

A GENERAL THEORY OF UNITS OF ANALYSIS FOR CULTURAL ANTHROPOLOGISTS

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ABSTRACT

Scant attention has been paid in the social sciences to the problem of defining units of analysis. The problem of using culture as a unit of analysis is that culture is not a unit of analysis like a jury is a unit of analysis. It is also a more ambiguous unit of analysis than religion, ethnicity or gender, units which are possible to identify and define. It is concluded that the individual is the least problematic unit for analysis. The limitations of using the individual as the unit of analysis are that group characteristics and behaviors can only be measured indirectly and studies are prone to the 'individual differences fallacy.' It is dubious that one can generalize from individuals beyond the community. There are no ultimate primitive units of culture and whatever unit for analysis the researcher selects depends on the questions asked. Always however, a unit of analysis must be clearly defined, it cannot be used as a variable rather variables are extracted from the unit of analysis. Most importantly, there should always be a theory of analysis that justifies the choice of the units for analysis.

KEY WORDS: socio-cultural anthropology, units of analysis, culture, individual differences fallacy, religion, ethnicity, gender.

ANOTACIJA

Socialinių mokslų tyrimuose pastoviųjų analizės vienetų nustatymo problemoms yra skiriamas nepakankamas dėmesys. Metodologiniai klausimai visų pirma yra orientuoti į kintamųjų objektų aprašus, koordinates bei tyrimus. Tuo tarpu kiekviename moksliniame tyrime yra būtina aiškiai apibrėžti tiek pastoviuosius, tiek kintamus tyrimo objektus. Šios sąlygos ignoravimas tiesiogiai veda prie metodologiškai nepagrįstų, klaidingų išvadų. Analizuodami bendruomenės dėsnius, antropologai tokiais vienetais yra linkę laikyti individus, o tirdami kultūras, vienetais laiko atskiras bendruomenes, aptardami geografinius, kalbinius arealus – vienetais laiko vienokias ar kitokias kultūras. Ši metodika laikytina *individualiųų skirtubių paklaida*, kai smulkesni vienetai (individai, bendruomenės) laikomi identiškais stambesnio mastelio vienetais. Visada abejotinos yra išvados apie individo elgseną, remiantis vien bendraisiais jo visuomenės dėsningumais. Nėra pirminių, pirmapradžių kultūros sampratos vienetų, ir tik pats tyrėjas savo analizės vienetu renkasi tai, ką jis nori ištirti. Labai svarbu yra remtis straipsnyje aprašoma visuotine analizės vienetų teorija, leidžiančia neklystamai pasirinkti tinkamą analizės vienetą konkrečiuose antropologiniuose tyrimuose.

PAGRINDINIAI ŽODŽIAI: sociokultūrinė antropologija, analizės vienetų teorija, kultūra, individualiųų skirtubių paklaida, religija, etniškumas, lytis.

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Doing anthropology in the Baltics is a relatively new project. The goal of this paper is to provide some 'rules of thumb' or some general guidelines to keep in mind when anthropologists, or any social scientist, is study people. It is important for anthropologists to keep in mind that the people they are writing about is a biased sample that may not be representative of the community or of the culture that the anthropologist is writing about. This issue is really distilled in two related questions: (1) "is my sample a reasonable representation of the community or cultural?" and (2) "What unit of analysis does my sample represent?" In this paper I provide a general theory of units of analysis and how they can be applied to research, particularly cultural research.

1. Definition Statement

Scant attention has been paid in the social sciences to the problem of defining units of analysis. Instead, the methodological lens has been aimed at describing, measuring and analyzing variables. This chapter describes the problems that occur when the researcher neglects to clearly define the units of analysis and how to avoid them. Units of and for analysis are always entities while variables refer to the attributes, events, or processes that are part of or impact on entities. For any research question it is necessary to clearly define the unit as well as the variables of the study. Ignoring this distinction leads to either the ecological or the individual fallacy. Both of these problems and their resolution are addressed. This is followed by an examination of defining units for cross-cultural research. Cross-cultural research requires that the units of comparison are independent of one another otherwise the similarities we find may be a result of diffusion rather than of independent origin. It is demonstrated that this problem can only be resolved on a case-by-case rather than a systematic basis. A checklist for determining the appropriate units of analysis for any social research project is provided at the conclusion of the chapter.

In this chapter provides a detailed discussion of the meaning, uses and limitations of the concept 'unit' in the social sciences. There is some disagreement over how to define 'unit' and what kinds of things can and cannot be classified as units. The first two sections of this chapter provide a definition and typology of social units. The third, fourth, and fifth sections consider the three most obdurate and enduring problems associated with the unit concept: (1) the ecological fallacy, that is, conflating or confusing situational constraints with personality; (2) the particulate-systemic or attributionist fallacy, confusing a behavior for a trait or attribute of a person or group; and (3) the problem of determining the independence of units. This latter problem has been dealt with most comprehensively in cross-cultural studies where it is known as 'Galton's problem'. The sixth section offers a checklist for researchers in helping them decide what cultural units to choose for their research and the limitations and advantages for analysis of these different kinds of units.

2. Defining 'Unit'

A unit is a person, element or some discrete indivisible property that can be treated as an entity and can therefore be measured. Variables are never units. A unit contains or expresses the variable that is under study. A unit may be an individual or a collectivity. What distinguishes a unit from a variable is that a unit is a discrete thing in itself. Time and space, as in minutes or inches, are units of measurement not of analysis.

A unit of analysis is always treated as if it were an entity. If one is interested in the height of sixth-grade boys and girls, then each individual boy and girl is a 'unit of analysis'. In the statement 'he is six-feet-five', 'he' is the unit of analysis and 'six-feet-five' is an attribute of that unit, while feet and inches are the units of measurement. The individual is a discrete and indivisible thing that has the property of being 'six-feet-five'. Discussing a property as if it is an entity is called the 'attributionist fallacy' and is covered in section four. In short, a unit is always an entity from which measurements are taken.

In a typical social science two-mode data matrix, rows identify cases and columns identify variables. In two-mode matrices, cases are usually equivalent to units and the column labels identify the variables in the study. A cell is the intersect of a unit and a variable. The value in any cell is a measure of the amount of that variable associated with that unit (see Figure 1). Social scientists usually analyze the cell value as a variable rather than as a social or cultural unit value.

	Variable 1	Variable 2	Variable 3	Variable 4	Variable 5
Abel					
Beth					
Carl					
Don					

Figure 1: Example of a Two-Mode Matrix with the Cases as the Units of Analysis

Researchers use a two-mode matrix to test hypotheses about the relations between variables. The unit itself is seldom considered in the analysis because ‘variable’ and ‘unit’ are typically perceived to be in a figure-ground relationship with the units as the ground and the variables as the figure(s). The analytic lens is aimed at the variables rather than the units (i.e., the individuals). The units are figuratively drawn and quartered with only their salient parts incorporated into the analysis. For example, one can compare suicide rates across time, space (e.g., a rural-urban dimension), cultures, or religions without ever considering the units (i.e., the people committing suicide) as individuals. The individuals who ultimately comprise the units of analysis are extricated from the study except as they provide anecdotal material.

An example of a research strategy which retains the individuals as units of analysis and measurement is the study “Environmental Values in American Culture” by Kempton, Boster and Hartley (1995). The researchers compared the environmental values of a sample of sawmill workers, dry-cleaning managers, the general public, Sierra Club members, and members of Earth First! The study focused on the response profiles of all the individuals and compared these profiles both within and between groups. The researchers found surprisingly high agreement among the members of these groups. In this study, the individual was the unit of analysis and the unit of measurement and the statistics and charts depicted the relationship between individuals rather than between variables. This study relied on consensus analysis (a relatively new method introduced in 1986 by Kim Romney, Sue Weller and William Batchelder) to measure the aggregate level of agreement across all variables for each individual, thus figuring the unit of analysis and grounding the individual variables. However, such studies are rare and most foreground the variables rather than the units. The following discussion of the different kinds of units considers the former rather than the latter situation. A problem with using the individual in toto, as both the unit of analysis and measurement is that the profile variables may range from nominal to ratio, and vary considerably in how they are operationalized and whether they are independent of one another. For example, measures of social class often aggregate different types of variables such as income, religion, prestige, and education as if they can all be measured by the same scale. This crude amalgamation of different types of variables to construct and then profile social classes both mystifies class and “washes out the actual grid of causal processes that distribute people across several dimensions of the social landscape” (Collins 1990: 48). On the other hand, such mixing can lead to greater generalizability if takes into account the limitations and difficulties of making summarizing inferences from an array of disparate variables.

3. Kinds of Units

The individual is the most common unit of analysis. Studies on personality traits, agent-based analysis, decision-making, and life histories are examples of individuals as the units of analysis. When data on individuals is aggregated and the analysis is based on the aggregate profiles then the collective is the unit of analysis. At minimum, a collective consists of two or more individuals who recognize their common identity. The term 'collectivity' is favored over 'group' because the criterion 'interaction' is often a defining feature of 'groupness'.

Individuals can recognize their common identity on the basis of religion, gender, ethnicity, common language, culture or nationality without interacting. Durkheim (1893/1933), Toennies (1887/1957), Weber (1947/1964) and Benedict (1983) are among the many social theorists who have thought to distinguish the social structural and psychological differences between small and large collectivities. Relations in small collectivities are multiplex (i.e., many connections) and 'face-to-face', with interactions characterized by intimacy or *Gemeinschaft* (i.e., informality). Bonds in large collectivities are usually singleplex, relationships are imagined rather than actual, and interactions when they occur are characterized by formality or *Gesellschaft*.

Small collectivities are often defined in terms of their structural components or their social function. Structural analyses of small groups use either the size of the group as the unit of analysis or the form of the group. Heider (1977) and Simmel (1950) were interested in the inherent sociological properties of dyads; Simmel (1950) and Granovetter (1973) were interested in triadic relations. The study of dyads and triads is a vital cottage industry in the subdisciplines of social networks (in sociology) and personal relationships (in psychology). In these studies it is the number of individuals that comprise a group that is the unit of analysis. For example, Simmel noted that one property of dyads is that it is the only social group in which the individual has the option of terminating the group. Granovetter points out that a property of triadic relationship is that their stability rests on the mutual affinity of each member for the other. Group size, not its shape nor its members, comprise the unit for analysis. Collectivities such as dyads and triads are studied as if they were single entities with the relationship of properties to collectivity analogous to that of traits and the physiological properties that pertain to an individual.

Alex Bavelas (1950) initiated a series of experimental studies on the shape of small groups. He and his colleagues wanted to investigate the communicative efficiency of different social forms. By efficiency, he meant a combination of accuracy and speed in solving problems. Bavelas and his associates discovered that 'star-shaped' structures were the most efficient at solving problems in a laboratory setting while 'circle-shaped' structures were the least efficient. In a post-test survey he discovered that those subjects who were placed in the circle structures were much happier with participating in the experiment than those who were placed in the star structures (with the exception of the individual at the center of the star). The reason for these responses is based on emergent behavioral and emotional properties of the respective groups. The center person in a star-shaped structure received all the information from the people at the end of each 'ray' or spoke. The subjects at the end of each ray were not in communication with each other and were completely dependent on the central person to make a decision for the group. Each would pass their bit of information to the central person who then had complete information to solve the problem that was posed to the group. In circle shaped structures, the information is distributed equally and the group seeks to make its decision via consensus, which is time-consuming, may be faulty but necessitated the input of each participant in the decision-making process. The Bavelas research project was very success-

ful in isolating group-level characteristics and analyzing their effects on communication. One can imagine many other types of social forms, as indeed Bavelas and many others have done, but most other forms of small groups lie somewhere between star and circle structures. In the growing field of network analysis (largely spurred by Bavelas's findings) much research has been conducted on cliques (where each member of a group is connected to everyone else), the directionality and the strength or valence of ties, and on informal as well as formal networks. In these studies the unit of analysis is not the individual or group but the pattern of relations.

Another division under 'small collectivities' refers to those groups that are organized by status-role relations. Statuses are distributed through a bounded group creating a rich network of reciprocal privileges and obligations. Roles are understood to be the rules for the appropriate engagement of a status. Thus, a status set is a system of reciprocal rights and duties. Ascribed statuses are acquired by birth or are assigned by convention. Two examples of an ascribed status acquired by convention are age-grades and kin statuses. Achieved statuses are those that are acquired by choice and through a social decree. In contrast to a social convention, a social decree refers to a claim for a status that is then legitimated by a referent group. A few statuses such as adopted kin status may be considered both achieved and ascribed, but the majority clearly belong to one or the other category. Research that relies on status-role as the unit of analysis typically examines (1) the qualifications of the position, (2) the distribution of rights and duties of the position; (3) activities spawned by those rights and duties; and (4) the settings associated with the status-roles.

Large collectivities are divided into supracommunal and birth/ideological types. Any collectivity that contains two or more levels of institutionalized authority is considered a supracommunal collectivity. For example, in a chiefdom there are local chiefs who have authority over the commoners in their locale and paramount chiefs who have authority over the local chiefs. A nation-state has, at minimum, three supracommunal levels: national, regional, and local seats of authority. The nation-state is the unit of analysis in world systems theory where the transnational flow and exchange of natural resources, as well as humans, between core and peripheral nation-states is the subject of study. Supracommunal levels were used as the units of analysis by Elmond Service (1962) who placed cultures into a cultural evolutionary scheme based on socio-political levels of integration. Bands and tribes were the simplest societies with zero or one supracommunal level; chiefdoms had two supracommunal levels; and states consisted of a minimum of three such levels. Corporations also have hierarchically-nested seats of authority. Corporations are units of analysis in studies on corporate organization, the production and flow of goods and capital, and in analyses of the stock market.

Collective identities predicated on birth and/or ideology include culture, sex, language and ethnicity. Sex is a unit of analysis in evolutionary psychology where it is assumed that sexual differences promote different mating strategies and work activities. Expendability theory, for example suggests that in foraging societies the reproductive value of women is far greater than men and thus women are protected and remain near camps while men take on the high-risk activities such as big-game hunting. Sex is a unit of analysis when social differences are seen to be a result of inherent psycho-biological differences between males and females. When these differences are evaluated in terms of gender, culture becomes the unit of analysis. Recent cross-cultural studies have shown that patriarchy is greater in Islamic countries and communities than in Hindu or Christian countries or communities (e.g., Williams and Best 1990). In this kind of study, religion is the unit of analysis, culture is held constant, and the properties of the religion are the variables. Religion and gender are cultural constructs and

cannot be units of analysis in ethnographic studies. That is, culture is always the unit of analysis when the subject of study is a subsystem of a culture. Religion, gender, ethnicity and other macro-collectivities are units of analysis only when they are being studied cross-culturally. In these instances, these units are treated as mega-cultures (de Munck and Korotayev 2000).

Ruth Benedict's "Patterns of Culture" first published in 1934, laid the groundwork for the study of national cultures and the theoretical predilection of researchers to reify culture. She explicitly argued that cultures were not merely a collection of traits but were 'like individuals', forming a more or less integrated pattern of emotions, thoughts and actions. In reifying culture, Benedict promoted the use of culture and other social constructs as units rather than objects of analysis. More recently Bellah et al have re-popularized the notion of culture as an entity in their book "Habits of the Heart" (1986) and its successor "The Good Society" (1992).

The typology of social units of analysis presented above will undoubtedly be modified over time. However its two primary nodes – the individual and the collectivity – must be the core divisions of the typology. While it is true that collectivities are comprised of individuals, it is not true that the properties of collectivities are identical with those of individuals. The following two sections take particular issue with problems that result from confounding collectivities with individuals and individuals with collectivities.

4. The Ecological Fallacy

Robinson (1950) coined the term 'ecological fallacy' to refer to the error of interpreting variations in environmental settings as variations among individuals. One tactic for solving Robinson's ecological fallacy is by constructing surveys in which questions clearly state whether they are asking personal opinions of the subject or general assessments of an environment setting. A Likert-scale example of an ecological (that is, environmental) question is to ask respondents to agree or disagree with the comment 'sometimes class is very disorganized'. A comparable example where the individual is the unit of analysis is to ask respondents to agree or disagree with the comment 'Sometimes I am not prepared when I come to class'. The ecological question provides a generalized assessment of the environment without targeting the source of disorganization. In the ecological example it is unclear as to what unit of analysis the subjects are responding to – the setting, the teacher, the other students, themselves, or all of these.

Richards (1990) and Richards et. al (1991) have compared the use of individualist and ecological units to analyze classroom environments. They used the Classroom Environment Scales developed by Moos and Trickett (1987), which consisted of true-false questions about the classroom environment. Richards et. al noted that the questions were 'modeled on and resemble the type of questions used in objective personality tests' (1991:425). A consequence of this is that measures of dispersion (such as standard deviation) were much higher among individuals in settings than across settings and reliability measures (alpha) were also higher across than within settings. Richards et. al also suggest that assessments of setting measures were mediated by personality differences between the individuals and that this confounded the results within any one setting. Thus, survey questions should be crafted so that they distinguish and elicit assessments of the environmental setting rather than serve as 'disguised measures of individual differences'.

Richards and colleagues use the terms 'ecology' and 'settings' interchangeably. But it should be remembered that, strictly speaking, the setting is not the unit of analysis but the group that inhabits the setting. The actual classroom does not fill out a questionnaire, students do. The Richards et. al

study is important because it unequivocally confirms that by themselves, and without a theoretical justification, individuals as the unit of analysis are invalid and unreliable units by which to measure setting-level characteristics. It should be noted that by 'setting' Richards et. al are referring to the small-scale groups that inhabit the setting and thus 'setting' is a group-level unit. If the goal of the study is to understand the characteristics and dynamics of settings (in this case the classroom), then the proper sample for the study is settings and not individuals and the goal of the researcher is to examine variation between settings and not between individuals.

Recently, Gary King (1997) has proposed a statistical solution to the ecological inference problem. Leo Goodman (1977) had previously proposed an ecological regression model to estimate individual differences from census data. King has added to Goodman's model by using random coefficients to further minimize the aggregation bias. His solution has met with partial success in finding estimators of sub-populations within a larger population. However, while statistical sampling is a powerful tool, statistics is not good at low-level inferences, that is, reducing the whole to its components, a kind of reverse statistics.

The ecological fallacy is the error of attributing the characteristics of a population onto an individual. Statistical inference is intended to generalize from a sample population to the whole population. The goal of statistics is to generalize from the particular to the whole and not from the whole to the particular. As such, statistics cannot offer a solution to the ecological fallacy. Data on individuals or on sub-populations within a larger population can best be obtained by making sure that the unit of analysis is the individual or the sub-population and not the larger population. As Richards and his colleagues note, this problem can be avoided by designing survey instruments that elicit individual characteristics and attitudes. It is only from individualistic data that the researcher can track individual and sub population characteristics when necessary.

In a study in which local and individual hospitalization rates were derived from community-level estimates of socioeconomic characteristics (SES), Hofer (1998) noted that SES community profiles may not be representative of those individuals in the community who are actually going to the hospital. For example, it is known that the proportion of elderly who have medical coverage is far greater than it is for young adults and that some of these elderly patients will use the hospital many times. To obtain accurate estimates of the sub-populations using and also not using the hospital, it is necessary to obtain data on samples of individuals, not social aggregates. The best aggregate estimator of sub-population or individual differences is to either make sure that the individual characteristics to be analyzed are representative of the aggregate or to use complete analytical models that target only that set of SES data pertinent to a target population. In their study on hospitalization rates, Billings et. al (1993) found it necessary to include age and income interactions in assessing SES variables in small area studies.

Though ecological (groups) units comprise individuals, their characteristics are not equivalent to that of the individuals in the group and for this reason one has to apply a different theory to studies that use collectivities as units of analysis than to studies that use the individual as the unit of analysis. When collectivities are the units of analysis, the proper subject of inquiry should be the overall characteristics and emergent properties of populations. Group-level characteristics may be very different from those of the individual members of the group. Ethnographic and psychological studies are frequently guilty of the opposite of the ecological fallacy. The fallacy of mapping reflects individual characteristics onto a group. We turn to this problem, called the 'individual differences fallacy' by Richards (1990), next.

5. The Individual Differences Fallacy

The ‘individual differences fallacy’ occurs when the individual is used as the unit of analysis in order to investigate and describe the characteristics and behaviors of a collectivity. This error will be examined by discussing the individual differences fallacy in studies of small- and large-scale collectivities. The appropriate stratagems for resolving this fallacy are substantively different for small and large-scale collectivities. Small-scale collectivities are usually discrete molecular units; large-scale collectivities have indeterminate or ‘fuzzy’ boundaries and are always ‘imagined’, rather than actual. For small-scale collectivities it is often possible to observe survey and collect qualitative and quantitative data from all the members of the collectivity; this is never possible for large-scale collectivities. Hence, the individual differences fallacy is of greater magnitude when dealing with large-scale collectivities like gender or culture than with small-scale collectivities such as classrooms and juries.

One example of this problem can be illustrated by a study of jury behavior by Kerwin and Shaffer (1991). Verdicts are group-level decisions, so that studies of juries should be based on a theory of group-level characteristics and dynamics and use the group as the unit of analysis. Kerwin and Shaffer committed the individual differences fallacy by assuming that central tendency measures of jury member characteristics as elicited through survey instruments mirrored the characteristics of the jury as a whole. They committed what Galtung called the ‘fallacy of the wrong level’ (1967: 45), taking for granted that there is a direct correspondence between aggregated individual and group characteristics.

In their study of a mock trial, juries were categorized as ‘dogmatic’ or ‘nondogmatic’ on the basis of their mean dogmatism score obtained through a survey. Statistically, a jury could fall into the nondogmatic column if five people graded average on the dogma index and one graded unusually low on this index. Kerwin and Shaffer assume that individual levels of dogmatism cause the jury, as an entity, to be dogmatic or nondogmatic.

The authors of the study also used ANOVA inappropriately, as it can only be used to analyze nominal-level data under specific conditions that were not met (Whitley Jr. 1992: 681). In studies of small groups, researchers should rely on groups as the unit of analysis unless they are interested in the effect of the group on individual behaviors. When using groups as the unit of analysis, the researcher should consider whether group characteristics are independent of, derived from, or adequately represented by aggregate statistics of the individual members of the group. There are three stratagems a researcher can employ to develop a theory of group-level behaviors: the first is that the group’s behaviors and characteristics are completely independent of the individuals who comprise the group; the second is that group characteristics and behaviors reflect the overall statistical properties of those individuals; and the third is that the behaviors and characteristics of the individuals are byproducts of the behaviors and characteristics of the group. It is probable that each of these approaches is valid for different types of groups. It is recommended that for small-scale studies concerned with group characteristics, the researcher should pretest each of these three stratagems to determine which best suits her or his needs.

The individual differences fallacy is magnified when the unit of analysis is a large collectivity such as culture. Culture is the central organizing concept for the major subfields of anthropology: sociocultural, linguistic, physical and archeology. The core defining attributes of culture are that it is shared, learned, and holistic. No other social/behavioral science discipline has made holism such a central tenet of study as has anthropology. Psychologists may study memory, personality, percep-

tion, and so forth, but few are likely to claim that they are studying or describing the entire human psyche in the same way that an ethnographer presumes s/he is giving you a description of a whole culture, more or less, even if this claim is unstated.

Unlike the individual or a jury, culture is, at best, a slippery unit of analysis because it lacks what Campbell (1958) refers to as 'entitativity'—a collection of material and/or mental things that 'interact strongly, have a common fate and resist dispersion'. Even though anthropologists customarily treat culture as a holistic unit, culture seems to be composed of a more-or-less random collection of things, some of which are only loosely connected. For example, things like mousetraps, computers and fast food restaurants seem to have little in common with each other, much less with the various values, beliefs, and behavioral repertoires that also constitute culture.

Culture is not a unit of analysis like a jury is a unit of analysis. It is also a more ambiguous unit of analysis than religion, ethnicity or gender, units which are possible to identify and define. Culture is a heterogeneous, not homogeneous, unit and is not only composed of different kinds of things, but it is also understood at different levels of abstraction. At the macro-level it may be understood as a seamless weaving together of values, beliefs and behaviors, much as Ruth Benedict in her typology of cultural patterns as personality writ large. At the meso-level, culture may be construed as a set of interdependent but distinct functional systems. This is the most common understanding of culture and is reflected in ethnographies in which the material is divided into religious, kinship, political, economic and other areas. At the micro-level, cultures are often depicted as token events, social interactions and actors.

These different levels of abstraction are seldom, if ever, underpinned by, or justified in terms of, a theory of units. Anthropologists move with intellectual innocence from one unit of analysis and level of explanation to another. Given that culture is shared, the anthropologist is partially justified in presenting ritual, customary events, and profiles of individuals as token types, representative of the culture as a whole. Partial assurance of the validity and reliability of ethnographic representations of a culture, in the absence of any attempt to address the cultural units dilemmas that inevitably arise, comes from the length of the ethnographer's stay in the field and a comparison with other ethnographies written about the same cultural area. Nonetheless, Barrett (1996) is right in using the label 'no name anthropology' to describe most of the work done in anthropology.

Cultural theorists have dealt with the problem of cultural units by considering symbols or cognitive structures to be the basic units of people. Clifford Geertz has been most influential in developing the notion of symbols as the units of culture. Humans are symbol-generating animals and culture consists of symbolic interactions and interpretations. Cultural symbols are public, they are known by the members of a culture and are used to communicate with and interpret social environments. Geertz is the founding father of the interpretivist school of cultural theory and he has influenced constructionist, post-structural, political economists, subaltern, and hermeneutic theorists. What these schools have in common is the notion that culture is a text consisting of symbols that are publically accessible and knowable, but these symbols are open to multiple interpretations depending on the position of the 'reader'.

The Geertzian position solves the individual fallacy problem since it doesn't view culture in terms of animate entities but in terms of symbolic entities, or 'vehicles' as Geertz has called them. But this problem has been replaced by Whitehead's 'fallacy of misplaced concreteness' whereby mental phenomena, such as symbols, are treated as if they were entities. This may work if we assume that these entities are in the minds of individuals and exist as a neural network, but interpre-

tivists as constructionists are emphatic that symbols are not to be studied in the mind but in public arenas. It is also not true that the symbol can be the unit of analysis, for symbols differ in meaning and levels of abstraction, all symbols are different and we cannot study the categorical label 'symbol' for, like all labels, it designates a category of things and does not, in itself, possess the property of 'thingness'. The Geertzian position ultimately exacerbates the fallacy problem because it is impossible to identify a unit of analysis from this theoretical perspective.

Metaphorically perceiving culture as text leads logically to the idea of culture being constituted of loosely or independent modules or systems of knowledge. This idea, that there are no grand cultures but only cultural modules, pares down the possibility of creating a cultural unit that is of manageable size. Goodenough in 1956 defined culture as knowing how to behave in a normative or appropriate manner in any given situation. This proposal is central to the ethnoscience and ethnomethodological schools of cultural theory. From this perspective, the researcher took a particular task, behavior, concept or setting in a culture and found out what one needed to know in order to understand the concept or act in a setting in the same way as a native. Culture here is viewed as a series of recipe-like books which describe the law-like regularities that govern behavior and knowledge in a particular setting. The position is similar to that of the interpretivists except that the symbol systems were located in the mind of the individuals, and the set of symbols to study were specific to a particular cultural target. The unit of analysis is not the mind or cognitive processes as some ethnoscientists insist, but the individual from whom information about cultural models or schemas is elicited.

This theoretical position resolves the ecological-individual differences fallacy by using individuals as the unit of analysis and by investigating regularities in their thoughts, emotions and behavioral repertoires. The study of culture is invested in the study of individuals to discover normative knowledge and behavioral clusters that are specific to a particular socio-cultural domain such as illness, attending funerals, ideas of success, and the like. The limitation of this approach is that there is no theory of collective behaviors and characteristics except as these are normatively construed by individuals. Such a theory cannot provide us with an understanding of the characteristics of social units as social units because collective units are not the units of analysis.

6. The Independence of Units

In order to conduct statistical analysis the units of analysis must be independent of one another. Random sampling and care that survey questions are not mere replicas of one another are the primary means to ensure independence between units and variables. However, culture is shared, and the members of a culture share common cultural experiences. Statistical analysis can be employed only when we distinguish between individuals or groups within a culture. Thus, we can compare across gender, ethnicity, age groups, regions and the like, assuming that these differences are significant enough to ensure the independence of units. In cross-cultural studies we can assume that cultures are independent units. But what if they are not? What if many of the cultures in a sample have had extensive historical contact with one another and some have not? The cultures that have had extensive contact may unduly bias our results so that we are guilty of a Type I error, that is, any statistical test will show that our results are significant when in fact they are not. In cross-cultural research this is known as 'Galton's problem'.

In 1889, Francis Galton attended Sir Edward Tylor's presentation of what appears to be the very first cross-cultural study relying on statistical methods. Galton questioned the results by suggesting

that many of Tylor's cases were replicas of one another as many of the cultures included in the sample had had extended historical contact with one another. Galton concluded by suggesting that Tylor's conclusions were suspect because his sample was biased.

Since then there have been many attempts, none completely successful, to solve 'Galton's problem'. The failure to solve this problem is due to two separate issues: first, theoretically, anthropologists have assumed that cultures are holistic linguistic communities in which members share common traits, values, technologies, and complementary (if not similar) behavioral repertoires. Second, methodologically, anthropologists have assumed that Galton's problem is a statistical, not theoretical problem, hence solutions have focused on devising a proper sampling technique. However, it has been shown that there are no ultimate primitive units of culture and that the units researchers use depend on the questions asked. A common cross-cultural sampling criterion is to select only those cultures for study where the natives speak different languages. It is argued here that if cultures diverge on language then they are independent cultural units subject to statistical analyses. Unfortunately, the language criterion for independence does not always hold up. For example, if the researcher hypothesizes that male circumcision is related to cultural prohibitions against drinking alcohol and has a sample containing predominantly Islamic cultures whose members speak different languages, the results will still be biased by these cultures sharing a common Islamic heritage. Since Christianity and Islam are global religions, it doesn't matter if your sample consists of cultures that are from disparate regions and where the indigenous people speak different languages, their common religious background is enough to bias the sample.

In an actual cross-cultural study, Andrey Korotayev and the author hypothesized that the number of supracommunal levels (that is, levels of political integration) is directly correlated with the presence of a class structure. The correlations for this hypothesis were found to be significant with both a sample of only Islamic societies ($Rho = 0.55$; $p = 0.01$) and with a world-wide sample ($Rho = 0.62$; $p < 0.001$). In this case, it simply doesn't matter whether we used a large and diverse world-wide sample or a sample of just Islamic societies; we can include any number of cultures from the Islamic world into our world-wide sample without distorting the final results.

We decided to perform the same test using only ethnicity (rather than language or religion) as the criteria for delineating cultural units. In addition, we chose a sample of only equatorial Bantu cultural groups, selecting a sample of cultures that were, according to all sampling criteria, dependent units. The correlation between the two variables selected in this closely-knit cultural region is even higher and more statistically significant than the one for the world-wide sample ($Rho = 0.72$; $p < 0.000000000000000001$)! This cannot be explained by a Galton effect. The hypothesized correlation between political integration and class structure – the greater the political integration, the more stratification we find in that society – holds for all our three samples with the range of variation more pronounced in the ethnically-similar sample than in the worldwide sample. In this case, the Galton effect was utterly irrelevant to the analysis. The concern voiced first by Galton and later by George Murdock and Douglas White with regard to selecting independent cultures for comparative research appears not to be relevant for some cross-cultural comparisons.

These results demonstrate that it is impossible to know *a priori* what criteria to use for selecting units for cross-cultural analysis. The criteria will vary on a case-by-case (or rather hypothesis-by-hypothesis) basis. If culture is seen as modular, rather than holistic, and if those modules consist of a knowledge-emotional-behavioral repertoire cluster, then one has to determine what criteria are responsible for organizing the cluster. Under certain circumstances, cultural clusters are not neces-

sarily geographically contiguous or even proximate, but can be organized on the basis of global transcultural and transcontinental systems such as Christianity or Islam. In other circumstances, linguistic and cultural area boundaries serve as useful criteria for identifying cultural units. At still other times, it is unnecessary to be concerned about linguistic or cultural areas, as differences are predominantly affected by environmental or other extra-cultural factors.

7. A Checklist for Determining Units of Analysis

Units of analysis are always entities. The least problematic entity is the individual. The individual is the primary unit of analysis for studies where the focus is on individual agency or the characteristics and behaviors of individuals. The limitations of using the individual as the unit of analysis is that group characteristics and behaviors can only be measured indirectly and studies are prone to the 'individual differences fallacy' where groups are attributed to possess the characteristics of either token-type individuals or those characteristics derived from central tendency measures of a sample population. In order to describe and analyze group-level characteristics from the individual as the unit of analysis, the researcher must posit an *a priori* theoretical justification for making such a leap. Collectivities can be the units of analysis. For small-scale groups the use of such units is relatively unproblematic and has great advantages if one is going to analyze group or ecological characteristics and dynamics. However, one cannot reduce group level units to particular individuals. Statistical methods were devised to work from the part to the whole rather than from the whole to the part. Thus, inferences from the individual to the group can be plausible and inferentially appropriate if theoretically specified, but inferences from the group to the individual are seldom, if ever, plausible or appropriate. Symbols and concepts should be avoided as units of analysis because they lack entativity. Large-scale collectivities such as gender, religion, and culture lack generalized entativity but may have specific entativity, this is to be discovered on a case by case, or, as mentioned, hypothesis-by-hypothesis basis. A unit of analysis must be clearly defined, it cannot be used as a variable, rather variables are extracted from the unit of analysis. Most importantly, there should always be a theory of analysis that justifies the choice of the units for analysis.

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VISUOTINĖ ANALIZĖS VIENETŲ TEORIJA KULTŪRINĖJE ANTROPOLOGIJOJE

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Santrauka

Socialinių mokslų tyrimuose pastoviųjų analizės vienetų nustatymo problemoms yra skiriamas nepakankamas dėmesys. Metodologiniai klausimai visų pirma yra orientuoti į kintamųjų objektų aprašus, koordinates bei tyrimus. Tuo tarpu kiekviename moksliniame tyrime yra būtina aiškiai apibrėžti tiek pastoviuosius, tiek kintamus tyrimo objektus. Šios sąlygos ignoravimas tiesiogiai veda prie metodologiškai nepagrįstų, klaidingų išvadų. Tyrimo objektu gali būti bet koks asmuo, materialus daiktas ar nematoma kokybės išraiška, laikytina vieningu, neskaidytinu vienetu. Jį yra įmanoma vienokiu ar kitokiu būdu užfiksuoti ir apibūdinti. Kintamieji objektai niekada nėra pastovūs. Jų neįmanoma nei užfiksuoti, nei pamatuoti.

Antropologijos moksle dažniausiai yra apibrėžiamos trys pastoviųjų vienetų rūšys. Tai individas (elementarus vienetas), jų grupė (bendruomenė) ir visuomenės sluoksnis (klasė). Analizuodami bendruomenės dėsnius, antropologai tokiais vienetais yra linkę laikyti individus, tirdami atskiras kultūras, vienetais laiko atskiras bendruomenes, aptardami geografinius, kalbinius arealus – vienetais laiko vienokias ar kitokias kultūras. Ši metodika laikytina *individualiųjų skirtybių paklaida*, kai smulkesni vienetai (individai, bendruomenės) laikomi identiškais stambesnio mastelio vienetais. *Individualiųjų skirtybių paklaida* dar labiau išauga, kai tyrimo vienetu laikomas daugelio individų kolektyviai sukurtas produktas (pvz., kultūra). Kultūra yra esminis, pagrindinis daugelio antropologijos šakų (sociokultūrinė, lingvistinė, fizinė antropologija, archeologija) veiksnys. Kultūros esmė yra tai, kad ją galima bendruomenėje perimti, ja dalytis, jos mokytis. Kultūra kiekvienu atveju yra holistinis vienetas, t. y. vientisa visuma, netolygi jos elementų sumai. Holistinė doktrina yra ypač plačiai paplitusi antropologijoje. To nėra jokioje kitoje socialinių ar humanitarinių mokslų šakoje.

Kita vertus, vadinamoji *ekologinė paklaida* liudija nepagrįstas nuostatas, kai visos populiacijos bruožai automatiškai priskiriami kiekvienam jos individui. Statistines išvadas apie bendruomenės ypatybes dera pagrįsti individų ypatybėmis, bet jokių būdu ne atvirkščiai. Taigi, norint išvengti *ekologinės paklaidos*, tyrimo metu reikia eiti tik viena kryptimi – nuo individualių faktų link apibendrinimų.

Kultūros kaip tyrimo vieneto problema yra ta, kad kultūros sampratą sunku detaliam apibrėžti ir apibūdinti. Kultūra – tai sunkiau nusakomas tyrimo vienetas negu religija, etniškumas ar lytis, kuriuos identifikuoti ir apibrėžti yra santykinai lengva. Kultūros samprata gali būti vienokia jos bendrosios prasmės atveju – čia ji yra holistinė ir homogeniška (vienalytė). Atskiresniais atvejais kultūra gali būti suvokiama kaip tarpusavyje susijusių jos funkcijų sistema, o dar smulkesniais – individualiais atvejais ji paprastai apibūdinama konkrečių simbolinių veiksmų, socialinių sąveikų apraiškomis. Tokių skirtingų kultūros abstrakcijos lygmenų yra aptinkama palyginti retai, tačiau būtent jie sudaro straipsnyje pristatomos ir aptariamą analizės vienetų teorijos pagrindą.

Apibendrinimuose verta pabrėžti, kad individai yra mažiausiai problemiški analizės vienetai. Vienintelė išlyga individų kaip analizės vienetų sampratoje yra tai, kad individų grupių elgsenos ypatybės gali būti įvertintos netiesiogiai. Tokių tyrimų metu visada reikia tikėtis ir mokėti išvengti minėtos *individualiųjų skirtybių paklaidos*.

Visada abejotinos yra išvados apie individo elgseną, remiantis vien bendraisiais jo visuomenės dėsningumais. Nėra pirminių, pirmąkart kultūros sampratos vienetų, ir tik pats tyrėjas savo analizės vienetu renkasi tai, ką jis nori ištirti. Žinoma, kiekvienu konkrečiu atveju pastovieji analizės vienetai turi būti aiškiai apibrėžti. Čia yra netinkami jokie kintamieji vienetai. Kitaip tariant, kintamieji vienetai privalo būti ekstrahuoti, išbraukti iš tyrimų metodikos sąrašo. Labai svarbu yra remtis straipsnyje aprašoma visuotine analizės vienetų teorija, leidžiančia neklystamai pasirinkti tinkamą analizės vienetą konkrečiuose antropologiniuose tyrimuose.

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