Ethnologies

ethnologies

Practical Cosmologies

Götz Hoeppe

Volume 40, Number 2, 2018

Devenirs de l'ethnologie
Whither Ethnology?

URI: https://id.erudit.org/iderudit/1056384ar
DOI: https://doi.org/10.7202/1056384ar

See table of contents

Publisher(s)

Association Canadienne d'Ethnologie et de Folklore

ISSN

1481-5974 (print)
1708-0401 (digital)

Explore this journal

Cite this article

Hoeppe, G. (2018). Practical Cosmologies. *Ethnologies*, *40*(2), 75–92. https://doi.org/10.7202/1056384ar

Article abstract

For much of the 20th century, indigenous cosmologies, understood as the totalizing worldviews of delimited social groups, were one of ethnology's central topics. In the last few decades, however, the concept of cosmology no longer sat well with many ethnologists' wariness of identifying social wholes as analytic units and with accepting correspondences of social organization with orders of time, space, and color, among others. Recently, Allen Abramson and Martin Holbraad, in their 2014 book *Framing Cosmologies*, called for a "second wind" of anthropologists' attention to cosmologies, now including popular understandings of Western science. While endorsing this broadened attention to cosmology and the uses of analyst's perspectives, I call for remaining attentive to the practical uses of cosmologies by the actors that ethnographers learn from. This entails attending to the social accountabilities and organizational contexts that constrain how people act. I seek to illustrate this by drawing on ethnographies of fishers in south India as well as of astrophysicists in Germany.

Practical Cosmologies

Götz Hoeppe
University of Waterloo

Introduction

To ask "whither ethnology?", as this issue of *Ethnologies* does, invites us to take stock of what ethnological studies have achieved in recent years and to identify new routes to pursue[1]. It also invites us to stop along the road and look back to remind ourselves of which other turn we may have taken, routes that may still be attractive and fruitful today and in the future. Take cosmology, for example. For much of the 20th century, indigenous cosmologies, understood as the totalizing worldviews of delimited social groups, were one of ethnology's central topics. In the footsteps of Émile Durkheim and Marcel Mauss's (1963 [1903]) essay on primitive classification, a generation or two of socio-cultural anthropologists set out to explore correspondences of social organization with orders of time, space, and color, among others, culminating perhaps in the work of Claude Lévi-Strauss (1966) and Mary Douglas (1970, 1982). In the last few decades, however, the concept of cosmology no longer sat well with many ethnologists' wariness of identifying social wholes as analytic units, and their concern with cultural, social and political change.

While anthropological interest in cosmology never disappeared entirely (see e.g. Barth 1987; Viveiros de Castro 1992; de Coppet and Iteanu 1995; Descola 2013), there has been a series of calls to return to cosmology in the past few years. Most recently, Allen Abramson and Martin Holbraad called for a "second wind" of attention to cosmologies, now including popular understandings of Western science. In the preface to *Framing*

1. I am very grateful to my interlocutors in both settings for their help, patience and understanding in the course of my fieldwork. Two anonymous reviewers kindly provided comments on an earlier version which improved this paper. Financial support was provided by the Deutsche Forschungsgemeinschaft (grants LU 528/7-1 and HO 3986/2-1).

Cosmologies (2014), Abramson and Holbraad report on their meeting with Mary Douglas in 2007, shortly before her death. They describe her bemusement and surprise that cosmology might, again, be current and relevant beyond being considered a mere cultural remnant (1). Abramson and Holbraad argue that anthropologists of the "classical ethnographic period" (1920s – 1970s) focused on viewing the cosmologies of "primitive societies" as totalities that populate the "outer reaches of a social universe" whose center was marked by a "more or less modern core," an arrangement of sorts to "theorise the human whole" (4). Resuming the cosmological project in anthropology today, they argue, would imply rejecting such an idea of structural integration, functional differentiation and hierarchical difference (ibid.: 9). Nevertheless, like most authors in their collection, Abramson and Holbraad, do not abandon the analyst's viewpoint.

Prior to Abramson and Holbraad, Don Handelman (2008) had also called for reviving anthropologists' interest in cosmology. Focusing on religious cosmologies, Handelman contrasted two basic forms of "cosmoses." Characteristic of monotheistic religions, one is marked by "fractures" between cosmic interiors and cosmic exteriors and is held together ("integrated") by exterior forces, while the other, "organic" cosmos – exemplified, for example, by classical Hindu universes – is marked by integration from within ("intra-gration"). As such, Handelman also presents an analyst's view. More interested than Handelman in how people use cosmologies, John Tresch is troubled that the study of cosmology is hindered by worldviews being "locked up inside people's heads," and that "figuring out what is going on in the head of your informants (…) is just about impossible" (Tresch 2005: 69). He recommends turning to "cosmograms" instead. Such "central points of reference that enable people to bring themselves into agreement" (ibid.) can be rituals, paintings or other artifacts deriving from, or alluding to, collective practice and experience.

A still earlier call to return to the study of cosmology was made by Michael Herzfeld in his 2001 book *Anthropology: Theoretical Practice in Culture and Society*. Drawing in part on Ossio (1997), and being mindful of the insights of Mary Douglas, Herzfeld begins his *Anthropology* by defining social and cultural anthropology as the "critique of common sense" (Herzfeld 2001: 1). He insists that "[t]hrough cosmology, people treat the universe as organized: rather than a collection of random physical components, it is a highly ordered disposition of matter and energy structured in different levels of size and complexity" (194). As such, he argues, "the term 'cosmology' emerges as a more useful and encompassing

term and tool for the comparative project of anthropology" (194). While Herzfeld acknowledges an interest in "total cosmological systems," he nevertheless insists on attending to their "interactional and interpretive elements" (197). As such he is more interested in actors' perspectives than either Abramson and Holbraad (2014) or Handelman (2008).

In the reflective spirit of this special issue of *Ethnologies*, I take Herzfeld's (2001) position as my starting point. I supplement it by probing into a streak in the work of Mary Douglas, a dominant anthropological explorer of cosmologies, that has sunken into oblivion but is worthy of rediscovery: to attend to cosmologies in the context of the practical work of social accountability and of sensemaking in organizational contexts. I do not conceive of the "practical cosmologies" in my title as a novel concept. My point rather is by taking an analyst's viewpoint many anthropologists have disattended from the uses of cosmologies in people's lifeworlds. In the spirit of the special issue's guiding question of "Whither Ethnology" my call is to appreciate and reconsider their enduring importance for the organization of collective work.

A useful anthropological starting point for formulating my position is the book *Rules and Meanings: The Anthropology of Everyday Knowledge* (1973), that Douglas edited and commented. Douglas conceived of *Rules and Meanings* as a collection of texts that "claims philosophical forebears for a course in anthropology that I like to teach" (9). She forcefully argues that the time has "come for a renewal of the original community and of the free-ranging conversation about the social basis of knowledge that it once enjoyed. Philosophers will become conversant with totemic systems again as they once used to be" (12). She explains that the

> selections offered here draw out of the sociological theory of knowledge a certain thread. The theme goes back to Hegel and Marx; that reality is socially constructed. Every thinking sociologist would now agree in principle. But how far dare they follow? And what can be known about the kinds of reality that are construable? (9-10).

When Douglas writes that "it will be worth asking what the main varieties of society are that produce the constructions of reality" (10), she appears to be well on her way toward refining the grid-group theory that she had first proposed in *Natural Symbols: Explorations in Cosmology* (1970), a wide-ranging attempt to link social structure with classificatory systems (see also Douglas 1982: Chapter 9). This orientation, enriched by her call "to treat everyday knowledge and scientific knowledge as a single field in

sociology" (13), was a major influence for the development of the so-called Edinburgh school in the sociology of scientific knowledge (Barnes, Bloor, and Henry 1996). Yet, as Douglas' biographer Richard Fardon (1999) observes, Douglas never quite gave a plausible answer to her critics, such as Rodney Needham (1975), who noticed that she had not demonstrated how, exactly, social organization affects the classification of thought. Fardon (1999) also observes that Douglas kept pushing her ideas to the limit, sometimes beyond their breaking point. If so, the danger may well be that her readers may reject or overlook developments that do not go quite as far as her most radical stances, but that retain their viability nevertheless. It is this sort of middle ground that I propose to revitalize.

Rules and Meanings begins with excerpts of works of Ludwig Wittgenstein, Alfred Schütz and Harold Garfinkel, in that order. Only then comes the first writer with anthropological credentials: Edward Evans-Pritchard, Douglas' doctoral supervisor. Alongside excerpts of the works of anthropologists Godfrey Lienhardt, Ralph Bulmer and Stanley Jeyaraja Tambiah, the rest of the book includes four more texts by Wittgenstein, three more by phenomenologist Edmund Husserl, one more by ethnomethodologist Garfinkel and one more by phenomenological sociologist Schütz. Douglas' explicit openness to ethnomethodology, a sociological approach to the study of human sensemaking practices rooted in phenomenology (and informed, in part, by Wittgenstein's work) is noteworthy. She writes that "[e]thno-methodologists bring great delicacy to analyzing how the process of social interaction constructs the typifications and recipes which make social reality" (Douglas 1973: 10). Ethnomethodology is the study of the local orderliness of ordinary activities as the ongoing concern and accomplishment of participants (Lynch 1993; Liberman 2013). It highlights the perspective of social actors. Founded by Garfinkel, it was intensively debated in the early 1970s, but also criticized in surprisingly vigorous and embittered ways, most notably perhaps by Ernest Gellner (1975), like Douglas a British social anthropologist. I do not know if Douglas succumbed to such critiques, but it is noteworthy that she refrained from referring to Garfinkel and Schütz in her works after 1975. By contrast, historian of science Thomas Kuhn and philosopher Nelson Goodman remained influential references in her later work (as, for example, in Douglas 1992). Is it possible that Mary Douglas herself forgot the conversation that she had intended to revitalize in 1973?

Douglas' biography of Evans-Pritchard, published in 1980, suggests otherwise. Although she does not refer to Garfinkel therein, the theory of

accountability that she attributes to Evans-Pritchard (but endorses herself) is strongly reminiscent of ethnomethodology's specific concern that for mutual understanding to succeed, participants in interaction need to act accountably, which means that their actions have to be observable and reportable (Garfinkel 1967: 1). Evans-Pritchard's *Witchcraft, Oracles and Magic among the Azande* (1937) is a masterful exposition of such practices. However, readers of this book are not introduced to any correspondence of cosmology and social order. After reading it one does have a sense of the Azande's social hierarchies, but one knows neither what their conceptions of space and time are nor which deities they worship, if any.

Among ethnomethodologists, *Witchcraft, Oracles and Magic* has been influential especially for Melvin Pollner's (1974, 1987) work on mundane reasoning. As Pollner (1987) claims, "mundane reason is not an empirical version of reality but an *a priori* specification of its features in terms of which empirical claims are reviewed for their adequacy" (18). It is because of their mutual orientation to the assumption of an "incorrigibly objective and commonly shared world" (Pollner 1974: 53) that members of a practice are able to recognize and resolve disjunctive experiences. In doing so, they commonly rely on *ceteris paribus* clauses. Embedded in members' reasoning, "incorrigible propositions" are resources for reflexively preserving their own validity. This insight is inspired by Evans-Pritchard's (1937) study of the "secondary elaborations of belief" used by Azande ritual specialists to account for contradictory observations of oracle performances. Pollner does not write about cosmology explicitly, but as he moves on from sensemaking practices at a traffic court to Merleau-Ponty's (1968) notion of the world as the "Great Object," it seems to be just around the corner.

Lawrence Wieder's (1974) account of the "convict code" in a halfway house for released ex-convicts demonstrates the simultaneously prescriptive and descriptive uses of incorrigible propositions in the social world. The halfway house Wieder studied was an institution that was meant to prevent convicted narcotics offenders from relapsing into new offenses upon their release from prison. Wieder discovered that its convict residents kept referring to a loose set of maxims by which residents ought to abide, for example, not to "snitch," that is, to inform halfway house staff. What Wieder came to call the convict code also included references to types of people – such as "kiss asses" and "snitches" (Wieder 1974: 114). Wieder recognized that this code – although never specified in detail – was familiar and binding both to residents and staff of the halfway house; new residents and Wieder, as their ethnographer, had to familiarize themselves with it

hermeneutically by using what Garfinkel (1967: 78) called a documentary method.

Pollner and Wieder are firmly aligned with Harold Garfinkel, who begins his *Studies in Ethnomethodology* by insisting that "in doing sociology, lay and professional, every reference to the 'real world,' even where the reference is to physical or biological events, is a reference to the organized activities of everyday life" (Garfinkel 1967: vii). This observation is far removed from associating specific social structures with the classifications that make up a cosmology, but it invites one to open up the "interactional and interpretive elements of cosmology" (Herzfeld 2001: 194) to the ethnographer's scrutiny. Doing so is not an individual's problem only, but also (and characteristically) one of collective sensemaking as it is often encountered in organizational contexts, of which traffic courts and halfway houses are but two examples (see also Weick 1995; Maitlis and Christianson 2014). It is in light of these reflections that I shall turn to the practical uses of cosmology for the sensemaking of fishers in south India and that of astrophysicists in Germany, thus following Abramson and Holbraad (2014) as well as Herzfeld (2001) in going beyond the limits of cosmology in earlier anthropological accounts.

Contemporary uses of an ancient cosmology

My first anthropological encounter with cosmologies dates to my doctoral fieldwork of Hindu fishers in Chamakkala, a village on the Malabar coast in Kerala, southwest India (1999-2002). I focused on how local human-environment relations can be conceived in terms of a practice-based moral order as well as a negotiation of the limits of human agency (Hoeppe 2007, 2008, 2011). In late October 1999, soon after I had arrived in the village for the main stint of my fieldwork, a tropical cyclone hit the coastline of the East Indian state of Odisha, causing more than 9000 human deaths and massive damage.[2] On the beach in Chamakkala, the reports from Odisha were heard and discussed as documenting a catastrophic flooding. Some older fishers mused that the flood may have been due to moral breaches by Odisha's coastal dwellers, causing the sea to abandon its proper place. As commonly described to me in Chamakkala, the sea rises toward the west above the beach level, an astounding fact given that water should naturally flow down to lower elevations.[3] What keeps the sea "standing" is its contractual moral commitment toward human coastal dwellers and

2. https://en.wikipedia.org/wiki/1999_Odisha_cyclone (accessed Nov 9, 2017)
3. This 'standing' of the sea is doubted by many younger fishers (see Hoeppe 2008).

the mountains east of the village (the Western Ghat chain running along India's southwest coast).

Significantly, this conceptualization of marine space is reflected in the everyday speech of Chamakkala fishermen. When they refer to the westward and eastward motions of fish and boats in the sea, they commonly use the verbs *kayaruka* (to rise, increase, mount) and *irannuka* (to descend, decrease) of the locally spoken Malayalam language, respectively. The same verbs are used in an everyday context, such as when describing motion into or out of a confined, and usually elevated, space, e.g., a room (*muri*). Examples are: *muriyil kayaruka* ("to enter a room") and *muriyil ninnu irannuka* ("to leave a room").

Interpreting the moral implications of the Odisha flood was informed by the view, central to the cosmology of South Malabar fishers, that the regional world is constituted by a contractual, morally informed agreement between humans, mountains and the sea. Here the relation between the (male) mountains and the (female) sea is of paramount importance. In general comments, reflections and lamentations, older fishers in Chamakkala refer to the sea as "mother" (*amma*) or "sea mother" (*katalamma*). Notably, this is a category of kinship which entails notions of care and protection of the mother for her children. Even though there are no temples consecrated to *katalamma*, the sea is often identified with the Goddess (*devi*) of the Hindu pantheon. Besides this explicit notion of the sea's female nature, the fishermen's speech contains many references to its "bodiliness" and "subjectivity." The former is manifested by what one may call a "physiology of heat." The terms that are used by the fishers to refer to the constitution of the sea are identical to those used in referring to the female human body. A state of heat (*cuutu*), agitation (*kshoobham*) and anger (*koopam*) is opposed to a state of coldness (*tanuppu*) and calmness (*shaantam*). As in the female body, the "heat" of the sea is imagined as varying according to a regular pattern.

This is illustrated by a myth in which the seasonal cycle of the sea's "heat" is considered as an expression for the (female) sea's desire for intercourse with the (male) river water from the Western Ghat mountains; this includes large rivers such as the Bharatapuzha as well as a number of small streams. The sea wants to come to the mountains to "cool" its desire. In debating their union, sea and mountains realize that this would imply the people along Kerala's coastal strip would drown – an immoral implication, since they have made the promise to humans that this would not happen, provided, however, that humans themselves behave morally.

Older persons explained to me how success in fishing depends on men and women behaving truthfully (*satyamulla*; although only men go fishing). This means, normatively, that by respecting a set of values and rules (sharing with the poor, bringing regular offerings to temples, no sexual intercourse before fishing, menstruating women not entering the beach, etc.), one can expect to count on the sea's blessing, be spared from accidents and be rewarded with a sizeable catch (Hoeppe 2007: Chapter 5). In the end, the sea's desire is cooled by the "mountain water" (*mala vellam*): water which has poured down in the Western Ghats during the southwest monsoon (June to August), and which subsequently enters the sea through the rivers. When the mountain water enters the sea, the latter is expected to be rough for a few days, but subsequently its "heat" is supposed to be "cooled." As a consequence, fish, thought to prefer cool environments, may enter the near coastal inshore waters. The currents in the sea (*niiru*, *ozhukku*) are said to be affected by the mountain water as well, and a countercurrent from west to east is supposed to carry along small fish.

The myth of sea and mountains, as well as the notion of truthfulness, its association with the contractual constitution of the environment and its promissory character, echo Handelman's (2008) notion of an "intra-grated" cosmos.[4] But these cosmological understandings are of practical use as well. Local uses of the verbs *kayaruka* (to rise, increase, mount) and *irannuka* (to descend, decrease), matter to everyday social interaction on board: to communicate meaningfully with "old hands," novice fishers have to learn how to use these words. Yet even the narrative construction of spatio-temporal processes in the regional world becomes consequential for practical action, particularly in providing an ordered account of heat and coldness in the sea.

During the time of my main fieldwork in the village (1999-2002), most fishing was done by using *vallam*-s, an Arabian-style design of boats with stitched planks from which ring seine nets were operated to catch shoals of pelagic (near surface) fish like mackerel and sardine. Shoals are first spotted and then encircled with large nets, an operation requiring 20 or more men on board. This, then, is a form of teamwork that mandates a high level of social coordination. Although there is a hierarchy of command during the fishing trip, boat and gear are jointly owned by most of the team's men, who may at times demand to contribute to decision-making at sea.

4. It is noteworthy that these notions are likely to be ancient and be related to Vedic truth spells (Hoeppe 2007; see also Söhnen-Thieme 1995).

Since there are hardly any structures on the sea bottom that make up good "fishing spots," each fishing trip in this uncertain and fairly unstructured environment is a process of active knowledge-making (Hoeppe 2011). Setting out on the beach in the morning and deciding where to go on the sea may be informed by yesterday's catches (through which one learns at places on the beach where landings are auctioned), or by noticing a characteristic taste of fish which indicates that these fish had come from the Lotus sea, making it plausible to fish further to the west. When setting out at night one may head toward clusters of stars in the sky in the expectation (or hope) that fish tend to gather beneath it – a possible echo of the homonymy of "fish" and "stars" in Dravidian languages like Malayalam, where both are called *miin* (Hoeppe 2007: 66). Yet a fishing trip may also begin with what may be called the helmsman's hunches. I witnessed that helmsmen's decision-making before embarking on a trip was guided by expectations of where the sea would be hot or cold (informed by the narrative of spatio-temporal structuring of the environment). Thus, as rain would cool the sea and attract fish it marked potential spots of fishing success. Motorized trawling boats, on the other hand, were perceived as heating the sea and chasing fish away because of churning the water.

Arguments about the impact of heat on fish behavior mattered, for example, for the men whom I joined on extended fishing trips on a *vallam*. One day, while at sea, the arrival in regional waters of a number of trawlers was interpreted by their impact on heating the local sea, making it discomfortable for fish who would seek out cooler waters toward which *vallam* fishers followed them. Yet, the team had not set out in the morning drawing on a hunch of its helmsman or considerations of cosmology. Rather, it was seeing a *vallam* team embarking at a neighboring beach, a team whose helmsman was respected and was known to have recently guided his team to large catches recently. It seemed reasonable to follow this team. Not only did team members observe how other boats moved around on the sea, they also paid close attention to where sea gulls plunged into the sea. As such, inferences drawing on cosmology formed only one element in a complex and dynamic perceptual environment in which vision, in particular, was extended among diverse actors (Hoeppe 2011). Considerations of heat were made where more direct observations were undecisive. Cosmology is not the only tool these fishers use.

It is easy to dismiss expectations, such as fish gathering beneath stars in the sky, as incoherent fragments of folklore. Against this, I argue that they are better understood as significant elements of organizational

sensemaking in fishing. Remember the uncertainty of the ever-changing marine environment and the relative instability of the command structure on board the *vallam* boats. It is in such a context that an initial hypothesis that draws on shared cultural knowledge may be suited to gather the coherence of group decision making and stabilize organizational conduct. This would echo the story, famously told by poet Miroslav Holub, of a small Hungarian military detachment that got lost in snow and ice while on a maneuver in the Alps. After giving up all hope, one of the men discovered that he had taken a fragment of a map with him, hidden in a pocket. Studying it raised the group's confidence and aided them in returning to their camp. Upon their arrival, the lieutenant took a careful look at the map, only to discover that it was not a map of the Alps, but of the Pyrenees. Organizational scholar Karl Weick, who recounts this story, argues that when lost, any map, or any plan, will help to orient people, enable them to act, discover relevant context, generate tangible outcomes, and orient to future decision-making (Weick 1995: 54-55). Cosmologies, thus conceived, are resources for "thinking amidst ambiguity" (Liberman 2013: 71). They provide kernels from which retrospective and prospective reasoning can unfold.

Cosmology as a convict code

Let me now turn to my second ethnographic encounter with cosmologies, now in the course of a study of astronomers' research practices with digital data (2007-2010, with re-visits in 2010-17). Astronomers are makers of representations, and these representations are, literally or figuratively, world pictures. It is in the course of their work that researchers conceive of representing the universe in different ways, for example, by adopting specific diagrams, graphs or parameters. Yet as they aim for mutual intelligibility, researchers cannot but work toward holding worlds in common with others through sharing classifications and methods of sensemaking and ordering. I witnessed the coerciveness of this activity in following the work of Nancy, a PhD student at a research institute in Germany, who had to work distinct digital recordings together in the making of a consistent dataset. Her work was part of a collaborative research project, in which achieving consistency of the work of subprojects was a matter of enduring attention. Nancy was instructed by senior scientists to represent her data in a series of representational formats and assess them in light of what the universe could possibly look like, if seen through these formats (see Hoeppe 2014, 2018).

In November 2007, right at the beginning of my fieldwork, I sat in on the weekly meeting of a research group of astronomers in Heidelberg, Germany. Its members made observations of distant galaxies and clusters of galaxies for the purpose of studying their evolution. Some of their observations had been scheduled at a telescope in Spain over the previous three years, but due to recurrent bad weather only a small fraction of the data required for the project had been gathered. This was much to Nancy's frustration. Having received an email from the observatory earlier in the day, Ken, a senior researcher and Nancy's supervisor, was to report on the status of new observations of two clusters of galaxies, called A226 and A901.[5] Besides Ken, Jim and Owen (two other senior astronomers), several PhD students (including Nancy), and post-doctoral scholars were present.

The following exchange occurred at the beginning of the meeting. I transcribe my recording of it using elements of Gail Jefferson's (2004) transcription scheme. In this scheme, underscoring indicates emphasis, parenthesized "h" – such as (hhh) – signifies an outbreath characteristic of chuckling or giggling, and degree signs bracketing an utterance – such as °these two° – indicate that it is spoken more softly than the surrounding talk. In the following, (HA-HA-HA-HA) represents loud laughter. "MANOS Deep" and "COMBO-17+4" are acronyms of the group's observing projects. All personal names are pseudonyms.[6]

1. Ken: Okay … so ehm … maybe it would be good to give a brief … eh … account where we … where we stand at the moment with MANOS Deep or COMBO-17+4 ... I want to mention before that … from my side we have … new observations in A226 … ehh … we had new observations in A226 already a week ago …. or a bit more than a week ago .... and tonight (hhhh) the first observations of A901 for more than a year (hhhhh) have happened (hhhhh)

2. Owen: It is still … it is still there?

3. Ken: (hhh) ((*chuckles*))

4. (hhhh HA-HA-HA-HA-HA-HA-HA-HA) *[collective laughter]*

   (3 seconds)

5. Ken: So … it seems that we make some progress … I am pretty (sure) …

5. These acronyms stand for entries in the Abell catalogue of galaxy clusters (Abell 1958).
6. See Hoeppe (2018) for a more comprehensive discussion of this conversation.

6. *[collective laughter continues]*

7. Jim:°It has drifted away°

   [0.5 seconds]

8. *[laughter ends abruptly as Ken continues to talk]*

9. Ken: I … I think we have a good chance to get … a very good … to decent data base for A226 in this year … we have already collected quite a bit

Arguably, Owen's question (in line 2) of whether the galaxy cluster A901 was "still there" was rhetorical. Astronomers do not expect a galaxy cluster to disappear or to "drift away" in the sky, as Jim jokes (in line 7), certainly not after a year or so of bad weather. However, despite this being implausible, Owen's question did elicit collective laughter (line 4). Ken can be heard as having invited this laughter as his chuckling (toward the end of line 1) opened a slot for Owen to position his question (see Jefferson 1984). Yet the laughter that followed was contained. It ended abruptly (line 8) and Ken went on to give his account on the current state of observations for the project (line 9).

Members of the group may have heard Owen's interjection as a quip on their notorious bad luck with the weather. Yet they may have also heard it as suspending the backgrounded assumption of the stability of the night sky – commonplace for astronomers since Antiquity. If galaxies and galaxy clusters were to "drift away," the sky, and astronomical work practice, would literally be "out of order." Douglas writes that a joke "affords the opportunity for realizing that an accepted pattern has no necessity" (1975: 96). The laughter that a joke elicits illuminates a social world held in common with others (Critchley 2002: 86). People hold worlds in common with others through sharing classifications and methods of sensemaking and ordering. Thus, Harold Garfinkel begins his *Studies in Ethnomethodology* by insisting that "in doing sociology, lay and professional, every reference to the 'real world,' even where the reference is to physical or biological events, is a reference to the organized activities of everyday life" (Garfinkel 1967: vii). If this is the case, Owen's quip suggests that there ought to be shared practices of achieving reference which themselves are generally unproblematic to these researchers. The sudden end of laughter (in line 8) and Ken's continuation of his account (in line 9) mark these researchers' return to business as usual, astronomically speaking. They cannot afford to be skeptics.

When astronomers talk about a cosmology, they often talk about a specific "world model" – a set of assumptions, informed by theory and backed by observations, about what the universe is like, such as originating in a Big Bang while today appearing

> spatially flat, homogeneous, and isotropic on large scales, composed of radiation, ordinary matter (electrons, protons, neutrons, and neutrinos), nonbaryonic cold dark matter, and dark energy. (Spergel et al. 2003: 175)

This is a glimpse into the technical vocabulary of astronomers, a vocabulary that reaches far into popular culture and imagination. Working within its framework, researchers on galaxy evolution make explicit the cosmological assumptions they use. Their papers typically include a sentence in which the "cosmology" is specified at the end of the introduction section, such as:

> Throughout this work, an $(H_0, \Omega_M, \Omega_\Lambda) = (70, 0.3, 0.7)$ cosmology is used. (Faber et al. 2007: 268)

Here H_0 (the Hubble constant), Ω_M, and Ω_Λ (the fractions of matter and dark energy of what astronomers call the critical density) are three of six numerical parameters characterizing the world model that is currently dominant, and that astronomers also refer to as "lambda cold dark matter cosmology" or the "concordance cosmology," indexing the perceived agreement of community members (Nicola, Amara and Refregier 2017). Research publications on galaxy evolution suggest that astronomers presumably use this cosmology and the parameters specifying it only to convert observations into physical parameters describing cosmic objects. Agreeing about the model and its parameters is important for being able to combine data generated with different telescopes. As it is through a cosmology that people consider the world as organized, this is where the astronomers' cosmology meets the ones with which anthropologists are more familiar.

Throughout the late 20th century there was a notorious uncertainty among astronomers about basic cosmological parameters, dividing researchers by and large into two factions (Ashman 2001). In 2003, the widely publicized release of observations taken with the NASA satellite WMAP, the Wilkinson Microwave Anisotropy Probe, resulted in a set of precisely determined cosmological parameters that most researchers came to agree upon (Spergel et al. 2003), ushering in what has been called an era of "precision cosmology" (Primack 2005). Years after this release I heard researchers referring to it as "The Gospel according to WMAP" and thus

eliciting their hearers' smiles and nods. By doing so they seemed to allude not only to its hegemony, but also to the moral implications of mutually sharing an order of (and for) practice. Ken, for one, kept emphasizing to me his disbelief in this model, but he could not escape from using it.

For the astronomers whose work I witnessed the "lambda cold dark matter cosmology" became a resource for retrospective and prospective sensemaking, a collection of "embedded instructions for perception," much like the "convict code" in the halfway house that Wieder (1974: 203) described (see Hoeppe 2014). To astronomical practitioners it reflexively asserts the "uniqueness of the world" for these uses, independent of personal beliefs. As experienced practitioners orient to the observed world as having a single "underlying pattern" (Garfinkel 1967: 40, 78; Pollner 1987), Nancy was guided to proceed hermeneutically and apply a documentary method to elicit it.

Conclusion

I have argued that recent calls for anthropologists to resume the study of cosmologies have largely taken an analyst's perspective, and I have proposed to complement these studies by attending to the actor's practical uses of cosmologies as resources for sensemaking, in organizations and beyond. For doing so I have drawn on Michael Herzfeld's earlier call for attending to the interactional and interpretive elements of cosmologies, on Mary Douglas' treatment of social accountability, as well as on work on sensemaking by ethnomethodologists and scholars of organization. I have illustrated this with two cases from the early 21st century, one from artisanal fishing in south India, the other from astronomers' collaborative analyses of digital data in Germany. These cases are situated at either side of a divide in the understanding of cosmologies that Abramson and Holbraad (2014) seek to bridge.

In an all too general sense my cases confirm how "[c]lassifying, as opposed to not classifying, has a value of its own, whatever form the classification may take," as Claude Lévi-Strauss (1966: 9) asserted long ago. The cases highlight the shared sense of order among members of expert communities, and in this respect the notion of cosmology is interchangeable with that of a paradigm (Kuhn 1970). But what also matters in either case is the embeddedness in practices that are shared by members of a community, or that can be made mutually accountable and provide mutual understanding.

Whether musing about the Lotus Sea or lambda cold dark matter cosmology, participants in both of my field sites expressed personal disbelief about classifications dominant in their respective cultural settings, yet succumbed to their coerciveness. Seeking to hold worlds in common with others through sharing classifications and methods of sense-making and ordering they arguably had no other choice. Yet, members of either organization – the fishers' team and the astronomers' research group – were held accountable in clearly distinct ways. On board the *vallam* boat the shared meaning of words and the agreement on what to make of the heating and cooling of the sea in light of regional worldviews was a local matter that members were willing to override in light of alternative clues for the presence of fish. By contrast, as astronomers' work is mediated through documents and shared among members of a worldwide epistemic community, they are subjected to more rigorous demands for accountability that extend beyond the situatedness of the work's here-and-now.

Nevertheless, either cosmology was used not only by members of the specific organizations considered. They also mattered to the specifically organizational work of agreement and of achieving the respective group's work to be coherent for the purposes at hand and for the time being. As ethnomethodologist Ken Liberman argues,

> [m]any social thinkers ignore the mundane, preferring to study only important matters, like revolution or recent social crises. But if only for the reason that there is always so much of it everywhere, the organized, ordinary activities of everyday life also merit close scrutiny. (2011: 71)

For the members of both communities, fishers in a south Indian village and astrophysicists at a research institute in Germany, resorting to the resources that a cosmology offers is a matter of everyday work. Even in periods of social crisis and cultural, economic or political change, very much of social life remains organized and ordered in ways that affect cosmologies and are affected by them. The problems that cosmologies pose, and the possibilities they offer, are not resolved once and for all, but are bound to emerge always again in new contexts. This, I believe, deserves our continued attention as ethnologists.

References

Abramson, Allen and Martin Holbraad (ed.). 2014. *Framing Cosmologies: The Anthropology of Worlds*. Manchester: Manchester University Press.

Ashman, Keith. 2001. "Measuring the Hubble constant: Objectivity under the telescope." In Keith Ashman and P.S. Baringer (eds.). *After the Science Wars*: 97-116. London: Routledge.

Barnes, Barry, David Bloor and John Henry. 1996. *Scientific Knowledge: A Sociological Analysis*. Chicago: University of Chicago Press.

Barth, Fredrik. 1987. *Cosmologies in the Making: A Generative Approach to Cultural Variation in Inner New Guinea*. Cambridge: Cambridge University Press.

de Coppet, Daniel and André Iteanu (eds.). 1995. *Cosmos and Society in Oceania: Their Interrelations or Their Coalescence in Melanesia*. Oxford: Berg.

Critchley, Simon. 2002. *On Humour*. London: Routledge.

Descola, Philippe. 2013. *Beyond Nature and Culture*, translated by Janet Lloyd. Chicago: University of Chicago Press.

Douglas, Mary. 1970. *Natural Symbols: Explorations in Cosmology*. London: Barrie & Rockliff.

———. 1973. *Rules and Meanings: The Anthropology of Everyday Knowledge*. Harmondsworth: Penguin Books.

———. 1975. *Implicit Meanings: Explorations in Anthropology*. London: Routledge.

———. 1980. *Edward Evans-Pritchard*. London: Fontana Books.

———. 1982. *In the Active Voice*. London: Routledge.

———. 1992. "Rightness of Categories." In Mary Douglas and David Hull (eds.). *How Classification Works: Nelson Goodman among the Social Sciences*: 239-271. Edinburgh: Edinburgh University Press.

Durkheim, Émile and Marcel Mauss. 1963 [1903]. *Primitive Classification*, translated by Rodney Needham. Chicago: University of Chicago Press.

Evans-Pritchard, Edward E. 1937. *Witchcraft, Oracles, and Magic among the Azande*. Oxford: Clarendon Press.

Faber, Sandra M. et al. 2007. "Galaxy Luminosity Functions to $z = 1$ from DEEP2 and COMBO-17: Implications for Red Galaxy Formation." *Astrophysical Journal* 665: 265-294.

Fardon, Richard. 1999. *Mary Douglas: An Intellectual Biography*. London: Routledge.

Garfinkel, Harold. 1967. *Studies in Ethnomethodology*. Englewood Cliffs: Prentice-Hall.

Gellner, Ernest. 1975. "Ethnomethodology: The Re-enchantment Industry

or the California Way of Subjectivity." *Philosophy of the Social Sciences* 5: 431-450.

Handelman, Don. 2008. "Returning to Cosmology: Thoughts on the Positioning of Belief." *Social Analysis* 52(1): 181-195.

Herzfeld, Michael. 2001. *Anthropology: Theoretical Practice in Culture and Society*. Malden: Blackwell.

Hoeppe, Götz. 2007. *Conversations on the Beach: Fishermen's Knowledge, Metaphor and Environmental Change in South India*. New York and Oxford: Berghahn Books.

———. 2011. "Extended Vision: Finding Fish Like South Indian Fishermen." In Marie-Claude Mahias (ed.), *Construire les savoirs dans l'action: Apprentissages et enjeux sociaux en Asie du sud*: 205-235. Paris: Editions de la Maison des Sciences de l'Homme.

———. 2014. "Working Data Together: The Accountability and Reflexivity of Digital Astronomical Practice." *Social Studies of Science* 44(2): 243-270.

———. 2018. "Mediating Environments and Objects as Knowledge Infrastructure." *Computer Supported Cooperative Work* (forthcoming)

Jefferson, Gail. 2004. "Glossary of Transcript Symbols with an Introduction." In Gene Lerner (ed.). *Conversation Analysis: Studies from the First Generation*: 13-31. New York: John Benjamins.

Kuhn, Thomas S. 1970. *The Structure of Scientific Revolutions*. Chicago, IL: University of Chicago Press.

Lévi-Strauss, Claude. 1962. *The Savage Mind*. Chicago: University of Chicago Press.

Liberman, Kenneth. 2011. "The Reflexive Intelligibility of Affairs: Ethnomethodological Perspectives on Communicating Sense." *Cahiers Ferdinand de Saussure* 64: 73-99.

———. 2013. *More Studies in Ethnomethodology*. Albany: State University of New York Press.

Maitlis, Sally and Marlys Christianson. 2014. "Sensemaking in Organizations: Taking Stock and Moving Forward." *Academy of Management Annals* 8(1): 57-125.

Needham, Rodney, 1975, "Review of Mary Douglas, Implicit Meanings." *Man (n.s.)* 11(1): 127-128.

Nicola, Andrina, Adam Amara and Alexandre Refregier. 2017. "Integrated Cosmological Probes: Concordance Quantified." *Journal of Cosmology and Astroparticle Physics* 10: article 45.

Ossio, Juan M. 1997. "Cosmologies." *International Social Science Journal* 154: 549-562.

Pollner, Melvin. 1974. "Mundane Reasoning." *Philosophy of the Social Sciences* 4(1): 35-54.

———. 1987. *Mundane Reason: Reality in Everyday and Sociological Discourse*. Cambridge: Cambridge University Press.

Primack, Joel R. 2005. "Precision Cosmology." *New Astronomy Reviews* 49: 25-34.

Söhnen-Thieme, Renate. 1995. "On the Concept and Function of *sathya* ("truth") in Ancient Indian Literature." In Cezary Galewicz (ed.), *Proceedings of the International Conference on Sanskrit and Related Studies. Cracow Indological Studies*: 235-244. Cracow: Enigma Press.

Spergel, David et al. 2003. "First-year Wilkinson Microwave Anisotropy Probe Observations: Determination of Cosmological Parameters." *Astrophysical Journal Supplement Series* 148: 175-194.

Tresch, John. 2005. "Cosmogram." In: Melik Ohanian and Jean-Christophe Royoux (eds.). *Cosmograms*: 67-76. New York: Lukas & Sternberg.

Viveiros de Castro, Eduardo. 1992. *From the Enemy's Point of View: Humanity and Divinity in an Amazonian Society*. Chicago: University of Chicago Press.

Weick, Karl. 1995. *Sensemaking in Organizations*. Thousand Oaks: Sage.

Wieder, Lawrence. 1974. *Language and Social Reality: The Case of Telling the Convict Code*. The Hague: Mouton.