Members doing ethnography? On some uses of irony and failed translation, witnessed in an episode of data sharing in open science

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Abstract

Early in his *Studies in Ethnomethodology*, Harold Garfinkel argues that 'doing, recognizing, and using ethnographies' is 'for members a commonplace phenomenon'. He makes an intriguing remark on members' uses of 'anthropological strangeness' in its pursuit. In this paper I aim to contribute a few questions, observations and thoughts on 'members doing ethnography', informed by work in anthropology that has emphasized the uses of translation and irony in cross-cultural understanding. I draw on my ethnography of a team of junior astronomers who prepared a scientific data set for public release and thereby became both inquirers into, and actors in, astronomy's 'culture of open data access', in which there are no natives to talk with, or translate from. I inquire into how these scientists attempted to translate from their quotidian Euro-American culture into this 'culture of open data access', and failed in insightful ways. I also pay attention to their collaborative production of irony in interaction and discuss whether its analysis could function as an 'ethnographic proof procedure'.

INTRODUCTION: USES OF ANTHROPOLOGICAL STRANGENESS FOR MEMBERS AND ANALYSTS

Trained as a sociocultural anthropologist I have been intrigued by how Harold Garfinkel and Harvey Sacks took inspiration from a classical understanding of anthropology's epistemological predicament to formulate essential aspects of ethnomethodology and conversation analysis. Garfinkel remarks early in his *Studies in Ethnomethodology* that 'members doing sociology' ought to 'treat the rational properties of practical activities as 'anthropologically strange' (Garfinkel 1967: 9) and notices that it is in 'doing, recognizing, and using ethnographies' that members accomplish the 'analyzability of actions-in-context' (ibid.: 10). Considering that this is 'for members a commonplace phenomenon' it would

seem that 'doing ethnography' is members' task and routine achievement—even though Garfinkel does not specify what, exactly, 'doing ethnography' entails.[1] Reflecting on his own approach, Sacks noticed that 'the anthropologists' procedures, which tend to involve a very occasional tapping in to a society, asking one or two people more or less extended questions, (…) turn out often to be extremely generalizable' (Sacks 1992: vol. I, 484–85). This apparent success, he argues, supports the view that order may be found 'at all points' in society (ibid.: 484). That anthropological outsiders manage to do so encouraged Sacks to think that, likewise, 'doing being a member' can be accomplished by encountering a very small portion of a society's order.

Unless they 'go native', anthropologists report on their findings to an audience that rarely includes the conversationalists encountered in the 'field'. Charles Goodwin (1994) finds that members doing ethnography may do that, too. Analyzing how video evidence was used in a court trial on police brutality against Rodney King, an African-American driver stopped for speeding, Goodwin discussed how a sergeant of the Los Angeles Police Department provided jurors 'with an ethnography of seeing that situates the events visible on the tape within the work life and phenomenal world of a particular work community' (Goodwin 1994: 622). Goodwin argues that '[e]xpert testimony in court forces members of a discourse community to become metapragmatically aware of the communication practices that organize their work' (ibid.). Writing his paper for a readership of anthropologists and social scientists, Goodwin (1994) emerged as a sort of 'second-order ethnographer' who analyzed the sergeant's ethnographic practices for another public that included professional anthropologists.[2] These two orders appear to be collapsed in Bob Anderson and Wes Sharrock's (2018) project of 'Third-Person Phenomenology', which dwells on their familiarity, as members, of an expert practice: management in higher education. Familiar with this domain through their first-person experience they produce an ethnography (a written account) without doing (additional) fieldwork. Publishing their book, *Action at a Distance: Studies in the Practicalities of Executive Management* (Anderson and Sharrock 2018), in a series on 'Philosophy and Method in the Social Science' they share their insights with non-members and, potentially, members alike.

By producing accounts for non-members, both the Los Angeles police sergeant and Anderson and Sharrock seem to pursue what most of the members doing ethnography that Garfinkel alluded to typically do not. This distinction makes Garfinkel's understanding of ethnography curious for anthropologists, who, like Clifford Geertz, regarded the term 'anthropology' as 'equivalent to 'ethnography' or 'works based on ethnography' (Geertz 1988: *v*) and considered 'endogenous ethnography' (van Ginkel 1994) as referring to anthropologists who observe their own culture, and produce (written) accounts thereof. Through much of the mid- to late-twentieth century, doing anthropology—and producing ethnographic accounts—was described, often metaphorically, as 'translating cultures' or 'translating modes of thought', particularly in British social anthropology

[1] Garfinkel glosses over the distinction of 'doing ethnography' and its products, traditionally written accounts.

[2] This wording is inspired by Luhmann's (2000) notion of 'second-order observation'.

(Asad 1986, Leavitt 2014, Lienhardt 1954, Rubel and Rosman 2003). While the making of such accounts was criticized profoundly (e.g. Asad 1986, Clifford and Marcus 1986), the notion of translation as central to doing ethnography, and indeed anthropology and sociology more broadly, has gained traction again. Thus, Susan Gal (2015: 226) observes that translation 'points usefully to a whole family of semiotic processes. They purport to change the form, the social place, or the meaning of a text, object, person, or practice while simultaneously seeming to keep something about it the same'.

In this paper I aim to contribute a few questions, observations and thoughts on 'members doing ethnography', informed by work in anthropology that has emphasized translation and pondered the uses of irony in cross-cultural understanding. I do so by considering how a team of junior astronomers arguably became both inquirers into, and actors in, astronomy's 'culture of open data access', a culture in which there are no natives to talk with, or translate from.[3] These astronomers—members of MUWAGS, the Multi-Wavelength Galaxy Survey (pseudo-acronym)—had assembled a data set of observations and measurements from various instruments, including the Hubble Space Telescope, which they used for diverse studies of galaxy evolution. Toward the end of their project's core stage they prepared a set of reduced digital photographic images and tables of measurements for release to the public. Several members of the team had witnessed other data releases as junior participants in other projects, but none of them had assumed a leading role in another collaboration before. In this light the team's discussions of *how* and *when* to release *which* of their processed data seemed to me to be a sort of perspicuous setting (Garfinkel and Wieder 1992) for the study of 'doing open science'.

'Open science' is not a clearly circumscribed domain. While Robert Merton (1942) argued that the open sharing of results is a characteristic element of the normative structure of modern science, more recent work has turned to consider the sharing of research materials—and challenged the explanatory power of norms. It has shown that the contrast of 'open' and 'closed' science is simplistic. Stephen Hilgartner (2017: 72), for example, argued that scientific work entails a 'dialectic of revelation and concealment through which knowledge is selectively made available and unavailable'. Developing this insight in an interview-based study, Nadine Levin and Sabina Leonelli (2017: 280) conceive of openness as 'a dynamic and highly situated mode of valuing the research process and its outputs'. Astronomy has been considered a forerunner in 'open science', not the least because many of its key facilities are tax-financed and therefore subject to public accountability (Hoeppe 2018). Yet, at the time of my fieldwork there were significant differences in attitudes of sharing data between subfields of astronomy. Studies of cosmological deep fields, contingent on the shared use of large public facilities, were deemed relatively open, whereas the search for exoplanets, possible also with smaller telescopes, was

[3] This text draws on 18 months of ethnography of digital astronomical practice (2007-09, with re-visits in 2010-19). I have witnessed MUWAGS team meetings and teleconferences, conducted interviews, accessed their emails and participated in a small part of their work. See Hoeppe (2014, 2018, 2019) for other aspects of this work.

deemed more secretive. Astronomers working in the former domain, in which I did my ethnography, described it as a 'culture of open access'.[4]

Rather than presuming a shared culture of 'open science', even when members may do so, I follow David Francis and Stephen Hester (2004: 30–31) in considering it an empirical task to examine how culture 'is accomplished in and through the making of observations of sameness and difference'. As they put it, 'persons "recognize" their sameness with others by seeing that others think or act in the same sorts of ways as themselves. Culture, therefore is an accomplishment of talk and action, not a determinant of it' (ibid.; see also Garfinkel 1967: 76–77, and Sacks 1992: vol. I, p. 226). Probing into how members achieve this by 'doing ethnography' my stance is broadly related to that of Anderson and Sharrock (2018). Prior to becoming an anthropologist, I had been trained in astrophysics (MSc University of New Mexico, 1993) and had done research closely related to what I witnessed in my ethnography fifteen years later, gaining as such something approaching 'unique adequacy' (Garfinkel and Wieder 1992) in it.[5] When doing my ethnography, I also shared much of the cultural background of MUWAGS collaboration members and was of a similar age.

Being thus positioned affects my uses and presentation of ethnographic data in this text. I focus on transcribed audio recordings and read them as specifically located in the contexts of astronomers' collaborative work. I use elementary conventions of conversation analysis, simplified from Jefferson (2004), in my transcriptions.[6] I use pseudonyms for all the conversationalists and places whom I quote or refer to, and pseudo-acronyms in referring to their collaborations and computer code.

A THEFT OF DATA?

In order to consider junior astronomers as inquirers into, and actors in, the 'culture' of open science I begin with a moment in the work of MUWAGS, a discussion at a collaboration meeting a few months before the team's release of 'higher level' data (calibrated images as well as tabulations of detected objects and measurements of their properties). After the one-year period of the team's proprietary use had ended, observatories had made the 'raw data' recorded there—processed not by the team but by observatory staff in standard ways unspecific to any particular scientific use—available to anyone who

[4] Former Space Telescope Science Institute director Robert Williams gives a brief account of this in his book on the Hubble Deep Field, which was an influential project for open access in astronomy (Williams 2018).

[5] Note, however, that Anderson and Sharrock came to management in higher education in advanced stages of their careers as academic sociologists.

[6] In the Jefferson (2004) scheme here adopted, underlining indicates stress, capitals indicate sounds louder than their surroundings, left side square brackets indicate where overlapping talk begins (and right side square brackets where it ends), empty parentheses indicate talk too obscure to transcribe, text in parentheses indicated dubious designations, double round brackets add the transcriber's commentary, colons indicate prolongation of the immediately prior sound. Round brackets indicate the time (in seconds and tenths of a second) of noticeable pauses. Noticeable aspirations are transcribed by hhh. I use full stops where I heard the end of sentences. I use quotation marks to indicate where I heard instances of direct reported speech or of quotations of writing (or writing-to-be).

wished to download them.[7] This was a grave concern for Christina, a team member who had been aware that a competing group had downloaded the data for the kind of analysis that she had planned to do. Consequently, she had rushed to complete her analysis of the galaxy cluster on which she now reports to the team. She points out some features of the distribution of galaxies and dark matter on a map projected onto a screen (line 1) when she is asked a question by Mallory, the team's principal investigator, about the work of this competing group (line 2). LENSURV is the name of another collaboration of which Christina is a member.

1 Chr: hhheh it's a shame there's another one up in the top (0.7) right as well that has a (0.7) a big me::rger (2.0) ehh which Amanda's found (0.5) so when she's looking at her associations with mergers and peaks it's again it's just on the outside of the dark matter (0.3) that was (0.5) yeah that one has got a B mode as(h) well hehh (.) So maybe we wanna to try and improve the systematics again (.) I don't know
2 Mal: hmm … (are there) any news from the Munich group (what about) their analysis?
3 Chr: they stole our LENSURV data instead and started working on that which I've [( )
4 Eli: [huhuhuh[hu
5 Mal: [hehe[he
6 Chr: [HAHA
7 Eli: You have some (thieves following you)[( )
8 (Mal): [HAHAHA
9 Chr: ha they steal my HST ((Hubble Space Telescope)) data and then steal my ground-based data it's ri::ght! (0.6) haHA haHA (0.2) yeah
10 Eli: ah:::
11 Chr: they're like 'oh you wouldn't need some of the HST data we're taking it' so hhhahahahaha
12 Eli: no::: heh
13 Chr: I think they (would be in that) mood
14 Eli: Have they (started the data analysis)( )
15 Chr: ehm (1.2) well I see Albert end of May so we did we we (.) we also spoke about it we said 'we should really do some comparisons' and (I don't know) (0.2) ehm (0.5) I wrote to Andrew and Anthony yesterday who are doing a 3D analysis and haven't heard back (0.8) so (0.9) I don't know how that's

[7] By doing so the data-generating observatories had fulfilled their institutional obligation. This routine practice can hardly be ascribed to the astronomers' work culture – except for the astronomers' role in writing proposals and thus instigating the production of these data.

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          going but Andrew also has the Munich catalogue so he's the
          (1.5) sort of most (0.4) eh (1.1) likely person to do (0.3)
          that sort of analysis but (0.9) they don't have the redshifts
          so there is not much they can do (1.5) until the data release
          anyway (0.8) ehh
16 Mal:   can you take the Munich catalogue?
17 Chr:   yeah yeah yeah (0.9) if we wanted to (0.2) it's not that bad
          an idea because they've got a much better PSF ((Point Spread
          Function)) correction scheme
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Transcript 1

Like Christina and Mallory, Elias is a member of MUWAGS, whereas Albert, Andrew and Anthony are members of 'the Munich group'.

Christina, a native speaker of English, responds to Mallory's question (line 2) about the work of the competing team by stating that, instead of doing the study she feared they would do, they 'stole' her other data set (line 3).[8] As she emphasizes the verb 'stole' her voice exhibits a raise in voice, a prosodic shift.[9] Elias and Mallory react with contained laughter (lines 4 and 5), to which Christina (in line 6) herself responds with louder laughter. Elias then interprets and builds on Christina's statement, translating her reference to 'stealing' into a statement on 'thieves' (line 7). Someone, probably Mallory, reacts with laughter (line 8), upon which Christina raises her voice in a noticeable prosodic shift (line 9), thereby animating imagined reported speech (line 11). Referring to members of the Munich group by their first names she indicates that those who 'stole' her data are not strangers to her and the others present (lines 15 to 17).

A notable feature of this exchange is Christina's report on the alleged theft of data and her subsequent laughter. What she presents is 'troubles-talk' and one may well hear her laughter as exhibiting 'troubles-resistance', that is, that these troubles are not getting the better of her (Jefferson 1984: 351). If so, her laughter would seek to edit, or even negate, the literal meaning of the accusation. Since her laughter was joined by that of other collaboration members (lines 4, 5 and 8), who conceive of these data as collectively theirs, they may experience trouble as well. More specifically, and perhaps more plausibly, this exchange can be heard as an instance of irony, where what Christina meant is not literally expressed by her words, but subverts their literal meaning. Irony has often been regarded as a means to express criticism or discomfort (Fernandez and Huber 2001), and this is what Christina surely does here. Recipients of irony commonly treat it as humor and react with laughter, or they build on it and thereby sustain it (Clift 1999, Hutchby and Drew 1995, Sidnell 2010). Here Elias, at least, does both (lines 4 and 7). Yet, subsequently he retracts from this position (in line 12) and initiates a return to talk in a non-ironic mode (line 14).

[8] As a native speaker of English, Christina did not translate the verb forms of 'to steal' into another language.
[9] Lacking a video recording or detailed notes of visible interactions I cannot comment on her, or anyone's, possible gesturing and facial expression.

Two days later, travelling home from the collaboration meeting, I had the opportunity to talk with Christina. As she elaborated on what she regarded as challenges in the organization of the team's work load, I asked her about the alleged theft of data.

1 Chr: And that's why I think we have a problem with our team that we (0.5) we're not getting the science results out because (0.4) nobody is spending 100% of their research time on it. And (0.2) so (0.7) But with the competition I hurried up.
2 Göt: The Munich competition you said they kind of stole your data?
3 Chr: They've done it again yeah hehehehehe (0.8) so yeah (1.2) so yeah I I sent them a copy of the paper when we submitted it
4 Göt: Yeah
5 Chr: and then they stopped working on the MUWAGS data because there was nothing more they could do without photometric redshifts. And then (0.3) then they looked around which other data was available on the archive and now they've downloaded the LENSURV data which is the other data set I am working with.
6 Göt: It is also public?
7 Chr: It is a:lso public. So (0.2) I mean it's (0.4) yeah (1.8) and in fairness to them they always they tell us what they are doing (1.1) so
8 Göt: So they write to you an e-mail that they're loading it down?
9 Chr: So I mean they (0.3) yeah it's it's (0.5) they are they are being fair but it's still (0.4) a bit (0.7) a bit tiresome. You work really hard to get the data. And then people who don't spend any time writing proposals just take it from the archive and (0.5) so (0.7) it's:::: it's fair. The archive is there for a reason but (0.5) it's difficult when people download archive data to do the key science that you were planning to do with it. What you want is them to do things that you wouldn't have thought of or (0.5) aren't your key science. But when they're (0.4) in direct competition that's tough. It happens hehehehehe. But now I have an I mean (0.5) this meeting is the first time I thought about MUWAGS in a long time so (1.0) I guess I will be advisor on papers that come out in the next round but until we get them I won't be working any more scientifically on MUWAGS.

Transcript 2

Transcribing the conversation I realize that, by saying 'kind of stole your data' (line 2) I may have unwittingly invited Christina to conceive of the Munich team's use of the

data in just the same way as she had done two days ago. Remarkably enough, though, she again adds laughter to her verbal response (in line 3) as well to her account of this situation's background (line 9). More clearly than before she insists that the Munich people had acted fairly in downloading the public data, despite her concerns (line 9). Fairness here alludes to their adherence to formal regulations.

Christina's answer and her uses of laughter, which largely echo those of Transcript 1, support the interpretation of her utterance as being ironic. They question 'stealing' as the appropriate verb to describe an action in the domain of open science with the English-language vocabulary of Euro-American academics. Christina points to a concern about the regulation of data access, that is, the possibility of competitors to do one's own key science with data whose proprietary use period had ended. She appears to subscribe to a sort of Lockean notion of private property, which ascribes legitimate ownership to human labour (Locke 1988 [1690]). By notifying Christina about downloading the data, members of the Munich group arguably acknowledged her team's right to know of it, even though to do so may have been out of courtesy in light of their personal acquaintance (cf. Transcript 1, line 15). Yet, for Christina, it is arguably just this familiarity of the Munich team with herself and her two projects, MUWAGS and LENSURV, that makes their uses of 'her' data questionable. After all, members of the Munich team are not about to access and re-use data from anonymous or unrelated data producers. Christina thus apparently regards a mere notification of these uses as insufficient. To her, fairness and properly moral uses are not the same.

If the improperness of 'stealing data' hinges on the familiarity of 'perpetrator' and 'victim' one could suspect that taking data produced by *strangers* may consequently not be regarded as a theft. However, in the circumscribed domain of the work of this collaboration (as throughout astronomy), with its access to major facilities like the Hubble Space Telescope, there are few, if any, strangers. Much rather, a number of astronomers participate in several, even competing, collaborations.

With this in mind, let us consider another instance of access to open data being described as an act of 'stealing data', this time by somebody who describes his own teams' actions with this term. The following is an excerpt from a conversation I had with Norman, a PhD student in the MUWASHH project (unrelated to MUWAGS), whose assemblage of their data set he describes to me. Like Christina, he is a native speaker of English.

1 Nor: MUWASHH is the MUlti Wavelength Survey by Harvard and Hawaii and in this particular field to call that a survey is a bit of a cheat … because ah … so it's an optical plus infrared survey … so it's got 6 optical bands- or it's 7 optical bands and 3 near infrared.

2 Göt: Right.

3 Nor: Of those we stole <u>all</u> of the optical imaging … and we stole <u>one</u> of the near infrared bands. So we've in fact … oh that's

> not quite true … we stole all but one of the optical bands from the archives. So we didn't actually take these data ourselves … they were publicly available. And in fact we didn't even re-reduce these data hehehehehe. We didn't even steal them from the archive … someone else went … so Astronomer4 went … as part of … he called his survey PDS … what is just the Potsdam Deep Survey. They went to the archive … they took all the data for a bunch of different fields including the Chandra Deep Field South. Then they re-reduced the data … and then they gave it to us … and then we added the near-infrared. You get the point. We stole someone else's data and we added this stuff to it.[10]
>
> *Transcript 3*

Norman adds light laughter to his verbal description of 'stealing data from the archives'. This laughter, however, does not follow mentions of the verb 'stole' closely, and thus its sequential import appears to differ from that of Christina's laughter in Transcripts 1 and 2. Much rather, Norman frames his entire account as a series of thefts, presumably counting on my understanding of his irony. He signals a tension with an evaluative sensibility that is morally troubled by this way of acquiring scientific data.

I do not mean to suggest with these three excerpts that the notion of 'stealing data' is pervasive in astronomy, or among junior astronomers. It is noteworthy, however, that this description was chosen by two junior scientists with little prior experience in the domain of open science. As such, perhaps, they are more prone to describing it in terms of their competence of English and notions of property and ownership in the Euro-American culture they are familiar with. The regime of open science in astronomy, shaped by institutional demands, made practicable by the comprehensively digital form of its data, enabled by network infrastructures and archives, and marked by periods of proprietory data use, thus pushes scientists into problematizating what is owned and ownable, and how it is recognizable, and recognized, as owned or ownable. Or, indeed, usable.[11]

If 'stealing' is not the proper verb to describe what 'the Munich group' (Transcript 1, line 2) did with the MUWAGS and LENSURV data sets, one may consider it as a mistranslation of sorts: what the Munich group did in the domain of 'open science' is not properly described by the English verb 'to steal'. Christina's laughter would then point to the limits of describing actions in the domain of 'open science' with terms describing actions in Euro-Americans' quotidian culture.

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[10] Due to the COVID-19 situation I am currently unable to access the original recording and refine this basic transcription.

[11] Note in this context Sacks' lectures on possessables and possessitives (Sacks 1992: vol. I, 382–88, 605–09).

ETHNOGRAPHY, TRANSLATION AND IRONY

Conceiving of these junior astronomers as members doing ethnography points to irony and attempted, but failed, translation as elements of their 'methods of social inquiry' (Garfinkel 1967: 104). As suggested in the Introduction, translation has been deeply implicated in how many sociocultural anthropologists have conceived of ethnography. It was often understood, sometimes tacitly, as the translation of systems, not only of language, but also of 'cultures as texts' (Geertz 1973) and 'modes of thought' (Lienhardt 1954). Thus conceived, its currency reached beyond the writing of ethnography into debates on relativism (e.g. Hollis and Lukes 1982) and to Thomas Kuhn's (1970) view of scientific change. Notably, Kuhn (2000: 166) argued that communities of scientists are 'language communities'. As Gal (2015) observed, sociologists' and anthropologists' more recent uses of the term translation point to a wide range of semiotic processes, including approaches like actor-network theory (Callon 1986, Latour 2005), which dwells on a metaphorical understanding of translation, as well as what appears to be essential to anthropological method—'[l]anguage learning, note-taking, interaction, transcription, and the effort to make findings intelligible to colleagues all require translations of various kinds' (Gal 2015: 228).

Yet, as William Hanks and Carlo Severi (2014: 2) insist, translation is also a matter of members' everyday practice, including what Hanks and Severi, as linguistic anthropologists, call 'code switching, blending, crossing, paraphrasing, reported speech, and giving accounts'.[12] They argue that 'understanding is itself a matter of translation' (ibid.) or, as Hanks (2014: 21) puts it yet more poignantly, 'the intralingual translation of an expression quite simply *is its meaning*' (ibid.: 21; emphasis in original). It is not only that translation is prevalent in monolingual speech. Much rather, 'translation is not only productive but at the heart of language as a social form, and society as the dynamic product of self-interpretation' (ibid.: 33). This insight may well be gained from reading Sacks' lectures,[13] but Hanks and Severi are inspired by Roman Jakobson's (1959) essay 'On linguistic aspects of translation'. For Jakobson, intralingual translation is one of three kinds of translation besides the more familiar cross-language translation and the cross-modal translation of speech into gestures. Each of these kinds draws on Charles Sanders Peirce's triadic notion of the sign and chain-like semiosis, which precipitates and open-ended process of interpretation and communication.

Peirce famously defined the 'semeiotic sign' as follows:

> A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an

[12] With the latter, practices and problems of translation hark back again to central concerns of ethnomethodology. It is not by chance that the notion of indexicality was inspired by considering troubles in machine translation (Garfinkel and Sacks 1970: 349).

[13] See especially Sacks' lecture on 'Patients with observers' as 'performers with audience' (Sacks 1992: vol. 2, 104–13).

> equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign' (*Collected Papers*, volume 2, paragraph 228; Peirce 1932: 135).

It is only because of an interpretant that representamen and object are connected, whereas with no object or representamen there is no point for there to be an interpretant. Therefore, 'for a sign to function as a sign there must be present in it all three correlative functions' (Daniel 1984: 19). Peirce scholars have commonly emphasized the close connection of the interpretant with processes of translation. As Parmentier (1994: 5) puts it, the 'interpretant is the translation, explanation, meaning, or conceptualization of the sign-object relation in a subsequent sign representing the same object (…)'.

If, for Peirce, the 'mind of that person' is the locus of the interpretant, an ethnomethodological critique of its presumed 'mentalism' and 'representationalism' is imminent. Ethnomethodology, after all, 'is not in the business of interpreting signs' (Garfinkel 2002: 97). Goodwin (2018: 32) appears to soften this view when he argues that his own later work on public substrates and their re-uses and transformation—inspired by Sacks' lectures on tying in conversation (e.g., Sacks 1992: vol. I, 716–721) –, is consistent with Peirce's view of in-principle infinite semiosis. By emphasizing, and working out, the contextual and interactional practices of substrate production and use, Goodwin has taken at least some of Garfinkel's central concerns on board. An alternative formulation of the generativity of translation that Peirce's interpretant points to is Michael Silverstein's (2003) notion of transduction. Silverstein questions that one term, translation, adequately describes what is in fact a continuum of practices, of which purely denotational 'word-by-word' translation is one extreme—and at the same time a caricature, since there may never be a complete and specifiable correspondence of grammatical-categorial spaces in source and target languages. Silverstein proposes the notion of transduction as a mode that takes translation seriously as an unavoidably indexical and interactional practice.[14]

In less theoretical terms, but consonant with Silverstein's reasoning, Hanks and Severi (2014: 2) note that '[i]ronically, the process of successive failed translation may be our best tool in discerning what is specific to any object society or to any 'original'. In other words, it becomes a method (…)' A method, one may add, for both members and analysts.[15] A method, too, for exploring as yet little-known cultural worlds, such as, for these junior scientists, the 'culture of open science'. Thus I heard Christina's laughter as qualifying her account of her data having been stolen. This was, perhaps, more a pointing to a lack of proper terms to describe actions in a culture without natives and without a native language than a properly failed translation. She has turned to irony to make her point.

By addressing the 'simultaneous presence of two dimensions of meaning' (Clift 1999: 533) irony shares some aspects with translation, but rather than seeking to reveal

[14] For Silverstein, transduction is intermediate between translation (narrowly conceived) and the transformation of meaning: 'there is always something of the transformational in every attempted translation' (Silverstein 2003: 93).

[15] See Ciardi (1961) and Webster (2016) for related remarks on translating poetry.

'sameness-in-difference' (Gal 2015: 226) it arguably projects 'an attitude of disbelief along with the 'outer' meaning of their words' to 'convey a contrary, 'inner', meaning to those who can catch the cue' (Fernandez and Huber 2001: 1). As such it can express a 'questioning attitude' or 'critical stance' (ibid.). Yet irony, as Hayden White (1973: 37) argues, also signals 'the ascent of thought in a given area of inquiry to a level of self-consciousness on which a genuinely 'enlightened'—that is to say, self-critical—conceptualization of the world and its processes has become possible'. Pervasive beyond spoken and written language, irony has been understood as a probe into culture, not the least with the diagnosis that ours is an 'age of irony'. Such assessments have been accompanied by concerns that irony is over-used (Colebrook 2004). Apart from such theoretical 'big hitting' (Watson 2009), irony has also been recognized as an intriguing lens into fieldworking anthropologists' inquiries to understand 'the other' (Fernandez and Huber 2001). Thus Diane Losche, an anthropological ethnographer of the Abelam area (Sepik, Papua New Guinea), describes how, overcoming her concerns about its potential omnipresence and evanescence, she found irony to 'go to the core of the cross-cultural project' (Losche 2001: 105).[16] Made curious about this possibility, it would seem that instances of irony and how they are achieved collaboratively (Hutchby and Drew 1995, Clift 1999) could be good places for ethnographers, and members doing ethnography, to attend to.

MEMBERS IN SEARCH OF A METHOD

Equipped with these considerations, let me return to how Christina and her fellow MUWAGS team members became inquirers into, and actors in, astronomy's 'culture of open data access'—and were, as such, member doing ethnography. The MUWAGS team was not obliged to release its 'higher level data', such as the calibrated images or tabulations of measurements that they worked with.[17] Nevertheless, preparing the public release of such items took a central stage in its work and was a key agenda item of several team meetings and teleconferences throughout more than a year. Assembling the data set, making it consistent, and using it for scientific analyses was a shared interest of team members. They did consider releasing such processed data as a moral obligation, but doing so was also motivated by seeking to attract other researchers to the team's work and to increase the project's 'value'. Paralleling Christina's expedited completion of her study in light of her knowledge of the Munich team having downloaded the raw data (Transcript 2, line 1), the end of exclusive rights to use the data also became a motivating factor within the team to complete their analyses in a timely manner.

Having been unable to intervene into the observatories' release of the 'raw data', team members could not be held accountable for its quality. By contrast, users of the MUWAGS higher level data release could possibly blame the team for its work, and this

[16] An instructive anthropological study of irony is Basso (1979).

[17] The final MUWAGS data release included the processed images, a catalogue of measured quantities of ca. 90000 objects that were detected in this patch of the sky (mostly stars, galaxies, and so-called quasars) as well as additional maps of weak gravitational lensing in the observed field of the sky.

is what team members worried about. That other scientists could 'scoop' the team and do its key science with its data (Transcript 2, line 9) or use data wrongly and blame the team for it were among the considerations shaping the team's search for methods of sharing the data. Thus, whereas Transcripts 1 and 2 document the team's concern with what other astronomers did, the focus is now on what the team itself should do, and seek to agree on. As successful applicants for observing time at major observatories, including the Hubble Space Telescope, team member's membership in professional astronomy was established beyond doubt. But how could they 'do being open scientists' together? How could they produce a data release that is adequate not only for uses by other professional astronomers but also for their own concerns?

Ben, Christina, Ken, Mallory and Mike are the speakers in the following discussion, at which Elias and three other team members, as well as myself as an ethnographer, were also present. IMAGS and LENSURV (pseudo-acronyms) are the names of collaborations which used public observatories and prepared public releases of their data, GalaxFit and REDCOR (pseudo-acronyms) are the names of open-access computer codes for data analysis.

1 Chr: Now IMAGS has an interesting eh (0.9) so (0.2) data use policy in that you can download and use the data for anything but if you want to publish it you have to contact (1.2) them.
2 (3.5)
3 Mal: For permission?
4 Chr: For permission (0.2) yeah. This is a new one only. I never heard people doing this before
5 Mal: And are they are they (1.5) is there authorship (1.7) eh issues there as well?
6 Chr: I (1.0) eh eh so we've been looking at different models for authorship for the LENSURV because (2.2) we've had various problems with people using the archive data but (0.7) anyway (0.5) ehm but we've been looking at different models and that's the one that I'm personally interested and that's the IMAGS model. So I don't propose we have any of that but (0.3) we cou::ld if we wanted (0.2) if we were worried about our ke::y science being taken by other people.
7 Mal: Well I think I think we've made a decision when we made it public that (4.5) eh (1.3) we weren't gonna wait so long that everything has been done by us (2.1) ehh (.) but we and we weren't gonna release things (2.2) for which we put in a ton of work and never had a chance to have (1.5) ehmm (0.3) reap the rewards. But for the rest of it I think it's it's kind of the other side of the coin is the incentive for us.
8 Chr: Yes no I think we should

9 Mal: So I don't think we can't release it and then say you can't use it for the science (area).

10 Chr: No:: but we could have something saying 'we (0.2) we're really keen to hear about what you are doing

11 Mal: yeah!

12 Chr: with the data'.

13 Mal: Oh yeah definitely. 'Tell us' (0.8) O::R 'If you don't wanna do it on your own if you want to collaborate with us that's fine as well'.

14 Chr: yeah

15 Mik: Mm hm

16 Mal: Yeah. And I think a friendly note saying 'Please keep us informed as to how you use these data'. (1.7) That would be a way out of it.

17 Ken: Or directions on (how) to use the data (2.0) like with GalaxFit (1.1) Don't you have to register or give your e-mail so you can download it? So that you can

18 Mik: GalaxFit? No!

19 Ken: Who did that? Somebody did that with an application you know

20 Mal: Ye::ah!

21 Ken: I don't want I don't want to (.) basically they were saying it was for updates.

22 Chr: Yeah.

23 Ken: I just want to [keep a] list of people that are

24 Ben: [Chuang]

25 Ken: interested.

26 Ben: Chuang asks people to send him an e-mail but he (0.3) because he (0.4) constantly sends around upgrades on the on the program but it's not a need

27 Mik: Astronomer5 does that for REDCOR

28 Ken: That could be that you just don't get to the download page (0.7) unless you put an e-mail address. You know [( )

29 Mik: [when he asks up to (0.3) ehh (0.2) what? (0.3) certain to reference certain papers of his (0.6) if you're using his work and to send him an e-mail if you're using the code (0.9) But you can still download them and not do anything.

30 Chr: Yeah that's not bad.

31 Mal: I think I'll put that on top of the page that (0.2) you know 'a few things' (0.3) 'please read before you download' (0.3) 'please send us your e-mail' (0.4) you know (0.3) 'please reference'

32 Ken: 'Please (put in your e-mail address and) ( )
33 Ben: Put put check boxes (0.4) like that
34 Ken: 'I've read [the
35 Ben: ['the terms and conditions'
36 Mal: haha[( )
37 ( ): [HAHAHAHAHAhahaha ((collective laughter))
38 Mal: yeah
39 Ken: a statement (1.1) 'Billing address (0.2) please add your credit card here'
40 Ben: hhh[( )
41 ( ): [HAHAHAHAHAhahaha ((explosive collective laughter))
42 Ken: Not that we'll use it of course
43 ( ): uhuhuhuh
44 Ken: but we need it.
45 ( ): hahahaha ((collective laughter subsiding))
46 Mik: It's always good to have that information.
47 Mal: A deposit
48 Ken: A deposit
49 Mal: [A deposit]
50 Mik: [heheheheh]
51 Mal: 'If you misuse the data we will charge you'.
52 Ben: hahaha
53 Chr: Anything new might be less worth if it is just internet-based that people submit their (internet-)( ) e-mail but I'm not very sure how many people would do that … there is only a handful ( ) not to worry
54 Ken: But it would be easier for people to just put in (0.3) to fill in a field before they press the download button ( )
55 (5.5)
56 Chr: How are your internet skills to make such a (0.4) form?

Transcript 4

This excerpt represents a moment in the team's discussions at which they consider options for how to release their higher level data, and assemble what a written alert to users, to be posted on the archive website, could contain. Christina's account of how IMAGS, another collaboration, shares its higher level data (line 1) leads to her exchange with Mallory, who recapitulates the team's earlier agreed-on commitment on which data to release (line 7). Christina responds by formulating a textual request to future users, hearable as a quotation through her use of prosody (lines 10 and 12). Mallory continues in style (lines 13 and 16). Ken, Mike and Ben supplement Christina's account of the IMAGS model with their knowledge of how the authors of two open access data analysis software share their code (lines 17 to 29). In all the three suggestions they consider, users'

identities (and, for IMAGS, intended uses) are requested, instead of making data or software available unconditionally to anonymous users. Christina endorses this approach (line 30) and Mallory, the team's principal investigator, announces to assemble these suggestions into written formulations, hearable again through her use of prosody (line 31). Ken and Ben build on her formulations, continuing with similar prosody indicating textual quotation yet invoking the language of legal contracts (lines 32 to 39). Unlike Christina's and Mallory's formulations (in lines 10, 12, 13, and 16), these evoke loud collective laughter (in lines 37 and 41), initiated, respectively, by Mallory (line 36) and Ben (line 40), and subsequently petering out (in lines 43 and 45). With her suggestion for users to leave a deposit, Mallory (in line 47 and 49) continues to invoke the language of legal contracts and uses prosody to mark an apparent quotation. Her formulation is accompanied by subsiding laughter from Ben and Mike (line 50 and 52). Christina subsequently returns (in line 53) to speech with normal prosody. Yet, neither does she continue the laughter nor does she build on the formulation, and thus marks a return to a non-ironic mode.

The build-up of invocations of the language of legal contracts (such as for sales or rentals), beginning with Ken's, Ben's and Mallory's formulations (in lines 29 to 37) and continued by Mallory (in line 42), as well as the intermittent, collective laughter (in lines 36, 38 and 43), can be heard as being ironical. This irony is invoked and sustained—and thereby apparently understood (Sidnell 2010: 70)—by all those who participate in this formulating and in the subsequent laughter (cf. also Clift 1999, Hutchby and Drew 1995). References to users committing to a contractual agreement—by signing the 'terms and conditions', leaving the billing address, filling in one's credit card number and leave a deposit –, although made ironically, can be heard as pointing to team members' concerns not about the data's availability, but about its proper uses, and the team's desire to hold users accountable for their actions in a legal sense. Although these suggestions were dismissed, they arguably point to what one would like but cannot have in astronomy's regime of open access. Christina's return to non-ironic speech (in line 53) marks a return to assessing what one could, after all, do as open scientists: asking data users for their e-mail addresses and formulating written instructions for them.

Note that by invoking the language of legal contracts, these scientists are borrowing, indeed translating, from their quotidian 'culture' of the everyday—shared by the members of this group of young astronomers from Western Europe, the USA and Canada—to the domain of data access in open science. The challenge for these junior scientists is to find a proper way of acting in this domain. Their joking and their uses of irony seem to be conscious and deliberate. They point to playful and exploratory considerations of what would be breaches in this 'culture' and what they could possibly get away with.

This excerpt represents only a minor fraction of team members' discussions of *how* and *when* to release *which* of their processed data. Nevertheless, it is within a few turns at talk that Mallory assembles what team members appear to hear as an acceptable text for posting on the archive website. Her formulations are informed by a mutual, yet quite limited, inquiry into other open science projects (pertaining to data and software),

benefitting from individual members' knowledge and their partly overlapping memberships in other collaborations and projects. As such this conversation can be heard as resembling the 'very occasional tappings in to a society' that Sacks (1992: vol. I, 484) identified as 'anthropologists' procedures' that, nevertheless, yield a suprising 'generalizability'.[18] Rather than assuming a shared culture of 'open science' it seems that this culture, if it is one, is accomplished by members through talk and action (cf. Francis and Hester 2004: 30–31).

IRONY IN CONTEXT: AN ETHNOGRAPHIC PROOF PROCEDURE?

With these observations made, I am back to ponder the work of MUWAGS members as social inquirers, or as members doing ethnography. What was at stake for them throughout their deliberations leading to the public release of their (higher level) data set was to properly do 'being open scientists together'. To do so they needed to achieve agreement on, and demonstrate, properly do 'being a research collaboration together'. This was unavoidably a collaborative task since large amounts of observing time at public observatories are never given to individual researchers. Given a research collaboration's collective authorship in describing data reductions in the data release paper, their internal discussions may well be described as a perspicuous setting (Garfinkel and Wieder 1992, Garfinkel 2002: 181-182) in which 'participants must routinely and repeatedly 'place their understandings on view' (Koschmann 2011: 436).

Properly doing 'being open scientists together' required for team members to pursue 'methods of social inquiry' (Garfinkel 1967: 104). In so doing their work is reminiscent of that of the jurors in Garfinkel and Saul Mendlovitz' 1954 study (Garfinkel 1967: Chapter 4), and perhaps even of Agnes' quest for passing as a properly gendered person (1967: Chapter 5). These astronomers' social inquiry comprised not only pondering the data release policies of other data-sharing collaborations (like IMAGS) and authors of open-access software (like GalaxFit and REDCOR). They also addressed the adequacy of terms describing ownership (and theft) and its legal transfer (as contracts) in their quotidian Euro-American, 'liberal' culture (a sort of 'source domain') to the 'target domain' of open science. Neither are contemporary astronomer-users of telescopes liberal subjects who own data privately and permanently, nor are data—despite being occasionally described by astronomers as commodities (Hoeppe 2018)—generally available for sale in contract-like agreements.[19]

Christina, Ben, Ken and Mallory, it seems, were attempting to translate between these two domains. But compared to the practices of translation that Silverstein (2003) describes—from the 'other's language' to one's own –, theirs was a translation in the

[18] See Mair et al. (2016) for statisticians' ethnographic tappings into the society they study quantitatively, a study inspired by Sacks' notion of culture as an apparatus for generating and detecting recognizable actions (Sacks 1992: vol. I, 226).

[19] This view, however, is complicated by arrangements in which the participation in data-producing collaborations is purchased (cf. Hoeppe 2018).

opposite direction, playfully adopting terms and actions from their quotidian culture to describe potential actions in the domain of open science.[20] These astronomers brought irony off as a contextual and interactional, and indeed collaborative achievement. This irony appeared to mark the limits of legitimate translations. As Jack Sidnell (2010: 70) observes, irony 'presents something of a test for the maintenance of intersubjectivity. If intersubjectivity is to be maintained, a recipient of a possibly ironic utterance is required to show that they understood not only what the words mean but, moreover, what the speaker meant in using those words' (cf. also Hutchby and Drew 1995). Would this 'test' afford specifying the assertion that uses of irony place understandings on view (e.g. White 1973: 37), and are therefore close to the core of the 'cross-cultural project' as Losche (2001: 105) remarked? Could witnessing irony in context then function as a sort of 'ethnographic proof procedure', somewhat like the conversational analytical 'proof procedure' identified by Schegloff and Sacks (1973: 299) and Sacks et al. (1974: 728–729)?

Note that applications of the 'proof procedure' in conversation analysis have been criticized for making understanding a technical matter. Thus, Michael Lynch (2011: 554) argues that rather than 'offer[ing] a guarantee that a conversation analyst who uses a tape recording to get access to what co-participants' 'understand' from each other's talk will get it right' it only 'narrows the field of relevancies' for such analysis. In the present case, making sense of instances of irony always requires considering its situatedness. Doing so prevents its understanding from becoming technical matters—unless there were, in turn, procedures for the identification of relevant contexts. This implies the proof procedure's loss of procedurality. Furthermore, the episodic occurrence of irony versus the omnipresence of sequentiality in interaction would curtail such a procedure's reach, not to mention cases of irony that remain unrecognized by members and/or analysts. Despite irony's value for displaying and recognizing members' and analysts' understanding alike, this understanding does not appear to lend itself to proceduralization.

Unremarkable to members, for whom humor and irony are common modes of expression, these ethnographic moments were nevertheless instructive for junior astronomers and for me, the ethnographer, who were both afforded observations of members' assessment of sameness and difference, of what one could do, and of what one would like but cannot have—of culture as members' accomplishment, that is.

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[20] This direction of translation was common in early ethnographies, recognizable, for example, in the title of Bronislaw Malinowski's (1922) *Argonauts of the Western Pacific*.

REFERENCES

Anderson, Robert J., and Wes W. Sharrock. 2018. *Action at a Distance: Studies in the Practicalities of Executive Management*. London and New York: Routledge.

Asad, Talal. 1986. 'The Concept of Cultural Translation in British Anthropology'. In *Writing Culture: The Poetics and Politics of Ethnography*, edited by James Clifford and George E. Marcus. Berkeley: University of California Press, 141–64.

Basso, Keith H. 1979. *Portraits of 'The Whiteman': Linguistic Play and Cultural Symbols Among the Western Apache*. Cambridge, UK: Cambridge University Press.

Callon, Michel. 1986. 'Some Elements of a Sociology of Translation'. In *Power, Action and Belief: A New Sociology of Science?* edited by John Law. London: Routledge, 196–229.

Ciardi, John. 1961. 'Translation: The Art of Failure'. *Saturday Review*, 7 October 1961, 17–19.

Clifford, James, and George E. Marcus (eds.). 1986. *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley: University of California Press.

Clift, Rebecca. 1999. 'Irony in Conversation'. *Language in Society* 28(4): 523–53.

Colebrook, Claire. 2004. *Irony*. London: Routledge.

Daniel, E. Valentine. 1984. *Fluid Sign: Being a Person the Tamil Way*. Berkeley: University of California Press.

Fernandez, James W., and Mary Taylor Huber. 2001. 'Introduction: The Anthropology of Irony'. In *Irony in Action: Anthropology, Practice and the Moral Imagination*, edited by James W. Fernandez and Mary Taylor Huber. Chicago: University of Chicago Press, 1–37.

Francis, Dave, and Stephen Hester. 2004. *An Invitation to Ethnomethodology*. London: Sage.

Gal, Susan. 2015. 'Politics of Translation'. *Annual Review of Anthropology* 44: 225–40.

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

Garfinkel, Harold. 2002. *Ethnomethodology's Program*. Lanham, MD: Rowman & Littlefield.

Garfinkel, Harold, and Harvey Sacks. 1970. 'On Formal Structures of Practical Actions'. In *Theoretical Sociology: Perspectives and Developments*, edited by John C. McKinney and Edward A. Tiryakian. New York: Appleton-Century-Crofts, 337–66.

Garfinkel, Harold and, D. Lawrence Wieder. 1992. 'Two Incommensurable Asymmetrically Alternate Technologies of Social Analysis'. In *Text in Context: Contributions to Ethnomethodology*, edited by G. Watson and R. Seiler. London: Sage, 175–206.

Geertz, Clifford. 1973. *The Interpretation of Cultures: Essays in Interpretive Anthropology*. New York: Basic Books.

Geertz, Clifford. 1988. *Works and Lives: The Anthropologist as Author*. Stanford, CA: Stanford University Press.

Goodwin, Charles. 1994. 'Professional Vision'. *American Anthropologist* 96 (3): 606–33.

Goodwin, Charles. 2018. *Co-operative Action*. Cambridge: Cambridge University Press.

Hanks, William F. 2014. 'The Space of Translation'. *Hau: Journal of Ethnographic Theory* 4 (2): 17–39.

Hanks, William F,. and Carlo Severi. 2014. 'Translating Worlds: The Epistemological Space of Translation'. *Hau: Journal of Ethnographic Theory* 4 (2): 1–16.

Hilgartner, Stephen. 2017. *Reordering Life: Knowledge and Control in the Genomics Revolution*. Cambridge, MA: MIT Press.

Hoeppe, Götz. 2014. 'Working Data Together: The Accountability and Reflexivity of Digital Astronomical Practice'. *Social Studies of Science* 44(2): 243-70.

Hoeppe, Götz. 2018. 'Tensions of Accountability: Scientists, Technicians and the Ethical Life of Data Production in Astronomy'. *Science as Culture* 27 (4): 488–512.

Hoeppe, Götz. 2019. 'Medium, Calculation, Play: On Digital Images in Scientific Practice'. *Social Studies of Science* 49 (5): 758–84.

Hollis, Martin, and Steven Lukes (eds.). 1982. *Rationality and Relativism*. Cambridge, MA: MIT Press.

Hutchby, Ian, and Paul Drew. 1995. 'Conversation Analysis'. In *Handbook of Pragmatics*, edited by Jef Verschueren et al. Amsterdam: Benjamins, 182–89.

Jakobson, Roman. 1959. 'On Linguistic Aspects of Translation'. In *On Translation*, edited by Reuben A. Brower. Cambridge, MA: Harvard University Press, 232–38.

Jefferson, Gail. 1984. 'On the Organization of Laughter in Talk About Troubles'. In *Structures of Social Action: Studies in Conversation Analysis*, edited by J. M. Atkinson and J. Heritage. Cambridge: Cambridge University Press, 346–69.

Jefferson, Gail. 2004. 'Glossary of Transcript Symbols with an Introduction'. In *Conversation Analysis: Studies from the First Generation*, edited by Gene Lerner. New York: John Benjamins, 13–31.

Koschmann, Timothy. 2011. 'Understanding Understanding in Action'. *Journal of Pragmatics* 43: 435–37.

Kuhn, Thomas S. 2000. *The Road Since Structure*. Chicago: University of Chicago Press.

Kuhn, Thomas S. 2012 [1962]. *The Structure of Scientific Revolutions*. Fiftieth Anniversary Edition. Chicago: University of Chicago Press.

Latour, Bruno. 2005. *Reassembling the Social*. Oxford: Oxford University Press.

Leavitt, John. 2014. 'Words and Worlds: Ethnography and Theories of Translation'. *Hau: Journal of Ethnographic Theory* 4 (2): 193–220.

Levin, Nadine, and Sabina Leonelli. 2017. 'How Does One "Open" Science? Questions of Value in Biological Research'. *Science, Technology, & Human Values* 42(2): 280–305.

Lienhardt, Godfrey. 1954. 'Modes of Thought'. In *The Institutions of Primitive Society*, edited by Edward Evans-Pritchard. Oxford: Basil Blackwell, 95–107.

Locke, John. 1988 [1690]. *Two Treatises of Government*. Cambridge: Cambridge University Press.

Losche, Diane. 2001. 'What Makes the Anthropologist Laugh? The Abelam, Irony, and Me'. In *Irony in Action: Anthropology, Practice and the Moral Imagination*, edited by James W. Fernandez and Mary Taylor Huber. Chicago: University of Chicago Press, 103–17.

Luhmann, Niklas. 2000. *Art as a Social System*. Stanford, CA: Stanford University Press.

Lynch, Michael. 2011. 'Commentary: On Understanding Understanding'. *Journal of Pragmatics* 43: 553–55.

Mair, Michael, Christian Greiffenhagen, and W.W. Sharrock. 2016. 'Statistical Practice: Putting Society on Display'. *Theory, Culture & Society* 33 (3): 51–77.

Malinowski, Bronislaw. 1922. *Argonauts of the Western Pacific: An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea*. London: Routledge & Kegan Paul.

Merton, Robert K. 1942. 'Science and Technology in a Democratic Order'. *Journal of Legal and Political Sociology* 1 (1-2): 115–126.

Parmentier, Richard J. 1994. *Signs in Society: Studies in Semiotic Anthropology*. Bloomington, IA: Indiana University Press.

Peirce, Charles S. 1932. *Collected Papers of Charles Sanders Peirce*, vol 2. Cambridge, MA: Harvard University Press.

Rubel, Paula G., and Abraham Rosman (eds.). 2003. *Translating Cultures: Perspectives on Translation and Anthropology*. Oxford: Berg.

Sacks, Harvey. 1992. *Lectures on Conversation*. Malden, MA: Blackwell.

Sacks, Harvey, Emanuel Schegloff, and Gail Jefferson. 1974. 'A Simplest Systematics for the Organization of Turn-taking for Conversation'. *Language* 50: 696–735.

Schegloff, Emanuel, and Harvey Sacks. 1973. 'Opening Up Closings'. *Semiotica* 8 (4): 289 –327.

Sidnell, Jack. 2010. *Conversation Analysis: An Introduction*. Chichester: Wiley-Blackwell.

Silverstein, Michael. 2003. 'Translation, Transduction, Transformation: Skating "Glossando" on Thin Semiotic Ice'. In *Translating Cultures: Perspectives on Translation and Anthropology*, edited by Paula G. Rubel and Abraham Rosman. Oxford: Berg, 75–105.

van Ginkel, Rob. 1994. 'Writing Culture from Within: Reflections on Endogenous Ethnography'. *Ethnofoor* 7 (1): 5–23.

Watson, Rod. 2009. 'Constitutive Practices and Garfinkel's Notion of Trust: Revisited'. *Journal of Classical Sociology* 9 (4): 475–499.

Webster, Anthony K. 2016. 'The Art of Failure in Translating a Navajo Poem'. *Journal de la Société des Américanistes* 102 (1): 9–41.

White, Hayden. 1973. *Metahistory: The Historical Imagination in Nineteenth-Century Europe*. Baltimore: Johns Hopkins University Press.

Williams, Robert. 2018. *Hubble Deep Field and the Distant Universe*. Bristol: Institute of Physics Publishers.