



Preserving quantifiable ethnographic records of disappearing human lifeways

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Abstract

The human evolutionary sciences place high value on quantitative data from traditional small-scale societies that are rapidly modernizing. These data often stem from the sustained ethnographic work of anthropologists who are today nearing the end of their careers. Yet many quantitative ethnographic data are preserved only in summary formats that do not reflect the rich and variable ethnographic reality often described in unpublished field notes, nor the deep knowledge of their collectors. In raw disaggregated formats, such data have tremendous scientific value when used in conjunction with modern statistical techniques and as part of comparative analyses. Through a personal example of longitudinal research with Batek hunter-gatherers that involved collaboration across generations of researchers, we argue that quantifiable ethnographic records, just like material artifacts, deserve high-priority preservation efforts. We discuss the benefits, challenges, and possible avenues forward for digitizing, preserving, and archiving ethnographic data before it is too late.

KEYWORDS

archival, Batek, ethnography, quantitative anthropology, reproducibility

1 | INTRODUCTION

As young graduate students of evolutionary anthropology at Dartmouth College, we (T.S.K. and V.V.V.) first approached Dr. K.M.E. in the spring of 2012 with questions about his ethnographic research with Batek hunter-gatherers in Peninsular Malaysia. At the time, we were preoccupied with questions about human locomotion in rainforest environments, particularly those surrounding tree climbing and arboreal behavior, and had read Dr. Endicott's vivid descriptions of extraordinary arboreal feats by Batek foragers in pursuit of honey and fruit (Endicott & Endicott 2008). We knew that K.M.E. and his wife, anthropologist K.L.E., had spent long periods of time in the field with the Batek (Figure 1). From 1971 to 2004, they conducted studies on Batek religion, gender relations, social organization, economy, development, and land rights.¹⁻⁴ The research questions addressed by the Endicotts were qualitative in nature, but we noticed that in their book, "The Headman was a Woman",³ foraging return data were presented in tabular form.

One day, we asked K.M.E. about the source data underlying the foraging statistics, and to our surprise, he brought out boxes containing stacks of yellowed field notes. The materials spanned 4 decades and revealed a cornucopia of quantifiable data on topics ranging from daily foraging returns to sharing networks, kin relations, coresidence patterns, and nomadic movements, all bolstered by meticulous daily field notes (Figure 2). This information was documented in various forms: raw field notes in shorthand, summaries of daily field notes, and hierarchical data coded neatly in spreadsheets complete with metadata. During their training, the Endicotts were advised that, regardless of one's research question or anthropological orientation, collecting basic quantitative data on economy, kinship, and social organization lends crucial objective context.

Over the next few years, we developed a friendship and scholarly collaboration with K.M.E. and K.L.E. that stands as the highlight of our early careers (Figure 3). Their materials have formed the basis of multiple scientific studies from a behavioral ecology perspective on Batek

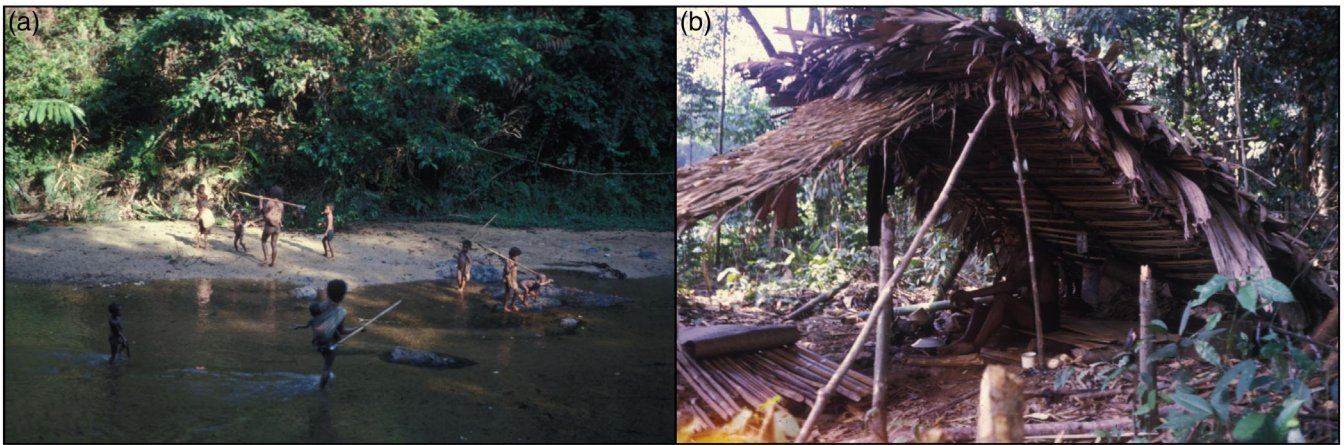


FIGURE 1 (a) Batek women and children foraging for tubers along the river and (b) a Batek man sits in a traditional lean-to hut made from palm thatch [Color figure can be viewed at wileyonlinelibrary.com]

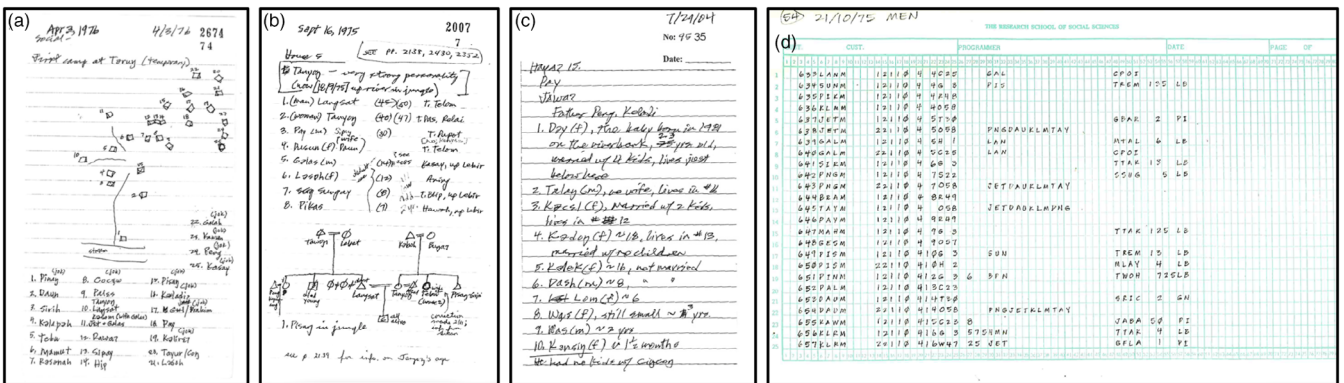


FIGURE 2 The various forms of quantifiable ethnographic records. Examples of the Endicott's field data, including: (a) camp diagrams detailing the location and composition of households, (b) genealogies, (c) kinship information, and (d) curated foraging data at the daily and individual level, which were subsequently digitized [Color figure can be viewed at wileyonlinelibrary.com]

socioecology,⁵ sharing patterns,⁵ rainforest locomotion,^{6,7} mobility patterns,⁸ and reproductive outcomes.⁹ The data have also contributed to comparative studies^{10,11} and inspired new fieldwork efforts by T.S.K. and V.V.V. with descendant communities of Batek in Peninsular Malaysia. From 2013 to 2016, we collected genealogical records that extended the original Endicott database which covered 1971-2004. Replicating the standardized methodologies used by the Endicotts in the field, we collected new data on coresidence patterns and foraging behavior, and have begun several ongoing studies with these communities, allowing a fine-grained, longitudinal perspective into changing Batek lifeways (Figure 4).

2 | DEFINING QUANTIFIABLE ETHNOGRAPHIC RECORDS

“Quantifiable ethnographic records” are a type of historical documentation that provides detailed, often systematic, information about the life and behavior of individuals and groups from the past. Like material

artifacts that have been the focus of major curation efforts in museums around the world, quantifiable ethnographic records such as those collected by the Endicotts are especially valuable because they cannot be recreated or reproduced once lost. We employ this term to mean the rawest form of the data possible, ideally at the hourly, or daily, and individual level, for short periods of time corresponding to dense periods of ethnographic observation.

In their most commonly manifested form, quantitative ethnographic data are reported as average values or ranges in tables and figures. Such values have been meticulously compiled and lie at the heart of comparative research in cultural evolution, behavioral ecology, and archeology.¹²⁻¹⁴ While useful, such data often have important shortcomings: they reduce continuous data to categories, present point estimates without meaningful error distributions, and obscure longitudinal variability. Most anthropologists readily recognize that such summary values do not reflect the rich reality of the ethnographic record, yet they often provide the only available information about certain societies, so that is what we use.

Museums and archival initiatives such as the human relations area files (HRAF) have led the way in preserving primary ethnographic materials. But we also believe that important and rich quantitative

ethnographic data remain unnoticed. Unfortunately, little attention has been paid to the quantifiable richness inherent in historical records, and therefore we are at risk of losing much of it. Indeed, we are unaware of ongoing efforts targeting quantifiable ethnographic data specifically, and we suspect that a centralized endeavor does not yet exist (though some guidelines and recommendations do exist, e.g., <https://savageminds.org/2015/08/28/ethnographic-field-data-3-preserving-and-sharing-ethnographic-data/>). In the following sections, we describe the fates of quantifiable ethnographic records and outline considerations for their archiving. We then present an incomplete proposal aimed at ensuring the long-term integrity of historical quantitative ethnographic data.

3 | WHAT HAPPENS AFTER AN ANTHROPOLOGIST IS GONE?

A major difficulty of anthropology is that humans are long-lived organisms and a single ethnographer will not be around to observe many generations of their study participants. As such, some of the best known research in our field comes from societies such as the !Kung San, Hadza, and Yanomamo that have been studied continuously by multiple generations of anthropologists. In these situations, systematic data as well as field notes and anecdotal insights are passed down via generations, enhancing the quality of future research. In an extraordinary example, Dr. Brian Wood and colleagues received a time-sensitive NSF RAPID grant to archive Dr. Frank Marlowe's extensive quantitative life work with the Hadza as he faced early-onset Alzheimer's disease (https://www.nsf.gov/awardsearch/showAward?AWD_ID=1548143).

The urgency of archival efforts is underlined by the fact that ethnographers accumulate a tremendous amount of knowledge that is not available through published works. For example, the Endicotts'



FIGURE 3 Collecting and curating ethnographic records. (a) Kirk and Karen Endicott with a Batek family in 1975 and (b) Kirk Endicott with Tom Kraft in 2015 reviewing historical photographs of Batek [Color figure can be viewed at wileyonlinelibrary.com]



FIGURE 4 Historical and modern photographs of Batek from the upper Lebir, Malaysia. The Endicott's fieldwork ranged from 1970 to 2004, and Kraft and Venkataraman from 2013 to present. This longitudinal perspective has provided detail on behavior and life history for individuals who were (a-b) children or (c-e) teenagers in the 1970s and now live in a mixed hunting and gathering economy [Color figure can be viewed at wileyonlinelibrary.com]

intimate knowledge of Batek genealogies was crucial for untangling ambiguous relationships involving half-siblings, name changes, and fictive kinship terms. In our study of Batek mobility,⁸ the Endicotts used their daily field diaries to estimate the time spent moving between camps and to connect the locations of historical camps to daily records of foraging. This example demonstrates the importance of consulting directly with ethnographers when converting tacit knowledge into data and metadata for future generations. Quantifiable ethnographic records are infinitely more valuable if they are archived in collaboration with the ethnographers who collected them.

Our collaboration with the Endicotts was largely a product of coincidence. We suspect that the fate of the majority of quantifiable ethnographic records looks very different. When most anthropologists are gone, the detailed data that they collected often lose critical context, along with unique knowledge that comes from long-term observation of peoples and cultures. Files that were never digitized might be lost or thrown out, field notes recycled, and original photographs discarded. Even when documents are archived, without careful documentation by the ethnographer, much of their value to future researchers is lost. The loss of ethnographic records has consequences for all anthropologists, some of which are explored as follows.

4 | REPRODUCIBILITY AND THE INTEGRITY OF QUANTITATIVE ANTHROPOLOGY

Reliability and internal validity have long been concerns for those engaging in ethnographic research.¹⁵ With lone ethnographers sometimes providing the sole lens into remote societies, inevitable questions loom about the reproducibility of qualitative observations. Quantitative methods may help alleviate problems of anecdotal inference, but these are no panacea. Even today, anthropological journals lag behind related fields like biology in terms of data-archiving requirements and support for open access publication, and analytical reproducibility remains problematic.¹⁶

The long-term utility of archived ethnographic data is highly dependent on form. We advocate that quantitative ethnographic data be preserved in the rawest form possible, to facilitate maximum flexibility. Raw, disaggregated data at the individual level enable the use of contemporary statistical tools such as multilevel modeling¹¹ that capitalize on variation within and between individuals or clusters to enhance the precision of estimates and address more detailed questions about variability.^{17,18} Many quantitative ethnographic data, however, are currently preserved as aggregate or summary estimates.

Consider the example of group size. Group size has long been of interest to anthropologists and lies at the heart of many questions such as those surrounding diet, mobility, technology, sociopolitical organization, violence, and territoriality.¹³ Although this trait has been usefully analyzed across cultures in a comparative framework,¹⁹ no anthropologist would seriously consider a single value to properly represent a society, no matter the practiced lifeway. Group size varies by

season, year, region, and even day by day according to the coming and going of individuals. Such variability should therefore be retrievable within the raw data when possible. Indeed, several authors have leveraged more fine-grained data from original sources to more fully understand phenomena involving group size.²⁰

As our case with the Batek illustrates, far more nuance and detail underlie summary values. Since the Endicotts published their book in 2008,³ the summary statistics they presented attracted modest scholarly attention from evolutionary anthropologists. Once the raw data were coded, digitized, and analyzed, however, the inherent strength of the data collection protocol made it easy to leverage the data set for a number of studies. For instance, the Endicotts exhaustively measured the foraging returns of Batek adults at an individual level over a 93-day period across 11 nomadic camps in 1975-76, in addition to recording information on camp movement and daily censuses. With these data, we were able to quantitatively test the predictions of an important model in foraging theory,⁸ an effort that had previously been impossible due to the “daunting data requirements”²¹ in an anthropological context. Likewise, detailed field notes sometimes provide incidental quantifiable information at a high enough resolution to address major questions in anthropology, such as the structure of human coresidence patterns.^{5,22}

One potential approach to improve the preservation of quantitative ethnographic data is to encourage the publication of data in tandem with primary research articles. However, data published with journal articles are often preprocessed or aggregated and lack useful connections linking individuals between related datasets, a tactic that protects the proprietary value of hard-won ethnographic data, but which could hamper future research. We have ourselves presented aggregated data based on the Endicott data set,⁸ and we recognize that this may be unavoidable in some circumstances and depends on the question at hand. Publication of data as supplementary materials is highly desirable, but it is not a comprehensive solution. We advocate for a long-term approach that involves the creation of publicly available archives of relational databases containing raw data and metadata.

5 | PRESERVING ETHNOGRAPHIC RECORDS

The opportunity to preserve an important generation of quantifiable ethnographic records is rapidly closing. For example, although hunting and gathering characterized most of human existence, the vast majority of peoples worldwide practicing this lifeway have either transitioned to market economies or are well on their way,²³ and many of the ethnographers who most carefully studied these populations during critical periods have retired or died. The same is true for all small-scale societies, including subsistence horticulturalists and pastoralists. As such, we must ask: what is necessary to ensure more and better archiving?

As demonstrated by our experience with the Batek, connecting researchers from different generations and subdisciplines is imperative

to preserve quantifiable ethnographic records. Such datasets will rarely be amenable to coding and entry by untrained assistants and will often require skills in anthropology and data science. Ideally, these efforts will involve collaboration with those conducting contemporary studies of the same populations. Raw, disaggregated data must be archived with metadata that is developed in collaboration with original ethnographers (when possible) in order to maximize the ability of future researchers to flexibly reanalyze the data or conduct novel analyses. To this end, departments with emeritus faculty who have raw data might consider actively recruiting graduate students interested in working with these scholars and building on their data in their own doctoral research.

There is also great value in preserving unquantifiable information from ethnographic field notes in tandem with quantitative data that are extracted. Unquantifiable records, especially information about what people say they do and why they do it, provides context for understanding behaviors under study. Records such as photos and audio recordings can also shed light on quantifiable data and enable future generations to reinterpret ethnographic descriptions from field notes.

Digitizing ethnographic field notes requires formidable effort and can be extremely tedious. At Dartmouth, we were fortunate to receive support from the Claire Garber Goodman Fund of the Department of Anthropology to pay undergraduate students to type the Endicotts' original field notes. The efforts of our student typists made it possible for the Endicotts to focus on important curation tasks that only they could do: decipher abbreviations and handwriting (often written in Batek or Malay using phonetics), and check for general accuracy. The final product was a searchable document of several thousand pages, spanning 4 decades of field notes of K.M.E. and K.L.E.

Archiving ethnographic field notes poses substantial challenges regarding subject privacy, confidentiality, and Institutional Review Board (IRB) or human subjects approval.²⁴ Here we briefly discuss some considerations. Funding agencies and academic journals are increasingly requiring authors to make data publicly available.²⁵ Fields such as biomedical research provide a promising model for anthropologists because, like ethnographic work, medical records are sensitive and can contain private or identifying information.²⁶ There are many resources available to guide best practices on the sharing and usage of secondary biomedical data.^{27–29} Principal issues for data custodians include standards of consent and anonymization, which are the two legal mechanisms that enable patient data to be ethically shared.²⁸ In the ideal scenario, consent for data sharing would have been obtained from subjects at the time of data collection, and records would be anonymized to decouple personally identifying information. In most cases consent for data sharing was unlikely to have been collected for historical ethnographic information, but many research ethics boards have permitted sharing of patient data without consent if proper anonymization is achieved.³⁰

For secondary sharing of data, quantitative ethnographic data can be anonymized using rigorous procedures and curated in a way that balances utility for researchers with ethical constraints. Anonymization involves the removal of direct and quasi-identifiers from data such that

the “probability of assigning a correct identity to a record in a dataset is very small.”²⁸ Whereas direct identifiers enable straightforward identification (e.g. names of participants or original photographs), quasi-identifiers in an anthropological study might include information such as ethnicity, place of birth or residence, or date of birth. Depending on the time and country of origin in which ethnographic records originate, anonymization may actually be more feasible in contexts that lack extensive government documents or written records in general. Nonetheless, researchers should be aware of local legal requirements pertaining to the sharing of data, as considerations of what types of data are considered “personal information” for anonymization purposes can differ between jurisdictions.²⁷ For more information, we refer readers to the large existing literature on anonymization practices.^{28,31}

Finally, IRB approval should be obtained by curators and researchers who will have access to archived resources at levels that contain personal or identifying information about subjects. In our case, T.S.K. and V.V.V. obtained IRB approval to work with the contemporary descendants of Batek participants in the Endicotts' study as well as the historical data. This process ensures that data are archived for legitimate usage and will not be used in a discriminatory or stigmatizing manner. Guidelines for how secondary data may be used by other researchers can also be issued and monitored. Ethnographic information may therefore be best shared as “quasi-public data” rather than fully public data.²⁸

6 | CASE STUDIES IN ANTHROPOLOGICAL DATA ARCHIVING

There are many examples of how ethnographic work has been archived, from primary source materials housed in library special collections to the online HRAF. In order to achieve the goal of large-scale preservation of quantifiable ethnographic records, a system must be developed for identifying ethnographers and datasets that exist, connecting interested researchers across generations, providing incentives to share raw data, and enabling the actual archival process. In addition to community buy-in, this will require resources such as infrastructure (server space, software, etc.) and personnel, which are not yet available.

But some precedent does exist. University libraries, special archival collections, and museums already manage materials in a similar way, and other digitization efforts in subdisciplines of evolutionary anthropology have had enormous impact. For example, the HRAF time allocation series (<https://hraf.yale.edu/publications-archives/hraf-press-other-publications/#time-allocation-series>) compiled quantitative information on diskettes that we have converted to modern storage formats and are analyzing for publication. Likewise, there is a long tradition in social demography of archiving and analyzing historical records to address major scientific questions, including extensive work on the historical demography of England by the Cambridge Group for the History of Population & Social Structure,^{32–34} preindustrial parish records from Finland,^{35,36} the “Registre de la population du Quebec ancien” and the “BALSAC” databases from Quebec,^{37,38} church register entries

from the Krummhörn region in Germany,³⁹ and the Utah Population Database.⁴⁰ The longitudinal nature of these databases has allowed unparalleled inference into historical processes relating to demography, health, and other topics, and can serve as a model for how quantitative ethnographic data could be preserved in tandem with the subjective observations of ethnographers.

Many successful archival initiatives are supported by institutions and/or dedicated research teams. For example, the Utah Population Database is supported by the University of Utah and the Huntsman Cancer Institute and is maintained by a substantial number of full-time support staff (<https://uofuhealth.utah.edu/huntsman/utah-population-database/staff.php>), and the HRAF is based at Yale University. These illustrative cases suggest that centralized efforts using established infrastructure are most likely to be effective, and demonstrate that funding can be successfully obtained once the scientific value is justified.

Looking to the future, Dr. Richard McElreath at the Max Planck Institute for Evolutionary Anthropology in Leipzig has instituted an unprecedented initiative to promote the collection of quantitative ethnographic data across cultures,^{41,42} and infrastructure for contemporary data is being developed that could be leveraged to support efforts targeting historical data. Combining archival activities with contemporary data collection efforts, as is the case for many of the examples listed above, can help motivate archival work and ensure maximal utility of longitudinal datasets. As a first, albeit minor, step, we have set up a webform to gauge interest from ethnographers or other anthropologists who would appreciate assistance in digitizing, archiving, or otherwise preserving quantifiable ethnographic records (<https://sites.dartmouth.edu/ethnographic-records/>). The confidential form can be filled out with contact information, study population, dates of study, and types of data available. Given permission, we will make this information publicly available in an effort to stimulate progress by showing the depth and breadth of what is available.

None of this will be easy. Funding sources and organizations devoted to the study of human evolution will have to elevate proposals for archival work to the status of those for conducting specific hypothesis testing. Program officers for organizations such as the NSF can play a tremendous role by recognizing the value of archival work and helping to encourage proposals that request funding for historical research (as occurred for the RAPID grant described above). Researchers will have to devote time to a task that does not fit into a conventional curriculum vitae format. And ethnographers would have to consent to sharing hard-won field data.

But the payoff is invaluable. Ethnographers will see their exceptionally hard work saved and used to address new questions. It will aid new generations of researchers seeking to study conditions in the past and starting longitudinal studies of change. And comparative studies will be bolstered by the ability to assess variation within as well as between societies. But the benefits of preserving quantifiable ethnographic records extend beyond their scientific utility. We believe that ethnographic records have the ability to empower study communities and aid in their advocacy. Younger generations of Batek actively seek to learn about their history from the Endicotts' ethnographic material that we bring to the field, including photographs, videos, and

voice recordings. Faced with devastating deforestation of their ancestral lands, the Batek individuals we know most closely have consistently expressed the desire to see knowledge of the "old" Batek lifeway preserved so that it can be understood by future generations. Like the Batek, many societies that have been the focus of anthropological research are small-scale groups who are politically marginalized. They face jarringly rapid changes from modernization, which are often related to the loss of traditional subsistence practices on ancestral lands and accompanied by negative social and health consequences. As such, there may be crucial information in ethnographic records that can serve as hard evidence in court cases, such as land rights claims.⁸ Importantly, we must seek to involve study communities in this process, and encourage them to lead the way.

7 | CONCLUSION

Conversations with others indicate that our experience is not unique, and that much, if not the vast majority, of quantifiable ethnographic records from the 20th century are at risk. Without a targeted push, we risk losing hard-won data that can never be replaced. From our work with contemporary Batek hunter-gatherers, we are acutely aware of the extent and rate at which the foraging lifeway is changing or disappearing around the world. From this standpoint, we are making a timely plea to the anthropological community: invest the effort and resources now into digitizing, preserving, and archiving quantifiable ethnographic records before it is too late.

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DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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