or researcher assessment (Louviere, 2000). The structured and open framework of Q methodology provides a rigorous process for refining and validating these traits, ensuring that they are culturally and contextually appropriate to the research subject (Ryan & Deci, 2001).

Future study should thoroughly assess the methodological viability of Q methodology as a valuation tool in socio-cultural economics. Its ability to complement and augment other preference elicitation strategies, particularly by incorporating subjective and cultural components, represents a promising frontier for the field (Watts & Stenner, 2012). This goal would benefit from multidisciplinary approaches that draw on cultural studies, behavioral economics, and social psychology to address the multidimensional nature of preferences in sociocultural situations.

## 2.2. Economic Evaluation Through Case Study Methodology

Q approach is well-suited for case studies and small-scale economic evaluations. Conventional economic evaluation methodologies typically fail to consider local cultural variables and context (Chauvel, Fournier, & Raimbault, 2003).

Q approach incorporates local language and cultural characteristics to tailor evaluations to local conditions and stakeholders' perspectives (Chauvel et al., 2003).

## 2.3. Economic Behavior

The methodology also can be used to create more detailed models of economic functioning that take into account the situational and cultural restrictions that influence human action and behavior. For example, Q technique has been applied to investigate economic rationality and lifestyle choices influenced by cultural and social circumstances. Although Q can be used to verify a priori assumptions and standard economic theory, its main strength is its inductive ability to offer novel insights on human motivation and socioeconomic activity (Brătianu, Pînzaru, & Zbucnea, 2017; Hirshleifer, 1987).

One such use could be to investigate the development and priority of value systems among stakeholders such as policymakers, cultural institutions, and community leaders. It could also aid in understanding how subjective preferences and motivations influence economic decision-making and actions in a variety of socio-cultural contexts. There is a clear role for Q methodology in socio-cultural economics, including applications that supplement or address the limitations of existing methods, as well as areas for future research that require further development (for example, as an alternative preference elicitation technique or to investigate cultural value hierarchies). The following section discusses the key features of Q methodology, followed by a breakdown of the processes involved in carrying out a typical Q study (Brătianu et al., 2017; Hirshleifer, 1987).

### 3. Q Methodology Definition?

Q approach consists of interconnected techniques for exploring subjectivity. 'Q' distinguishes this method from 'R' methodology, which refers to classic statistical methods based on correlation. ('R' refers to Pearson's product moment correlation ( $r$ ). In Q technique, subjectivity refers to communicating personal perspectives and conceptions, rather than uncovering 'objective' facts. Q approach is applied to examine topics with limited alternative perspectives, including as taste, values, and beliefs (Rogers, 1995).

Q approach includes two primary features: the 'Q sort' and a 'by-person' factor analysis. Respondents can reflect on their opinions, attitudes, and perceptions by sorting and ranking things supplied to them (see to Q sorting later in the paper). Factor analysis identifies a few key views. By interpreting the variables, a structure may be constructed to offer several perspectives on a topic. This involves identifying commonalities and correlations between different types of reports and revealing "competing but equivalent stories".

Q studies involve four stages: selecting the 'Q set' of items (usually statements), selecting a sample of individuals or 'P set', sorting the items by respondents (often followed by a brief interview), and analyzing and interpreting the factors. Figure 1 shows a practical application of the Q study principles (McKeon & Thomas, 1988; Rogers, 1995; Watts & Stenner, 2012).

#### 3.1. The Q-Set Selection

The concourse is the beginning site for all Q studies. It refers to the set of ideas, opinions, and beliefs (not facts) concerning a specific topic of concern. The Q set is a selection of objects from the concourse, mostly statements, but can also include photos. Accessing the concourse can be done through interviews, focus group discussions, public papers, or popular press coverage. The goal of the Q set is to provide a diverse representation of the concourse, regardless of its origin (Rogers, 1995).

Respondents can select structured or unstructured statements to sort. In the former method, things are chosen based on their supposed relevance to the topic, with an emphasis on representation. The latter uses sample items to represent points in a theoretical matrix. Structured samples are used similarly to semi-structured interview schedules. The structure covers certain aspects of an argument or set of assertions. The vast number of possible permutations in a Q sort limits the researcher's ability to affect the factors that emerge. A basic 10-item Q set may have 1,209,600 (10 factorial) distinct sorts (Brown, 1996).

When using a structured or unstructured Q set, it's important to depict the "communication concourse" of potential value sets, similar to how conventional quantitative techniques employ samples to reflect a reference population. The amount of items in the Q set varies every study, but typically ranges between 20 and 100 statements (Brown, 1996; Meckstroth, 1981).

#### 3.2. The P Set Procedure

Individuals are chosen based on personal characteristics, expressed viewpoints, and social background. The sample size will be determined by the research topic, not statistical power.

P set sizes differ amongst research in socio-cultural economics, depending on the topic and breadth of the investigation. Intensive studies frequently involve a small number of subjects, each of whom performs repeated Q sorts under different conditions of instruction. For example, a respondent could be asked to reflect on their cultural consuming habits and rank a Q set from "most representative of my cultural preferences" to "least representative." The respondent could then repeat the process for various contexts, such as preferences shaped by familial background, peer groups, or professional situations. The participant's Q sorts are then evaluated using factor analysis to determine the underlying components related with these various cultural and social experiences (Brown, 1996; Meckstroth, 1981).

Extensive investigations sample a bigger P set to obtain Q kinds from diverse individuals. The ideal size of the P set depends on the number of variables and how individual Q sort 'load' on them. This



A forced Q sort requires respondents to sort statements into a quasinormal distribution, as seen in the example above. This sorting method allows responders to organize their statements in a logical manner. Brown showed that skewed, flattened, inverted, or rectangular distributions have limited impact on emerging factors and are not statistically or conceptually significant. Respondents can choose where to place objects, even with forced distributions. Although the range and quantity of items are predetermined, the respondent choose where each statement is placed (Kline, 2014).

Unlike typical rating scales, which rate items sequentially and disregard contextual information, this approach considers contextual factors.

Q sorters determine the rank and contextual significance of each item. The distribution does not indicate a pre-defined meaning, but rather the sorter's interpretation of the scale. This approach allows for more subjective data than traditional rating scales, which limit the range and patterns of replies.

To record item placement, numbers are assigned to each statement and recorded on a data sheet with a scale or grid for easy data entry. Qualitative interviews are often used to supplement the Q sorting process and provide additional context. Qualitative data is utilized to help interpret the factors.

**Table 1.**

Glossary of terms, Extracted from.

Term	Definition
Concourse	The 'universe' of subjective viewpoints on a subject.
Q set	The set of items/statements, usually transcribed onto cards, which respondents are asked to sort according to the condition of instruction.
P set	Sample of persons selected (usually on theoretical grounds) to sort the cards/statements in the Q sample.
Condition of instruction	All Q sorts are conducted according to some condition of instruction i.e. direction to sort with reference to some specification such as sorting the cards representing your own point of view, from those which are 'most like me' to those which are 'most unlike me'.
Q sort	The arrangement of items or statements by respondents according to the condition of instruction. Can be forced or unforced and administered by interviewer or self-completion.
Rotation	Rotation is a statistical technique in which the relation between Q sorts as they are represented in factor space can be examined from different angles.
Factors	Factors are analytic constructs calculated using correlations to reduce a large number of variables to a small number of underlying dimensions. In Q methodology each factor is seen as a distinct account relating to the topic studied, constructed from the correlations between individuals' Q sorts.
Factor array	The composite Q sort representing a factor, derived from weighted averages of individual Q sorts.
Factor loadings	Factor loadings represent the degree of concordance between an individual Q sort and a factor.
Factor scores	Scores given to statements in the composite Q sort corresponding to the original values used in the Q sort (e.g. -5 to +5).

### 3.4. Data Analysis

Once respondents have sorted the items, correlation and factor analysis are undertaken. The first stage involves calculating a correlation matrix to determine the degree of similarity between individuals' Q kinds. Correlations (r) are determined using the formula below:

$$r = 1 - (\text{sum } Diff^2 / \text{sum } indiv^2)$$

*Diff* indicates the disparity between the 'rank score' (e.g. -5 to +5) assigned to each item by two respondents in the inquiry, and *indiv*, which stands for the rank score that each individual has provided. It is therefore possible to obtain the correlation matrix by performing this computation multiple times for each respondent and comparing it to each and every other respondent in order to generate a table for *n* respondents among *n*×*n*. The correlations range from one to one, with a negative correlation suggesting that the items have been rated differently by the Q sorters. In the extremely improbable situation that two Q sorts were identical, the number of differences would add up to zero, and the value



of  $r$  would be equal to one, indicating that there is a perfect correlation between the two (DeVellis, 2016).

### 3.4.1. Factor Analysis

Factor analysis is a way to break down a set of data into an easy structure of factors based on how many variables are related to each other. This method has been used a lot in psychometrics to boil down a lot of test scores to a smaller set of factors that are easier to understand. Usually, you factor analyze by item (using questionnaire items or test results as the variables of interest), but the Q method uses by-person factor analysis, which looks at the patterns between respondents, which are shown by their Q types. So, to do this kind of analysis, the dataset needs to be switched so that rows of cases become columns of factors.

Factor analysis of Q sort data involves two approaches: *varimax rotation and judgmental rotation*. Often, analysts will consult both solutions. Using varimax rotation, a technique used alongside principle components analysis in factor analysis, leads to higher levels of explained variance and a simple structure that maximizes both factor similarities and differences (orthogonality). Although rules of thumb, such as eigenvalues surpassing 1 or scree plot cut offs, are commonly utilized, retaining the right number of variables still requires judgement (Comrey & Lee, 2013).

Many Q social researchers propose for judgmental (or theoretical) rotation. Judgmental rotation enables analysts to consider things from several perspectives before arriving at a solution. Individuals can be defined as reference variables, with factors spun around them. This strategy gives the analyst more control over the solution, but it cannot push elements to a specific outcome. Brown's description of a Q research conducted in a psychiatric unit highlights the need of judgmental rotation (Brown, 1996; Watts & Stenner, 2012).

The fourth factor preserved for rotation had an eigenvalue less than 1 and a single Q sort to define it. Non-statistical analysis revealed that this component reflected the perspective of the team's senior decision-maker (Comrey & Lee, 2013). Excluding this aspect would have meant losing valuable data. The capacity to rotate factors based on local context or theoretical principles (e.g. power relations) is valuable.

Judgmental rotation permits exploratory hypotheses regarding data patterns. Some argue that statistically driven factor solutions, such as varimax, may not be as sensitive to context or theory as judgmental solutions.

### 3.4.2. Factor Loadings, Factor Arrays and Factor Scores in Economics

A factor array is used to represent factors. This document presents a composite Q sort, which is derived from the weighted averages of individual sorts. The resultant meaning is elucidated through the calculated factor scores. Factor scores represent the computed 'rank score' (e.g. -5 to +5) assigned to each item within the factor array. Each factor can be represented using the original scoring grid by placing statements into the designated spaces on the grid (Brown, 1996).

Loaded factors indicate the extent of agreement between an individual's Q sort and the factor. 2 to 2.5 times the standard error (SE) serves as a criterion for determining the significance of a correlation (Bastin et al., 2013). The SE is calculated using the formula  $SE = 1/\sqrt{N}$ , where N represents the number of statements. In the grid presented in Figure 1, N is equal to 49, indicating that correlations are deemed substantial when  $r$  exceeds 2 to 2.5 times  $1/\sqrt{49}$ , specifically within the range of 0.29 to 0.36 (DeVellis, 2016).

## 4. Interpretation

The objective of the interpretive phase is to determine the distinct reports that support the patterns of Q sorts, based on their similarities and differences.

The interpretation of factors in Q methodology is expected to align with decisions regarding the selection of factors for retention and rotation. The interpretation of factors in Q methodology is an iterative process that necessitates reflection on the structure of the concourse. It involves referencing theoretical frameworks and considering the specific features that delineate and bind the factors, similar to how qualitative analysis typically intersects with data collection.

Factor arrays play a crucial role in the analysis of each factor. In contrast to traditional factor analysis, the comparison is made between the factor scores linked to each factor and the Q sort items, rather than the factor loadings. Key sources of information for interpreting factors include: the items located at both ends of the spectrum; neutral items; items that differentiate or embody common perspectives among factors; any noticeable discrepancies within the factor array; and observable differences in item interpretations across factors (Watts & Stenner, 2012).

The arrangement of factor arrays on full-size grids serves as a valuable tool for interpreting factors, alongside the qualitative accounts gathered during and after the Q sorts.

#### *4.1. The Factors in Q Methodology*

The elements indicate the many perspectives on the topic of interest. Judgmental rotation results in fewer factors compared to statistical rotations and eigenvalue cut-off rules, which typically exclude factors with eigenvalues below one (Jolliffe, 2013; Osborne, 2014). Factors are typically labeled and given with descriptions, loadings, and scores to provide statistical information.

## **5. Finding and Discussion**

### *5.1. The Strengths of Q Methodology*

It's possible for paradigm wars to happen when qualitative methods are used in sociocultural economics or other fields with a strong quantitative history. This paper talks about Q methodology as a way to answer qualitative research questions that is also clear from a mathematical point of view, which might appeal to a field that usually uses quantitative methods. We don't want Q to replace qualitative methods; instead, we want it to be used along with or instead of qualitative methods to improve and add to standard practice.

The Q method is better than qualitative study in some ways. People don't like how the interview data was analyzed because of "the mystery of the classification."

It's hard to figure out how to understand and organize large, complicated statistics so that they can be shown in a way that is useful. One thing that makes that task hard to meet is being able to explain exactly what the study was. It's clear that qualitative analysis is both an intellectual and a technical process, since it uses code, themes, and other tools. However, it can be hard to fully explain this process. Reflexivity, triangulation, and other methods are often used to give reliable stories that take into account the researcher's and the researcher's roles in coming up with the results. At the end of the day, though, the researcher may worry that their analysis is partly shaped by their own assumptions. Q lets accounts come up that aren't expected or make sense. This is possible because the Q sort is self-referential in the end, while the concourse and Q sample rely on the researcher and their baggage when it comes to knowing things. In Q, the people who answer decide how the questions are categorized (McKeon & Thomas, 1988; Rogers, 1995; Watts & Stenner, 2012).

Another advantage concerning the Q method is that it works well for topics where people don't always have a ready-made story. Qualitative researchers have come up with ways to study new areas. For example, they may question the same people more than once or give the people they are studying more time to think about the topic they are studying. It's not necessary for respondents to be able to explain their thoughts in a clear or consistent way for Q methods to work. Instead, the shared accounts between respondents come from the factors that led Brown to say, "Q methodology reveals dimensions which are intrinsic, or inherent, in a concourse, i.e. which emerge from it naturally."

On a philosophical and cognitive level, Q works better with qualitative methods than with other quantitative methods. This means that Q helps to bridge the gap between qualitative and quantitative



methods that has been talked about a lot. Q is able to pull out a simple structure from complicated data while still being aware of how different people may understand it.

This kind of logical combo doesn't work with (or is hidden by) most quantitative tools. This method is unique because it combines emotional ideas with clear and organized ways of thinking about things.

### 5.2. The limitations of Q methodology

The Q method has been used a lot in many research areas, and there are more and more Q studies in sociocultural economics. However, sociology and cultural studies may not like it because it is new and subjective.

It is not possible to use Q for large-scale, generalizable study that is based on logical positivism and the number of people who agree with a point of view. Q's analytical attention stays on the point of view that is making the group together. Q also goes against the basic idea of freedom that is at the heart of statistical inquiry. If you put a Q sample sentence somewhere on a spectrum, it changes where the next statement goes. However, some writers have questioned whether this violation is important and say that this can be fixed by using a Q-sample that is the right size and raising the significance level from 0.05 to 0.01 (McKeon & Thomas, 1988; Meijer, 2023; Waters & Deane, 1985).

## 6. Conclusion

The goal of this study was to present the Q method and look into what part it might play in sociocultural economics. Three main themes in the field have been used to describe possible study areas: finding out what cultural and social tastes people have; including local context factors in socio-economic assessments; and modeling economic behavior in terms of its sociocultural aspects. Q is a quantitative method, but that shouldn't take away from the fact that it is also interpretive and judgmental by nature, which is something that both qualitative and quantitative methods have in common. We think that the Q approach has a lot of potential. But it's still not clear if it will become a standard tool for sociocultural economics to use in their research.

### Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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