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Geologists' implicit persuasive strategies and the construction of evaluative evidence

The qualitative analysis of academic discourse is valuable for understanding how the resources used for expressing authorial positioning act both as the reflection and as the perpetuation of a community's value system. In geology, this value system continues to be largely centered around demonstrating a requisite knowledge of "field culture", where having been in the field is crucial to establishing credibility, authority and field competence. The stance and position taken for providing concrete evidence of this activity is the basis by which contributions are recognized and evaluated by the community. At the same time, modern scientific reporting conventions impose a "textual silence" on the explicitness of the field account, resulting in the use of implicit strategies to express insider concerns. Accordingly, interweaving clusters of features, as *evaluative evidence*, work to discreetly confirm the author's success as a field researcher, by persuasively permitting the community to evaluate his credibility and his competence. This paper describes the basis for the evaluational practices of the field geology community, though a qualitative analysis of geologists' implicit strategies coupled with the situated analysis of the Field Account part-genre, its past and present disciplinary practices.

Keywords: implicit, evaluative evidence, part-genre, situated genre analysis, qualitative linguistic analysis, dialogism

Introduction

In a recent and long-needed volume, a number of authors have tackled the difficult and evasive topic of evaluation in academic discourse, defined as a "broad cover term for the expression of the speaker or writer's attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about" (Thompson & Hunston 2000: 5). In particular, the definition of evaluation the volume editors propose includes those comments made by the speaker which demonstrate an assessment of both the value ("affective good/bad opinion") as well as the epistemic or evidential strength (opinion of probability) of previously stated propositions.

As Thompson and Hunston (2000: 13) further note, the process of evaluation "… consists of anything which is compared to or contrasts with the norm." In this sense, when a writer evaluates prior claims or propositions, he or she is really contrasting this with what is considered to be a norm within the community. Among these norms, we can count a community's bed of knowledge, and other suppositions, beliefs, values, visions of the world, schemas, models, filters, or disciplinary practices.

Norms generate ways of seeing the world, and of acting and being in it, that confirm our membership to our respective communities (Bourdieu 1984, Geertz 1988, Goodwin 1994).

Within this perspective, one function of evaluation is to preserve and maintain standards and values within a community. By contrasting what is said with a community's norms, we seek to weed out anomalies, normalize action and belief within the community by confirming or disputing claims, and we regulate both the acceptance of claims and admittance into the "inner circles" of the community (Rudwick 1985). The very act and essence of evaluation itself can therefore be seen as a manifestation of the community's normalizing process.

Expressions of evaluation thus pervade language use, and applied linguists' growing interest in them belies the ever-increasing importance accorded to the dynamic and interactional nature of academic and professional discourses (Bhatia 1997, Freedman 1999, Hyland 1999, Schryer 2002). However, the variety of contributions to Thompson and Hunston's important volume also poignantly highlights the difficulty involved in defining evaluation, such as how and where to draw a line between representational or descriptive meaning, on the one hand, and attitudinal or evaluative meaning on the other. To complicate matters further, in addition to examining a writer's reaction to a claim, we can also inquire about the very thing that has provoked an evaluative response. What does a prior writer do to signal that he or she is playing into — or going against — communal knowledge structures and accepted beliefs? What does he or she say that will be evaluated?

Within the frame of Bakhtinian dialogism, evaluation can also be seen as a dynamic, ongoing process that dialogically and variably engages multiple readers and writers at various points in time while they interact with their community and its

system of values (Bazerman 1988, Myers 1990, Freedman & Medway 1994, Berkenkotter & Huckin 1995). Therefore, in addition to attitude or stance, we can also observe that evaluation in academic discourse is a communicative act, which is facilitated and necessitated by *prior* speech. It is the dialogical exchange between the different instances of interaction that here will be called the 'evaluative dialogue'.

The present paper explores the theme of evaluative dialogue in the forum of the scientific journal, since an important part of the quest for competence recognition and the corresponding evaluation of norm coherence continues to occur in scientists' documented archives. Within this frame, we will consider in particular how field geologists initiate the evaluative dialogue among their peers. To do this, this study combines a qualitative linguistic analysis of the construction of evaluative evidence, as well as a situated genre analysis (Freedman & Medway 1994, Geisler 1994, Berkenkotter & Huckin 1995, Swales 1998, Atkinson 1999, Dressen 2002b) of the particular 'stand-alone' (Bhatia 1997) or 'part-' genre (Ayers 1994) in which it occurs.

The Field Account, with an audience and set of communicative purposes specific to it, is an integral genre in its own right, although it is embedded within the overarching research article genre, thus explaining its characterization as a *part*-genre. While the research article sets the study within the larger concerns of the geology community in general, the Field Account reports the results of field research to one's specific field community while responding to its particular concerns. In order to identify these concerns and the normative backdrop against which contributions are to be evaluated, geologists' fieldwork practices will first be briefly described using results from socio-historical and ethnographical analyses of disciplinary practices and geologists' attitudes toward field research over time (Dressen 2002b).

The relationship between the community's concerns, and the linguistic resources that reflect this value system, will then be explored by reporting on the results of a "qualitative" linguistic analysis (Altheide 1987, Salager-Meyer 1998, Huckin forthcoming) of a corpus of Field Accounts. Here, we can discern how the rhetorical wielding of natural field evidence acts as an invitation to disciplinary evaluation. To identify its linguistic resources, I have manually examined each text from a corpus of 103 recent (1995-1999) field-based research articles, from three subdisciplines of geology[i]. From this, I have constituted a targeted corpus of 65 articles (67,758 words) that effectively contain a Field Account. In the linguistic analysis of the targeted corpus, I have separated those words that functionally act in the sense outlined above (i.e. the rhetorical construction of evaluative evidence) from the less contextually dependent items (e.g., articles, connectors, conjunctions, or metadiscoursal comments about the argumentative structure of the paper). These functional items account for roughly one-half of the total number of words, and among them I have discerned a systematic set of thematic patterns that work to establish the researcher's field activity and competence. These thematic and functional patterns will be discussed below, as they form the basis for initiating field geologists' evaluative dialogue.

It will further be shown that the cues used to initiate this evaluative process are largely implicit, occurring as a constellational set of interweaving traces of field presence and competence, rather than as explicit declarations. Their interpretive value is not immediately apparent, and it appears only after the reader has "reconstructed" the writer's intent on the basis of shared community knowledge and assumptions. By combining a qualitative analysis of linguistic results with the situated analysis of past and present field practices, one might hope to move more closely toward uncovering

the complex relationship that exists between readers and writers, such as it is shaped and manifests itself within the frame of the disciplinary value system.

A qualitative assessment of geological values

Through the evaluative dialogue, the community encourages and reinforces norms, and controls access to inner circles. Likewise, the individual seeks to gain entry into and confirmation by the research community by providing evidence for members to evaluate his or her competence. The members of a community, in turn, then evaluate the validity of the writer's claims, eventually allowing that individual into tighter and ever smaller circles of competence recognition and acknowledgement.

However, it is clear that what is to be evaluated is extremely context-dependent, and is closely tied to the needs of each particular academic community. As Hunston (2003) has recently noted, the focus of this evaluation necessarily revolves around the conflicts and norms of the community, such as those found in conflict articles published in the journal *Applied Linguistics.* Here, Hunston identified a number of points by which an aspiring or accepted member of the applied linguistics community will be systematically judged, notably whether or not the contributor's publication lacks clarity or shows a misunderstanding of the issues involved, whether the research or argument lacks perceived competence, or whether there is a general absence of 'fit' to community expectations. These shortcomings would very clearly engender a negative evaluation, which Hunston has shown is reflected in the highly critical and polemical language used in these types of articles.

The discipline of geology possesses its own basis for evaluation, which is highly specific to and dependent on the historically-shaped needs of the community of field geologists. To understand how the evaluative dialogue becomes initiated in geology, we must first understand what it is that will be evaluated by geologists. One

particular and differentiating element that undergoes close scrutiny in geology are the results of the field mission. The reasons for this are many, and are largely historically situated (Rudwick 1985, Gohau 1987, Ellenberger 1988, Dressen 2002b).

In writing the Field Account, the field writer's purpose is to describe his field research. However, equally important, he must also show that he is a competent field geologist and therefore credible. Being credible and convincing in one's description of reality is very important since hardly anyone these days will actually go out and check up on someone else's fieldwork, unless he's in competition over the territory, or suspects gross incompetence and wants to prove it. If one is credible, however, a good part of the battle toward gaining a positive evaluation has been won. Indeed, if this evaluation is positive, the discipline's gate-keepers may attribute a recognized field competence to the researcher by allowing some level of entry into the community's more established and recognized inner circles, which Rudwick (1985: 41) has colorfully described as the "brethren of the hammer".

The reader-writer relationship and ongoing evaluative dialogue is therefore key to the successful fieldwork endeavor and to one's continued career. However, being judged convincing and competent is a multi-layered process. First and foremost, it is necessary for the author to translate what it means to be a field geologist and to reinscribe this **within** the community's norms.

One of these norms is how to *act* like a field geologist. In this regard, ethnographical data shows that there is very likely a predisposition among field geologists to tolerating and even seeking out the very conditions involved in doing fieldwork, akin to Bourdieu's (1984) concept of 'habitus'. This includes being of the rugged individual, outdoorsman type, who can go for days with minimal food to leave room in his backpack for hammers, tools, and the up to 30 kg of rock samples he'll

pick up during the day (J. Bouloton & G. Chazot, p.c. 1999). Field geologists tend to pride themselves on their exploits, and have historically set themselves apart from the mere 'drawer-type' geologist, who does not get beyond the safety of his lab or office. In contrast, the field geologist will go to pick up his own rocks, whether it be in icy, pouring rain or in 50°C/122°F weather (G. Chazot, p.c. 1999); perhaps also at 4,000 to 5,000 km altitude (N. Arnaud & O. Merle, p.c. 1999), at gunpoint (G. Chazot & F. LeGros, p.c. 1999), or faced with charging elephants and mutinous research teams (Scholz 1997). In addition, fieldwork today is generally done in the more remote – and dangerous – areas of the world, for field geologists are ready travelers, and retain vestiges of the 'world to be discovered' mindframe.

Real field geologists, by their own estimations, must obligatorily spend anywhere from 3-4 weeks to several months in the field, and away from 'home' every year — indeed, if they even have one. One well-known British petrologist prides himself on not owning a home, but camping while back in England, and despite his international reputation, he by choice holds only a temporary lectureship position at Oxford, which he renews annually (N. Arnaud, p.c. 1999).

In addition to knowing how to act like a geologist, one must also know how to *see* like one. What one sees in the field, as a historically central practice (Rudwick 1976), is very important to this particular community, and students spend a considerable amount of time learning how to observe and see properly, as well as how to fit their observations into current schemas for understanding and describing terrestrial mechanisms. As geologists themselves say, if one fails to describe something accurately, it's because one hasn't seen it properly (see Goodwin 1994 and Medway 2002, for a very similar account of the enculturation of students into archeology and architecture, respectively, and their discipline-based practice of visuality). This

communal filter works in exceedingly strong ways, and Rudwick (1996) describes how conceptual innovation only becomes possible when the field geologist completely isolates himself from the community over a considerable length of time.

Because it is crucial that the field geologist prove or demonstrate to his peers that he can act and see like a field geologist, he seeks to shift the balance in his favor by providing elements that will allow his readers to definitively situate him as a confirmed member of the "brethren of the hammer". This positioning is also part of the normative backdrop against which the field geologist will be evaluated.

The evaluative dialogue is thus initiated by the timely linguistic and rhetorical marshalling of conclusive evaluative evidence. Here, the writer must show his readers that he's been in the field, thereby implying that he's a real geologist — for this will add to his credibility. He must also show that he's been properly trained and that he knows what he's talking about — in other words, that he's describing a plausible, or communally acceptable, reality. Furthermore, he must describe this reality in a way which indicates its self-evident nature. Much more than a simple description of the field, then, the Field Account very much depends on the rhetorical success of its fieldwork reconstruction, for it will be evaluated, positively or negatively, on the solidity of the various types of evidence presented by the writer. The devices used to communicate this information will be described in the next section.

The *implicit* strategies of the Field Account: A rhetoric of understatement

However, the conventions of modern geological discourses are similar to the twentieth-century trends noted for other scientific disciplines such as physics (Bazerman 1988), medicine (Salager-Meyer 1998), economics (Shaw 2003) or botany (Swales 1998), or for large corpora data covering many disciplines (Hyland 2000). Namely, drawing attention to oneself has become largely taboo and authorial modesty

has become the norm. Nevertheless, today's Field Account is characterized by a number of *implicit* devices (Ducrot 1972) from which informed readers may infer pertinent and important information. This behind–the–scenes evaluative dialogue hinges on "a rhetoric of understatement", which quietly translates geologists' private need to draw special attention to and reconfirm community values, despite modern discoursal conventions that downplay such displays (Dressen 2002a).

To illustrate the opaqueness of this discourse, we can consider, for example, the following passage written by the previously mentioned, world-renowned but homeless British geologist.

> The Karakoram terrane, along the northwest frontiers of Pakistan and India, forms the southern continental margin of the Asian plate (Desio 1964). It lies immediately north of the Tethyan suture zones which mark the zone of collision between India and Asia (Fig. 1). The Shyok suture zone (SSZ) separates the Kohistan arc-microplate from the Karakoram terrane in the north and the Main Mantle Thrust (MMT) places the Kohistan arc-microplate southwards over upper and mid-crustal rocks of the Indian plate. Sedimentology along the Indus suture zone (ISZ) and north Indian plate margin in Ladakh and south Tibet suggests that closure of Tethys along the ISZ, and collision of India and Asia occurred between the early and mid-Eocene at ca. 50 Ma...[ii]

It is likely that to most **of** us, nothing here 'says' that Michael Searle has been in the field at all – so how do we know it? As a bit of background, it might be important to add that Searle has spent more than 40 years hiking all over the 150 km wide and 1000 km long Karakoram, a politically explosive and inaccessible mountainous region nestled among the shared borders of Afghanistan, Pakistan, India and China, and that contains the hotly-contested Kashmir province. We can further consider the fact that Michael Searle is an internationally recognized expert on the Karakoram, and that his name has been referenced together with the Karakoram in over 60 articles indexed in GeoRef. When other geologists read Michael Searle, they

clearly identify him as a voice of authority (N. Arnaud, p.c. 1999), and so it is clear that there is more going on in his text than what immediately meets the eye.

As ~~it~~ will be argued here, the linguistic and discoursal markers of evaluative evidence do not *overtly* signal adherence to or divergence from norms. Rather, by using a number of low-lying "clusters of features" (Halliday 1993: 56), the writer can *implicitly* refer to the values and practices crucial to the field geology community, and invite evaluation of his mastery of the craft by those 'in the know'.

Using qualitative linguistic analysis to identify geologists' implicit propositions

We see the foundations for geologists' evaluative dialogue in the interweaving set of clusters of features, here called "Functional Traces of Professional Field Presence". These low-lying cues tacitly foreground the construction of evaluative evidence, and respond to the author's need to demonstrate the thoroughness of his field research, to persuade the research community of the clarity of his interpretations, to mark his membership **in** his research community by displaying his knowledge of its concerns, and to sometimes even give himself a promotional boost or simply say something about himself. A delimited set of such cues has been identified in the corpus using a qualitative linguistic analysis.

These cues are not grammatically organized, neatly placed within categories such as the passive voice, evaluative adverbs, reporting verbs, and so on, but are rather seen to act as a constellation of traces of field research. Among these traces, we have a variety of overlapping categories: lexical, syntactic, discoursal, visual, metadiscoursal, **and** numerical, each of which adds to the myriad of cues that help the author to define, and the reader to recognize, field competence.

These traces are organized according to a systematic set of thematic and functional patterns that extend throughout each text exemplar, and across the entire

targeted corpus. In contrast to a 'quantitative' analysis, which uses statistical models, key word and collocation searches, the 'qualitative' linguistic analysis adopted here uses a more interpretive identification process, contrasting what actually appears on the page with what ethnographical and other qualitative data has revealed as being norms of evaluation for field geologists. Three functional categories of features have been identified in the corpus, listed in order of least to most frequent.

(1) ***Explicit researcher implication*** in the research account, whereby the author draws overt attention to his role as the field researcher,

(2) ***Disguised indications of researcher activity*** in the field, that signal the author's field activities without necessarily drawing explicit attention to him, and a

(3) ***Demonstration of research community-based professional expertise***, which allows the author to display his detailed and shared disciplinary knowledge by using appropriate metadiscoursal cues and disciplinary terminology.

Type 1: Explicit researcher implication in his fieldwork

The least frequently occurring functional set of traces explicitly implicates the researcher in his fieldwork, by allowing the author to overtly signal his research endeavors, intellectual engagement and activity. This is done in part by grammatically 'fronting' references to his person and his research group. Such agential statements of field activity are found in the first person plural pronoun 'we' (Ex. 1) or in the plural possessive 'Our + [a noun]' (*our study*, *our samples*; Ex. 2). Here, the author directly attests to his actual presence in the field by representing himself and his co-workers as both the grammatical subject and possessor.

1. Because the block is exposed high in the near-vertical wall of a glacial cirque… *we have not been able to examine it closely*. [JP-So]
2. However, *our* synthetic secondary fractures make a greater angle with respect to the fault-zone boundary (approximately 30-60°). [JSG-Do]

Another set of traces identified in the corpus (Ex. 3-4) mark intellectual engagement by using adjectives and adverbs of judgment and comparison. Here, we find "on-site enthusiasms" occurring as adjectives or adverbs of opinion (*fortuitously*, *dramatically*). While these traces can be true personal opinions, as in "The footwall exposes a *superb* or *spectacular* fold axis...", they also simultaneously attest to the actual physical observation of the field, to the researcher's own evaluation and discernment, and to his own competent judgment in understanding the field. Such evaluations reify community values by insisting on how closely what has been seen in the field does or does not match what geologists take to be the norm.

3. The CFS is *extremely well exposed* along most of its strike, but *exceptional exposures* occur along the south and east sides of the Sierra Cabrera basement high… [JSG-Ke]
4. Most ijolite outcrops reveal such a *bewildering* range of textures that there is little doubt... [JP-Ha]

Another type of device used in the construction of evaluative evidence are those descriptive adverbs that, while they lack the overtly judgmental weight and explicit intellectual engagement of the previous type, undeniably indicate a process of authorial discernment. Here, one understands the author to be describing what he has seen in the field *in comparison to* the other features he has observed, by contrastively evaluating the nature of the evidence (Ex. 5).

5. The granodiorite *usually* occurs between the gabbro and the granite, and the quartz diorite is *mainly* scattered as enclaves within the granite (Fig. 2e, f) [LI-Xu]

Whole interpretive phrases also mark personal discernment, where the author takes a stand on his field description and works a plausible and self-evident interpretation from it. Here, he exposes his interpretation of reality by using natural facts collected in the field as support for his claims, bolstered by verbs of seeing (*see*, *observe*; Ex. 6, 8), which sets up the interpretation as the natural and evident prolongation of the field observation. The onset of this discoursal move is quite often signaled by a cluster of coinciding features, such as existential 'it' or 'there' coupled

with a judgment-marking adjective (*enigmatic*, *evident*; Ex. 6-7), by argumentative connectors (*therefore, although*; Ex. 7-8), and by the marked increase of an otherwise non-existent modality in a straightforward Field Account (*may*, *might*; Ex. 8). It is also at times indicated by a shift from present-to-past tense (Ex. 8), as well as by a set of verbs that imply human intellectual engagement (*imply, suggest, base, interpret, indicate, argue*; Ex. 8-9), where the grammatical agent is the field.

6. *It is enigmatic that if the pyroxenite* was indeed the earliest intrusive component, *it is never seen intruding* the mafic fenites that are extremely well-exposed along the... [JP-Ha]
7. *It is evident, therefore, that the growth of graben-bounding pairs of faults* is not always coupled in such as way as to maintain complementary displacement profiles. [JSG-Ca]
8. *These pegmatitic granites imply* filling of late-stage fractures by residual melt drained from the largely crystalline leucogranite by percolative flow. *Although* the pegmatitic granites *may suggest* local volatile phase saturation, *we have not observed miarolitic cavities to confirm this***.** [LI-Pr]
9. *Preservation of the euhedral calcite rhombs argues* against this *interpretation* and *suggests that* the calcite was... [JP-Co]

Type 2: A disguised account of research activity

A second functional category of traces is thematically organized around giving details of the research activity itself. Here, however, the author 'disguises' his own participation in the observational and descriptive task. These are the research account's "doing the work details" (Rowley-Jolivet 2000) and are generally presented without personal attachment. By using these types of traces, the researcher signals his activity, but does so more or less indirectly. To this end, there is a whole range of process and activity-based nouns that construct the author's own research endeavor, but that remain largely unclaimed (Ex. 10-11).

10. "The high relief in the area of up to 900 m allows *assessment* of...." [MM-Gr]
11. "The ubiquitous *evidence* for extensive brittle deformation... may have two important *implications*." [JSG-Ke]

Likewise, verbal adjectives may also disguise the researcher's activity. They are discreetly tucked away into the sentence, far distanced from the main verbal phrase

(Ex. 12). Another discreet verbal strategy consists of using a passive verb, where the demoted agent might be imagined to be the researcher, but whose true identity remains somewhat ambiguous (Ex. 13). The field geologist author further disguisedly describes the field by using epistemic modality, or the oft-discussed 'hedge' (e.g., Myers 1989; Salager-Meyer 1994; Hyland 1996). While it is commonly argued that hedges are a tool for indicating 'politeness' or are used as 'face-saving tactics' (Brown & Levinson 1987), one can also consider them to be indirectly indicative of researcher activity in a discourse characterized most, as in medicine, by its "researcher invisibility" (Salager-Meyer 1998). As such, such hedges can also be read as additional proof of having been there, for they constitute a softening of the impersonal, empirical fact (Ex. 14).

12. In pavement outcrop within a discrete body of leucogranite NW of the town of Phillips (Fig. 2, locality 1), the leucogranite exhibits a sheeted structure in which structurally concordant screens of pelitic schist occur (Fig. 3a–c), and sheets of leucogranite and pegmatitic granite occur within the pelitic schist outside the *mapped* contact of the body. [LI-Pr]
13. No feldspar, magnetite or mica *is ever found* in these ijolites. [JP-Ha]
14. Metre-scale, low-amplitude, lineation-parallel ridges and grooves — megacorrugations — are also observed (Fig. 2), and these *seem* to be typical features associated with other normal faults. [JSG-Do]

One final verbal strategy is to present oneself as some elusive actor or 'invisible' demoted agent-recipient, only remotely alluded to by verbal adjective (Ex. 15). While the agent recipient in Example 15 is most likely the researcher, in the following sentence (Ex. 16) the geological features seem to supplant the human observer, who in reality uses the structure himself to trace the pathways.

15. "The good three-dimensional exposure *afforded by* the incised banks of the Tshweneng River shows that..." [CG-Ja]
16. "Locally, several centimeter thick late pegmatite veins consisting of aenite, perthitic alkali feldspar and eudialyte and other Na-REE-Zr-silicates *trace* the main fluid pathways..." [JP-Mi]

The author makes further reference to his field activities by referring to the various metric, angle and direction measurements he has made in the field:

17. Maximum displacements on the mapped faults range *from 1.5 m to 150 m,* and their trace lengths range *from 108 m to 6584 m*. [JSG-Ca]

The field writer will also use 'locational' adverbs and prepositions to indicate where and how the structures occur in the field. These traces denote an actual taking-in of the field with a specialist's eye, and translate either the researcher's visual and microstructural appreciation of the location of geological features in relation to one another, or the researcher's own movement from point to point in the field (Ex. 18).

18. The peridotite *over*lies high-grade gneisses and marbles… *along* an essentially low-angle brittle thrust marked by extensive brecciation discernible *over a distance of up to* 100 m *away from* the context. [JP-Vd]

Field geologists, of course, must necessarily visually communicate what they have observed (Rudwick 1976), and the discipline's normalized practice of "visuality" is implied through metadiscoursal reference to the author's own maps, cross-sections and the like, drawn based on his field mission. Such in-text references to visual representations are a crucial form of field description, and the author's involvement is assumed. An absence of citation of other authors would otherwise indicate "I drew this" (Ex. 19).

19. The most spectacular slickenslide surfaces have been *schematically represented in Fig. 2* and *they are shown in the photographs of Fig. 3*. [JSG-Do]

Certain complex noun phrases indicate the geographical location where the author has done his fieldwork. In this way, authors appear to lay territorial claim to the structures studied in their region, especially when these structures become acronyms when added to geographical markers (Ex. 20).

20. From the *town of Rjukan* to the *village of Tuddal* (Fig. 1), an excellent section (ca. 1000 m) is exposed. [CG-Br]

Finally, the writer also confirms his research activity in the field by using sentence-final, parenthesized references to his own prior fieldwork missions (Ex. 21). Reference to one's own previous fieldwork provide definitive proof of field presence,

although the present article may not make explicit, textual reference to it. Because one fieldwork mission may inspire three to five separate articles, some more closely focused on the field mission than others, not every article will have the same amount of explicit field detail. If questioned about the curious absence of explicit fieldwork markers in a particular article, although the analyst knows full well that the author "was there", the author might very well respond that "yes, it [the field report] is there, but it's in the bibliography" (N. Arnaud, p.c. 1999).

21. Strauss & Turner (1950) considered the pyroxenite to be the earliest intrusive component of Spitskop and presented a photograph. However, Strauss & Turner provided no petrographic description of this dyke, and as this exposure no longer exists *(Harmer 1992)*, the relationship... remains unclear. [JP-Ha]

Type 3: A demonstration of research community-based professional expertise

Finally, turning to those functional traces that occur most frequently in the corpus, we can note that these traces are less markers of field *activity* than they are of field *professionalism*, whereby the author paints a picture of himself as a competently trained field geologist who knows when and how to wield the appropriate terminological, grammatical and discoursal structures for his discipline.

Among the lexical items we find here are nominal and adjectival descriptive qualifiers, which relate observed geological rocks and structures. The description of these objects is a further demonstration that the author is well versed in the specific sub-disciplinary norms of his specialty, and that he knows how to play the basic "disciplinary game" by using its key terms to address a domain-specific audience (petrology, Ex. 22; structural geology, Ex. 23; geochemistry, Ex. 24).

22. *Ijolites* form the *bulk* of the *silicate phase* of the *complex*. [JP-Ha]
23. *Dips* of the (steepest) part of the *monoclines* vary along their *fold axes*, with the *maximum bedding dip* usually occurring close to the '*brittle' tip*. [JSG-Ca]
24. Above the *opx*-bearing *mantle rocks*, poorly to unlayered *dunites*, *cpx-dunites*, *wehrlites*, and *plagioclase*-bearing *wehrlites* occur with a *thickness* up to 500 m. [GCA-Ba]

The author also appeals to the shared background knowledge his readers will be assumed to possess, by making his field description more relevant to the concerns of a wider geological audience. To this end, he uses both adjectival qualifiers of geological time, as well as verbal and adverbial indications of geological activity, quite often coupled with the past tense (Ex. 25).

25. *Miocene-Recent* left-lateral oblique-slip (transpressional) was accommodated along the CFS (Hall, 1983; Rutter et al., 1986). ... The CFS *has been active from the Burdigalian to the present***,** with fault movement being laterally transferred, and accommodated, by different branches of the CFS *through time* (Keller et al., 1995). [JSG- Ke]

As has been noted elsewhere (Dressen & Swales 2000), the verbal repertoire used for field description is mostly general and non-technical in nature. Accordingly, the geologist demonstrates his mastery of geology's more technical relationships by using a set of verbal adjectival and participial qualifiers to describe the interaction between the rocks and structures observed in the field. The agents and demoted agents of these verbal qualifiers are necessarily the observed geological structures (Ex. 26).

26. The *stepping* sense of the fissures preserves the *ca* N020° strike of the main fault, whilst fully *exploiting* those joints *oriented* favourably for reactivation... [JSG-Ca]

Finally, the author responds to his research community's concerns and practices by acknowledging what other researchers have reported and contributed to the bed of communal knowledge. He thereby situates his own field research within a myriad of references to other researchers' published field results.

In the handling of these trace clusters, we can see the author position himself in relation to both his own concerns as well as the research community, by fashioning his field observations into the rhetorically sensitive description and community embedded interpretation we find in the end account, where each word has its role to play in the construction of evaluative evidence. To illustrate how this is done, let us now turn to a rather typical example of the Field Account[iii], in order to examine the ways in which these thematic and functional trace clusters operate together so as to provide readers

with the resources necessary for evaluating **the** researcher's credibility, competence and authority (*sentence numbers have been added*).

> [1]The southern Yadong-Gulu rift is composed of the Pali and Duoqen valleys, which together extend approximately 90 km in a north-northeast direction across the southern Tethyan Himalaya (Plate 1). … [2]Both valleys are bordered on the east by a rugged, anomalously north-northeast trending segment of the High Himalaya dominated by Mount Chomolhari (7313 m), referred to subsequently as the Chomolhari range. [3]The Chomolhari range is the geomorphologic expression of the YCS. [4]The western foot of the range, bordering Duoqen and Pali valleys, is marked by an en echelon set of active high-angle normal faults which, in aggregate, we refer to as the Chomolhari fault system (CFS) (Figure 2). [5]The CFS is evidenced by conspicuous scarp cutting moraines, hanging glacial valleys, and triangular range-front facets [Armijo et al., 1986]. [6]These features are evident both in the field and on thematic mapped images. [7]West of Duoqen valley, generally east-west striking Paleozoic and Mesozoic sedimentary strata of the Tethyan belt are exposed. [8]These strata are succeeded southward by a diverse assemblage of granite, granite gneiss, schist, phyllite, and locally marble, the bulk of which we assign to the Greater Himalayan belt. [9]These strata are readily observed along the west side of Pali valley and along the two principal north-south roads through the region, which converge near the southern edge of the map area at Yadong (SW corner of Plate 1). … [10]Our field observations together with the regional mapping by Gansser (1983) suggest that the crest of the Chomolhari range is underlain by high-grade metamorphic rocks and granites of the Greater Himalayan belt. [11]To the east in Bhutan, the Himalaya are similarly underlain by greater Himalayan belt strata, with local outliers of Tethyan belt strata preserved above [Gansser, 1983].

Very generally, this passage, taken from an article in structural geology, identifies and localizes the general geological structures of the area [1-3], and introduces the "CFS", or the Chomolhari fault system [4], which the authors then describe using their field observations [5-9]. Crucially, the field observations made along the CFS allow the authors to posit an extremely important finding, the YCS [3], with implications for understanding the entire regional geology, i.e., the Greater Himalayan belt strata [10-11].

In this text, traces demonstrating community-based professional expertise (Type 3) are the most common, as is standard for the part-genre, and make up 0.28 of the passage (80 tokens from 286 words). The average for such traces in structural geology is 0.31 (standard deviation 0.04). These traces, then, constitute the core around which the authors construct their account, and are densely packed throughout the description of the field [4-8], as well as in the interpretive claim [10].

However, the authors also keenly demonstrate their field activity by using traces disguisedly marking their field activity (Type 2). The frequency is somewhat atypical here (0.23, or 66 / 286), for the norm in structural geology is 0.14 (standard deviation 0.02). We can further note that the authors principally use 'Geographical location markers' to do so (29 / 66). While these traces taken alone clearly do not constitute definitive evidence that the authors were in the field, it is noteworthy that they are often attached to 'Nominal qualifiers of the field' (Type 3), which suggests that the authors are taking possession of the field, especially when this construction occurs in conjunction with a number of quasi-metadiscoursal statements ('*referred to subsequently as* the Chomolhari range' [2], '…*we refer to as* the Chomolhari fault system' (CFS) [4], and 'the bulk of which *we assign to* the Greater Himalayan belt' [8]). Furthermore, the authors have coined the term 'Chomolhari fault system', immediately replaced by the acronym 'CFS' [4], which is then used throughout the remainder of the article. The authors thus appear to be actively working to establish their authority over their territory.

The authors give further unquestionable details of their field activity with a number of other Type 2 traces, such as 'Direction measurements' [4, 7-9], a couple of locational adverbs and references to visual data ('*along* the two principal north-south roads through the region, which converge *near* the southern edge of the map area at Yadong (*SW corner of Plate 1*)' [9]), as well as a very small handful of verbal and nominal indications of fieldwork ('*evidenced by*' [5], 'these features are evident *in the field*' [6], and '*our field observations*' [10]).

And so, it would seem obvious so far that the authors have already firmly situated themselves in the field, and that consequently, one crucial piece of evidence in the construction of their credibility has been laid. However, it is hardly sufficient to

have merely been in the field to be attributed competence, for one must also use the description of the field to make the interpretation appear obvious and relevant. This is a task the authors spend a good deal of time doing, and we can see that the central part of the excerpt [4-8] contains most of the traces of professional expertise, using primarily 'Nominal field qualifiers' and 'Technical verbal adjectives' (Trace 3). Here, the authors seem to be simply presenting the evidence, further suggested by the relative verb "be" ('The western *foot* of the *range*, *bordering* Duoqen and Pali *valleys*, *is marked* by an *en echelon set* of *active high-angle normal faults*' [4], '*are exposed*' [7], 'These *strata are succeeded*…' [8]). These "facts" are further embedded within a disciplinary frame of shared communal knowledge, as seen by the author's use of other traces of professional expertise, such as 'Geological age' ('…*Paleozoic* and *Mesozoic sedimentary strata*' [7]), and references to others' publications [5, 10-11].

However, by using a number of traces of explicit researcher implication (Type 1), the authors mitigate the presentation of this natural reality, thereby making it more amenable to being believed by qualifying a straightforward description of fact with well-placed adverbial indications of discernment ('*approximately*' [1], '*generally*' [7], '*similarly*' [11]). They also strengthen the force of their descriptive claim by using adverbs and adjectives of opinion ('*rugged, anomalously*…' [2], '*conspicuous*' [5]). Furthermore, the authors personally vouch for these observations, making them appear more real by stating that they are 'obvious' as they can be 'easily observed' in the field ('These features are *evident*…' [6], 'These strata are *readily observed*…' [9]). And finally, they finish the section by squarely positing their interpretation of events within the frame of what the geological community has already described and cautioned:

> *Our field observations together with the regional mapping by Gansser (1983)* suggest that the crest of the Chomolhari range is underlain by high-grade metamorphic rocks and granites of the Greater Himalayan belt. To the east in Bhutan, *the Himalaya are similarly underlain* by the Greater Himalayan belt… [10-11].

In this text, then, the authors demonstrate that they are the masters of their domain: because they have been in the field to see for themselves, they are its best (i.e., most competent) describers. They demonstrate the veracity of their description with unquestionable field data such as measurements, sketches, locale names, acronyms, descriptive relationships tinged with discernment, indirect references to themselves, and newly constructed interpretations, all of which lies upon a frame of references to their own prior field missions. They also take pains to evidence their knowledge of the professional community by showing themselves to be fully versed in its discoursal conventions, such as when and how to cite others, how to wield the terminology, how to imply to others that they did their own fieldwork, when to add in all the descriptive "tidbits" that could only come from their own eyes so as to bolster a claim, how to construct undeniable interpretations, and also how to at times draw attention to themselves by simply and strategically *not* referring to anyone else's work. And finally, they manage from time to time to imply in an outright manner — that is, to insiders — "We were there" and "what we saw was truly exceptional." The elements for evaluation have thus been set.

Conclusion

We have seen here that while many of the presence markers used by geologists to build up points for a positive evaluation are linguistically similar to markers of stance and attitude, their primary function is not to evaluate, per se, but to construct evaluative evidence by drawing attention to the noteworthy aspects of field research. Even in those instances when the author is clearly evaluating prior work (e.g., Harmer 1992 [21]), this is done in an effort to build up one's own field credibility and competence.

To do this, the author strategically draws on a number of thematically functional traces to construct implicit cues. The implicit thereby acts as a vehicle for initiating the evaluative dialogue, providing crucial information to readers in-the-know in order to persuade them to positively evaluate the research under consideration. Making credible, evidential statements and building evidence for the evaluation of field competence are undeniably two of the more important 'communicative purposes' (Askehave & Swales 2001) of the geological Field Account. However, the implicit cues the author uses to fulfill his rhetorical purpose do not occur in the stepped, progressive, discourse-level moves we have come to expect of written academic genres (Swales 1990), but rather as a "constellation" (Lemke 1995, Schryer 2000) of optional clusters of features. It is the interweaving ensemble of such unstepped trace clusters acting together that achieves the desired, rhetorical effect: ensuring a positive evaluation of one's field competence.

We might evaluate the usefulness of the methodological choices made here for the analysis of evaluative dialogues in academic discourse. Clearly, identifying aspects of the evaluative dialogue and discovering geology's "hidden agendas" necessarily depends on a certain amount of digging around, where meaning must be "gleaned from [its] context" (Huckin 2002). By analyzing the past and present norms of practice in which the community's current texts and present value-system take root, we can see how these norms give rise to the specialized meaning of geologists' linguistic resources, and particularly the veiled hints of the modern geology Field Account.

In particular, this paper argues for the need to pay closer attention to the peculiarities of particular academic communities, through a qualitative linguistic analysis coupled with socio-historical and ethnographic methods. Although larger studies make general patterns appear, the explanations for these patterns, without

grounding in the community's "substance" (Burke 1969), remain at least partly the analyst's artifact. While we generally think of the discourses of the sciences as non-imposing and distant, intended to allow for the facts to speak for themselves, the linguistic analysis of a smaller corpus, grounded in a qualitative, ethnographic and socio-historical analysis, gives us insight into the inside conversations that are at the heart of every academic discipline. And thus, what we may take as scientific distance and an unwillingness to impose personal views in an otherwise seemingly objective account is in all likelihood but a muted conversation to which only inside members are privy, able as they are to capture the essence of the implicit and, in the end very personal, propositions of their dialogues.

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Notes

[1] The study focused on three subdisciplines of geology, where one often goes out into the field to conduct research. These are (1) Structural geology, (2) Geochemistry and (3) Petrology. A complete description of the corpus is given in Dressen (2002b).

[2] Searle, M., Crawford, M., Rex, A. 1992. Field relations, geochemistry, origin and emplacement of the Baltoro granite, Central Karakoram. *Transactions of the Royal Society of Edinburgh,* 83: 519-538.

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