Mikea, Malagasy, or hunter-gatherers?
Scale, ethnicity, and cultural groups in ethnographic description and ethnological analysis

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Introduction

Are ethnic units also cultural and sociopolitical units? Barth (1969a) argued that they are not. However, some recent cultural evolutionary studies argue that ethnicity may function to facilitate within-group cooperation and between-group competition, referred to as parochial altruism (Choi and Bowles 2007; García and van den Bergh 2011; Handley and Mathew 2020; Jones 2018). Ethnographers have historically treated ethnicity and culture as equivalent with assertions that X people have particular beliefs, habits, customs, etc. In this paper I explore the ramifications of scale in ethnographic description and generalization, with a focus on my research participants in southwestern Madagascar, whom I usually label with the ethnonyms Mikea, Masikoro, and Vezo, or with the anthropological categories of hunter-gatherers, farmers, and fishermen. These are people who refer to themselves by these same ethnonyms or hyphenated combinations of terms (Masikoro-Mikea, Vezo-Mikea), or as Malagasy, a term refering to all peoples of Madagascar, or by village or clan affiliations. By contrasting evidence from my research (Tucker et al. 2021) with a study by Handley and Mathew (2020) about East African herders, I argue that the appropriate scale for ethnographic description may depend on patterns of similarity and difference in shared cultural traits and social networks, and these may be related to, or independent of, historically constituted ethnonyms. Careful thought is required to avoid scalar errors of over-particularization and exoticism (which I call Type 1 scalar errors) and over-generalization and stereotyping (Type 2 scalar errors). Because "ethnic-

ity" is not just one "thing," ethnicity is not always the proper scale for ethnographic description.

I begin this exploration of scale in 2012, when the BBC News website posted a story about threats to the critically endangered spider tortoise (*Pyxis arachnoides*). The article argued that Madagascar's Mikea hunter-gatherers pose a significant threat to the tortoise by over-hunting (Barley 2012). The story made some significant errors. It erroneously referred to Mikea people as "a nomadic tribe," and it repeated the tired, ethnocentric narrative that ignorance and poverty drive traditional people to overexploit endangered natural resources (cf. Kull 2000; Scales 2012 who challenge this narrative). But a central claim of the article is at least partially factual: Mikea people do catch tortoises and bake them in hot coals to eat the meat inside. Or so I have been told. During 25 years of fieldwork with Mikea I have never witnessed the practice and it is unclear to me whether it occurs with sufficient frequency to constitute a threat.

I start with this BBC article about tortoise hunting because it makes a critical and potentially dangerous error of scale, a type of error that is common in media and social science descriptions of peoples in the rural Global South. Whereas the BBC story was correct that Mikea hunt and eat tortoises, the claim is misleading because "Mikea" is the wrong scale at which to ascribe the practice. Many, or maybe most, Malagasy peoples hunt, cook, and eat tortoises in the same way, whether they self-identify as Masikoro, Vezo, Bara, Mahafale, Tanosy, Tandroy, etc. Tortoise eating should more properly be ascribed to some or all Malagasy, where "Malagasy" or *olo Gasy* is a salient national identity term encompassing all of Madagascar's 25 million people. The BBC article's claim is potentially dangerous because it places the blame for overhunting on a subset of the likely "culprits," who happen to be among the poorest and least able to defend themselves in public narrative or legal tribunal. The accusation that Mikea are to blame for overhunting endangered species could invite conservation-minded project planners and policymakers to unfairly limit Mikea people's access to the wild foods they need while not placing similar limits on their wealthier tortoise-eating neighbors.

I call this a "Type 1" scalar error, in playful reference to type 1 errors in frequentist statistics. A Type 1 scalar error occurs when writers ascribe traits to a small social unit that are, in reality, shared by the larger population, of which the smaller unit is but a subset. The small social unit is often labeled with an ethnic term. The harm of Type 1 errors is that they make minority groups

stand out as exotic, while making group boundaries seem more concrete than they may be on the ground.

Mikea may be particularly vulnerable to harm from Type 1 scalar errors. Because Mikea are rumored to be Madagascar's only hunting and gathering population, they are consistently presented as primitive people, clothed in familiar idioms of both noble savagery and mysticism, as well as sub-humanness and backwardness. I commonly hear from urban Malagasy that Mikea are African pygmies without language, or that they are invisible, or that they are the last remaining survivors of Madagascar's original people who occupied the island before the arrival of proto-Malagasy from Indonesia (Poyer and Kelly [2000] report hearing similar stories). Early ethnographers claimed that Mikea live in a "repulsive" desert environment (Dina and Hoerner 1976: 275) of "thorns" without consuming water (Molet 1958, 1966). Popular journalistic accounts describe Mikea as nomads in harmony with nature who live in rudimentary huts without use of money or markets; and as people threatened by rapacious Malagasy farmers who ravage their forests for agriculture (Mouyon and Francelle 1999; Rarojo 1999). The World Bank classified Mikea as Madagascar's only indigenous people (Huff 2012). Documents instrumental in the creation of the Mikea Forest National Park stated that there are fewer than 1000 Mikea people living in a handful of villages, and that Mikea life is intimately tied to the cult of the ancestors and animistic rites (Repoblikan'i Madagasikara 2010: 20-21).

Some of these statements are absurd: Mikea are not pygmies; like all humans, they talk, drink water, participate in new economic opportunities, and have positive and negative effects on the environment. Genetic evidence demonstrates that Mikea share historical origins with other Malagasy (Pierron et al. 2014; Razafindrazaka et al. 2010), which is consistent with Mikea oral histories that tell of their shared ancestry with neighboring Masikoro and Vezo people (Tucker 2003). There are many more than 1000 Mikea (probably more than 10,000) but the number depends on some fuzzy definitions.[1] A few other statements result from Type 1 scalar errors: Mikea are not the only

1 The 1000 person Mikea estimate seems to be a sum of people in the Namonte Basin, Bedo, and a few other large forest communities. But on the edges of the Mikea forest there are a series of villages where many or most people call themselves Mikea (or Masikoro-Mikea, or Vezo-Mikea), many of which were founded in the early twentieth century as a result of French colonial relocation and villagization projects. Some of these villages are large; Magnono, Andohasakoa, Vorehe, and Bevondro each have several thousand Mikea inhabitants, while hundreds more Mikea live in villages such

Malagasy to live in "rudimentary huts;" nearly identical reed-thatched structures house wage workers throughout urban Toliara. Most rural Malagasy hunt and gather, in addition to farming and herding. In Toliara I routinely drink beer with two old friends, a Tesaka retired hotel guard from eastern Madagascar and a Tandroy rickshaw cyclist from southern Madagascar, who, after a Three Horses Beer and a pack of cigarettes, inevitably wax about their childhood adventures chasing *tandrake* (*Tenrec ecaudatus*) and digging *ovy* tubers (*Dioscorea acuminata*), the same wild prey that Mikea pursue. Mikea are hardly unique in their devotion to 'the cult of ancestors' and 'animistic rites'; most Malagasy, whether Merina, Betsileo, Tagnala, or Tankarana venerate ancestors and forest spirits (Mack 1986; Middleton 1999). However, when ascribed to Mikea, such behaviors make Mikea seem different and exotic, whereas much of this description fits most Malagasy living in towns and cities across the island nation.

Hunter-gatherers are particularly vulnerable to a second, "Type 2" scalar error, which occurs when writers generalize observations from a small population to a larger category of which they are a supposed subset. This error is commonplace in news media descriptions. A casual internet search for "hunter-gatherer" news turns up a series of remarkable claims: "what a hunter-gatherer diet does to your body in just three days" (Spector 2017), "hunter-gatherers agree on what is moral, but not on who is moral" (Science Daily 2021), and "hunter-gatherers sit as much as us, but how they sit makes all the difference" (Dockrill 2020). There are an estimated 5,000,000 hunter-gatherers in the world today, living from the arctic to the tropics, with diverse diets, concepts of morality, and sitting postures (Lee and Daly 1999; Kelly 2013). But all three of these news stories generalize about all "hunter-gatherers," including those in the distant past, with observations from a single contemporary population, Hadza of Tanzania, and from the limited subset of Hadza recruited for each research project. The original research these news articles refer to make more precise scalar claims: neither K. Smith and Apicella (2020)'s study of Hadza morality, nor Raichlin et al.'s (2020) study of Hadza sitting, generalize their findings to all foragers. Some scholarly work generalizes about hunter-gatherers from just one or two populations. For example, Majid and Kruspe (2018) conclude that "hunter-gatherer olfaction is special," based on data from Malaysian Semaq Beri foragers in contrast to

as Ihotre, Antsakoamarovitike, Afeza, Befandefa, Ankindranoke, Agnolignoly, etc. This partial list excludes the southern half of the Mikea Forest.

their horticulturalist neighbors; and D. Smith et al. (2014) speculate about the significance of "hunter-gatherer story telling" for cooperation, based only on stories from Agta of the Philippines. But many contemporary studies that make general claims about "hunter-gatherers" involve some degree of cross-cultural comparison, seemingly to avoid Type-2 errors (e.g., Bird et al. 2019; Bird-David 2017; Hamilton et al. 2007; Hill et al. 2011; E. A. Smith et al. 2010).

Hunter-gatherers are vulnerable to Type 2 scalar errors because of lingering nineteenth century notions that foragers are relics unchanged since humanity's earliest stage of cultural evolution in the Pleistocene. Although anthropologists have opposed this social evolutionist worldview for the past half century (Barnard 1999; Schrire 1984), it still occupies popular conceptions of human history, and occasionally slips into academic work. It is hard to imagine headline statements that *farmers*' or *wage workers*' diets, moral concepts, or ways to sitting have the same relevance to human nature and our evolutionary past.

In this chapter I consider whether ethnographers commit Type 1 or Type 2 scalar errors when we generalize findings to the level of the ethnic group. Generalizing observations to ethnicities is an old practice in anthropology, as demonstrated by the volumes that populate anthropologists' bookshelves, with titles like *The Yanomamo* (Chagnon 2012), *The Canela* (Crocker and Crocker 2004), *The Tiwi of North Australia* (Hart and Pilling 1963), *The Bolivian Aymara* (Buechler and Buechler 1970), etc.; and, as demonstrated in cross-cultural studies, in which the datapoints are "societies" with unique social and cultural traits that are labeled with ethnonyms (e.g. Borgerhoff Mulder 2009; Ember 1978; Henrich et al. 2005; Murdock 1967). More casually and commonly, ethnographers routinely state that we work with this-or-that ethnic group, or that the ethnic group we study has this-or-that set of customs or beliefs. Generalizing ethnographic observations to ethnicities implies that the world's peoples fall into natural, discrete, comparable cultural units that correspond to ethnic boundaries. Yet we know that ethnic identities are often flexible and negotiated (Astuti 1995; Linnekin and Poyer 1990); that ethnonyms are often imposed by outsiders during processes of conquest and colonization (Mafeje 1971; Iliffe 1979; Southall 1970); that ethnic groups vary in scale, from nano- to nation (Bird et al. 2019; Bird-David 2017); and that ethnicity is only one among a host of identities that are imposed upon and adopted by the subjects of research, alongside gender, nationality, occupation, and residence, and kin group (Barth 1969a, b). Generalizing to the ethnic level constitutes a Type 1 error if the social or cultural traits we describe are common among

a larger populace, perhaps defined by regional geography, language, nationality. Generalizing to the ethnic level constitutes a Type 2 error if the traits we describe are actually particular to individuals, families, clans, neighborhoods, villages, areas, or genders. These social scales, from family to village to ethnicity to nation, may have a hierarchical, nested structure, or they may be cross-cutting and negotiable.

I begin by re-visiting conflicting claims in the literature about the relationship between ethnicity and culture. Fifty years ago, Barth (1969a) argued that ethnic units should not be considered cultural or social units. For simplicity, I abbreviate this argument as *ethnicity ≠ culture ≠ society*. Barth and his intellectual descendants argue against the received wisdom that the world's people constitute an array of discrete cultural units who bequeathed their heritage faithfully and linearly across generations since the beginning of time. Rather, ethnicity and identity are social facts (*sensu* Durkheim 1982[1895]) that we collectively imagine into being, and that we are constantly reimagining and renegotiating, that may correspond poorly with actual patterns of cultural agreement and social organization.

Then I discuss recent work by cultural evolutionary scholars who argue that ethnic units may be cultural and social units; that "ethnicities" could have evolved through cultural group selection to divide humans into internally-cooperative and externally-competitive groups, a pattern called parochial altruism (Choi and Bowles 2007; García and van den Bergh 2011; Handley and Mathew 2020; Jones 2018). I abbreviate this argument as *ethnicity = culture = society*. This perspective views ethnicities like sports teams, who mark inclusion with team colors, within which teammates, bound by their cultural similarities, work together to advance their survival and to defeat other, culturally-foreign teams.

I contrast two published studies, one supporting *ethnicity = culture = society* with evidence from east African herders (Handley and Mathew 2020), and the other, coauthored by myself and colleagues, supporting *ethnicity ≠ culture ≠ society* in southwestern Madagascar (Tucker et al. 2021). I discuss the historical and geographical reasons why ethnicity is a different kind of thing in these two places. Then I conclude with some thoughts about best practices when generalizing across scales. I suggest that labeling samples with ethnonyms may be unwise even when evidence supports *ethnicity = culture = society*. We should be particularly cautious in making scalar claims when there is risk that Type 1 or Type 2 errors could cause harm, such as when describing behaviors our audience might associate with primitiveness. Generalizations

about hunter-gatherers ideally require data from a large and preferably representative sample of foraging populations as well as a non-foraging control groups.

Barth: Ethnicity ≠ Culture ≠ Society

Studies of ethnicity and identity routinely cite Barth's (1969b) edited volume as the starting point for modern research on the topic. In the introduction, Barth (1969a) presents the old-school "ideal type" description of ethnicity:

> "Practically all anthropological reasoning rests on the premise that cultural variation is discontinuous: that there are aggregates of people who essentially share a common culture, and interconnected differences that distinguish each such discrete culture from all others. Since culture is nothing but a way to describe human behaviour, it would follow that there are discrete groups of people, i.e., ethnic units, to correspond to each culture." (Barth 1969a: 9)

Two pages later Barth (1969a: 11) continues, it is "not so far removed in content from the traditional proposition that a race = a culture = a language and that a society = a unit which rejects or discriminates against others." He then proceeds to dismantle this old-school ideal type, arguing that ethnic boundaries often facilitate social ties that cross boundaries. Cross-boundary social relations may be just as important as coethnic relations, and are not necessarily agonistic (think of trade, for example). He then argues that ethnicities are not culture-bearing units. People of the same ethnicity occupying different ecologies are likely to have different cultural traits. Pathan of Afghanistan and Pakistan perceive unity among fellow Pathans, even though the cultural traits of northern and southern Pathan are quite different, and regionally, Pathan may be more culturally similar to neighboring non-Pathan than to distant coethnics. Pathan perceive Pathan unity around a small assortment of seemingly arbitrary cultural traits.

Cultural evolutionary arguments for *Ethnicity = Culture = Society*

Now let us fast-forward to the first decades of the 21st century, and recent arguments about ethnicity and parochial altruism by scholars of cultural evolution. Parenthetically, contemporary cultural evolutionism is completely unrelated to the racist, colonial, Victorian cultural evolutionism of Herbert

Spencer, Edward Tylor, and Lewis Henry Morgan. It also has very little to do with genes. Modern evolutionary thought starts with Darwin's tenants that there is variation within and among populations, that some of this variation is heritable, and that some variants are more likely to survive to reproduce within particular environments. Whereas biologists commonly apply Darwin's tenants to genetic inheritance and biological diversity, Darwin's tenants apply equally well to cultural inheritance and behavioral diversity. Culture varies. Culture is heritable, through active and passive forms of teaching and learning. Culture delivers survival and reproductive outcomes. Unlike genes, we acquire culture continuously throughout our lives from many sources. Cultural information rarely consists of discrete units, but consists instead of knowledge sets, associated, for example, with subsistence, religion, or identity. These knowledge sets contain norms for rewarding compliance and punishing deviance, which operate to make the knowledge seem normal, moral, or inevitable (for an accessible introduction to this theory, see Richerson and Boyd 2005).

A major research question for contemporary studies of cultural evolution is how to explain how people get along with one another in large scale societies constituted by anonymous strangers. When two people meet, they must first solve a series of coordination problems, such as how to greet one another. A handshake, hug, or kiss on the cheek work equally well, so long as both people share the same expectation, and there is no benefit to transgressing the standard. Strangers may also have to solve cooperation problems involving sharing or helping, that are costly to perform, beneficial to receive, and prone to cheating (non-reciprocation). As the argument goes, in small-scale, kin-based societies, coordination and cooperation problems are easily solved because people interact frequently and remember each other's past behavior. But in large-scale societies, one cannot be sure of a stranger's history of past transgressions, or even what they consider to be transgressive behavior.

Ethnicity can solve problems of coordination and cooperation at large scales if visible, ethnic practices communicate invisible commitments to social norms (McElreath et al. 2003). If ethnic markers, visible tags such as clothing, hairstyle, or dialect, coevolve with social norms, then one may know from glancing at a stranger's clothes and hair what rules they follow, and interact with them accordingly (McElreath et al. 2003; Riolo et al. 2001). If ethnic markers co-evolve with cultural information and social norms, then ethnic groups, bounded as they are by markers, are also likely to be cultural and social groups. Coethnics share the same coordination norms for things like greetings. Mem-

bers of an ethnicity are incentivized to avoid cheating in cooperation problems because of fear of punishment, ostracization, and the loss of group membership and shares of collective gains. The result is within-group social cohesion (Moya and Boyd 2015). Ethnic beliefs and practices may strengthen outgroup antagonism, because warfare is a cooperative act in which coethnics reward each other for victory and punish cowards and defectors (Mathew and Boyd 2011). The result of this "parochial altruism" may be that ethnic groups rather than individuals compete for survival, a type of cultural group selection (Choi and Bowles 2007; García and van den Bergh 2011; Handley and Mathew 2020; Jones 2018).

Example of *Ethnicity* = *Culture* = *Society*: East African herders

Handley and Mathew (2020) offer a formal definition of "cultural unit" as the social scale at which two individuals from different groups are most likely to disagree about cultural norms. Differentiated cultural units are analogous to differentiated genetic populations and can be quantitatively evaluated using the same math, Wright's fixation index (F_{ST})

Handley and Mathew (2020) test key predictions of parochial altruism using data from four East African pastoralist populations, Samburu, Borana, Rendille, and Turkana. To test whether cultural norms differ more between ethnic groups than between territorial or clan subsections of an ethnic group, they asked 793 individuals whether they agreed or disagreed with a series of 49 normative statements (e.g., "A woman can only joke with a man from her husband's ageset"). They found the greatest variation in norms (the greatest cultural F_{ST} or CF_{ST}) was between pairs of ethnic groups: Samburu, Borana, Rendille, and Turkana (mean CF_{ST} = 0.152). There was much less variation in norms between subsections of ethnic groups (mean CF_{ST} among Turkana territorial sections = 0.030; among Borana clans = 0.003). This evidence suggests that Samburu, Borana, Rendille, and Turkana ethnic units correspond to social and cultural units.

To test whether cooperation is more likely among sets of people with more similar social norms, Handley and Mathew (2020) asked the same sample to respond to a series of hypothetical vignettes involving helping or not helping others from the same or different groups. They found a greater willingness to cooperate with those from groups with more similar norms. Thus, ethnic units appear to correspond to socio-political groups.

These findings are remarkably consistent with colonial era anthropologists' descriptions of hierarchical, nested groups of ethnicities and ethnic subunits. For example, in Evans-Pritchard's (1940) description of Nuer, he classes Nuer and Dinka, and Shilluk and Luo, as two branches of a larger category of Nilotes. He subsequently subdivides Nuer into nested categories at a cascade of levels from tribes to primary, secondary, and tertiary tribal sections to villages, each with its own territory, character, and identity. This is the hierarchical nested scalar model of cultural and identity which Barth (1969a) criticizes.

Example of *Ethnicity ≠ Culture ≠ Society*: Mikea, Masikoro, and Vezo of southwestern Madagascar

My colleagues from the University of Toliara[2] and I (hereafter, "we") performed similar data collection and analyses as Handley and Mathew and arrived at different conclusions (Tucker et al. 2021). For our study, we wanted to know how well Mikea, Masikoro, and Vezo could classify one another into ethnic categories based on visual cues, and whether they prefer to cooperate with coethnics.

Identity in this part of Madagascar is complicated and has been the subject of much research (Astuti 1995; Astuti et al. 2004; Poyer and Kelly 2000; Tucker et al. 2003; Yount et al. 2001). Ask just about anyone in the region what Mikea, Masikoro, and Vezo are, and you will probably get an answer such as these statements, made by women in the context of focus group discussions about ethnicity in 2006:

> "Mikea live in the forest, and they sell what they gather from the forest. Masikoro live in the interior. They cultivate rice, manioc, sweet potato. Vezo do their livelihoods at sea."

> "Mikea live in the forest; they know how to collect honey and tenrecs, and hunt wild bushpig. Masikoro are people who practice the circumcision ceremony [for boys]. Vezo do not circumcise; they do their livelihoods in the sea."

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These statements suggest that Mikea, Masikoro, and Vezo are mostly livelihood distinctions, so that Mikea are hunter-gatherers, Masikoro are farmers, and Vezo are fishers. Astuti (1995) explored the ramifications of this "identity by doing" among Vezo and their neighbors in the Menabe Region, 150 km north of our field sites. She documents that children born of Vezo parents are not considered to be Vezo until they learn to "struggle with the sea," and that adult Masikoro can become Vezo by moving to the coast and learning to fish or sail.

Although we have heard similar narratives in our field sites (Poyer and Kelly 2000; Yount et al. 2001), we have also noticed frequent mismatches between identity and livelihood, including whole villages where people self-identify as Mikea despite farming or fishing for a living, villages of farming Vezo, and villages of Masikoro who fish. Most Vezo villages contain immigrants who practice Vezo lifeways but are nevertheless called Masikoro, and Vezo may farm the savanna and not be considered Masikoro by their neighbors. When we ask people to explain these apparent mismatches between ethnicity and occupation, we hear a second narrative, that identity is inherited lineally from ancestors. Mikea are those who venerate ancestors who resisted the Andrevola kings that ruled the region before French colonization by hiding in the forest; foraging is a symbol of resistance and independence and not necessarily a specialization. Masikoro venerate ancestors who were vassal to the kings; crops and cattle symbolize wealth and strength. Vezo remember ancestors who resisted royal dominion by sailing away to sea (Tucker 2003). Children acquire these identities during rites of filiation (*soroanake*), when their formal relationship with ancestors begins.

Given the competing narratives of what makes someone Mikea, Masikoro, and Vezo, identity fluidity, and routine, peaceful inter-ethnic interaction for trade, marriage, and ritual, we wondered whether people could actually discriminate one another by ethnicity just by their appearance (Tucker et al. 2021). We took photos of 132 Mikea, Masikoro, and Vezo adults (we call the photographed subjects "alters") standing alone against a blank background. Then we showed these photos to 355 Mikea, Masikoro, and Vezo living 100 km or more away (the "judges").

In the first experiment, judges were asked to classify alters who were photographed in their everyday clothes, without objects in their hands, in an upright pose. The judges successfully identified the alters 65% of the time, which is much greater than the background guessing rate (33%). This indicates that Mikea, Masikoro, and Vezo do send and receive signals marking their eth-

nicity. In the second experiment we asked judges to classify photos of alters who were specifically posing as a member of their ethnic group. Mikea alters donned tattered clothes and held the digging tools and net bags they use in foraging; Masikoro women tied sarongs (*lamba hoany*) high on their chests and across their breasts while men wore capes (*lamba be*) and hats, holding spades and plows; and Vezo women tied their sarongs low, and Vezo women and men held fishing lines and lures, fishing spears, masks, fins, and in one case, a dead squid. Although judges were more successful classifying these photos (77% success), the difference is not statistically significant, suggesting that southwestern Malagasy may be limited in their ability to purposefully improve the clarity of their ethnic marks. In the third experiment, judges classified photos of alters recruited from busy marketplaces, venues where Mikea, Masikoro, and Vezo interact. Interestingly, judge's success rate matched that of the probability of a guess. These experiments indicate that Mikea, Masikoro, and Vezo do perceive borders separating these identities, although they seem to drop the borders when meeting to trade.

The fourth experiment was a bit different. Judges were told a hypothetical vignette about a wage labor opportunity to the north, where the boss hired people by teams. Whichever team cooperated the best got double salary, and whichever team cooperated the worse got half salary. We then asked, who, among the photographed alters, would you most want on your team, and who do you least trust to cooperate? If ethnic boundaries are social boundaries marking discrete transitions between sets of social norms, then we would predict that the judges would prefer to cooperate with coethnics. This was not the case; judges were equally likely to classify coethnics as cooperative and as untrustworthy. Judges explained their choices with reference to the alters' appearance, work ethic, and personality. Only one out of 90 judges mentioned ethnicity as a reason to mistrust a coethnic, and three out of 90 cited a preference to work with someone of a different ethnicity. Ethnic boundaries do not appear to be social boundaries.

In a separate series of semi-structured interviews conducted with 30 Mikea, Masikoro, and Vezo in three villages, we asked whether people of their ethnicity cooperate best with coethnics or with people from neighboring ethnicities. Roughly half (16 out of 30) said they worked best with coethnics, citing similar knowledge, ideas, livelihood strategies, personality, and sense of humor, and several said members of their ethnicity work best in solitude (N=2). A substantial minority expressed a preference for working across ethnic lines. The benefits of coethnic cooperation include a more diversified

skillset, lower political tension (because coethnics tend to argue and compete about similar things), and cross-ethnic kindred in perspectives.

To discover whether ethnic boundaries correspond to cultural boundaries, we conducted two versions of a norms questionnaire with 150 people per version in two Mikea, two Masikoro, and two Vezo villages. We asked questions about social organization and gender (e.g., "is it normal to marry someone in your clan?"), ancestor veneration (e.g., "Is it normal to offer the ancestors a goat, wild tubers, or beans if you don't have access to a sacrificial cow?"), and taboos (e.g., "are you taboo for sheep?"). We purposefully chose items that we suspected might be different among ethnicities (e.g., we had heard that Vezo are less concerned with clan endogamy, Mikea routinely offer goats or beans in sacrifice to ancestors, and Vezo are universally taboo for sheep). Like Handley and Mathew, we calculated cultural F_{ST}, with the help of coauthor Erik Rinen. The results indicated that that there was similar variation in norms between villages as between ethnicities (Average CF_{ST} among pairs of ethnicities = 0.04 for social organization norms, 0.06 for ancestor norms, and 0.07 for taboos; average CF_{ST} among pairs of villages = 0.05 for social organization norms, 0.06 for ancestor norms, and 0.05 for taboos). Although we might have found greater ethnic differences with different questions or a larger sample of villages, these analyses suggest that ethnic boundaries do not enclose cultural differences.

East-African herders are different from southwestern Malagasy because ethnicity is not just one thing

Readers could argue that by comparing the findings of Handley and Mathew (2020) to my own study (Tucker et al. 2021) I am setting up a false comparison, because Turkana, Samburu, Borana, Rendille, are clearly not comparable ethnological units as Mikea, Masikoro, and Vezo. Turkana, Samburu, Borana, and Rendille and speak different languages, from two different language families; they migrated to their current territories from different directions; and they sometimes raid each other for livestock. By contrast, Mikea, Masikoro, and Vezo speak the same language, share historical origins, in many cases belong to the same clans, and depend on one another for trade, marriage, and ritual. But these differences are exactly my point. By ascribing ethnographic descriptions to ethnicities, anthropologists, journalists, and politicians speak as though these *are* comparable units. In this section I discuss some of the

geographical and historical reasons why ethnicity is a different phenomenon in East Africa contrasted to Madagascar.

First, let us consider geography and deep time. The borders of Kenya are modern and arbitrary, whereas the borders of the island nation of Madagascar are unambiguous coastline. Kenya is a cradle of human evolution while Madagascar is among the last large landmasses to be occupied by humans (even with new evidence by Dewar et al. 2013). The result is that the modern borders of Kenya arbitrarily group together various peoples with diverse languages and cultures, who may find many reasons to see each other as different. By contrast, there is only one native language in Madagascar, Malagasy, spoken in different dialects by all 25 million inhabitants. Genetic studies find that despite the dual origins of the Malagasy population in Africa and Island Southeast Asia, there is low haplotype diversity and relatively even admixture of African and Asian genetic markers (Pierron et al. 2014; Razafindrazaka et al. 2010). Malagasy share many significant cultural practices and beliefs centered on ancestor veneration, cattle sacrifice, tombs, spirit possession, divination, and astrology (Mack 1986; Middleton 1999). Malagasy may be less likely than East Africans to see ethnic difference because they are less differentiated. Indeed, people in Madagascar habitually refer to Malagasy customs (*fomba gasy*), Malagasy knowledge (*fahaiza gasy*), and Malagasy food (*sakafo gasy*) rather than the customs, knowledges, and foods of smaller ethnic subunits, even when describing local practices that are not actually shared across the island.

Next, consider the ways that European colonial powers exploited social differences for political purposes. The Germans and British in East Africa and the French in Madagascar employed similar strategies of codifying racial and tribal boundaries and transforming these into colonial administrative units via policies of indirect rule, but with some different outcomes. European explorers assumed *à priori* that Africa's peoples fell naturally into racial and tribal categories, and then sought to document those categories whether they existed or not (Iliffe 1979; Mafeje 1971; Ranger 1993). Nineteenth century linguists observed the geographic distribution of grammars and vocabularies and, from them, invented stories of sequential invasions by races of increasing superiority: Bantu replacing San, Nilotes displacing Bantu, Arabs subjugating Nilotes (Gourevitch 1996). The list of supposed tribes generated by explorers included an odd collection of dissimilar categories: geographical names, kin groups, kingdoms, enemy's epithets, and catchall categories (Southall 1970, 1971). European powers transformed these newly discovered (invented) tribes into administrative units, and transformed whatever influ-

ential people they found, whether kings or clan heads or healers, into "chiefs," whom they incorporated into the colonial government hierarchy, where they were responsible for enforcing colonial policies of taxation, labor recruitment, and villagization (Hodgson 1999; McCabe 2004; Simpson and Waweru 2021). Through this process, Europeans may have brought into existence the hierarchical, nested sociocultural groupings that Evans-Pritchard (1940) and other colonial era ethnographers assumed were primordial.

In Madagascar, efforts to reify ethnic or tribal identities may not have been entirely successful. French colonial agents worked with a list of 18 supposed tribes generated by French explorer Alfred Grandidier and others (Kent 1970; Southall 1971). Grandidier's tribal map labels Madagascar's southwestern people as Sakalava, but the Mikea, Masikoro, and Vezo people that I work with do not seem to have ever used this term for themselves. This may be because the term Sakalava is a place name that refers to the region north of where my fieldwork occurs, or because southwesterners were never administered collectively as Sakalava. In the south, southwest, and west, indirect rule involved empowering the sons and grandsons of the last kings rather than ethnic representatives per se. Eggert (1986) met many people in the area labeled Mahafale who still had not heard that they were supposedly Mahafale, suggesting that some Malagasy did not know their supposed tribal affiliations until instructed by outsiders.

Published histories of the origins of east African herders seem consistent with parochial altruism. During the centuries before colonization, one branch of Nilotic speakers diverged to form Turkana, Karimojong, and Jie (Lamphear 1988; McCabe 2004), while another split to form Samburu and Maasai (Simpson and Waweru 2021), whereas Borana, Rendille, and Ariaal diverged after the rise of the Oromo kingdom in the horn of Africa (Schlee 1990), during a time of war over pasture and raiding for cattle.

These histories may be largely factual, but the question remains whether eighteenth century east Africans called themselves by these ethnic terms imbued with their contemporary meanings, and formed alliances and enmity along ethnic lines; or whether the ethnic terms were applied during after-the-fact twentieth century retelling because ethnic divisions had become meaningful in the colonial era. While there was inter-ethnic conflict in the precolonial era, there is also evidence of inter-ethnic cooperation. By the 18th century, Samburu, Rendille, and Borana formed "heterogenous, multilingual confederations" (Lamphear 1988: 31 cited in McCabe 2004: 49). Following a period of interethnic conflict associated with the growth of the Oromo polity, Sam-

buru enjoyed a "pax Borana" with their neighbors (Schlee 1990). Some scholars have suggested that the warfare and raiding by herders witnessed by colonial officers could have been a recent reaction to the 1890s rinderpest epidemic that devasted herds, or a reaction to colonial intrusions and policies (McCabe 2004; Oba 2011). As a result, it is unclear to what degree the parochial altruism identified by Handley and Mathew is the cause of Turkana, Samburu, Borana, and Rendille ethnogenesis or the result of colonial policies of division.

Conclusions: At what scale should we generalize ethnographic descriptions to avoid Type 1 and Type 2 errors?

Although the scale of ethnographic representations was not the focus of Handley and Mathew's study of East African pastoralists nor my co-authored study in southwestern Madagascar, one could conclude from our studies that the proper scale of generalization should be the scale where there is the greatest between-group difference. In Handley and Mathew's East African Pastoralist example this seems to be the ethnic level, whereas in southwestern Madagascar it would be something larger. I endorse a qualitative application of this strategy, with some significant caveats.

One caveat is that even in cases where cultural knowledge and social structure do demonstrably cluster at ethnic levels, labeling cultures and societies with ethnonyms may still be unwise. This is because the practice encourages a casual "ethnicism" with the same dangers as everyday racism, as an anonymous reviewer of an earlier draft of this chapter suggested. That people who self-identify as Turkana agree more amongst themselves than with non-Turkana about men and women's joking relationships does not indicate that these norms are inherent to, or caused by, being Turkana, for regional agreement in norms could be coincidental to the ethnonyms and identities employed in the region. Nor do we know how change or loss of these norms might influence Turkana identity, if at all. Use of ethnic labels may encourage the general public to think that ethnic groups as primordial or essentialized populations. Exotic-sounding ethnonyms may conjure inaccurate stereotypes of primitivism.

A simple linguistic solution to ethnic labels would be to change statements such as "I study Mikea," to "I study people in southwestern Madagascar who self-identify as Mikea," followed by a description of what self-identifying as Mikea means. This relatively simple rephrasing indicates although my research subjects are Mikea, my findings do not necessarily apply to all Mikea.

This rephrasing also leaves open the possibility that my research participants may call themselves by other terms (which they do). This practice is standard among many anthropologists, but it is hardly universal across the social sciences, much less in public media.

Some writers continue to put the definite article before ethnonyms, so that they write about "the Mikea," "the Yanomamo," in the same way that politicians half a century ago talked about "the Blacks," "the gays," etc. Putting "the" before an ethnonym makes ethnicity a noun and an immutable category of matter. Dropping "the" leaves the ethnonym to function like an adjective, so that "Mikea" or "Yanomamo" is a property of a person, and just one property at that.

Cross cultural studies should refer to their samples with geographic locations rather than ethnonyms, although it may be appropriate to explain that the people from *X* sample self-identify as *Y*. This strategy avoids conflating the sample with an ethnicity, society, or culture, and it avoids presenting ethnic groups as comparable units of analysis.

It is probably impractical use quantitative measures of CF_{ST} as a guide to the scales for ethnographic generalization. For one thing, different cultural traits and social structures within the same populations may generalize at different scales. For example, some specific beliefs about forest spirits may be unique to some Mikea individuals or communities, whereas other beliefs endorsed by Mikea, such as the general belief that forest spirits exist and mediate between living supplicants and God the Creator, are common to all Malagasy, and perhaps beyond Madagascar as well. To calculate CF_{ST} for multiple social and cultural features across scales would require an overwhelming amount of data, from a plurality of people who call themselves Mikea, Malagasy, and perhaps from across the Indian Ocean Rim.

A qualitative application of the basic logic of CF_{ST} calculations, which states that we should generalize at the scale where beliefs and practices are shared, requires writers to have a general knowledge of regional cultural patterns. So rather than write, "Mikea believe that people with bad intent can harm others through the manipulation of magical objects," a more cautious statement would be that "many people in the study region, like their neighbors across much of rural and urban Madagascar and Africa, believe that people with bad intent can harm others through the manipulation of magical objects."

Obviously the second version of this statement is more complicated, and writing space is often limited. Thus, we should prioritize using cautious scalar

statements when describing topics with the greatest chances of causing the dangers of Type 1 and Type 2 errors, specifically, exoticization and stereotyping. This includes cultural traits associated with primitivism such as sorcery, witchcraft, spirit possession, scarification, human sacrifice, skull deformation, genital and other body modifications, cannibalism, marriage-by-capture, and child marriage, but also, hunting and gathering, nomadism, chiefs, etc.

The appropriate scale of ethnographic generalization may not have a handy and convenient name, and the temptation to create new scalar names could lead to a counter-productive return to cultural area studies. I have provided evidence that Mikea, Masikoro, and Vezo share many cultural beliefs, but people in the region employ no umbrella terms to refer to these people. Some early writers referred to these people as "Fiheregnars" (Drury 1826[1729]) after the name for the Fiheregna region, but "Fiheregnars" lacks local salience. I use the admittedly awkward label "southwestern Malagasy." Ralph Linton (1928) suggested that Mikea, Masikoro, and Vezo share many cultural traits with other western and southwestern Malagasy, which he labels "cultural area III," which corresponds to the arid parts of Madagascar. This culture area approach conflates environment with culture and erases as much variation as it labels.

Sometimes our research goals require generalizations at scales such as ethnicities, nationalities, or anthropological categories such as "hunter-gatherers." In these cases, it is important to draw conclusions from a representative sample of both members and non-members of the category we are generalizing about. For example, I have argued elsewhere that anthropologists may be unduly fixated on food sharing as a trait common to hunter-gatherers, when actual sharing attitudes and behaviors vary considerably among foraging populations and farmers and herders also share food with similar apparent generosity as some foragers (Tucker 2019). The question remains how many samples of foragers (and of a non-forager control group) are required to generalize about foragers, seeing as a sample representative of foragers and non-foragers across time and space would be challenging to acquire. The two articles that inspired the Scale Matters workshop generalize to all foragers from one example covered in detail (Nayaka of India, Bird-David 2017; Martu of Australia, Bird et al. 2019), which they compare to a larger sample of other foragers known ethnographically. Although workshop attendees ultimately found that Bird et al. and Bird-David's scalar arguments were more similar than different, the question still remains, did either study include a

sufficiently large and representative sample of foragers to make conclusions about "hunter-gatherer" social scales?

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Comment by Thomas Widlok

Every discipline has its default connotations when the notion of "scale" is being invoked. Maybe most intensively this is being debated in geography where scale is being delimited by other spatial concepts such as such as place, locality, territory and space. For anthropology with its interest in socio-cultural scale rather than geographical scale the key association that features most prominently is that of 'ethnic identity'. This is so even though many anthropologists today will be quick to claim that they are not privileging ethnic groups in their research since they include a host of other, different groupings ranging from professional or age groups to more diffuse entities such as milieus, situations and subcultures. 'Ethno'graphy, too, the disciplinary method-books underline (see Breidenstein et al. 2013: 32), is today often not about ethnic groups, and there is no immediate reason why it should be. All these qualifications notwithstanding it is important to seek to clarify the relation between scale and the notion of ethnic group, as Bram Tucker does in this article. Because there is a latent danger in anthropological writing that the ethnic group may be assumed to be the default (if not the 'natural') scale of anthropological description and analysis. There are a number of reasons for these latent slippages that constitute errors of scale. One is that a good part of the body of anthropological literature up to this point has been framed in this way, not only as a habit of speaking amongst authors but also due to influential book series such as the 'Case Studies in Cultural Anthropology' and due to influential database projects such as the 'Human Relation Area Files'. Another reason has to do with the dominant mode of (lateral) comparison in anthropology and archaeology which conceives of case studies as datapoints that are commonly given ethnic labels. This is still common practice even when we do not know whether that label was used as a self-identification back in time, e.g. in much of the archaeological record. In the ethnographic record, too, it is important to take sufficient precautions in order to avoid errors of

scale that 'overattribute' ethnic identity with social practices. After all, ethnic identity and ethnic identification are political resources employed for a range of purposes (see University of Cologne Forum 2015). Tucker's contribution clearly distinguishes two forms of overattribution: Cultural practices (or traits) may be ascribed to the scale of ethnic groups even though they actually correspond to larger units such as languages or regions (Type 1 error) or despite the fact that they are actually tied to smaller units such as gender groups or individuals (Type 2 error).

What is important to note in this context is that these are not purely academic concerns. As Tucker shows with his examples these errors have very direct political consequences and they do not affect everyone in the same way: Small indigenous groups more often than others suffer discrimination as a direct result of being wrongly described in the Typ 1 erroneous mode ('Mikea hunting endangers tortoises'). Hunter-gatherer groups experience also a larger than average share of Type 2 erroneous misrepresentation because being included in the category 'hunter-gatherer' often goes with assumptions of a stable evolutionary stage of early humanity ('Foragers as early humans share more food than others') and it belies the diversity found among hunter-gatherers. Tucker's comparison of two case studies suggest that ethnic groups may indeed at times be a relevant scale to consider, but not necessarily so. There is no short-cut that would spare us the trouble of carefully testing which cultural practice can be associated with what type of grouping at the various scales under consideration. Caution is required, and Tucker provides some hands-on recommendations of how to practice this caution in scholarly writing. One of these recommendations is to refer to the group's own self-designation. And this may be one of the most relevant insights here: We scale as scholars, and we need to note the likely errors that occur when we do so. But we are also always constantly dealing with people who themselves are involved in scaling as a practice. These are first and foremost the interlocutors in our field research (or for the archaeological record those who leave marks of cultural distinction in materials and landscapes). But it also involves the readers of scholarly work who employ the scales that are inbuilt into their own biases, including those that have sedimented from previous scientific work that scholars today have come to criticize and reject. The bad news is that scaling is ongoing and it is a situated practice, a response to particular contexts so that there will not be a one-scale-fits-all. The good news is that if the practice of scaling is malleable, we do stand

a chance to positively influence the harmful and erroneous scaling that we observe.

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