

Exclamative as a Universal Speech Act Category

A Case Study in Decision-Theoretic Semantics and Typological Implications

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Abstract: We explicate Exclamative as a speech act type which communicates an ostensible drastic change in speaker's expectation, occasioned by an entity or eventuality. Expectation is understood in the technical, 'expected value' sense of decision theory. It can thus be decomposed into doxastic degree-of-belief and boulomaic valuation. The change is communicated non-assertorically: the interlocutors are ostensibly hearers made to react, rather than addressees to be persuaded or compelled. Unlike assertions and imperatival demands, Exclamatives do not perform acts aimed at transforming a juridical context of joint, ratifiable commitments. They need not thus be backed by authority or by reason-providing incentives for consent. Hence, they fall outside the classification of major speech act types, all of which are either argumentative or otherwise obligation-creating. The analysis is explicated in the framework of Decision-Theoretic Semantics. It criticises, develops and generalizes 'scalar' analyses centered on Wh-pro-forms and pro-form degree adverbs and a related 'domain widening' proposal. Their shared thesis that exclamatives are presuppositional of their propositional content is modified to one of probabilistic non-propositionality explicated in the probability calculus. Several empirical puzzles are solved. Typological facts explained include why exclamatives frequently resemble other constructions devoted to marking pronounced deviations from expectation, such as miratives, thetics, and optatives and why they often employ 'insubordinated' constructions.

1. Purpose, background, and methodology

Is there a universal speech act category of Exclamative?¹ Current answers range from silence to affirmation that is at best low key, and there is ample reason for this show of diffidence. The major speech act types recognized by linguists—Assertoric-Declarative, Questioning-Interrogative and Directive-Imperatival—owe their status both to their functions and forms. They perform highly general, important, well-regulated and well-understood social acts. They tend to have morpho-syntactic forms distinctive enough to constitute comparatively unitary sentence moods (Sadock & Zwicky 1975; König & Siemund 2007). By contrast, the function of exclamatives, prototypically described as the expression of surprise, does not readily articulate

¹We capitalize speech act type as distinct from sentence or utterance type.

with this paradigm of social acts. Moreover, exclamations exhibit a bewildering variety of morpho-syntactic forms already within widely studied languages such as, for instance, Modern English:

- (1) a. Oops!
- b. You'll be surprised!
- c. How fat this cat is!
- d. What a wonderful Mercedes she has!
- e. The darling!

Some exclamations are monomorphemic and of the interjection subtype; e.g. (a) or *Oh!* and *Ah!*. Some differ from declaratives at most in prosody or punctuation (b). Others (c, d) exhibit apparent ‘insubordination’ of subordinate clauses (Evans 2007). Yet others consist of a single, preferably unheavy NP (e). Further afield one finds *bona fide* translation equivalents in which exclamatory function associates with a variety of other syntactic constructions and morphological markers.

The ‘Cambridge Grammar’ (Huddleston & Pullum 2002: 851–946) meets the taxonomic problem for English² by distinguishing an exclamative sentence mood, associated with a characteristic syntax, and a residual category of ‘non-exclamative exclamations’. Exx. (c,d) would thus be exclamatives. Some or all of (a,b,e) might then yet fall under the second category, which contains exemplars such as (α) *The hell you will!*, (β) *So much remains to be done!*, (γ) *It was such a joke!*, and (δ) *Isn't it hot!*. Other grammarians would class some or all of these as plain exclamatives, notably (γ). Nobody would, however, exclude (c,d), which, along with (β, γ), we shall refer to as PRO-FORM EXCLAMATIVES.³

Looking next door to German, however, one finds language-specific denials of there being a syntactic exclamative sentence mood at all (Rosengren 1992, d’Avis 2001; see below). Such diversity of taxonomic decisions made within and across languages is reflected in typology by König & Siemund (2007), who class the exclamative utterance type as a ‘minor’ sentence mood. They also note that Exclamative is not part of the influential speech act taxonomy expounded by Searle (1975). Yet none of the linguistic studies we know of actually denies universality of this speech act type. The presumption already for (1) will indeed be that there is a unity of speech act type which unites the focal and peripheral items. The problem is how to characterize the type.

A typological approach based, in effect, on the model of core and periphery is offered by Michaelis (2001) [M 2001]. She argues for a universal exclamative ‘construction’ type understood as a collection of (i) morpho-syntactic and (ii) semantico-pragmatic features. Construction type is here synonymous with “sentence type” (M 2001:1041). The “speech act” is also characterized, but minimally so, by an “essential condition”: expression of surprise. It will be our object to explicate the Exclamative speech act more richly, in terms of semantico-pragmatic features which will in

²For French, see Gérard (1980).

³*What* and *how* are interrogative pronouns; *such* and *so* are deictic, kataphoric, or anaphoric adverbs without intrinsic descriptive, emotive, or expressive content. Elliott (1974) indeed postulated underlying *so/such* sources for *Wh*-exclamatives.

some respects differ from those in (ii), but will not pay for greater extension by a pronounced deficit in structure compared to the three ‘major’ types. Calling Exclamative a speech act type means simply that its characterization should be logically independent of morpho-syntax. This places a premium on characterizing pragmatic function, though in a way that still explains observed associations with expression and discourse form.

The function of exclamations, wrote Elliott (1974), to whom all modern accounts are indebted, is to talk about “abnormal or unexpected situations”. He also makes a key structural observation about English and a variety of other languages. Clauses specified as such in lexico-syntactic terms and which can be used as free-standing exclamations while not having other free uses in spoken language embed under what Kiparsky & Kiparsky (1970) class as ‘emotive factive’ predicates of propositional attitude. Examples of the resulting embedded exclamatives, which retain exclamatory function, are *{I am amazed/It is amazing} {how very tall she is/that she’s so (very) tall}*. These and related observations about other factives and the prescription of non-factive matrices for potential free exclamatives are fundamental to current theorizing.

The two kinds of observations reflect in a pair of widely shared semantico-pragmatic claims. The first of these is hard to disagree with when understood with a tacit ‘ostensibly’ before the key adjective.

Received Claim 1: Exclamatives express an extreme deviation from some norm—which might be phrased in terms of extreme ‘degree’ on some ‘scale’—and the speaker’s reaction to it.

‘Degree’ accounts include, among many others, Elliott (1974), Milner (1978), Grimshaw (1979), Gérard (1980), Quirk et al. (1985), Rosengren (1992, 1997), Gutiérrez-Rexach (1999), and the pair of studies which will be our benchmark treatments, M (2001) and Zanuttini & Portner 2003 [Z&P]. ‘Degree’ and thus ‘norm’ can be semantically characterized in one or both of two ways: (i) in terms of properties of objects which the utterance is ostensibly about—call this INTRINSIC DEGREE [ID]; (ii) in terms of a related gradable, attitudinal property of the speaker such as surprise and/or a preference-oriented state ranging from joy to exasperation—call this ATTITUDINAL DEGREE [AD]. For free exclamatives, AD is unambiguously the speaker’s to start with.

We take it that AD is a feature of all exclamatives, in variable weighting of its two components. ID, by contrast, is defined in terms of features of what is being exclaimed over and which obtain regardless of the speaker’s epistemic or desiderative attitude. Prototypical instances of ID would either be physical or have an order-isomorphic physical substrate. ID will also include socio-psychological projections of collective AD into objective status, e.g. as social rankings. For linguistic purposes, ID is most securely established by open-class lexical content of the gradable kind. A striking illustration is the class of ‘antitopic exclamatives’ so dubbed by Michaelis & Lambrecht (1996a), which have everything but the clause-initial interjection distressed: e.g. *GOD it’s hot out here!, My GOODNESS you’re late!* They involve no pro-form of degree, yet have for counterinstance **GOD that’s an even*

number! (Michaelis 2001: 1044) or **My GOODNESS you're {here/in France}!* The adjective *even* under its number-theoretic interpretation is non-gradable: cp. **How even is this number?*, **This number is so even!*. A borderline case of putatively collective projection might be *The hat (she wears)!*, which clearly evokes a stereotyped aesthetic grading of hats by outlandishness. Dub this an EXTRINSIC DEGREE [ED] phenomenon. ID instances of DE will surely include (1.d) and *That it should have come to this!*, which could, respectively, invoke recognitional progress to extreme loveability and degeneration to a sorry end.

Adopting terms from Robert Martin (1987), call DEGREE EXCLAMATIVES [DE] all those exclamatives which involve ID and ED. Dub NON-DEGREE EXCLAMATIVES [NDE] their conceivable relative complement. For Michaelis, NDE will be empty as a sentence type. Martin thinks NDE includes e.g. Fr. *Si elle est là!* (perhaps best rendered *Ain't she here!* or, in retortive response to a question, as *And HOW she's here!*) and *She's beautiful!*. The latter has a gradable predicate, but is contrasted with DE *She's so beautiful!*. Non-gradable open-class lexemes are rare: think of *very female*. However, those which there are suffice to raise the issue. Concomitantly, antitopic exclamatives make it unlikely that syntactic and closed class morphological criteria suffice to map out a proper subclass of DEs from exclamatives.⁴

'Norm deviation' has an objective flavour; the 'unexpected' is often identified with subjective improbability, while Michaelis takes both to be requisite for 'surprise', her essential feature of Exclamative. Dissenters include Fries (1988), who substitutes obligatory 'emotivity', and Z&P (2003), who require neither feature, at any rate for the sentence type. Upon explication of these notions, our proposal will generally require an admixture of each of the epistemic and non-epistemic components mooted. It will also articulate with the frequent stochastic correlation of improbability and extremity in some non-epistemic parameter space. Some putative counterexamples to 'improbability' will turn out not be actual counterexamples.

The second claim about exclamatives, due to Grimshaw (1979), seems less obvious to common sense, but goes well with the *what-* and *how-*variety:

Received Claim 2: Exclamative utterances presuppose at least part of what is being exclaimed over.

Grimshaw's thesis is modelled on intuited commonalities of sentences such as *I know how hot it is* and *I am amazed how hot it is!*. In the latter, an exclamative is plausibly held to be embedded, and arguments are offered, in line with Elliott, for a distinct abstract clause type which has the variable designated by WH, not unspecified as in questions, but implicitly and mandatorily specified for a value, constrained by Claim 1. Elliott, though he drew on the Kiparskys' study of lexical presupposition, still eschews making Claim 2. Perhaps this is due to doubts (Elliott 1974:239) that exclamatives have a truth value. Schwabe (1989), by further contrast, opts for an assertoric treatment of tangible exclamative content, perhaps in line with

⁴ *He is very MUCH in Rome* is a synonym for *He IS in Rome* just as *And HOW she's in Rome!* is its exclamatory correlate. These semi-idioms might just be tropes which objectivize epistemic AD to sometimes slightly sarcastic ID.

the relative prominence of a class of (German) exclamatives that do not exhibit a Wh-word, while D’Avis (2001) opts for presuppositionality (see below).⁵

The following three claims are not high on the explanatory priority list of generative proposals committed to Claims 1 and 2, but are of interest to typology in not relying on pronominal constructions for plausibility.

Common Sense Claim 3: The exclamative utterance expresses an emotive or affective reaction of the speaker’s to an eventuality exclaimed over.

The claim is widely adopted, e.g. by Michaelis, and sometimes emphasized as implying the phenomena addressed by one or both of Claims 1 and 2 (Milner 1978, Fries 1988, Rosengren 1992, d’Avis 2001). Emotive content has also heard calls for demotion to non-constitutive status on account of its alleged theoretical ineffability and occasional felt absence (Martin 1987, Z&P 2003). The maximal specificity of emotive factives as embedders of exclamatives militates for Claims 2 and 3 jointly. The central concept of Decision-Theoretic Semantics, EXPECTATION CHANGE, has emotivity at various levels of explicitness as a psychophysiological correlate. A notable instance of, or task-specific synonym for, expectation change in this domain is ‘prediction error’ (Schultz 2006, Goldie 2000).

At least for languages for which the issue has been discussed, reflective intuitions of emotivity are associated with the prosody of Exclamatives. They are fleshed in most readily by pointing to measurably enlarged tessitura, often also loudness, and to their positive correlation with felt emotionality of the non-boredom, non-sorrow type (Cruttenden 1986: 6, 131). Bolinger (1989:248f.) holds that a range reaching for “the extremes—usually higher, but sometimes lower” characterizes the class of exclamations in expressing “emotional arousal”.⁶ Rosengren (1992, 1997) and d’Avis (2001), with more faith in shape, similarly see exclamative prosody as intended to mirror heightened emotivity. This deviation from what is usual will intimate the presence of some cause or reason for itself. Segmental clause content will be among suppliers of constraints on the likely cause and on specific emotive attitude.

This, now, offers a direct link to Claim 2. While few people today would propound a tacit ‘higher clause’ analysis of free exclamatives, the idea that the paralinguistic expression of appropriate emotion could serve a similar purpose, rebus-like,⁷ does look attractive. D’Avis (2001:124) indeed infers a presupposed status of the eventuality exclaimed over from communicative primacy of the emotive, intonationally expressed reaction to it, which operates in analogy to the matrix clause of embedded forms.

Regardless of substantive interpretation, reference grammars indeed tend to speak for the distributional importance of intonation.

Frequent Claim 4: The exclamative utterance is associated with a prosody that is distinctive for it (within the language under consideration).

⁵Francophone authors acknowledge non-assertoricity, Bacha (2000) opts positively for presupposition.

⁶Gussenhoven (2004:88) associates wide range with symbolized “effort”. Glosses including ‘authoritative’ and ‘enthusiastic’ suggest that ‘extraordinariness’ is the common feature beside arousal.

⁷Compare the PP substitute in *It went* <FFHWUITT>, meaning: *It vanished*.

What this intonation actually is for a particular language, and whether there is just one or whether it is unique to exclamations usually remains unclear.⁸ For English, but with intimated wider ambit, Bolinger (1989:248f) is categorical: not shape, but range is characteristic of exclamations and hence, presumably, co-extensive with spoken Exclamative. The fallback hypothesis for the ‘special intonation’ that grammars tersely speak of will thus be widened tessitura. For shape, English offers a plurality of possible associations: just a few for Cruttenden (1986 [21997]), many for Bolinger (1989:248–299). In English, the melodic prototype, though not necessarily the statistically most frequent form in a corpus, seems to be the sentence-spanning steady-Rise-and-abrupt-Fall (or simply Rise-Fall) contour. It is minimally parsed as L*H*L-L% in transcriptional systems deriving from Pierrehumbert (1980) and is most typically associated with a gloss of ‘surprise’ (Sag & Liberman 1975), the emotional feature which Michaelis finds characteristic of Exclamative.⁹ Schwabe (1989) diagnoses a feature ‘[+elongated main accent syllable]’ to be the common surface feature of German exclamatives, d’Avis (2001:122) reports secure differentiation from contrastive and focus prosody and uniqueness to the utterance type. On this basis, Rosengren (1992) and in further detail d’Avis (2001) have argued that German exclamatives are syntactically either interrogatives or indicatives and are distinguished *qua* expressions from questions and assertions only by intonation.¹⁰ Reciprocally, and less controversially, intonation may be the sole perceptible formal feature which a variety of exclamative constructions in a given language have in common (see König and Siemund 2007:317). Thus, neglecting the semantics of intonation might just resemble doing ‘Cleopatra’ without the Queen.

But yet: under a typological perspective we must all but neglect it. There are few languages for which suprasegmental transcriptions are available all, let alone in comparable paradigms. Moreover, there is no viable consensus on frameworks about intonation semantics for any single language (cp. e.g. Pierrehumbert & Hirschberg 1990; Cruttenden 21997:113f., Merin & Bartels 1997, Bartels & Merin 1999). Appeal to exclamatory intonation, whatever it might be, does suggest a rule of thumb which would make Exclamative co-extensive with the class of exclamations:

⁸It might well be that the gross shape of melody and stress pattern elicited from fundamental frequency contour and amplitude does not suffice to capture it.

⁹High Falling forms, simple (H*L-L%) or downstepped H*+L-H+L-H*L-L% are common, but at least in BrE they easily come with an openly ironic, condescending, or patronizing tinge. Irony of the Rise-Fall depends more strongly on contextual mismatch. Analogy: a Rise is prototypical for yes-no questions (‘questioning intonation’), whereas in corpora of non-‘alternative’ YNQs Falls can be twice as frequent (see Bartels & Merin 1999). The prediction should thus be that non-prototype intonation tends to be more of an option when segmental markers are used which are typical of the exclamative construction and thence of the act. For the prototype we have a diffident conjecture: that it signals bypassing of negotiable common ground or due process. This would explain the alternative ‘redundancy’ reading of L*H*L-L% not only, with Sag & Liberman, by surprise at the addressee failing to know the obvious, but by extraordinary means now adopted to put it across.

¹⁰This claim rests on the extra-syntactic status accorded to intonation in graphocentric linguistic theory and on delicate argumentation about pro-forms, e.g. free uninflected *welch*, which, like English *what a* or free Italian *che*, is restricted to Exclamatives.

HEURISTIC: An exclamative utterance is, *prima facie*, any utterance whose best rendering in written English terminates with an exclamation mark and which is not an ordinary imperative or bare proper name vocative.

This rule¹¹ has ‘!’ stand for the unanalyzed prosody of Claim 4. In writing an English reference grammar of a newly discovered language, it is the heuristic one should presumably live by. One’s treatment of the heuristic is reflected in a crucial taxonomic decision. Exclamative qua speech act could be defined restrictively in terms of putative pragma-semantic features extracted from the core English cases. This would, for one, rule out interjection (1.a) for lack of compositionally recoverable propositional content, and (1.b) for lack of pro-form handles on presuppositionality. If intonation had first-class citizenship in linguistic analysis, the restrictive definition would be less attractive. Since it has not, there is an opposite bias. Our policy will be to let the mode-ambiguous written exclamation mark stand proxy for intonation. Even so, one reflective intuition that attaches to the symbol, namely that it marks the utterance as an ‘outburst’ of sorts, is consonant with the following

Infrequent but Uncontroversial Claim 5: The exclamative utterance is presented as being spontaneous, that is, involuntary or at any rate unpremeditated.¹²

We take it that most lay and professional observers would readily assent for prosodically typical exclamatives, excepting perhaps the very slow, falling intonation variants of English (Section 4.7). In return, many would diagnose a want of theoretical articulation. However, there is a link to Claim 3, if one assumes, consistently with folk psychology and juridical practice, that emotion is in complementary distribution with premeditation. Finally, there is a claim which many might agree with and which proponents of Claim 2 will see as being verified by it:

Claim 6: The exclamative utterance is non-assertoric.

Sadock & Zwicky (1985:162), as noted by Michaelis, express essentially this claim by saying that the exclamation is “expressive” in emphasizing speaker’s “emotional reaction” to a fact, while a declarative emphasizes the speaker’s “intellectual appraisal” that the proposition is true.

Our present goal is to specify a speech act type of Exclamative in terms that are in principle independent of both morpho-syntactic and prosodic form. Such an objective requires—by definition—that linguistic expressions receive denotata in structures or processes which have some credible claim to independent, extra-linguistic motivation, e.g. in the psychological and social science of cognition and action. Analyses of pro-form exclamatives engage constructions whose nearest non-exclamative

¹¹Bacha (2000) reports unhedged variants from French school grammars. Bolinger (1989:249) would agree with them. Section 4.8 below offers a proposal for the problematic case of syntactic declaratives.

¹²It presents itself as “wrested” from the speaker (Ducrot 1984:152) and thereby testifies to the authenticity of whatever feeling it conveys.

neighbours already have a rich semantic theory which appears favourable to a presuppositional analysis. The downside is a corresponding restriction of explanatory ambit. Many languages do not use either pro-form device for their translation correlates of English exclamatives and others do not do so exclusively (see exx. 1).

Accordingly, we look for structure which engages specifics of the prototype case favoured by recent taxonomy, but which has greater generality. The central construct of the analysis is ‘expectation’. This notion, in turn, is predicated on the concept of a partition of a space of possibilities into disjoint cells of alternatives. But the concept of a partition is also what underlies the oldest (and we think best) formal semantics for questions (Hamblin 1958), which is indeed abstracted from the richer decision-theoretic notion.¹³

This will account for the frequent association of exclamative and interrogative-like structures, but will also extend naturally to other exclamative forms. On this basis we propose a context-dynamic semantics and pragmatics for exclamatives as instances of non-assertoric communication. To establish its specificity, we contrast an explication of assertion. For question-related exclamatives some nontrivial compositionality will thus be retained, as it is in rather different terms in Z&P (2003). Compositionality in the sense that shared morpho-syntactic features presage shared semantic features will then, specifically via the notion of expectation, also engage typologically quite different construction forms.

We also hypothesize that a distinctive feature of Exclamative is that it bypasses the due process of negotiation of common ground. We will argue that it does so in a way which differs from the use of presupposing, as familiar from non-exclamatory constructions. The two pragma-semantic features, roughly speaking psychological and sociological, will be shown to articulate so as to yield a cluster of extralinguistic effects and preconditions which, in turn, warrant being collected under the label of an Exclamative speech act.

In accepting for the linguistic analysis the heuristic principle of typology, ‘like form presages similar function, within a given language’, we do not try and situate our approach in advance on the doctrinal gradient between a ‘compositional’ (Montague 1974) and a ‘constructional’ (Fillmore and Kay 1999) approach to meaning. We prefer to let the analysis do this by ostension.

Our theoretical framework is Decision-Theoretic Semantics (Merin 1994, 1999, 2003), which is a conservative extension of classical and modal logical dynamic semantics. The application to exclamatives builds on several aspects of M (2001) and Z&P (2003), and disagrees with others. One thesis common to both that we disagree with is that ‘presupposition’ as generally defined and presumed in the literature is an essential feature of Exclamative. The thesis, at least when supported by ‘presupposition accomodation’, is indeed plausible for most uses of *how-* and *what(-a)-*exclamatives, but hardly so for expression forms that lack independent motivation for presuppositionality. Presuppositionality of Exclamatives would by most

¹³D’Avis (2001) and in greater generality Z&P (2003) respectively adopted and adapted for exclamative semantics a question semantics due to Karttunen (1977), based on a 1970s proposal by Hamblin.

lights properly entail non-assertoricity, an act-feature diagnosed e.g. by Ducrot (1984) and Sadock & Zwicky (1985). We believe that it is this latter, negative property which is wanted for the general class of Exclamatives. We explicate its requisite instance positively by modifying the presupposition thesis in two ways. We generalize the notion of presupposition to an independently motivated category of ‘probabilistic presupposition’ (PPR or ‘prejudice’; see Merin 2003) which is in a mathematically specifiable, relative sense non-propositional. We then replace ostensible ‘common ground’ by a more complex site of communication. The account can thus be decomposed into a pair of proposals:

- PROPOSAL ‘WHAT’: What is expressed by exclamations, with more or less explicit reference to entities that occasion it, is a drastic, sudden deviation from *expectation*. Expectation is to be understood as in contemporary decision theory: as a mental or behaviourally dispositional attitude comprising, in the general case, both doxastic (belief-related) and boulomaic (desire-related) components that can trade off against each other. The expectation change is implemented as a transformation of a probability or value distribution over a partition into distinct ‘cells’ of a space of possibilities. The transformation is in general neither assertoric nor presuppositional as familiarly defined.

An utterance type, we take it, must have some expectable type of effect on the hearer. Assertions get people to believe things, in the first place. Demands get them to do things. Questions typically invite assertions, call for admissions, or elicit statements. The exclamation, we take it, is intended to induce in the hearer an attitudinal orientation change that mirrors a change ostensibly undergone by the speaker.¹⁴ However, the way it does so differs greatly from how an assertion would operate under the ‘I am convinced, and you should be too’ model of assertion of which Stalnaker (1974) is an instance.

- PROPOSAL ‘HOW’: 1. Exclamatives ostensibly bypass the domain of argumentative, incentive-type reasons which is associated with the Declarative, Interrogative, and also Directive speech act types. 2. Put with more theoretical commitment: they bypass, in the first instance, a negotiable joint commitment slate on which evidential assertoric or more generally incentive-based, imperatival discourse is predicated. Instead they work as ostensible media of direct causation. They purport to transmit a change of mind or heart undergone by the speaker to induce directly a similar change in the hearer.¹⁵ 3. They do not, ostensibly, express a proposition—at any rate not of the kind that would be the object of an assertion or presupposition as usually conceived.

¹⁴In respect of the mirror-type parallelism, which distinguishes them from imperatives, exclamatives instantiate a quality by which Stevenson (1937) characterized the putatively ‘emotive’ nature of terms such as *good*, whose use in *This is good* he roughly glossed ‘I approve, approve so too’. Generalize appropriately to other attitudes or attitude changes, including surprise.

¹⁵As a heuristic for the relevant distinction between causes and reasons, the following from an unpublished paper, ‘On Coming’, by one of us (A.M.) might be found helpful. Compare (a) *Kim made Sandy come* and (b) *Kim {forced/persuaded} Sandy to come*. It is easy to get the colloquial psychophysiological reading for (a); rather more difficult, and requisite of unusual scenarios, for either variant of (b). *Laugh* or *sneeze* pattern somewhat like psychophysiological *come*, aspects

The truth of informal sub-proposal 1 is implied by extant accounts which observe exclaimatives' reluctance to be followed by direct questioning, denial, or argumentative support.

Proposals 'What' and 'How' draw on the concept of 'probability kinematics on a partition' of the space of epistemic possibilities. This was introduced by Jeffrey (1965) *inter alia* to model the impact on beliefs and desires of perceived eventualities that defy descriptive effability.

2. Previous work

We start with brief remarks on speech act taxonomy. We then focus on the two most elaborate of recent linguistic accounts of exclaimatives, Michaelis (2001) and Zanuttini & Portner (2003), which both draw proximally on Grimshaw (1979) and thence on Elliott (1974). For each we add construals marked as such that minimize the news value, if any, of our own proposal, but which let remaining differences stand out clearly.

2.1 Neo-Austinian Speech Act Theory

In line with Austin (1962), Searle (1969, 1975) associates act types initially with performative use of *verba dicendi*. He then boils down what could be an over-rich taxonomy of act types, a.k.a. 'illocutionary forces', to five major types which are also independently specified by various attitudinal and sociological conditions on felicitous usage. They are [1] assertoric "assertives", [2] broadly imperatival "directives", [3] promissory "commissives", [4] a category of "expressives" whose paradigm examples are thanks, congratulation, apology, condolence, deploring, and welcoming, and [5] a category of "declarations" reserved for hirings, resignations, baptisms etc. Central to his act pragmatics is a classification by "direction of fit". Type-1 utterances have 'words-to-world' fit, type-2 and type-3 have 'world-to-word' fit, type-4 have neither, and type-5 have both. There is no Exclamative type, nor, as Sadock & Zwicky have rightly found strange, a major Interrogative type; but Vanderveken (1990-91: I,127), a sometime co-author of Searle's on acts, claims that the "expressive" act type is "realized syntactically in English in the type of 'exclamatory sentences'". His examples, e.g. *How glad I am that you have come!*, are exclaimatives under any current linguistic account. Instances are, however, restricted to expressions of gladness and sadness and the description is lean. Searle's range of expressive acts are indeed readily performed by means of declarative sen-

of which that can be more or less evident are indeed designated in formal register by an obsolete synonym of *exclaim*. What a person is forced to do or persuaded to do is an act of theirs, and in this sense performed either voluntarily or, when performed under duress, properly against their prior will. By contrast, what someone is made to do or experience need be neither voluntary nor against their will. The issue of will need not ostensibly arise at that point; though, of course, it can arise once imputable best interests of interactants are being considered.

tences. Unlike exclamatives, however, these expressions can be conditionalized, e.g. *If <condition>, I apologize*. Hence type 4 will not capture Exclamative, if it exists.

Kaplan (1997) has a sparser proposal for expressives which focuses on interjections *Ouch!*, and *Oops!* alongside value-loaded epithets such as obverses of *the darling*. This proposal is essentially an instance of Searle's general 'sincerity condition' on speech acts as Searle himself specifies it for expressives or for expressive components of sub-phrasal expressions. Use is felicitous iff a certain description of the context of situation (e.g. 'speaker experiences a pain', 'speaker has observed a minor mishap') is true, which here also implies that it is believed true by the speaker.¹⁶ This kind of proposal for articulating non-declaratives with truth conditions would apply to any utterance whose meaning can be paraphrased, but leaves open entirely what, save for compression, distinguishes *Oops!* from *I've just observed a minor mishap*.

How, then, does the expressive differ from the descriptive correlate? Cruse (2000: 271ff.) observes that *Ouch!* cannot be challenged with a denial such as *That's a lie. I just gave you a double dose of Novocain*, as one could challenge *I just felt a sudden sharp pain*, if somewhat presumptuously. Potts (2003: 2) adds that "expressives, like performatives, do not offer content for inclusion into the common ground so much as inflict content upon it." Reluctance to engage syntagmatically in argumentative relations also characterizes presuppositions (Ducrot 1968, 1972; Merin 1999, 2003). However, Potts notes from the literature that embedded expressives of the epithet variety penetrate 'plugs', i.e. matrix predicates that are known to neutralize potential presuppositions. The 'plug' *believe* in *Kim believes that Sandy regrets that Lee came* makes imputation to the speaker of the belief 'Lee came' non-mandatory. By contrast, Potts would argue, *Kim believes that Sandy regrets that Lee is an <epithet>* cannot fail to impute to the speaker the sentiments that warrant application of the epithet to Lee. Accordingly, Potts treats expressive content as a 'conventional implicature'. But this taxon is simply the residual catch-all of the currently received theory of meaning. A good way, we think, to interpret this residue when a substrate for its projection properties is sought, will be via the theory of expectation and probabilistic presuppositions (Merin 2003; and see Section 3.4 below).

What does this imply for Exclamative? Exclamatives' resistance to entering into argumentative relations is well known (Elliott 1974, Grimshaw 1979, Ducrot 1984). They are not easily challenged, yet at least one of *You are just playacting* or *You are exaggerating* or *You can't be serious* could introduce a challenge of non-interjective exclamations such as *How cold it is!*, supported next by suitable reasons, e.g. appeal to the thermometer. Exclamatives thus look presuppositional in view of presuppositions' inertia to denial and (Ducrot 1972) other direct argument. Note, however, that the blocking, suspension or cancellation criteria by which presuppositions are

¹⁶Michaelis (2001:1038) judges that expressive speech acts other than, say, apologies, could not be readily analyzed in terms of preparatory, essential, and sincerity conditions. We agree inasmuch as 'readily' would imply that they, specifically Exclamatives, are speech acts like all others. Their essential condition seems to be not simply, as Michaelis holds, that they express surprise, but rather that they are, in the sense suggested above and to be explicated below, a non-act altogether.

traditionally diagnosed (see e.g. Gazdar 1979; Merin 2003) do not apply to them. The residual category of ‘conventional implicature’ would thus more readily accommodate the meaning of exclaiming, but then the task is to give that category a positive specification which is as intelligible as that of assertion and presupposition.

2.2 Michaelis (2001) and Grimshaw’s Presupposition Thesis

Michaelis (drawing on Michaelis & Lambrecht 1996a,b) addresses exclamatives as a ‘construction type’, i.e. a collection of morphological, syntactic, semantic and pragmatic features. We defer discussion of her typology of expressive features to Section 5. Her meaning analysis is illustrated with English examples and we discuss it now. Exclamatives are said to have the following semantico-pragmatic features (Michaelis 2001:1041): (a) They presuppose an “open proposition” with a degree as the variable; (b) they express, and in effect “amount to” assertions of, a commitment to a particular scalar “extent” of the variable; (c) they express an affective stance towards the scalar extent; (d) they rely on person deixis (the default judge of extent and affectivity being the speaker); (e) they presuppose identifiability of the referent of whom the scalar property is predicated.

On the view espoused, “[n]ewsreporting utterances (like *They dismissed the Paula Jones case!*) do not qualify as exclamations”: they do convey the affective stance of surprise, but lack presupposition and scalarity (Michaelis 2001:1040). Presumably *She’s beautiful!* or *She’s Nepalese!* would fail at least on the first negative count.

While features (a)—(e) appear to fit many instances of pro-form exclamatives, we find that (a) and (b), which develop Grimshaw’s most characteristic thesis, want modification. We first show that exclamatives alleged to be presuppositional need not generally be so in actual fact. Michaelis’s paradigmatic worked example is

(2) It’s so hot! (Michaelis 2001: 1040)

A near-equivalent of (2), differing at most in register, would be *How hot it is!* (recall Elliott 1974). Given the prominence of *Wh*-exclamatives in English, we take it that the argument for (2) applies equally to this variant and would extend e.g. to *How hot the water is!* Now, exclamation (2) is said to “denote” and “lexically encode” the proposition

(3) It’s hot to a particular degree.

Michaelis writes, as one of the two core parts of her analysis:

“Exclamatives, unlike declaratives, presuppose that the proposition expressed is mutually known by speaker and hearer. The presupposed proposition is one which involves a *scalar degree*. The degree itself is not mutually presupposed; the speaker purports to know it, but assumes that the hearer does not, since the speaker’s purpose in exclaiming is to inform the hearer that the degree in question is extreme. Thus, the propositions which are presupposed in exclamative utterances can be represented as open propositions like

(4) It is hot to x degree.

The presupposed status of this open proposition is reflected in use conditions. A speaker could use [(2)] when the general ambient temperature is mutually known to be warm. A speaker would not be inclined to use [(2)] to report on the weather if neither the speaker nor the hearer know whether it is cold, hot or temperate outside.” (Michaelis 2001: 1040c2; our renumbering of exx.)

That (4) is presupposed by (2) is a central claim. Michaelis indeed offers the irreplaceability of anaphoric degree adverbs like *so* by *very* as evidence “that the scalar proposition expressed in the exclamation is presupposed” (Michaelis 2001: 1041c1).

Claim (a) leaves much room for interpretation. For preliminary analysis, logicians’ terminology is useful. In predicate logic, a closed sentence, say, Ra , can be used to assert that individual a has property R . It will intensionally denote a proposition and can receive a truth value. An open sentence, e.g. Rx , has a free variable x . As such it cannot have a truth value and does not denote a proposition. Philosophers have long thought of Wh-questions as open sentences, but in the semantic tradition of Stalnaker (1974), what can be presupposed are only propositions, not linguistic objects. (What could be presupposed is the proposition that a certain sentence has been uttered.) The problem is resolved by Z&P who construe Michaelis to be claiming that the existential closure of the open sentence is presupposed. For Rx this would be $\exists x[Rx]$, for (2) it will be

(5) $\exists x$ [It is hot to x degree].

Obviously, ‘It is hot to x degree’, is not intended to mean ‘The temperature is x ’. Again in semi-English, (5) will rather disambiguate to $\exists x$ [It is hot, and to degree x], which is logically equivalent to

(6) It is hot.

This is indeed what Grimshaw (1979) would propose as being presupposed by the more or less synonymous variant *How hot it is!*. Now, the usual definition of something being presupposed is that it is ostensible mutual knowledge [MK] (Michaelis’s usage, give or take ‘ostensible’) or ostensible common knowledge.¹⁷ On such a basis, Michaelis’s point (b) unfolds as follows: “The exclamation counts as an assertion that the degree in question is higher than the speaker would generally expect.” (p. 1041c1). For example (2) this is logically independent of (6) and the claim, dub it (a/5), that (6) is presupposed will not be redundant thus. However, the hedging phrase “counts as” leaves open just how the exclamative is to do what it does. The framework of assertion is at best mediately engaged.

¹⁷Formal epistemology somewhat unhappily assigns labels ‘mutual knowledge’ (MK) for “each knows” and the less suggestive label ‘common knowledge’ (CK), for “each knows, and knows that each knows, etc.”; see Binmore (1992). For textual cohesion we mostly use ‘MK’ to mean ‘CK’, as in ‘common ground’, and conjecture that Michaelis would tend likewise. Our critique will apply to either interpretation, and reading ‘MK’ as ‘MK and approximately CK’ is usually safe.

We now show that (6) need not be presupposed in Stalnaker’s MK sense. Michaelis notes that (2) COULD be used “when the general ambient temperature is mutually known to be WARM” (p. 1040c2, our emphasis). We agree. A rationale-of-sorts for compatibility with construal (a/5) might be a claim (not Michaelis’s) that ‘hot’ entails ‘warm’. Michaelis also notes that (2) would be infelicitous if NEITHER participant knew that the ambient was HOT. This fact is predicted by (a/5), but is non-critical. The speaker will always know (6) by utterance time, even if (6) is asserted or entailed, not presupposed. The critical MK-prediction of (a/5) is: (2) is infelicitous whenever NOT BOTH of speaker and hearer already know (6). Note now that the ‘ambient’ scenario has an implicit psychophysical feature which precludes falsification of this crucial prediction. The physical ambient engulfs everyone in hearing distance. If the speaker implicitly knows its felt temperature, so does the hearer. But, as we saw, the speaker must know. To control for thought-experimental artefact, consider situations that might elicit (2) as a contextual equivalent to *It’s so hot in here!* or *How hot the water is!* Imagine yourself entering the first, dry room of a Roman steam bath suite or dipping your foot into a bathtub. Suppose also that you and your hearer-to-be were expecting the room (or tub) to be LUKEWARM. Your exclamation of (2), directed at someone within hearing, though beyond heat-sensing distance, will not be infelicitous in these cases either. Being lukewarm is incompatible with being hot, both intuitively and by a standard test: *It’s lukewarm, indeed {warm/*hot}*. Thus, at utterance time, the hearer need not have expected the entity exclaimed over to be hot, let alone have known so, as (a/5) would require.

On the other hand, (2) empirically imposes limits on the extent of counterexpectation. Suppose we had both known one another to be near-enough-certain that the dipping pool in the Roman bath would be freezing cold. One of us dips their foot, finds the water to be hot, and exclaims something. Exclamations (2) or *How hot {it/the water} is!* would be infelicitous. What would be wanted, instead, is plain *It’s hot!* or *The water’s HOT!* Neither is a pro-form exclamative, even if each will intuitively and prosodically be an exclamation.

Thus, felicity of (2) does not require (6) to be presupposed. What seems required is a serious possibility that both participants had assigned non-zero, indeed non-negligible probability to the relevant entity being hot. This should be precluded by their assuming it to be freezing cold. One might next hypothesize that the possibility is required for ‘presupposition accomodation’, but Section 2.3 will argue that accomodation cannot always work. Suppose, then, that we do not rely on accomodation and adopt Michaelis’s realism about MK. Then the description of utterance conditions suggests that, if there is anything being presupposed in this sense, it will be something rather more complex than a simple proposition. The concept of a ‘probabilistic presupposition’ (Section 3.2) will explicate this idea and thereby develop Michaelis’s original intuitive notion of presupposing an “open proposition”.

What also speaks against a presupposition (6) is the usual stress placement both for the *allegro* tempo Rise-Fall utterance of (2), *It’s so HOT!* and the *adagio* Falling version *It’s S O H O T!* For (6) to be marked reliably as presupposed—and here one wants to avoid artefact from the ambient scenario which engulfs speaker and hearer—

we should want *It's so hot*, with *hot* distressed, followed by a deictic pointing—at any rate in assertoric discourse. On the other hand, *It's so HOT*, now with a final Rise, would embed into a kataphoric resultative construction *It's so hot, I'm almost fainting* (cp. Michaelis 2001:1041 for a clause-inverted example). If this were the paradigm for free *so/such*-exclamatives, the ‘openness’ of the proposition would really come into its own. We should say: x is the value of a function ξ such that the probability of fainting is in turn monotone increasing in the value of ξ . For free exclamative (2), a vaguely open-ended tacit disjunction of possible consequences could take the place of the result clause, or else the very fact and mode of uttering (2) could. One or the other interpretive option would need filling in for prosody to match closely enough with a claim that (6) is presupposed.

2.3 Interlude: limits to presupposition and its accomodation

Ex. (2) may be seen to invite a construal in which (6) is ‘accomodated’ (Lewis 1979) as a presupposition. Even if it was not actually mutual knowledge, the speaker credibly pretends (Stalnaker 1974) that it was. An accomodated proposition is treated as having become CG at a discourse time (d-time) $t-k$ corresponding to a physical time (p-time) $t-k$ when in fact it had not been as much as mooted until the utterance p-time, t . Linguistic presuppositions can thereby introduce what is in fact new information. Some uses of (α) *We regret that the bar is closed* will work this way. The fact of closure is to be taken for granted, and with it the fact that the speaker’s hands are bound, by adverse forces as the assertion specifies.

However, even transparent pretense needs some shred of credibility. Hence, if people are being told something by means of an accomodated presupposition, there should in principle be the possibility that the accomodated part has already become hearer’s knowledge at some p-time $t-k$ (Merin 2003). To verify this for assertoric discourse, compare (α) to (β), *We regret the bar is closed*. Only (β) would be felicitous if the bar had been closed this very instant; (α) requires that there should have been time, in principle, for someone to tell the addressees or for them to have found out. By the test of felicitous preservation under negation, (β) is non-presuppositional: *We don't regret {that/* \emptyset } the bar is closed*. Similarly, a traveller’s monosentential inquiry *Where is the station master's office (please)?* must have the definite NP’s existence presupposition accomodated. But clearly, there was time for any proper addressee to learn of such existence. To ask our non-resident travel companion, we must subjunctivize *is* to *would...be* and thereby hedge.

We now construct for a Wh-exclamative a scenario under which the hearer cannot know the allegedly presupposed content and the speaker cannot thus credibly impute MK.

- (7) [I look on the street outside, through the closed, soundproofed window. You are in bed, with the blanket drawn over your head. A Mercedes passes by. I utter:] *What a beautiful Mercedes!*

The utterance is felicitous, yet neither there being a Mercedes, let alone a beautiful one can credibly be construed as being already common ground (i.e. MK) among

speaker and addressee. There are not even grounds for assuming a shared epistemic ‘more-likely-than-not’ type expectation of a Mercedes driving by. In (2), by contrast, such an expectation of ‘hot’ might yet appear to be accomodable, provided there was an actual shared expectation at least for ‘lukewarm’, perhaps under a liberal margin for sensory memory error. Yet the error margin rationale already suggests that something stronger, namely (6) or knowledge thereof, cannot be accomodated. Intricate scenarios for (2) that positively preclude prior knowledge are suggested by analogy to the design of (7).

There is a rationale for having constraints on accomodation which are stronger than avoiding contradiction of what is MK. Presupposing is not a mere temporal, but also a micro-political process, as shown by the juridical textbook example, *Have you stopped beating your spouse?*. Speakers should not simply be able to take for granted what ought to be established by evidence or by reasons for compliance. Whatever the conditions, a pretense of prior asserting or directing and assent allows for a pretense that they have been met (see Merin 1999, 2003).

One may object now that such a rationale extends at most to Declaratives, Directives, and Interrogatives,¹⁸ and that it need not apply to Exclamatives. However, this response to (4) and to earlier examples makes the very point to be made: that one is no longer dealing with presupposition and its accomodation as familiarly explicated. The issue is not simply terminological. One could define ‘presupposition’ liberally enough to cover Exclamative. However, what really matters is whether or not there are specifiable differences within the broad concept of non-assertoricity, of which presuppositionality is, by definition, a special case. We think there are, and that they correlate with phenomenological differences in use-conditions and in distribution of word strings and prosodic patterns.

Limits to arguments for presuppositionality also appear in embedding contexts which were seminal in motivating Grimshaw’s thesis for Wh-exclamatives. Consider

- (8) a. I {know/forget/discovered} that they should have come.
 b. I {am amazed/am surprised/can’t believe} that they should {have come/ be so late}.
 c. I {am amazed/am surprised/can’t believe} that they {came/are so late}.

It is impossible for *should* to have a subjunctive reading in (8a); it is impossible for it not to have it in any of (8b). Indeed there seems to be a preference for (8b) over (8c) at least in English dialects or registers that still have subjunctive usage (cp. Kiparsky & Kiparsky 1970:[346f]). The (8a) verbs are our benchmarks for factivity, the (8b) verbs are ‘emotive factives’, along with *regret*, which also subjunctivizes. Whatever further reasons there might be for emotives to subjunctivize, the subjunctive introduces the possibility of the speaker reacting to a report or perception which might turn out to be non-veridical. If so, the presuppositions ‘They {came/have come}’ or ‘They are late’ will be hedged in (8b). Compare now *That they should {have come (at all)/be so late}!* and *That they {came {?at all/*∅}/??are so late}!*.

¹⁸ *Have you seen my Mercedes?* can elicit a rude retort *Do you HAVE a Mercedes?*. A response, *Is there a Mercedes?*, to (7) would be comparatively odd.

For NDEs and even for adverbial DEs, subjunctive hedging is possible or even the rule in free forms, as it is in their indirect correlates.

2.4 Zanuttini & Portner (2003): Domain Widening

Zanuttini & Portner [Z&P] offer the most technically committed account of Exclamative semantics so far (see also Portner & Zanuttini 2000, Zanuttini & Portner 2000). Z&P claim to have derived the phenomenological properties of exclamatives from what they propose as a compositional semantic interpretation. In outline, there are four components to their claim, (our labels ZP1–ZP4 and interpretive synthesis) which is first made with respect to variants of wh-exclamatives and subsequently extended to Yes-No (YN) exclamatives.

- ZP1: Exclamative clauses $S = Q[Rx]$ which contain a variable-binding expression Q (WH or DET) denote a set $\llbracket S \rrbracket$ of propositions.
- ZP2: $\llbracket S \rrbracket$ is obtained by instantiating in the open clause Rx elements d of a set $D_2 = D_1 \cup D^+$ where D_1 is a given domain of quantification for x and D_2 is a ‘widened’ domain such that D^+ i.e. $D_2 - D_1$ is non-empty (explicating an idea credited to Obenauer 1994).
- ZP3: Each of the elements of $\llbracket S \rrbracket$ is presupposed true as common ground.¹⁹
- ZP4: The exclamative carries a “scalar conventional implicature” that $D_2 - D_1$ i.e. D^+ consists of extreme cases on some scale ‘ \prec ’ which orders D_2 .

ZP1 as stated is consistent with a partition semantics (as indeed is Grimshaw’s and Michaelis’s ‘open proposition’ proposal), although Z&P choose a different formulation and their actual proposal will indeed be incompatible at some point with a partition semantics. The interaction of ZP4 and ZP3 is taken to explain the phenomenological properties which are distinctive of exclamatory utterances. Why it should do this, remains unclear. ZP3, as Z&P (p. 51) rightly observe with Manfred Krifka, will distinguish the exclamation from each of question, assertion, and imperatival directive. However, it is a long shot to conclude that ‘widening’ the domain is the likely ‘sentential force’ of exclamatives, none of the other three forces being available. Indeed, already the novel notion ‘sentential force’ appears more independent of verifying or falsifying phenomenology than the locutionary, illocutionary and perlocutionary forces of Austin (1962). However, even if present, neither widening nor the co-presence of feature ZP4—a feature ubiquitous in theories of scalar

¹⁹There are strong indications that what is intended is that $\llbracket S \rrbracket$, which, as given, has truth-conditions $\forall x_{x \in D_2} [Rx]$, be split into logical conjuncts $S_{D_1} =_{df} \forall x_{x \in D_1} [Rx]$ and $S_{D^+} =_{df} \forall x_{x \in D^+} [Rx]$ such that S_{D_1} is presupposed before S_{D^+} is added/conjoined to the presupposition set, again as a presupposition. Without some such staged process, ‘widening’ would be epistemically otiose. Michaelis’s [M]’s equally dynamic theory will have truth of $\exists x_{x \in D_2} [Rx]$ presupposed and subsequently narrowed down to $\exists x_{x \in D^+} [Rx]$ by something that “counts as” an assertion. Worked examples differ, making substantive comparison difficult: M’s D_2 is of the ‘or’-type (temperatures), Z&P’s putative abstract or concrete WH-example is of the potential ‘and’ type (kinds of peppers eaten). Z&P’s YN example analysis is disjunctively underspecified. Our proposal will be robust under change of example type.

phenomena attending assertions, questions, and directives—would predict that Exclamatives are at least typically perceived as ‘emotive’ or ‘emphatic’. The examples given for absence of emotivity, of which surprise is a special case, are also open to objection. ‘Use up the data!’ and ‘Articulate!’ are maxims in theory choice which are no less important than Occam’s Razor. However, for the rest of this section we ignore this desideratum entirely and turn to Z&P’s formal semantic specification and principal worked examples.

Z&P consider Paduan Italian *Che roba che l magna!* (lit: ‘what stuff that he eats’), and thence the English translation *The things he eats!*. The relevant example universe here consists of varieties of pepper ordered by fieriness:

- (9) The things he eats! (Z&P 2003:50)
 D_1 (a given domain): <poblanos, serranos, jalapeños>
 D_2 (widened domain): < $D_1 \cup \{\text{habaneros [extra hot]}\}$ >

Poblanos and serranos, Z&P fill in, are commonly eaten, jalapeños occasionally. Habaneros are so hot, they often make people ill. The propositional content of (9) is in the first place identified as “He eats poblanos, serranos, jalapeños”. By ZP3 (our construal) it would be presupposed along with any extra proposition obtained under ZP2. In fact, Z&P now specify a more explicit syntax and semantics, treating each as a module.²⁰ They define two elements characteristic of exclamative sentences.

“ R_{widening} ” is the “element in the syntax to which the pragmatic operation of widening will apply” and it “has the semantics of a quantificational operator” (Zanuttini & Portner 2003: 50). The semantico-pragmatic specification attached (p. 52) is “WIDENING: For any clause S containing R_{widening} , widen the initial domain of quantification of R_{widening} , D_1 , to a new domain, D_2 , such that (i) $\llbracket S \rrbracket_{w,D_2,<} - \llbracket S \rrbracket_{w,D_1,<} \neq \emptyset$; (ii) $\forall x \forall y [x \in D_1 \& y \in (D_2 - D_1) \rightarrow x < y]$ ”. Here “<” is whatever order relation in terms of which extremity is intuitively diagnosed.

“ $R_{\text{factivity}}$ ” is “the representation of factivity in the syntax” and it introduces “a presupposition that the propositional content of the exclamative is true” (Z&P 2003: 51). Specifically: “FACTIVITY: For any clause S containing $R_{\text{factivity}}$ in addition to R_{widening} every $p \in \llbracket S \rrbracket_{w,D_2,<} - \llbracket S \rrbracket_{w,D_1,<}$ is presupposed to be true.”

The intent behind appeal to Widening and Factivity (abbreviate: R_W , R_F) seems to be captured by the paraphrase Z&P offer for (9) uttered in the above context:

- (10) He even eats the very spicy peppers.

Z&P (2003: 52) explain: “[T]he analysis [represents] the intuition that he eats any kind of pepper, and if there is any sort he doesn’t eat, it’s beyond even the widened domain D_2 and thus so far out that it’s not worth consideration.”

There are several problems with this account. R_W and R_F , unlike clauses ZP2 and ZP3 of our synthesis, imply nothing about the epistemic or speech act status of the proposition S_{D_1} conjoining all substitution instances of D_1 .²¹ What they jointly

²⁰Much of their paper is concerned with syntactic projection, which is an issue we cannot broach.

²¹In any semantics that would, with Z&P, appeal to Stalnaker’s account of assertion and presupposition, a set of propositions is believed, asserted or presupposed iff their conjunction is, which is a proposition.

imply is only that S_{D+} , which subsumes all substitution instances from $D_2 - D_1$, is presupposed. At one point (p. 50), S_{D_2} , i.e. S_{D_1} and S_{D+} is referred to as being ‘implicated’ by (9) (“implicates that he eats all kinds”). Our synthesized constraints ZP3 and ZP4 have filled this gap: all of S_{D_2} is presupposed, not just S_{D+} . The filling-in agrees with Z&P’s repeated intuitive glosses for (9). In presupposing S_{D_1} , (9) would also conform to (10) whose traditional anglophone account will have it presupposing S_{D_1} and asserting extremely ranked S_{D+} .²² By ZP3, and now conforming to R_F , (9) would differ from (10) in presupposing rather than asserting S_{D+} , along with presupposing S_{D_1} . We might thus call it an ‘all-old’ sentence. To see the need for some construal such as ZP3, suppose that only S_{D+} , not all of S_{D_2} , was presupposed. This would be inconsistent with Z&P’s paraphrase (10) and other glosses. Moreover, S_{D_1} , would be epistemically unrepresented; hence, rule R_W , of Domain Widening [DW], which does appeal to it, would be ill-defined. No specification is given of what “implicated” might mean for S_{D_1} , whereas the meaning of “presupposed” is made clear.

On the other hand, having S_{D_2} presupposed in one go would make DW otiose. The best construal of the intended theory would thus be that the “context change”, as Z&P refer to widening from D_1 to D_2 , reflects in a parallel change of propositional commitments. S_{D_1} is presupposed at some virtual time $t - 1$ prior to utterance time, and this presupposition is augmented by S_{D+} to $S := S_{D_2}$ at t , where t is a time just prior to physical utterance. Intuitions of meaning would thus be AMBICONTEXTUAL, as e.g. in the semantics of *also* (see Merin 1999:Sec. VI). This still leaves unresolved the epistemic status of the ordering on elements of $D := D_2$, which is identified residually as ‘conventional implicature’.

This temporally staged account of Exclamatives will be isomorphic to the basic semantics for *even*, once anaphoric elements have been instantiated. The only substantive difference which remains is that *even*’s sequence of presupposition and assertion is now pushed back into the past by one ostensible discourse-temporal stage. Comparing Section 2.2, what “amounts to” an assertion for Michaelis is here another presupposition. Suppose then, as seems plausible, that this is what Z&P’s theory is when one or two t ’s are crossed. At this point, we appeal to the argument of Secs. 2.2–2.3 against the presuppositionality thesis. In the present instance, we take it that (9) can be uttered felicitously even when the interlocutor knows of neither S_{D_1} nor $S_{D_2-D_1}$ whether it is true. Moreover, a context analogous to ex. (4) could be constructed in which the interlocutor cannot possibly know, so orderly accomodation is blocked. This objection is operationalized by a distributional fact. It explains with high specificity why (10) would often be infelicitous as a discourse substitute for (9), regardless of subsequent discourse. (10) would be fine only if there had been prior discourse leading up to it, e.g. *He eats poblanos, serranos, and jalapeños*, or if speaker and interlocutor had both seen ‘him’ munching peppers and if, finally, at least the speaker had seen him biting into a habanero. If ‘He eats

²²That *even*-utterances presuppose is well-motivated by their anaphoricity properties, as e.g. in *Kim walks. {a. She/b. Sandy} even talks*, which are attestable independently of whether one judges (falsely) that (b) implies that Sandy walks.

peppers' had already been stated or implied, (10) might also be fine following (11), which robust intuition will tell us must be true for (9) to be felicitous.

(11) He eats things that are not normally eaten.

We now explicate DW sufficiently to distinguish it from the traditional common sense alternative. We then show that Z&P's own informal descriptions provide evidence for the alternative, and thus against the DW hypothesis consisting of ZP2 and its background of ZP1, ZP3, and ZP4. (A formal explication is in Section 3). Abstracting from syntactically motivated interpretive intermediates, the composite of DW and Factivity can be redescribed as having two apparent components. First, there is a domain D_1 (here: kinds of peppers) on which one or more functions are defined. For example (9), there are two functions: call them f_1^* and f_1^\dagger . Function f_1^* assigns truth values to instances of the sentence schema ' d is a (kind of) thing he eats', for all $d \in D_1$. Function f_1^\dagger assigns degrees, here presumably of pungency, to each $d \in D_1$. Now D_1 is EXPANDED to D_2 , where $D_1 \subset D_2$. The functions f_1^* and f_1^\dagger are undefined on $D_2 - D_1$. They will be EXTENDED to functions f_2^* and f_2^\dagger , respectively. These continue to yield the same values on D_1 , i.e. $f_2^*(d) = f_1^*(d)$ and $f_2^\dagger(d) = f_1^\dagger(d)$ for $d \in D_1$, but also yield values on $D_2 - D_1$. The second component of DW is a specific pair of constraints on values taken, those for f_1^* and f_2^* being imposed by ' R_F '. In the example, f_1^* assigns 'True' for all $d \in D_1$ and f_1^\dagger assigns values in a range deemed normal. The extension f_2^* assigns 'True' also for all $d \in D_2 - D_1$ while and f_2^\dagger assigns pungency values in a range deemed abnormal or extreme to all $d \in D_2 - D_1$. From a mathematical point of view, talk of 'expansion'²³ is dispensable. D_2 could be given in some Platonic reservoir and all humanly descriptive work done simply by 'extension' (a standard mathematical term) of the appropriate partial function f_1^i to a total or at any rate more comprehensively defined function, f_2^i ($i = *, \dagger$).

Before domain expansion and/or function extension takes place, there is NO COMMITMENT as regards satisfaction of the predicate and grading of items in $D_2 - D_1$. Both are UNSPECIFIED, because f_1^* and f_1^\dagger are UNDEFINED on $D_2 - D_1$. There is no belief about them at all. After expansion and extension, the beliefs or commitments are as specified above. A variant of this scheme could be that D_2 is given right from the beginning along with f_2^\dagger , which represents some intimation about ordering, and that the only thing that changes is that f_1^* , which is undefined on $D_2 - D_1$, is replaced by f_2^* , which is defined. The first version is suggested by the name 'domain widening', the second version might motivate the distinct labelling of the ordering constraints as 'conventional implicature' rather than 'presupposition'.

Either way: what DW would require to live up to its name in Z&P's example is absence of any belief or even conjectural attitude for $S = \textit{He eats habaneros}$ at some real or ostensible time t_{-1} , and positive determinacy at a later stage, t , indeed the present, because R_F says that S is presupposed to be true. The crucial theoretical distinction, then, is between (i) 'THERE WOULD HAVE BEEN NOTHING

²³This is an ad hoc label, as suggestive and therefore useful as 'widening', only free of further commitments that might attach to 'widening'.

TO SAY’ (at t_{-1}) about whether he eats habaneros and (ii) ‘THE ANSWER WOULD HAVE BEEN NO’. DW as specified by R_W , R_F , and by textual glosses opts for (i). Hence its adoption is inconsistent with the more robust intuition of deviation from an expectation, glossed in (11), which implies that (ii) was operative. Under (ii), things turn out otherwise than they were deontically or aesthetically or epistemically expected to be. Under (i), i.e. DW, counter-expectation with respect to habaneros cannot arise, because there is no basis for expectation either way to start with. If, on the other hand, one opts for (ii), i.e. counterspecification, domain expansion would prima facie play no role in explaining what distinguishes Exclamatives from ordinary Declaratives. (We expand on this below.)

Z&P’s own stated intuitions for overt Wh-exclamatives concur with option (ii), and thus contradict what the DW argument would phenomenologically imply. Z&P first write of “widening” that it introduces an eventuality (e.g. something being of a certain degree) “beyond what was contemplated before” (p. 55) or other than what had been “considered a relevant possibility” (p. 56). These descriptions are still consistent with DW. However, Z&P continue, à propos a different, Wh-exclamative, *What a cool day it was in New Delhi yesterday ...* : “Learning that one’s expectations are not met is precisely what gives rise to a feeling of surprise” (p. 56). Their robustly replicable description of this example, intended to demote emotional reaction, in effect denies the explanatory pertinence of DW. What they correctly intuit is a speaker’s ostensible prior expectation to the contrary, rather than no ostensible prior expectation at all, as DW requires. If, contrary to the theoretical description, this is what is intended by ‘DW’, the label would become a misnomer for ‘counterexpectational’, a term synonymous with ‘surprising’.

Related problems also attend Z&P’s description of non-wh exclamatives. Z&P (2003: 53) address a variety related to Yes-No-questions (YNQs). The original data are Paduan *No ga-lo magnà tuto!*, and English positive and negative YNQ exclamatives *Did(n’t) he eat everything!*. (SBrE speakers might prefer: *Hasn’t he eaten {everything/the whole lot}!*.) Z&P suppose, correctly we think, that negative YNQs have exclamatory potential because they implicate that the affirmative answer is true. Similarly, the Paduan exclamative can be used to “implicate” that ‘he’ ate everything. Z&P note the absence of a “WH-operator” and maintain that this exclamation type “involves widening of the domain of events under discussion” from an empty domain D_1 , to domain D_2 , containing ‘he ate everything’ which, by R_F , is in turn stipulated to be “presupposed” (p. 54). They assert, however, that “[t]he proposal would work equally well if [a] the corresponding proposition set is empty with respect to D_1 or if [b] it is {‘he didn’t eat everything’}” (p. 53n21, our added labels [a], [b]).

The rationale for adding option [b] is not stated, but seems to be a claim made slightly earlier: that “a yes/no exclamative, like a yes/no question, denotes either a singleton set or the empty set” [of propositions] (p. 53 par. 3). But this disjunctive claim sits uneasily with another, yet earlier claim (p. 53 par. 2), that “the propositional content of a yes-no question *Did he eat everything?* is either {‘he ate everything’} or {‘he didn’t eat everything’}, depending on which is true”. This claim

conforms to Karttunen’s (1977) proposal for question semantics. And this semantics is what Z&P explicitly adopt for exclamatives on grounds of compositionality, supplemented with a claim that one of the answers is presupposed as being true, in the present YNQ case the affirmative. Option [a] would remove the basis for the compositionality claim. Option [b] is *prima facie* inconsistent with DW. What DW applied to sets of propositions would require is Option [a]. It would presumably engage a discourse situation in which the corresponding question had not even arisen. Thus, each of [a] and [b] yields a proposal for a semantics that is in more need of motivation to cohere with the DW and specific compositionality claims. What is wanted, then, is a theory which explicates, coherently and so as to articulate with the kindred interrogative form, the very robust reflective intuition that, up to a point just prior to the utterance, there was a counterexpectation of eating which turns into an emphatic suggestion of the opposite.

In attempted partial defence of the ‘domain expansion’ component of DW one might say that Exclamatives, to the extent that they express surprise, do validate a reflective intuition glossed by literal readings of *It had not entered my mind* or *This was the last thing I’d have thought about*. Like Z&P’s description “beyond what was contemplated” or the adjective *unthinkable*, the colloquial meaning of these glosses entails: ‘this was utterly improbable’. If, by contrast, the glosses are taken literally, they will correspond to notions such as ‘being out of consciousness’ whose importance was emphasized by Chafe (1972) and Lambrecht (1994) in the context of discourse processes reflected in the grammar of stress assignment and anaphora. DW, while unable to account for observed counter-expectationality of Exclamatives, might thus not be redundant. If so, one should postulate a process of (domain expansion and) function extension to counterspecification, and then a change to counter-counterspecification. The YNQ-exclamative account might then be repaired by replacing the disjunctive [a]/[b] claim, which leads to incoherence each way, by some analogous process explicating DW or a look-alike, ‘expansion’.²⁴

An argument for non-redundancy of DW must overcome a further obstacle. Ordinary declarative discourse as conceived of *apud* Karttunen (1976), Kamp (1981) and Heim (1982) proceeds by introduction of discourse referents and constraints on them (example: an indefinite NP, *a mouse*). This is a steady process of domain expansion and appropriate function extension. The obstacle could be surmounted if one could argue that Exclamatives, e.g. (*Eeek!*) *A mouse!*, make heavy weather of a process that is taken for granted in declarative discourse. The argument for DW would be strengthened if (i) Non-Exclamatives could be shown to make stronger demands on prior availability of contextual domains than do Exclamatives. It would be weakened if (ii) the contrary were to be shown. Suppose (i), for which (7) and perhaps ‘thetics’ (Sections 4.8, 5.2.3 below) would be evidence, but the original scenarios for (2) and (9) are not. One problem now is that such ‘all-new-ness’ is *prima facie* inconsistent with the ‘all-old’ (Z&P) or ‘some-old’ (Grimshaw, Michaelis) presuppositional account. Z&P’s theory, with *ts* crossed and augmented by a counterspecification step might avoid inconsistency, but would yet have to persuade reflective intuition that

²⁴For such a module added to the basic DTS proposal see p. 37 below

all-new news is really old news. For once the link of presupposition to an actual or virtual discourse past is severed, it has become something else. Indeed, our proposal will be for an escape from assertoricity, not by a virtual backward move, but by a virtual move ‘sideways’ in the ostensible ontology of context-dynamics.

In the remainder of this paper we also pursue the idea that change from counter-expectation is required. We do so in a form which takes account of data from Sections 2.2 and 2.3 suggesting that neither a trichotomy between discrete all-or-none features ‘expected’, ‘unexpected’, and ‘neither’, nor a dichotomy between any subset of them is what is really wanted.

3. Decision-Theoretic Semantics

Exclamative is in many ways negatively defined and sometimes avails itself in whole or fragment of constructions associated with other act types. Thus, any would-be theory of it must specify what it is to contrast with or draw on. We shall emphasize in what respects the proposal is a conservative extension of the influential semantico-pragmatic tradition of Grice (1989) and Stalnaker (1974).

3.1 Assertions and Questions: Pre-probabilistic

We begin with a standard account of assertions (Stalnaker 1974). A declarative sentence A denotes a proposition, $\llbracket A \rrbracket$, which is commonly interpreted as the set of possible worlds in each of which A is true. So $\llbracket A \rrbracket$ is a subset of a set (‘the’ set) Ω of logically possibles. Assertion of A constrains the epistemic Common Ground (CG) by eliminating the possibility set $\llbracket \neg A \rrbracket$ from what is joint conviction.²⁵

Decision-Theoretic Semantics (DTS; Merin 1994, 1999) will emphasize that the constraint on CG is not imposed automatically. An assertion is an epistemic CLAIM and it constrains CG only once it has been assented to in a tacit or vocal act of admission or CONCESSION. A denial of A would be a refusal to let A constrain CG, usually coupled with an assertion of $\neg A$; not an erasure of A from CG. As in all cases of negotiation, an incentive for conceding a claim is required in principle, here normally that the assertor be able to supply evidential backing if called upon.

For questions we follow the proposal that an interrogative sentence Q denotes the set Π_Q of mutually exclusive propositions which are respectively denoted by its full possible answers (Hamblin 1958; Lahiri 2002).²⁶ Π_Q is a ‘partition’ of Ω

²⁵This is easy when CG does not entail $\neg A$. For the contrary case, philosophical logic has many diverse proposals, none of them uncontroversial.

²⁶In principle, this and Karttunen’s account, based on a later proposal by Hamblin, are intertranslatable. Thus, a Karttunen YNQ $A?$ will effectively denote a set $\{A, \neg A\}$ of propositions when its true answer is not known. However, for Wh-questions, there will be differences if no further assumptions are made. Lahiri argues that even for embedded interrogatives, which motivated Karttunen’s semantics, the 1958 proposal does better. Hamblin’s 1958 question semantics is perspicuous and mirrors the traditional decision-theoretic concept of an ‘experiment’ a.k.a. ‘question to Nature’ minus the latter’s prior probability assignment to possible outcomes.

into ‘cells’, $\llbracket A_1 \rrbracket, \dots, \llbracket A_n \rrbracket$ of propositions, i.e. such that $\llbracket A_1 \rrbracket \cup \dots \cup \llbracket A_n \rrbracket = \Omega$ and $\llbracket A_i \rrbracket \cap \llbracket A_j \rrbracket = \emptyset$ when $i \neq j$. Example: Extend the denotation function $\llbracket \cdot \rrbracket$ to interrogatives. Then for a YNQ *Did Kim talk?* we have $\llbracket \text{Did Kim talk?} \rrbracket = \{\llbracket \text{Kim talked} \rrbracket, \llbracket \text{Kim didn't talk} \rrbracket\}$. The partition has 2 cells. In extended predicate logic symbols: $\llbracket Tk? \rrbracket = \{\llbracket Tk \rrbracket, \llbracket \neg Tk \rrbracket\}$.

For Wh-questions we exemplify with wh = ‘who’ for intuitability. Example: For *Who talked?*, the set of full possible answers (true or false) depends on the possible instances of ‘ x talked’, i.e. the domain D over which x ranges. Suppose $D = \{\text{Kim}, \text{Sandy}\} = \{k, s\}$ so that, e.g. Tk stands for *Kim talked*. Then $\llbracket \text{Who talked?} \rrbracket = \{\llbracket Tk \& Ts \rrbracket, \llbracket Tk \& \neg Ts \rrbracket, \llbracket \neg Tk \& Ts \rrbracket, \llbracket \neg Tk \& \neg Ts \rrbracket\}$, a 4-cell partition of Ω . Analogous things will hold for ‘what’ and fairly analogous things for ‘how’. Thus *What car(s) did she buy?* makes Π_Q a partition by car types. *How tall is she?* partitions by heights. *How did she get here?* partitions by modes of arrival. In each case a possible full answer is a possible assertion that does not leave indeterminate any of the combinatorial possibilities afforded by the clause-content of the question. Whether an incomplete answer, e.g. Tk , receives a ‘mention some’ interpretation which leaves unspecified the truth value of, say, Ts or whether a default rule of ‘mention all’ ampliates it to $Tk \& \neg Ts$ is farmed out to the pragmatics of situational needs.

Questions have a directive component in calling for an answer. But what, if anything, would be their immediate effect on CG? One might say that they impose their presupposition on CG. Thus *Did the king of France arrive?* or *Who invited the king of France?* would make the existence of such a king CG by accomodation, unless this was already CG or unless someone objects. Such a presupposition is intuitively entailed by each cell of Π_Q . But this yet fails to represent the partition structure. One way to do so is to augment CG to admit a conjunction of epistemic modal propositions (Hintikka 1962), in which an operator K_s has the properties of modal necessity, \square , such that $K_s(A)$ glosses ‘person s knows that A ’. Then $\neg K_s(\neg A)$ would gloss either ‘ s does not know $\neg A$ ’ or ‘for all s knows, A ’ or ‘ s thinks A possible’. Hence, $\neg K_s \neg$ would have the properties of modal possibility, \diamond . Thus for the YNQ ‘ $Tk?$ ’ a higher order proposition $\neg K(\neg Tk) \& \neg K(Tk)$ whose import is that each answer is an epistemic possibility would likewise be presupposed.²⁷ If the constraint is to be one on CG, as distinct from a private commitment, s would rewrite colloquially to ‘*we*’.

We model the effect of questions on CG by way of an epistemic probability model, which conservatively extends the simplest of such modal schemes. We recall formal definitions in Sec. 3.2, but note for intuitive motivation that epistemic $\diamond A$ behaves like epistemic ‘ A has non-zero credibility or probability’, write this $P(A) > 0$, while $\square A$ behaves like ‘ A is a certainty’, $P(A) = 1$. Probability theory is richer than modal logic, because it can also represent degrees of belief and relations of non-deductive evidential relevance.²⁸

²⁷This adapts Gazdar’s (1979) ‘clausal implicatures’ for *or*, in which $\diamond A$ is instantiated $\neg K_s \neg A$, ‘speaker does not know whether $\neg A$ ’.

²⁸In return, there is no simple interpretation for iterated single-mind epistemic modalities, e.g. $K_s(K_s(A))$, but these are not very intuitive at any time.

3.2 Probability, Assertions, and Presuppositions

We generalize ostensible CG to an ostensible ‘Common Prior’ probability or credibility assignment. CG is traditionally a set (equivalently: conjunction, intersection) of propositions that are shared certainties. By contrast, a probability function P is a mapping from a space \mathcal{F} of propositions²⁹ to the real number interval $[0,1]$. Formally: A (finitely additive [f.a.]) probability space is a triple (Ω, \mathcal{F}, P) where \mathcal{F} is a boolean algebra of subsets of a non-empty set Ω and $P : \mathcal{F} \rightarrow [0, 1]$ a function such that **(Ax.1)**: for any $A_i \in \mathcal{F}$, $P(\emptyset) = 0 \leq P(A_i) \leq 1$ and **(Ax.2)**: $P(A_1 \cup \dots \cup A_n) = P(A_1) + \dots + P(A_n)$ when the A_1, \dots, A_n are pairwise disjoint, i.e. when for all $i \neq j$ ($i, j = 1, \dots, n$) $A_i \cap A_j = \emptyset$. All laws of f.a. probability are derivable from **Ax.1** & **Ax.2**.³⁰

Thus, a contradiction, true in no world and hence denoted by \emptyset , is always fully disbelieved, and the tautology Ω , as **Ax.1** & **Ax.2** imply, always fully believed—by an ideally rational cognizer. Full belief in some A or epistemic certainty of A is represented by an assignment $P(A) = 1$. Full belief in $\neg A$ is represented by $P(A) = 0$. More generally, $P(\neg A) = 1 - P(A)$, and $P(A \cup B) = P(A) + P(B) - P(A \cap B)$. The probability of B given A , notated $P(B|A)$ is standardly defined to be $P(A \cap B)/P(A)$ and undefined when $P(A) = 0$. ‘Updating on A ’ refers to a sequence of belief states, $P_{\text{old}}, P_{\text{new}}$, such that $0 < P_{\text{old}}(A) < 1$ and (just) A is learned with certainty, so $P_{\text{new}}(A) = 1$. Updating is by ‘conditioning’ on A iff for all X in \mathcal{F} , $P_{\text{new}}(X) = P_{\text{old}}(X|A)$.³¹ Note that $P(A|A) = 1$ whenever $P(A) > 0$.

We thus explicate: an ASSERTION of A is a proposal to condition CP on A . Thus, let $P^j(\cdot)$ be the Common Prior (‘old’) and situate it at d-time t . When $P^j(\cdot)$ is conditioned on some A to become a ‘Common Posterior’ $P^{j+1}(\cdot) \equiv P^j(\cdot|A)$ at d-time $t + 1$ (‘new’), we have $P^{j+1}(A) = 1$.

Consistently extending Stalnaker’s theory, we say: A is a DETERMINISTIC PRESUPPOSITION (DPR) at an epistemic context P if and only if $P(A) = 1$.³² Thus, if A is asserted at discourse time t , the CP being P^j , and is ratified for adoption by the addressee, it will be a DPR at $t + 1$, i.e. $P^{j+1} = 1$. It is a theorem of probability calculus that, whenever $P(A) = 1$ or $P(A) = 0$, there cannot be a proposition B such that $P(A|B) \neq P(A)$. That DPRs receive probability 1 explains that presuppositions can be derogated only by relatively violent conversational means.

²⁹A space or ‘algebra’ \mathcal{F} of propositions is a set of subsets of Ω which includes, for any sets A, B in \mathcal{F} their complements ($\neg A, \dots$), unions ($A \cup B, \dots$), and intersections ($A \cap B, \dots$), hence also Ω and the empty set \emptyset .

³⁰See e.g. Feller (1957). Dropping ‘f.a.’ means allowing for infinite unions and sums with N-many A_i .

³¹This is, in turn, the basis for a standard explication of positive evidential relevance of A to B by the condition $P(B|A) > P(B)$: assuming A would raise credence in B . Analogously: negative relevance $P(B|A) < P(B)$ and irrelevance, $P(B|A) = P(B)$. Implicature phenomena, where intimation short of entailment is required, are an obvious application, but other phenomena, among them ‘accommodation’ (Section 2.3), can be seen to involve relevance constraints (Merin 1999:312; 2003). Appeal to probability is not parochial to the phenomena treated below.

³²Relating this to utterance presupposition: let $B =$ ‘Kim is not smoking now’, $A =$ ‘Kim was smoking’. Then *Kim has stopped smoking* asserts B (proposes $P_{\text{new}}(B) = 1$) and presupposes A ($P_{\text{old}}(A) = P_{\text{new}}(A) = 1$).

A constraint such as $P(A) > 0$, or $P(A) \geq 0.5$ or $P(A) = 0.5$, or $P(B|A) < P(B)$ will be called a PROBABILISTIC PRESUPPOSITION (PPR) or PREJUDICE at P .³³ *Ceteris paribus*, i.e. unless ‘entrenched’ by hard, lawlike constraints, a PPR can be changed by conditioning. We can think of a DPR as a special, improper case of a PPR, namely one where the probability assignment is extreme, 0 or 1. In this case (only), we can simply speak of the proposition A or $\neg A$ being presupposed, and in this sense of a PRESUPPOSITION in the familiar sense.³⁴

More generally: Let A_1, \dots, A_n be the cells of a partition Π of Ω . Then the list of probability values, $P(A_1), \dots, P(A_n)$, will be a ‘probability distribution’ over Π and thus $P(A_1) + \dots + P(A_n) = 1$. A distribution $P(A), P(\neg A)$ is the simplest case, Π being a 2-cell partition. As an example consider the partition $\{\llbracket Tk \rrbracket, \llbracket \neg Tk \rrbracket\}$ denoted by the YNQ $Tk?$ (= *Did Kim talk?*). One of infinitely many distributions over it is $P(\llbracket Tk \rrbracket) = 1, P(\llbracket \neg Tk \rrbracket) = 0$. If P stands for the Common Prior at a d-time t we should say that *Kim talked* is presupposed at t . If $P(\llbracket Tk \rrbracket) = 0, P(\llbracket \neg Tk \rrbracket) = 1$, then *Kim didn’t talk* is presupposed at t . For a real question $Tk?$ to be felicitous, we clearly require $0 < P(\llbracket Tk \rrbracket) < 1$, which also ensures $0 < P(\llbracket \neg Tk \rrbracket) < 1$. There is one prominent distribution, the ‘uniform’ or ‘flat’ Prior, $P(A_i) = P(A_j)$ for all $i, j = 1, \dots, n$, which privileges neither answer. Here it will be $P(\llbracket Tk \rrbracket) = P(\llbracket \neg Tk \rrbracket) = 0.5$. The flat prior maximizes ‘entropy’, $\sum_i P(A_i) \log[1/P(A_i)]$, and thereby expectation of information from an answer.³⁵ A rather more skewed, yet still non-extreme Prior might be $P(\llbracket Tk \rrbracket) = 0.9, P(\llbracket \neg Tk \rrbracket) = 0.1$. Note next that *Did Kim talk?* is perfectly felicitous when no-one but Kim is being considered. Thus, truth-conditionally, the answer Tk (‘Kim talked’) is equivalent to $\exists x[Tx]$ (‘Someone talked’) when the domain D over which $\exists x$ ranges is the singleton set $\{k\}, (\{Kim\})$. Similarly, then, $\neg Tk$ will be equivalent to $\neg \exists x[Tx]$ (‘No-one talked’). If so, a flat Prior over the partition will not impose a prejudice either way.

$\{ Tk ,$	$ \neg Tk \}$	(cf. ‘Did Kim talk?’)
0.1	0.9	‘skewed’ Prior
0.5	0.5	*‘flat/maxent’ Prior*

Someone talked No-one talked

A Prior skewed in favour of Tk , would impose such an existential prejudice, by way of a prejudice for Tk . (As of now we omit semantic double-brackets.) A constraint of this kind on the Common Prior P^j , say $P^j(Tk) = 0.7$ or $P^j(Tk) > P^j(\neg Tk)$ or $P^j(\exists x[Tx]) \geq 0.6$ will be an instance of a PPR of context j (= P^j). A PPR of the form $P^j(\exists x[Tx]) = 1$ or $P^j(Tk) = 1$ or $P^j(\exists x[Tx]) = 0$ would be tantamount to a deterministic presupposition (DPR) of j , respectively of $\exists x[Tx]$, Tk , and $\neg \exists x[Tx]$. Recall that a DPR is a special case of a PPR, one which obviates the need for epistemic qualifiers when spelling out what is presupposed.

³³‘Suspension’, as in *Kim has stopped smoking [B], if ever she did smoke [A]*, presumes a PPR, $0 < P_{old}(A) = P_{new}(A) < 1$. What is called ‘presupposition failure’ invariably engages the case $P_{old}(A) = P_{new}(A) = 0$, which bars accomodation to $P_{old}(A) = P_{new}(A) = 1$. Cp. *The present King of France is bald*.

³⁴‘Prejudice’ could refer to proper PPRs. Below we assume all PPRs proper.

³⁵This ‘maxent’ property holds for any finite partition ($n \geq 2$). Proof: Any textbook of information theory, e.g. Goldie & Pinch (1991:15).

We take it that the default Prior for ordinary YNQs is flat: YNQs have no prejudice either way. This would explain why ordinary YN-interrogatives are not a prominent source of exclamatives and why *whether*-clauses are unprejudiced and do not form exclamatives. The familiar positive bias of ‘negative YNQs’, as Z&P note, will explain their suitability as a source. The bias is explained in Sec. 4.6.

For the Wh-question *Who talked?* to be a real question, D must at least have 2 elements, in standard symbols: $\text{card}(D) \geq 2$. (Else we have an ‘arch’ use, as in WHO *didn’t eat her spinach?*) Under the partition theory, the partition, Π_{2^n} , for a non-numeral Wh-question has $2^{\text{card}(D)}$ cells, i.e. at the very least 4. Of these cells, exactly one corresponds to the answer ‘No-one’ or ‘Nothing’. Suppose now the default Prior is flat. Then the prior probability of $\neg\exists x[Tx]$ will be $1/2^{\text{card}(D)}$, while the probability of $\exists x[Tx]$ will be $1 - 1/2^{\text{card}(D)}$. For $n = \text{card}(D) = 2$, it will already be 0.75, increasing rapidly towards 1 the larger D is (for $n = 5$ it is already 0.97, for $n = 7$ it exceeds 0.99), but never quite reaching 1. Example:

{ Tk&Ts ,	Tk&-Ts ,	-Tk&Ts ,	-Tk&-Ts }	(cf. ‘Who talked?’)
0.25	0.25	0.25	0.25	*‘flat/maxent’ Prior*
-----Someone-talked----- No-one-talked				
			0.75	0.25

The qualitative argument will continue to hold for non-uniform Priors which are not heavily kinked at ‘no-one’ and populous domains (Kim, Sandy, ...). This will explain both the existential prejudices of non-*why* Wh-questions and the fact that they are mere prejudices, i.e. proper PPRs, rather than DPRs, which are, by the laws of probability, indefeasible. Discourse need not have established $\exists x[Tx]$ prior to *Wh-Tx?* being asked, in which case plain *Who?* or *Who was it that talked?* would be appropriate. To verify empirical defeasibility, consider *Who {offered/will offer} his heart for an immediate transplant?* Whatever momentary existential bias one might feel: it will fade as one lets world knowledge inform the speaker’s intent. Everyone knows that live individuals tend to wish to live and so need their heart. To recover strong existential prejudice we might have to think up unusual scenarios, e.g. people about to be killed by the authorities-that-be and being overcome either by altruism or promises of a last favour conditional upon informed consent.

The account for *who*-Qs extends directly to *what*-Qs, such as *What does she eat?* though here the sortal \bar{N} may afford greater scope for lexical and encyclopedic knowledge to serve as a statistical basis for skewed intersubjective priors. *How many*-questions induce $n + 1$ -cell partition Π_{n+1} for an answer set $0, 1, \dots, n$. With $n < 2$ they are infelicitous, save in ‘arch’ or sarcastic ‘rhetorical’ use. For $n \geq 2$, a flat Prior over Π_{n+1} will again induce an existential prejudice, but numerically less strong for $n \geq 2$ than one induced by the flat prior over Π_{2^n} . Many *How*-Qs and singular number *What*-Qs will also induce $n + 1$ -partitions, with answers ‘*no way*’ and ‘*none*’ clearly evidenced in ‘rhetorical’ question use.

3.3 Conditioning and Generalized Conditioning

Bayesian decision theory, named after an early pioneer of the subject, says: change your beliefs by conditioning on evidence. Conditioning on a proposition A amounts to (i) taking away all ‘probability mass’ from $\neg A$ and then (ii) redistributing it evenly over all of A . Step (i) is in line with the formal fact that $P(\neg A|A) = 0$. Step (ii) is in line with the formal fact that $P(A|A) = 1$.³⁶

Jeffrey (1965) now posed the following problem. Suppose you have an experience which changes your probability distribution over a salient partition Π without having one cell of Π acquire unit probability. If $\Pi = A_1, \dots, A_n$, what will be the new probabilities of propositions B that are not cells or disjunctions/set-unions of cells of Π ? There is an elegant rule for all those B whose new probabilities conditional on each cell A_i of Π stay invariant or ‘rigid’, i.e. for which $P_{\text{new}}(B|A_i) = P_{\text{old}}(B|A_i)$.³⁷ Jeffrey called such an update process ‘generalized conditioning’ (GCOND) since conditioning is the special case where one of the $P(A_i)$ goes to 1, and hence all others to 0. (Like conditioning, GCOND cannot alter probabilities 0 and 1.)

Jeffrey sees a need for GCOND whenever the cognizer’s perceptual experience might not afford a proposition to condition on. Example: one is looking at a darkish piece of cloth by candle-light and is changing one’s probabilities for whether it is red, green, or blue. Here ‘proposition’ means: something expressible by means of our (present) language, \mathcal{L} . If \mathcal{L} is a language of live communication, there are clear criteria of expressibility. By contrast probabilities representing our degrees of belief need not in general be expressible or conscious if our beliefs need simply reflect in our disposition to conduct.

These two theoretical observations are our lead. Under conditioning on A , the credibility of everything in the complement $\neg A$ of A goes to zero, and $P(A)$ goes to one. This is why conditioning goes well with assertion, for what we assert when uttering a declarative, A , is a proposition. Importantly, A may be simple enough to contain no hedges or other auto-epistemic terms that cloud or complicate the speaker’s implicit claim to be conveying objective realities. When our languages lack specific discretized means for specifying the shift in belief, i.e. when words must fail us altogether or lack requisite precision, one might have to resort to GCOND.

In Jeffrey’s typical case, it is Nature which confronts us with an experience that shifts the salient perceptual input beliefs in ways too subtle to be discretely expressible by simple or unambiguous sentences or indeed by any sentence. ‘It looked like THAT’ and a pointing will not generally do. Our thesis is that in the case of exclamations, the event exclaimed over is presented as being in some respect ineffable, perhaps ostensibly because it is too outlandish. More importantly though, apparent ineffability is now a rationale for changing the usual rules of orderly declar-

³⁶Always provided $P(A) > 0$. The even spreading rule implies that all propositions B which entail A , i.e. all B such that $B = A \& B$ (equivalently: all B whose disjunction is A), get a non-negative probability increment proportional to their prior probability. This is what dividing by $P(A)$ in $P(B|A) =_{df} P(A \& B)/P(A)$ represents, because $P(A) < 1$ when A is at all relevant.

³⁷For the simplest, 2-cell case $\Pi = \{A, \neg A\}$, the rule is $P_{\text{new}}(B) = P_{\text{old}}(B|A)P_{\text{new}}(A) + P_{\text{old}}(B|\neg A)P_{\text{new}}(\neg A)$.

ative communication. If, for any reason, whatever it is that is being exclaimed over is not assertible, its expression will by-pass the orderly procedure of conditioning. To be precise: there will be no proposition IN THE DOMAIN OF P which is to be conditioned on.

3.4 Expectation and ‘Conventional Implicature’

We now need to introduce one more tool. GCOND so far only envisages shifts in beliefs. However, it has been said that people exclaim not only over matters which are epistemically surprising, but also over events which otherwise deviate from a norm. Whether or not the claim holds up, Bayesian decision theory provides for it in its central notion, ‘expectation’, which, as in Dickens’s book title, ‘Great Expectations’, includes a component of desirability.

Expectation in the probability-theorist’s sense is expected value: the sum of possible values of some function, call it X , each value weighted by the probability of its realization. A function that has such weighting attached to it is called ‘random variable’ [r.v.]; see e.g. Feller (1957).³⁸ The domain of arguments of X will be possible worlds (or possible states of our world), ω in Ω . Example: Let values be the number of eyes on the face of a fair die. Let X be a roll of this die. If, say, world ω_5 turns out to be the actual world, then $X(\omega_5) = 5$. The expectation, $E(X)$, of X in terms of ‘eyes’ is $1/6 \cdot 1 + 1/6 \cdot 2 + 1/6 \cdot 3 + 1/6 \cdot 4 + 1/6 \cdot 5 + 1/6 \cdot 6 = 3.5$. Eyes could stand for dollars won. Where we can speak of gains and losses, decision theory will specify values to desirability values. Suppose desirability values equal to monetary values. Then an objectively and intersubjectively fair price for a roll would be \$3.50.

Note that the expectation operator, E , like a Fregean quantifier $\forall x$ or $\exists x$, BINDS A VARIABLE, standing for possible values x of the function X . Save when $P(\omega_i) = 1$ can be taken for granted for a specified $i \in \{1, \dots, 6\}$ or when $E(X) = 1$ or $E(X) = 6$ holds, $E(X)$ will not specify which side comes up. But it will always tell us more than $\exists i[i \text{ will come up: } i \in \{1, \dots, 6\}]$. To say $E(X) = 3.5$ is also to presume the die fair in terms of payoff for a roll, though whether or not such fairness is achieved by uniformity or clever loading remains unspecified. $E(X) = 3.5$ also implies that $P(\omega_i : i \in \{4, 5, 6\}) > 0$. $E(X) = 5.6$ already implies $P(\omega_6) > 0.5$, and as $E(X)$ approaches 6, $P(\omega_6)$ approaches 1. If there existed ‘scalar dice’, loaded to satisfy $P(\omega_{i+1}) < P(\omega_i)$, then, for any such die and P , we should compute that $E(X) < 3.5$ *ex ante*, i.e. prior to the roll or to receipt of any other E -relevant information. A ‘2-exponential scalar die’ satisfying $P(\omega_{i+1}) \approx P(\omega_i)/2$ would have $E(X) \approx 1.88$, *ex ante*. One can easily extrapolate for $n > 2$ and for dies with faces ‘0’, \dots , ‘5’.

Expectation can indeed be conditional on potential information. Thus, suppose you were to learn that $A =$ ‘an even number of eyes will come up’ is true. The conditional expectation, $E(X|A)$, of X given A , for a die presumed otherwise symmetric should be $1/3 \cdot 2 + 1/3 \cdot 4 + 1/3 \cdot 6 = 4$. The probability of eventuality $\neg A =_{df}$

³⁸We follow prevalent mathematical typographic usage. To remember that X is a function, rewrite it mentally as ξ . Read $X = a$ as $X(\omega) = a$ or $\xi(\omega) = a$ for some ω .

$\{‘1’, ‘3’, ‘5’\}$ has gone to zero, and is distributed evenly across $A =_{df} \{‘2’, ‘4’, ‘6’\}$. Note finally that when the possible values of some r.v. X are 0 and 1 and are interpreted as possible truth values, False and True, of a proposition, B , then $E(X)$ is the mathematical expectation of truth of B , i.e. its probability, $P(B)$. Probability is a special case of expectation in this technical sense. In the general case of decision making, pertinent non-probability values will usually be desirability or undesirability values, i.e. preferences representable by such values. A definite ‘riskless’ such value is another special case of an expectation, namely that of an X such that $P(X = x) = 1$ for a specific x . Thus, for any standard die, $E(X|\omega_i) = i$; and one prominent learning situation is seeing the die at rest after the roll.

The difference between expectations $E(X)$ *ex ante* and $E'(X)$ *ex post* to some information receipt is crucial to all decision theory. Thus it should be so for a pragmatic approach to all of meaning. An obvious application are phenomena which trouble deductive logical semantics, such as ‘implicature’ (Grice 1989). This category is distinct from ‘presupposition’ in the narrow sense, for which the intimations of *stop* or *also* are paradigmatic. Implicature may be readily defeasible, as when *some* intimates *not all*. It may be vague to the point of intuitive ineffability, as in the ‘contrast’ intimated by *but* (see Merin 1999) or in the value load of epithets. It may indeed be both. Implicatures which are not defeasible and rationalizable as ‘conversational’ by appeal to utterer’s avoidance of preferable expressions are dubbed ‘conventional’ [CI]. In DTS, CIs are most generally explicated as lexically or constructionally conditioned transcontextual constraints on expectations. In particular, they are NOT in general representable as propositions in the domain of the same minimal probability function which has for arguments asserted and narrowly presupposed contents. Purely epistemic CIs, if such there are, will be proper PPRS that are mandatorily imposed on a context by use of certain lexical items of constructions. CI’s may also have an essential valuational, boulomaic component, prototypically so in epithets of detraction or endearment. They may then impose constraints on the value component of expectations which are invariant under purely epistemic changes. CIs might act on both components of expectations, directly, without being propositions to condition on. On one or two counts, then, their content is unlike that of an assertion or presupposition in the narrow sense. Their non-propositionality, relative to the smallest algebra \mathcal{F} requisite for representing what is being asserted or commanded, would explain why they do not submit readily to composition regimes: epithets escape ‘plugs’ (Potts 2003), *but* refuses the scope of *not* and *or*, and so on.

The toy examples with standard and nonce-loaded dies serve to illustrate the CI principle as we take it to be instantiated by exclamations and many other ‘scalar’ phenomena. Suppose information about the pertinent small world ω is wanted. It could accrue in the form of getting to know the true ω directly. It could be some proposition A true of ω and as informative for current purposes as the proposition $\{\omega\}$. It could accrue more vaguely by constraints on *ex post* probabilities $P'(A)$, or more liberally yet on general *ex post* expectations $E'(X)$ with a valuational component. Looking at the dies, one shall find that information that $E'(X)$ is extreme will strongly constrain ω , in sharp cases uniquely. Moreover in ‘scalar’ setups of

partitions with distributions, already a relatively vague constraint making $E'(X)$ high will much more strongly constrain what ω could be than in the non-scalar case.

4. The DTS-analysis of Exclamatives

In this section we formulate our proposal (4.1.) and give a worked example (4.2). We then address three benchmark problems which the recent literature presents as problematic for a ‘surprise’ interpretation (4.3–4.5). Finally we propose explanations for distributional facts which are tantalizing for any analysis (4.6–4.8). We shall not be concerned with ‘indirect exclamatives’, e.g. *{It’s amazing/I’m amazed at} the stamina she has!*, which provide heuristic data, but whose hybrid status bespeaks a rather complex semantics.

4.1 Basic Proposal

Suppose our aim is to explicate ‘amazement’, the psychological category designated by predicate variants of the verb *amaze* which are most specific (Elliott 1974) for selecting English embedded exclamative complements of English. Our independently motivated formal resources suggest that amazement should be attendant upon a change of expectations that is extra-ordinarily drastic, i.e. rapid (‘abrupt’) and/or large. A change of expectation can be induced by (i) a change of belief state, or by (ii) a change of valuation, or by a combination of both.³⁹ There can thus be tradeoffs both in regard to components of expectation and of expectation change. We now consider case (i). Suppose $P_1(A) = 0.001$, $P_1(\neg A) = 0.999$, $P_2(A) = 0.999$, $P_2(\neg A) = 0.001$, where numerical order of subscripts mirrors temporal order.

What evidence could there be that it is GCOND proper, as in this example, rather than conditioning on A , i.e. a change to to $P_2(A) = 1$, $P_2(\neg A) = 0$ that is wanted in Exclamative? One indirect piece of evidence is the use of the higher clause *I can’t believe* when it embeds an exclamative as in *I can’t believe that he should have done this!* or *I can’t believe how big her Mercedes is!*. There is a discernible transferred meaning, roughly, ‘I know it, but I have not (yet) adjusted to it in my visceral dispositions’. However, we should not ignore the literal meaning, namely that credence in whatever might be the object of belief is short of full imputable conviction that would attend official subscription to an assertion. The modal *can’t* indeed makes the matrix a metacognitive expression, consistent with belief short of certainty. A systematic reason for having GCOND proper is that only assertibles can bring about an orderly change of firm commitment.

Next we consider general expectation change. Suppose a two-outcome partition, $\{A, \neg A\}$. Assume that A entails a win of desirability value $u(A) = 12$, and $\neg A$ entails a loss of 6, i.e. a negative ‘gain’ $u(\neg A) = -6$. Let $P_1(A) = 0.333$, $P_1(\neg A) = 0.667$.

³⁹By ‘valuation’, decision theory usually means ‘attitudinal valuation’, i.e. a representation of preference.

Then $E_1(X) \approx 0$. Now let $P_2(A) = 0.933, P_1(\neg A) = 0.067$. Then simple arithmetic yields $E_2(X) \approx 11$. This is a noticeable change in mathematical expectation, and we assume routinely that stands for a noticeable psychological difference. Note that the expectation conditional on each partition cell is invariant, for we have $E(X|A_i) = u(A_i)$ always. Alternatively, let $u(A) = 12.000$, and $u(\neg A) = -6000$. Let $P_1(A) = 0.333, P_1(\neg A) = 0.667$ and $P_2(A) = 0.999, P_1(\neg A) = 0.001$. Now the expectation change is approximately $+12.000$.

Neither the specific numbers chosen, nor precision for any choice made are important. They merely serve to illustrate the general structural principle, which alone matters. We conclude: very high prior improbability of an eventuality A and valuational extremity of A each contribute to a drastic change in expectation, be it positive or negative. The conditions for their contribution to take effect are a suitable distribution of valuations to eventualities. Valuations may here stand for affective charge, i.e. the extent to which things matter for conversationists' ostensible present concerns. A final factor in the description 'drastic' will be time. For a given change $\delta e = e_2 - e_1$, drasticity and thus exclamation-worthiness will be increasing in the absolute value $|e_2 - e_1|$ and decreasing in physical time $\delta t = t_2^p - t_1^p$ over which the change takes place. When δt is small and the change due to a change in epistemic probability, we speak of 'surprise'. In Section 4.7 we note some correlations with English and German prosody, which common sense will see as an instance of iconicity.

There is also the possible case where expectation change is due not to a change in P but to an autonomous change in u , a change in tastes. A widely received micro-economic doctrine says that all changes in expected desirability are ultimately conditioned by a change in belief. We have found no clear counterexamples in Exclamative phenomena, but the theory allows for them.

Exclamatives usually, though not always, elicit descriptions as being relatively emotive and thus indicative of feelings that accompany and co-constitute emotional attitudes ranging from amazed joy to shock and indignation. We follow Immanuel Kant and common sense in regarding emotions as mediating between (a) preferences, i.e. the domain of expected values, and (b) action, with conscious feelings mediating with conscious action. Felt, represented, and communicated feelings are thus phenomenological concomitants of expectations or changes in expectations (see Goldie 2000). These have recognized neural bases. In complex sentient beings, 'prediction error'—a synonym for expectation change—involving the undifferentiated notion of expectation has correlates in dopaminergic neuron systems which sometimes, but not always allow differentiation of 'AD' and 'ID' parameters (Schultz 2006:109). The DTS theory accordingly articulates with a prototype feature, emotivity, of Exclamative without precluding relatively unemotive cases.⁴⁰

'Relative' is the watchword. One may feel that 'surprise', compared to 'amazement', refers to a purely epistemic sea-change. Decision-theoretically, this must be

⁴⁰Purely epistemic surprise is engaged in frameworks (Spohn 2008:19–41) that rank possible beliefs without overt reference to probability. However, meshing with preferences and neuropsychological theories of emotion remains to be developed.

an illusion. Absence of all valuation would entail utter indifference. This, in turn, sits ill with the exclamation mark. But suppose this aspect of ‘!’ is not taken for granted, and becomes an empirical issue. Z&P (2003:56) feel that (a) *What a cool day it was in New Delhi yesterday!* uttered “as an offhand remark made over the morning paper’s weather section” will be quite unemotive. Yet on comparing, say, (b) *It was cool day in New Delhi yesterday*, this feeling seems illusory. The “feeling of surprise” at learning the unexpected, which Z&P see as being expressed also presents the speaker as ostensibly caring about whether or not it was cool, at least as much and probably more so than (b) would. Emotion need not be as specific as indignation or joy. As the concept of entropy implies (p. 26 above), information, a measure of overall epistemic change and thus of expected relevance, can be a value in the expected value model. When preference polarity is left indeterminate, information can therefore stand proxy for it. Surprise is unspecified with respect to desiderative polarity. Unlike default amazement or being shocked, it can be any of pleasant or unpleasant or mixed-feelings, but an emotion it is under most taxonomies.

Exclamatives, moreover, can remain highly underspecified to hearers with regard to what (physical) eventuality they are exclaiming over. Cases of exclaiming over the mutually known or obvious will hide this problem. In Michaelis’s (2), the relevant partition is obvious enough.⁴¹ Z&P’s example (9) with its abstract noun ‘things’ leaves no such intersubjective toe-hold if it is uttered, as it may be, when the hearer is informed only of the identity of the personal pronoun referent.

The idea that Exclamatives ostensibly have no addressee, but only hearers who just so happen to be listening in on the speaker’s self-expressive outburst, is entirely consistent with such radical underspecification. It is, however, deleterious to the idea that what is being exclaimed over must, even in parts of contingent situational information, be presupposed as mutual knowledge. The problem is very general. We make sense, as addressees or as speakers, of questions such as *What happened?* or even of *Who’s there?* Under either of Hamblin’s early or later semantics we should have to say that their denotations are unknown or rather vaguely guessed at.

The problem posed by underspecification can be resolved by assuming that the hearer of an Exclamative, to the extent of being interested, entertains a probability distribution $\mu(\cdot)$ over triples $(\Omega_i, \Pi_i, \delta e_i)$ of possible universes Ω_i , partitions, Π_i , and expectation changes, δe_i . Any or all of the three components might differ pairwise across triples. However, the δe_i are real numbers representing expectation changes and can be regarded as values of a random variable X . Of these, the expectation or probability-weighted average, $\delta e^* = E(X) = \sum_i \delta e_i \cdot \mu(X = \delta e_i)$, can be formed. This ‘probability mixture’ of expectation changes should have an affective representation that accompanies whatever information about the space of triples is afforded by the exclamation and the context. These might be mixed feelings both literally and colloquially, since not only the ‘mean’, $E(X)$, but also the ‘variance’, $\text{Var}(X) =_{df} E((X - E(X))^2)$, of X (a measure of how dispersed the

⁴¹The abstract assumption that pertinent partitions are mutual (*sc.* common) knowledge underlies much of micro-economics. See Binmore (1992).

δe_i are) is a statistic now known to have distinct neuropsychological significance, alongside expectation, $E(X)$ (Schultz 2006:110).

As an exemplar for many types of statistical distributions we note the best known family of distributions of a continuous random variable X , the bellshaped ‘Gaussian’ or ‘Normal Distribution’ (see e.g. Feller 1957). An instance $N[\mu, \sigma]$ of the Gaussian is fully specified by the mean, $\mu = E(X)$, and dispersion, $\sigma = \sqrt{\text{Var}(X)}$, of X . The type is formally predicted to arise when phenomena represented by X are conditioned by many independent variables Y_i that are distributed similarly to one another. It attains its highest probability density at the mean value, $X = E(X)$, and assigns very low probability to extreme values, large or small. The Gaussian is the expository workhorse of statistics: we mention it simply as a prototype for many naturally occurring X , for which extremity of values and *ceteris paribus* surprisingness of their realization are co-extensive. The ‘rare iff extreme’ presumption is common sense, but is now seen to be well-founded in lawfully generated, single-peaked distributions, be they continuous or discrete.⁴² Most importantly, (b) as already presupposing the central notion of DTS: the expectation of a random variable.

More generally, the concepts of random variable and distribution allow one to model principled relationships between properly non-epistemic ‘degrees’ and epistemic attitudes, which jointly make up the prototype idea of a norm engaged in surprise, shock, and amazement. Michaelis notes that surprise is not simply a reaction, startled or not, to a non-predicted situation, but rather to a counternormal situation: i.e. to one whose non-occurrence had been predicted by appeal to a law or stereotype (M2001: 1039). We have doubts about being startled by anything but noises, flashes, or suchlike without being surprised, but we otherwise agree. People’s tacit or explicit predictions are based, if anything, on assumed statistical laws—i.e. laws which admit of exceptions in principle and say something about their relative likelihood. Any concrete instance of a formally characterizeable distribution of a random variable is a statistical law; French mathematical language indeed renders ‘distribution’ by *loi*, ‘law’.

The concept of the distribution of a random variable will also explain the cross-linguistic prominence of DEs observed informally by Michaelis (2001). Attitudinal and thus subjective or intersubjective degree (AD) is in principle the value of an approximately continuous or at any rate many-valued variable. For DEs, AD is mirrored by a putatively objective feature of the eventuality exclaimed over, which is the apparent cause of the exclamation. But objectivity is the most reliable underwriter of intersubjectivity. In turn, objectivity makes it easiest to conceive of the communication as one of causal transmission. An impact on the speaker is trans-

⁴²The uniform distribution determined for a unary predicate R by $P(Ra_i) = 0.5$ ($i = 1, \dots, n$) over a 2^n -cell partition Π_Q specifies an integer-valued random variable $X =$ ‘number of positive instances of R ’ ($X = 0, \dots, n$). The distribution of X is ‘binomial’ (hence $P(\neg\exists a_i[Ra_i]) = P(\forall a_i[\neg Ra_i])$) and rapidly approximates a Gaussian as n grows. Of course, very many worldly phenomena are not modelled well by Gaussians or binomials. More generally, if the ‘tails’ of a felicitous distribution are fatter than those of the one presumed, one will be surprised more often than one should have expected.

duced as an impact on the hearer, and in analogical proportion. The primacy of AD expectation change also explains what Milner (1978) problematizes: that pro-forms unspecified for degree should acquire, in PEs, an interpretation of ‘extreme degree’. The surprising event will thus, by analogical default, correspond to an extreme value of a random variable.

4.2 A worked example and other cases

Our example is designed for good comparability with Z&P’s (9). We take it that, when people say *The things she eats!* (or, in German, *Was für {Sachen/Zeug} sie isst!*), the reference must be to things which they consider either weird or extravagant, and it implies a comparison to edibles deemed normal.⁴³ (Unlike for *How hot it is!* or *Hasn’t she eaten the whole lot!* where extremity or improbability are of a more routinely quantitative kind.) For the average, stereotypical Englishperson, frogs legs, roast termites, poached rattlesnake, raw oysters, and perhaps caviar would be excellent things to exclaim over, the contrast class being traditional English food (i.e. cheddar, curry, and hot dogs). For someone with vicarious or real experience of peppers that can hospitalize the unwary, (9) would be just as good.

The emotion intuitably associated with *The things she eats!* hovers between any of disgust, indignation, amusement, admiration, and envy. Pure surprise (at statistical rarity) will be rare. Emotion matters, because it factors through (un)desirability, i.e. valuation or preference with respect to one or more socially recognized and behaviour-disposing categorial modalities. Importantly for extending generality, valuation need not have an order-isomorphic physical substrate, as in temperature (ex. 2) or capsaicine concentration (ex. 9), or quantities eaten. Our example domain is one of physically heterogeneous potential edibles ranked for a real or imagined constituency: cheddar cheese [traditional], gorgonzola cheese [slightly odd], and frogs legs [way-out]. It matters little whether they are strictly ordered by outlandishness or by extravagance, or whether frogs legs and gorgonzola are both way out on the parochial distaste or extravagance scale, or whether cheddar and gorgonzola are the unexceptional backdrop (and frogs legs are considered disgusting on account of cruel killing involved in their purveyance). Here we let frogs legs stand for a multitude of way-out foodstuffs to stay close to ex. (9) and offer both versions.

(12) The things she eats!

- Let |she| = Linda.
- Let x range over D = {cheddar, gorgonzola, frogs legs} = {c,g,f}.
- Let +X := ‘Linda eats x’; -X := ‘Linda doesn’t eat x’ (X = C,G,F)
- Let P[s-1] ostensible prior probability distribution;
P[s] (or P[s’]) ostensible posterior probability distribution;
- Let Des := affective-aesthetic evaluation (here: Old Rural British?)

⁴³In German *Sachen* (‘things’) is value neutral, *Zeug* (‘stuff’) more derogatory.

	{+C+G+F, +C-G+F, -C+G+F, -C-G+F, +C+G-F, +C-G-F, -C+G-F, -C-G-F}.							
Des	-10k	-10k	-10k	-10k	-5	0	-5	0
P[s-1]	v.low	v.low	v.low	v.low	[----summing to nearly one----]			
P[s]	[----summing to nearly one-----]				v.low	v.low	v.low	v.low

In this example, frogs legs are outlandish, gorgonzola is just a little outlandish and cheddar makes no difference either way.⁴⁴ Evaluations are not additive for our protagonists: if someone eats frogs legs, their eating gorgonzola harbours no extra shock value. In the scenario for (12), the speaker has just realized, with near certainty, that Linda eats frogs legs. Mere near-certainty, recall, means that the ‘can’t-believe’ predicament obtains. But it is also consistent with the fact that no settled conviction is being officially transacted as a quasi-legal, juridical commitment. There must be room for doubt and this is one way to represent it. Residual doubt is endemic for gradings which are at best parochially intersubjective, not physically objectivized. And note: even if +F happens to be a certainty, what is communicated to the hearer (recall Section 4.1) might include as a probability-weighted component a partition featuring an unobserved +R making, say, for $-15k$ desirability of the known world state if it were a certainty. The unseen, if vaguely suspected or at least suspectable, is indistinctly reflected in the bottom line of compounded expectation differentials.

Suppose now that ‘very low’ probability means ‘close to zero’. Then even a very high negative evaluation of options with that probability might contribute a near-zero summand to total expected value. Thus, a prior expectation could be $E_{s-1}(X) \approx -5$, supposing the low-prior-probability cells equiprobable. The posterior expectation, attendant upon the percept, would be $E_s(X) \approx -10.000$, assuming equiprobability of high-posterior-probability cells. Again, insert qualitative descriptions for numbers, or conduct a psychophysical experiment to get a response function. Either way: all reasonable assignments will be such as to make the expectation change intuitively drastic. Recall also suddenness of realization as a possible component of ‘drasticity’.

Let us next clear aside an inessential feature of the diagram. Partition cells in the above diagram were in parts ordered by feature combinatoric convention. However, they can, without change of import, be ordered by probability, by value (examples below), or by their signed contribution to total expectation. With a pinch of salt: we might have

	{+C+G+F, -C+G+F, +C-G+F, -C-G+F, +C+G-F, -C+G-F, +C-G-F, -C-G-F}.							
Des	-10k	-10k	-10k	-10k	-5	-5	0	0
Des’	-10m	-9.995k	-9.993k	-9.9k	-5	-3	0	0

Here Des is the original valuation, and Des’ is an alternative, just for variety. This concludes our example. We now turn to its analysis. The example has abstracted fully from incomplete knowledge of partitions and values which can be brought into

⁴⁴Precision does not matter, nor does absolute size: a desirability function u of the kind sufficient to be a ‘value’ component for expected value will be behaviourally indistinguishable from $\alpha u + \beta$ for any real numbers $\alpha > 0$ and β . Also, in many applications values might themselves be psychophysical transforms of stimulus values, say capsaicine concentration in (9).

the picture as in Sec. 4.1. To interpret the example intuitively, take the speaker's ostensible private probability distribution, P^s to be at first that of the Common Prior and of the addressee. It then changes under the impact of an event experienced by the speaker. This change is communicated, ostensibly causally, to the hearer's private distribution, P^h . As a result of presumed consonance, i.e. without scope for direct argument, the Common Prior P^j turns into a Common Posterior $P^{j'}$ meeting the same specifications. The change proceeds non-assertorically, i.e. entirely by GCOND proper. It thus involves only a change in non-deterministic PPRs.⁴⁵

The representation format will apply to a bi-partition (e.g. 'weird' food vs. 'normal' food) just as well as to a large n -partition. One difficulty for the case $n = 2$ is posed by a robust property of English (and German and ...) YNQ- and nYNQ-based exclamatives: the predicate must not be a standard non-gradable: *Isn't this number {large/??even}!*, *Hasn't she eaten {the whole lot/her spinach/ ??rice}!*, *Boy, is this number {large/??even}!*, However, admissibility of *{Boy, is/Isn't} this number prime!* or *Hasn't she burped!*, suggests that what really matters is for the predicate to be such that someone could credibly get excited enough about it to warrant a large desirability difference between the bi-partition's two cells. Being prime is an exciting, because comparatively rare property among prime-searchers. There are presumably no evenness-searchers, although, coming from a timid punter at roulette, *Hasn't this spin come up evens!* should be acceptable. Similarly, *Ain't this gold!* and *Isn't he smoking!* or French *Que ne fume-t-il pas!* make implausible an appeal to gradability, as distinct from desiderative evaluation. However, where the YNQ/nYNQ exclamative is bona fide ID/ED, not just AD gradable, we could envisage the bi-partition to be the coarsening of a finer partition and allow for an intimated Wh-style construal. When x ranges over an idealized continuous domain, as in size or temperature, one might either replace it by a discretized version ('... from 9.5 to 10.5, value a ; from 10.5 to 11.5, value b ,...') and stay with a discrete probability distribution, or else use a continuous probability density to compute expectations, which we assume to be defined.⁴⁶

⁴⁵Consistently with Michaelis's anaphoricity claim, Z&P (2003:76n42) conjecture that definite NP exclamations, presumably also *The things she eats!*, are "marked as, in effect, factive" by the existence presupposition attending *the*. This feels just right, but only with its hedge. Since there is no assumption of hidden completion by, say, ...*amaze me*, one still faces Russell's (1905) argument that the reference of *the N* is logically incomplete. Even so, while 'She eats things' is indeed plausibly presupposed, WHAT the referent of 'she' eats is not, without prior listing. The PPR concept answers to the ostensible conjectural element introduced by persistent syntactic incompleteness which makes felicitous the hedge, "in effect".

⁴⁶Interjective exclamations e.g. (1a) signaling a minor mishap observed, or, as *Ouch!* does, a sudden pain experienced by the speaker, fit the paradigm too. They have sincerity conditions C (as indicated) whose truth is requisite for their felicity (Kaplan 1997). C will provide an associated partition $\{C, \bar{C}\}$. However, unlike in utterance of *I have just felt a pain*, no verbally proponable proposition need be directly communicated. The belief distribution over the partition changes, as in Jeffrey's scenario, in reaction to changes in a variable, dub it ξ , that convolves perceptual and juridical attitudes (as for *Oops!*) or psychophysiological parameters (as for *Ouch!*) and of which C is an impoverished reflex. The change in ξ is communicated so as to induce, non-evidentially, an empathetic response in some hearer's variable ξ' , related to a partition in like manner. Other, and finer partitions are conceivable for each as well.

Suppose next, with Z&P's thesis in mind, that there were an empirical reason to assume that the speaker's initial state, a probability space $(\Omega, \mathcal{F}, P^{s-1})$ counterspecified for F, is preceded by a state in which F had not even been in back of her mind.⁴⁷ We should model this state by a belief function P^{s-2} defined only on a proper sub-algebra $\mathcal{F}' \subset \mathcal{F}$, not containing F. The salient partition would here be smaller than Π_1 , namely $\Pi_0 = \{+C+G, +C-G, -C+G, -C-G\}$. Suppose the change from a probability space with a belief function P^{s-2} was by function extension to P^{s-1} . Then $P^{s-2}(+C+G) = P^{s-1}(+C+G+F) + P^{s-1}(+C+G-F)$ would have to hold, where $P^{s-1}(+C+G+F)$ is very low, and $P^{s-1}(+C+G-F)$ might well be close to 0.25; analogously for the other three cells. P^{s-2} satisfying this constraint would determine a correspondingly near to uniform distribution over Π_0 . Consistent evolution of expectations would then assign each cell a desirability of around $-5k$, if desirabilities were implicitly defined, and thus a $-5k$ expectation overall. Zero-points of desirability scales that factor into expected desirability can be shifted without loss of representational felicity. Adding $+5k$ to all values would associate P^{s-2} with zero expectation, each of the $+F$ cells under P^{s-1} with $-5k$ value, and each of the $-F$ cells under P^{s-1} with a $+5k$ value give or take 5. We should still have the same expectation differential under the shift from P^{s-1} to P^s .⁴⁸ Epistemic function extension from P^{s-2} to a P^{s-1} highly skewed against $+F$ would be associated with a positive expectation shift, cruelly reversed to its polar opposite by the shift to P^s . If there were empirical grounds for supposing an extra extension stage in Exclamative, a DTS would implement it thus.⁴⁹ At present we see no compelling such grounds; cp. also Section 4.8.

More pressing an issue will be a distributional fact about Wh-exclamatives that relates to probability distributions over partitions. In our worked example, the Prior distribution was plainly non-uniform. By contrast, a uniform Prior is usually one's best bet for *who*-questions posed out of the blue, and often in context too. The didactic examples of Section 3.2 were indeed *who*-questions. By contrast, free-standing (and pure) WHO-exclamatives appear to be absent or else rare in languages that have Wh-exclamatives (Elliott 1974, Michaelis 2001). The same holds for pure WHERE- and WHEN-exclamatives and, e.g. in English, for bare *a*-less *what*-forms. Michaelis (2001:1046), following Michaelis & Lambrecht (1996a) [M&L], argues that inadmissible forms lack intrinsic ranking necessary for the obligatory exclamative 'degree' component. This is, however, held to be supplied by suitable matrix clauses, witness *{You wont/I can't} believe {what she ate/who she dated/where she lives}!*

⁴⁷ Define: a person with belief function P 'HAS A PROPOSITION A IN MIND OR IN BACK OF MIND' iff A is in the domain of P , i.e. iff $0 \leq P(A) \leq 1$. This condition part-explicates Chafe's 1974 and Lambrecht's 1994 'being conscious of' distinguished from 'knowing' (which implies $P(A) = 1$). It extends to consciousness e.g. of individuals: d is in (back of) mind iff there is a property R such that $0 \leq P(Rd) \leq 1$. Lambrecht defines d to be a 'discourse topic' iff it is a relatively predictable argument of such R .

⁴⁸ Desirabilities could be calibrated at each stage to yield zero expected value over partitions. The recalibrations would yet represent expectation change.

⁴⁹ The process of informational refinement by function extension over sequences of increasingly larger algebras is called 'extending the conversation' among probability theorists. In Merin (2003, 2007) it is applied to declarative discourse.

Individuals are not intrinsically ranked, but are often ranked in suitable property frames induced by expressions. The ‘degree’ hypothesis will also explain the absence of *whether*- and *why*-exclamatives.⁵⁰ Languages vary in admitting exceptions to the tendency. For English we find restricted occurrences, e.g. *What legs!*, or *What nerve!*. Michaelis (2001:1046f) observes more liberal use of *where* in Italian, and of *who* and *what*, with plural marking, in Turkish. These WH-headed exclamatives would respectively translate to exclamations headed by *The{places/people/things}*. Z&P’s (2003:66-77) discussion of Italian, Paduan dialect, and English exclamative *Wh*-phrases emphasizes the problem, and positive association with the feature [+sortal] is consistent with ease of intersubjective rankability. In German, pure *who*- and *where*-exclamatives are admissible without a floated, universalizing sortalizer in lexical context presaging ranking, prominently of a social prestige nature (see d’Avis 2001 for data fitting this description). The M&L hypothesis appears to be very fruitful. One discerns rankings in each use and will infer that languages vary in how much support is needed to induce them. We merely add here, by way of paraphrase, that, for non-sortal designata, non-uniform transcontextual expectations are rarely available. Positively, if an eventuality can be graded as extremely deviant from an extra-doxastic norm, the probabilistically hedged biconditional rule ‘rare iff extreme’ will make it epistemically surprising. But similarly, it will license the converse inference, probabilistic ‘extreme iff rare’; whence the facilitating effect, noted by L&M, of a matrix ‘*I can’t believe*’ which non-idiomatically expresses incredulity.

To sum up the above account and its components ‘What’ and ‘How’:

HYPOTHESIS ON EXCLAMATIVE

1. Exclamations communicate an ostensible drastic change in expectations which is occasioned by an eventuality whose ‘perceptual’ features match whatever the exclamatory clause offers in information constraints.
2. They do so in ostensible response to the eventuality exclaimed over, and aim to induce a corresponding (empathetic) change in the hearer’s expectations which is consistent with inducing a change in common expectations.
3. They do so vaguely or qualitatively in line with the imperfectly specified instantiation of the open variable. At the very least, and de facto, they allow the hearer to entertain a useful hypothesis about the expectation change in the speaker.
4. They transact no assertion, hence have no scope for evidential negotiation, ostensibly. In this sense the communication is ostensibly causal rather than evidential. (Think of evidence as an incentive as in negotiation.)

⁵⁰ *Why* can interjectively introduce an exclamation (*Why, if it isn’t Kim!*). In questions, this WH-item presupposes or, as *Why should he be there?* does, subjunctively moots a simple proposition, for which a reason is sought.

4.3 Exclaiming over the unsurprising

Not all things exclaimed over are ostensibly improbable, in the most intuitive sense of the term. This observation supports denials that exclamations express surprise as distinct from non-normal extremity. Z&P's example is a commendatory exclamation over one's host's cooking, *What a delicious dinner you've made!*. The speaker, say Z&P, does not mean to imply that she did not expect a good dinner. Such an implication would be positively impolite. If no impoliteness is discerned there was, so Z&P imply, no improbability. They also rightly intuit (Z&P 2003: 54) that other hosts will be the comparison class.

However, these observations in no way rule out a probabilistic analysis. Probability analysis of any situation starts with the question: What is the relevant space Ω and partition Π of possibilities? Suppose $\Pi := \Pi'$ classifies by quality the set Ω' of past present or future performances by the host. Then the benchmark for utter normality, in statistician's terminology, will be the host's ostensible TIME AVERAGE of gradable quality of performance. If so, an impolite implication of the exclamation is almost inevitable. Whatever experiential statistics your prior epistemic probability and thus expected value for tonight's instance is based on will be your host's overall lacklustre cooking on previous occasions.

However, suppose instead that $\Pi := \Pi''$ classifies the set Ω'' of possible performances—tonight—by all potential hosts or cooks. The make-believe presumption behind this model is that fate might just as well have placed you at the table of any one of them, but chose to place you at your host's. This changes the context radically. In statistical terminology adapted to include finite sample spaces, the normality benchmark is now the ostensibly estimated ENSEMBLE AVERAGE of this plurality of possible hosts. Compared to it, the host's cooking is exceptionally good—as it always is.

For both kinds of statistic the probability calculus provides a unified framework, and under its 'Bayesian', degree-of-belief interpretation there are no 'objective' probabilities that preclude consistent make-believe. The formal concept of drastic expectation change can thus fully show its mettle, and over a most intuitable distinction. The difference between time and ensemble averages is readily conveyed: compare (a) *We are lucky to be your guests TONIGHT* with (b) *We are lucky to be YOUR guests tonight*. We take it that these possible compliments, one of them quite likely backhanded and the other wisely diagnosing an act variable of the visitors as being controlled by Nature, ably sum up this part of English and other ethnographies of speaking.

But even when the host's time average IS the norm to be considered, a genuine compliment can be had. Assume a large- n -cell partition of host's cooking events, ordered from the atrocious to the sublime. Let the valuation on it be steeply increasing, so steeply that your marginal utility for quality in cooking is steeply increasing. Let there also be (loosely speaking) a strongly rightward-skewed transform of an approximately normal probability distribution over it which assigns close to zero probability weight to bad and mediocre cells. Intuitively this means two things. First, every extra refinement counts many times more than a lesser refinement step:

you are a real gourmet. Secondly, you were also very sure the host would cook extremely well, but could not be quite as sure that he would cook that extremely well. In sum: tonight he surpassed even his own consistently high time average and the surplus is high enough to deviate drastically from the already very high average.

Fries's example cited by Schwabe (1989), in English: (c) (*Boy*,) *Was I HUNGRY!*, is a prime candidate for desiderative deviation. The known past cannot surprise a rational cognizer. But again: an epistemic description is not inconceivable. The past tense exclamation appears to evoke a situation in which the speaker could have exclaimed (d) *Boy, am I HUNGRY!*. This does admit a note of epistemic surprise: people who are hungry much or most of the time tend not to clown over their predicament, as (d) invariably does, being kin to an 'arch' question and almost mandatorily prefixed by pseudo-vocative '*Boy*'. On the other hand, there is a marked contrast to (e) *How hungry I am!*. This presents the speaker as taking a third person view of herself and is, by comparison, utterly indicative of surprise, even supposing a self-imposed fast. Hence, the non-negative YNQ form of (c,d), the strangeness of (f) *Wasn't I hungry!*, and unacceptability of (g) **Am 'nt I hungry!* suggest, at least within English, a differentiation of Exclamative into epistemic and rarer boulomaic subtypes that correlates with expression form. (See also Section 4.7. below.)

4.4 Exclaiming over the obvious

What is obvious in the sense relevant here is what is already mutual knowledge between speaker and hearer. The eventuality exclaimed over is not only not unexpected, but definitely presupposed, i.e. a DPR. This is indeed what the Grimshaw family of exclamative semantics assumes is always the case in part or whole, and must so assume, modulo 'accommodation'.

Epistemic surprise is categorically ruled out. We see four treatment options for such cases. Option 1 is to treat exclamations in analogy to reminiscing utterances of, say, *That was {a surprise/amazing}, him eating Fugu fish!*. The exclamation is retrospective. Here, there would be semantico-pragmatic continuity to wistful, slow Fall intoned utterances of, say, *What a genius (she was)!* Option 2 is instantiated by the 'ensemble average' case. We feign surprise, but do have reason to be surprised with respect to a counterfactual space of possibilities. It is not for nothing that English uses past tense morphology for this semantic mode. Option 3 varies 1 dissimulatively: we exclaim over an MK present as if we communicated news, to make it explicit and socialize by phatic communion (Malinowski 1923). Option 4 is to say that expectation change originates in the speaker's valuation schedule u^s (recall p. 32 above), though it need not be confined to it. We believe that all four options are supported by reflective intuitions for diverse situations. The fourth type might be instantiated by someone exclaiming *What a sinner I am!* upon having undergone a sudden change of values towards righteousness, and within hearing of a hearer known to be righteous and familiar with the speaker's regrettable doings.

4.5 Exclaiming over the hearer-unknown

There are two main situations, i.e. the hearer (i) cannot be sure which value of x for a given YN or Wh- x partition is fact or unexpected fact or (ii) cannot quite reconstruct the partition to be ‘expected’ over.

Case (i) is dealt with by the standard DTS assumption, analogous to one routine in decision theory, that the hearer will already entertain a probability distribution over a given partition, and thereby an improbability ordering. (This ordering can also be understood as being ‘fuzzified’.) The ordering is ready for use in forming tacit hypotheses about which partition elements are meant. The induced expectation change will be as specific or unspecific as the situational data warrant. The easier case of the YNQ bi-partition will also cover

(13) A mouse!

This will typically induce an orienting reflex; on which see also p. 57 below. In so doing, (13) reflects in GCOND over a bi-partition $\{\llbracket \exists_i x[Mx] \rrbracket, \llbracket \neg \exists_i x[Mx] \rrbracket\}$, indexed to the immediate situation, i , and with M for mouse.

For case (ii), there exist statistical techniques for estimating the size of a partly unknown domain (Efron & Thisted 1976); hence the size of a relevant partition. Naive statisticians could well have some correlate to this. With suitable defaults for $u(\cdot)$ and $P(\cdot)$, they could undergo a highly non-specific, somatic change which anticipates that which is occasioned by a well-defined expectation change. For an overt model consider the following string of English:

(14) Goodness me!

This might be uttered in empathetic reaction to something the hearer has just related, but might also respond to an eventuality as yet unobserved by, or unobservable to, the hearer. Whatever discourse might follow it could specify what occasioned the utterance, but the utterance will have an effect before any such continuation or direct hearer perception ensues.

4.6 Exclamative sources: negative YNQs explained

Part 1 of the explanation is: neg-YNQs, $nA?$ (e.g. *Didn't Kim TALK? [nTk?]*) are biased for a positive answer, A (Z&P 2003). Part 2 is the DTS explanation for the bias and for Romero & Han's (2004) claim that the preposed negation of neg-YNQs contributes a VERUM operator, glossable by *really*, to represent the speaker's militating for inclusion of A into CG. By Section 3.1 above, the positive bias of a negative YNQ $nTk?$ amounts to presuming a Prior skewed towards Tk . The Prior might be the speaker's or it might be presumed as a PPR i.e. as a Common Prior, P^j . For questions we assume the latter. Observation 1: Neg-YNQs are typically posed when the addressee has displayed in word or deed a bias for the negative. Observation 2: That bias must have remained short of prior assertion or conclusive entailment of $\neg Tk$. Observation 3: The neg-YNQ in effect insinuates an opposite

bias (for a Posterior $P^{j'}$ relative to the Prior P^j), which is again short of being conclusive, hence short of assertoric. Hypothesis: The Aux+*n't* element of *nTk?* signals an attenuated GCOND variant of denial which proceeds entirely by PPR. Its effect will stand to the negative bias of the Prior in just the relation that the intended effect of a flat assertoric denial $\neg Tk$ stands to the intended ('positive') effect of an assertion Tk . Communication by negative YNQ proceeds entirely on the basis of PPRs, but, as a question, *nTk?* still solicits a properly assertoric answer that would propose a final Posterior, $P^{j''}(Tk) = 1$. The exclamative derivate, *nTk!*, does not. It works like all other Exclamatives, ostensibly bypassing P^j to have a change in P^s cause a similar change in P^h .

4.7 *Adagio* exclamatives

Am I HUNGRY! or *DIDN'T she TALK!* have their fundamental frequency peak prior to the penultimate vowel, unlike, say, default pronounced exclamatives *Ain't it pretty!* or *Isn't it swell!* The subsequent melodic fall is drawn out to give an *adagio* tempo feel, rather than the *allegro* or even *presto* of the typical exclamative. Where the latter sound *accelerando*, the former sound *rallentando*. Wistful, unironic, fall-intoned *What a GENIUS she was!* exemplifies a Wh-form. Unironic use conditions of *adagio* exclamations have in common that they offer no scope for sudden expectation change. Drasticity cannot thus be due to (i) rapidity of expectation shift. It is also unlikely, by the time of utterance, to be due to (ii) size of probability shift. It will thus be due, as phenomenological reflection confirms, to the third factor, (iii) deviation from an extra-epistemic quantity norm. Prosodic quantity is plausibly indicative of worldly or experiential quantity in other iconic usages of open class lexemes, but here it is obligatory. The correlation is readily testable and speaks both for the importance of the time factor and for a causal, non-evidential communication model which presumes analogical emulation.

4.8 Relations to prototypical English 'thetics'

'Thetics' are a tantalizing and controversial typological category (see Sasse 1987 and 5.2.3 below). Here we consider full declarative syntax exemplars in English: with main, but discursively non-contrastive stress on the subject NP (Chafe 1974, Allerton and Cruttenden 1979), 'marked' (only) relative to dictionary quotation prosody (Schmerling 1976): (i) *The SUN's out!*, (ii) *The KETTLE's boiling!* and (iii) *JOHNSON died!* Their syntax and ready deniability makes them assertions, yet, like typical exclamations, they are uttered 'out of the blue' and are most easily pronounced or punctuated emphatically as exclamations, even when uttered *sotto voce*. The DTS hypothesis will be: I.WHAT: Both varieties of (i)–(iii) communicate an epistemic change, not by proper GCOND, but by conditioning on a simple proposition, e.g. [[The sun's out]]. II.HOW: The [+ '!'] variety ostensibly communicate this ostensible change in P^s directly to a change in P^h , before P^j is eventually updated. Check [+ '!'] for reduced deniability. Thetics are sometimes called 'all-new sentences'. This characterization will *ceteris paribus* favour a 'domain expansion'

theory, but should also make thetics polar opposites of exclamatives as characterized by an ‘all-presupposed’ i.e. ‘all-old’ theory. Moreover, for use of (i)–(iii), sun, kettle, and Johnson must be mutually and thoroughly familiar [*contra* expansion], though in return they must not have been already mentioned in the ongoing conversation [*pro* expansion]. The best way to resolve the issue, we think, is to assume that they ARE ALWAYS in the universe of discourse—part of the furniture, as it were—but with a very high, yet non-unit degree of belief ostensibly attaching to their regional default state predicate (not boiling, not out, not dead) until utterance time. The same holds for stage directional *Enter the King*, which is preceded by the list of characters or, as computer scientists say, declaration of variables. Rapidity and large extent of epistemic change seem required throughout for thetics. The difference selecting from [\pm ‘!’] in (i)–(iii) seems to be situational importance, i.e. the differential in the *u*-component of expectation. Reflection on the praxeological concepts ‘urgency’ and ‘emergency’ will support this analysis. As for English *Kim is LAUGHING!* or *Kim is MALE!*, which are segmentally declaratives and have no highly restricted subject-predicate pairing, our assumption must be that they differ from thetics in proper topicality of *Kim*, but retain the moment of drasticity and some measure of non-argumentativity. Neither they, nor (i)–(iii) support continuation with *This is because Φ* , where Φ is some declarative. On the other hand, they, like (i)–(iii) can be denied, although we feel that a dubitative *Is she?* is more likely. Either way, they are thus ostensible ‘brute facts’ which are presented as needing no reason to be made acceptable, but might not impress the hearer after all, who challenges this status when questioning.

5. Exclamatives in a typological context

Michaelis holds that the semantic or speech act properties (a)–(e) reported in Section 2.2 above, motivate the following cross-linguistic features of exclamatives: (i) Co-occurrence with interjections (ex.: *Jesus, what a mess!*) (ii) subordination to factives: (*It’s amazing how much noise they make!*) (iii) topic constructions (*GOD it’s hot out there!*) (iv) anaphoric degree adverbs (*It’s so hot!*) (v) information-question form (*What a nice cake you made!*) (vi) NP-complements (*I can’t believe the way they treat us!*) (vii) free NPs (*The way they treat us!*) (viii) inversion (... *But, man, can this kid direct second unit!*). She concludes her typological survey by emphasizing that, overall, (v) and (vi) are the most salient of features of the sentence type (Michaelis 2001:1049).

In Section 5.1 we consider exclamatives which are not in (v) or (vi) and which do not otherwise conform readily to a DE construal. This makes them problematic for presuppositional accounts and for the related thesis that exclamatives contain a WH-element in explicit or, as for NP-exclamatives, sub-surface syntax (Z&P 2003:76). We then investigate kinship relations between exclamatives and other constructions, namely miratives, optatives, and thetics, which involve no adaptation of interrogative or degree-adverbial form and show how respective typological commonalities con-

form to the semantics we have proposed for instances of the Exclamative speech act type. Some example types will appear in several rubrics.

We speak of ‘typological implications’ because the difference between our pragma-semantic model and that of work in the line of Grimshaw (1979) changes the status of the exclamative construction or sentence type. We have dropped or weakened some semantic features (basically those of presuppositionality), and if there were none to take their place, it would be hard to anchor Exclamative in a semantic theory that gives it comparably lawful status. These other features (PPR, non-evidentiality, expectation change) accommodate the enlarged extension that goes with the non-imperative exclamative mark, notably in also covering the category of interjections (see note 46 above and also ex. 14) syntactic declarative exclamations (4.8), and infinitival exclamations (5.3).

5.1 ‘Degree’ and ‘non-degree’ exclamatives

Degree exclamatives (DE) as characterized p. 4 above are a proper superset of pro-form exclamatives (PEs) and others whose open class content allows for ordering by intrinsic or extrinsic degree (ID, ED). Under Michaelis’s taxonomy, putative non-degree exclamatives (NDEs) would not belong to the exclamative sentence type, but could qualify for performing Exclamative speech acts: DEs and NDEs alike will satisfy Michaelis’s essential condition of surprise, which could yet be one of attitudinal degree (AD). Think here of a clear-cut non-ID and non-ED example such as *She’s there!*, which is assimilated to DE exclamations only by intonation.

NDEs are of theoretical interest because they offer no apparent scope for presupposition theories of exclamatives of the form shared by Michaelis and Z&P. These theories require that a proposition S_1 imputing possession of a non-degenerate quality (e.g. being hot, tardy, weird, or beautiful) is DPR-presupposed which is then amplified by restriction to an extreme subset (e.g. extreme heat, etc.). If DPR-presupposition goes, alternative theories of non-assertoricity are wanted, of which DTS supplies one. Variational analysis of the kind exemplified in Sections 2.2–2.3 supplied arguments against the presupposition thesis for DEs and even for PEs, never mind YNQ-based forms. However, when variational argument is infeasible *in situ*, as is so often the case in typology, one might yet be tempted to question the expressive unity of Exclamative. We therefore sample from languages where non-intonational markers of exclamativity, which are in no danger of being called ‘paralinguistic’, cut across the DE/NDE divide. Much depends here on translations provided, and we discuss one example that could illustrate occasional problems. (More material pertaining to DE/NDE is in Section 5.3.)

In West Greenlandic (Eskimo-Aleut), according to Fortescue (1984), primarily subordinate verbal forms called ‘subordinate moods’ function as exclamatives in independent/main clause occurrence. Exs. (15a,b) illustrate such use of the ‘causative mood’ and 16(a,b) the ‘participial mood’. Exx. (a) and (b) respectively illustrate DE and NDE instances.

- (15) a. ilami kilirnir-it iti-qi-gami
 INTJ cut-2SG be.deep-very-CAUS.3SG
 My, that cut of yours is so deep!
- b. asirur-mi-gami
 break-EMPH-CAUS.3SG
 That it should break!
- (16) a. aatsaat tassa mamari-sa-ra
 for.the first.time that.is find.delicious-PASS-PART.1SG
 I've never tasted anything so delicious!
- b. (sunaavva)piili-qar-tuq
 INTJ car-have-PART.3SG
 Why, there's a car!

In Tundra Nenets (Uralic), exclamation is expressed by means of the clitic *nyuq* (Tereshchenko 1965). The clitic attaches to verbs or predicative adjectives. Without this clitic the counterpart of example (17a) has the meaning 'The weather is nice' and the counterpart of (17b) means 'He reads very well', but the clitic adds the exclamative component of "surprise".

- (17) a. num-ta sowa-nyuq
 weather-3SG nice-EXCL
 The weather is (so) nice! / What nice weather/Isn't!
- b. nyenaq sawaw^ona tolangku-nyuq
 very well read.3SG-EXCL
 He reads so well!

The clitic is compatible with non-degree predicates as in the following:

- (18) a. xoba-w^o tarosiyiq pus^ornga-r^o-nyuq
 skin-ACC.1SG in.vain waste-SG.OBJ.2SG-EXCL
 That you should waste my skin in vain!
- b. nyar^o xalya-m ngøma-døm-nyuq
 INTJ fish-ACC eat-1SG-EXCL
 Oh, I'll eat the fish!

Tuvaluan (Polynesian) has a distinct exclamative construction that consists of an independently used NP (Besnier 2000: 40). This is the only context in this language where an NP, not overtly marked for predication by means of a copula, forms a complete utterance. *Prima facie*, the construction can express both DE (19a) and NDE (19b).

- (19) a. te gali foki o te lagi a Niutao
 the beautiful also of the tune of Niutao
 Niutao's traditional tunes are so beautiful!
- b. te kata a mele
 the laugh of Mele
 Mele is laughing!

Supposing further that the literal rendering of *foki* as *also* implies anaphoric and additive properties akin to those of the English focus particle (Merin 1999:209–214) or its close affine *even*, (19a) presents a clear-cut DE of an ‘ampliative’, and *prima facie* presuppositional type. (19b) appears to have gradable open-class content—laughs surely admit of gradable variety—but, as Besnier renders its nuance, offers no scope for ampliative presuppositionality. To be interpretable as a DE at all, it would have to support a rendering as *The way Mele is laughing!*, which the translation has decided against. Decisions about DE vs. NDE status will often be delicate, granted that (i) PE form is not necessary for DE status and (ii) predicate gradability is insufficient for it. However, at least some of the NDE examples in this section make the possibility of a DE construal, i.e. by ID or ED, quite unlikely.

5.2 Exclamatives and related constructions

It is widely assumed that apparent polysemy of grammatical markers should correlate with conceptual closeness of the respective meanings in theory and vice versa. The assumption predicts that Exclamatives will be rendered with rather better than chance correlation by the same grammatical means as other utterance types that express a pronounced deviation from expectation. Miratives and optatives are instances of such types that have been recognized as such by grammarians, and thetics appear to harbour instances too. Very roughly, mirative and at least some thetic sentences present the eventuality of which the occurrence is indicated by the sentence as being outstandingly new and in this epistemic sense unexpected for the speaker. Optatives signal that the current state of the world deviates outstandingly from the speaker’s boulomaic expectations. Exclamatives can have both of these expressive functions. In each case, the speaker’s apparent reaction to or stance toward the eventuality that gives rise to the expression is presented as an integral part of the means by which the apparently intended communicative effect is to be achieved. Non-assertoricity or, more generally, socio-political non-impositivity are common features.

One may object that deviation from prior expectation is a quality that attaches to most if not all non-redundant utterances. However, in the usual run of things these deviations and presentations are so routine that they become, as it were, transparent. The speaking person can ostensibly be discounted in one’s stock of updated knowledge or deontic commitments. The Exclamative and its kin remove, in the first place, the presumption of transparency. This is what we mean by emphatic expression of the two features indicated, and we hold that it is common to Exclamatives, optatives, miratives, and at least in parts to thetics.

5.2.1 Miratives

‘Mirative’ names a cluster of verbal forms found in many languages whose meaning is to indicate that the conveyed information is new and unexpected for the speaker and/or that the event happens in a way that is beyond the speakers control (Aksu & Slobin 1986; Dickinson 2000; DeLancey 1997, 2001). Aksu and Slobin describe this phenomenon in Turkish using the notions of the “unprepared mind” and “psy-

chological distance”. Across languages, miratives are often expressed by the same morpho-syntactic construction as evidentials, which signal that the speaker has not witnessed the event herself but makes an assertion based on second-hand evidence. Prototypical evidentials indicate an indirect source of information: the speaker is PHYSICALLY OR PERCEPTUALLY REMOTE from the described event. Prototypical miratives, in terms perhaps equivalent to Aksu and Slobin’s, have the speaker MENTALLY OR EXPECTATIONALLY REMOTE from the event as one is from a ‘remote possibility’. They emphasize a contradiction between the speaker’s set of established expectations and the situation experienced. The common epistemic feature is, accordingly, the requirement for ‘remoteness’ from the event, be it physical-perceptual or mental-expectational.

Z&P (2003:53f.) note that YN exclamatives are similar to miratives. We now take up their recommendation of further study. First, the description in terms of remoteness should fill the gap opened up by their observation that ‘inferential’ uses of miratives, as distinct from those indicating ‘unexpectedness’ have no apparent connection with exclamatives. Next, we note that the positive connection they identify has varied grammatical correlates. In many languages, miratives and exclamatives have the same morpho-syntactic expression. Thus, in a number of Uralic and Turkic languages, nominalizations used in main clauses serve both as exclamatives and miratives/evidentials. For example, in Northern Ostyak (Uralic), prototypically dependent action nominals in *-m* may be used as main predicates (see Nikolaeva 1999).

- (20) a. Juwan jöxət-m-al
 John come-NMLZ-3SG
 Apparently John has come.
- b. [I entered the house] pa ũw numpina tüt jüx pön-ti nir ul-m-al
 and door above fire wood put-INF shelf be-NMLZ-3SG
 and above the door there was a shelf to put the wood.

Example (20a) illustrates an inferential evidential: the speaker did not observe the event, but infers that it took place. The basis for this inference is its visible result, e.g. John’s coat left in the room. (20b) is a mirative: the speaker now directly observes the event, but the event is presented as being totally unexpected. Such constructions are very common in Ostyak in the context of coming to a new place and discovering something unexpected. The construction of (20) also renders the Exclamative meaning. For example, (21a) can be uttered in a situation where the speaker directly observes the presence of John and is surprised by it. Such exclamatives are often accompanied by emphatic particles (21b) and must be marked with special intonation, rendered here by the exclamation mark.

- (21) a. Juwan tūta ul-m-al!
 John here be-NMLZ-3SG
 John is here!
- b. pa jur xōti si tāj-m-em!
 and strength PTCL so have-NMLZ-1SG
 I had so much strength!

Apart from the clitic *nyuq* discussed above, Tundra Nenets exhibits the so-called ‘narrative mood’ based historically on the perfective participle augmented with subject agreement affixes (Salminen 1997). It is used both in the inferential evidential (22) and mirative (23) function. The latter often includes references to uncontrolled events.

- (22) nyebya-w° yimpitøk°nta nyeseý° syisy°ye tyeb°dye-wi°
 mother-1SG dress.DAT.3SG new button.ACC.PL sew-NARR.3SG
 My mother has sewn the new buttons to her dress.
- (23) a. xørbyo nyenecý°h ngæ-wi°
 hard.working man be-NARR.3SG
 He turned out to be a hard working man.
 b. toxos°m sæd°q møda-we-w°
 fabric not.straight cut-NARR-SG.OBJ.1SG
 Apparently I have not cut the fabric straight.

The narrative mood is also used in exclamations both of the degree (24a) and non-degree (24b) type.

- (24) a. xurka sowa xíbya ngæ-wi°
 what nice person be-NARR.3SG
 What a nice person he is!
 b. xiy° tyukoxøna me-we-n°
 INTJ here be-NARR-2SG
 Ah, here you are!

The independent usage of non-finite forms in Tundra Nenets is largely identical to Northern Ostyak. A similar pattern is observed in West Greenlandic, where the participial mood mentioned above expresses both hearsay evidentials and exclamations (Fortescue 1984).

Ainu (isolate) makes use of several nominalizing particles co-occurring with the copula to indicate various types of evidential meanings (Tamura 2000). For example, the particle *siri* expresses visual evidence, and *hawe* expresses hearsay.

- (25) a. húci ek kor an siri ne
 grandmother come while be VISUAL COP
 (I see that) grandmother is coming.
 b. núman húci ek hawe ne
 yesterday grandmother come HEARSAY COP
 (They said that) grandmother came yesterday.

Both particles are also used in exclamations, e.g.:

- (26) a. e-easkay siri
 2SG-can.do VISUAL
 You are really skilful! [while observing an activity]

- b. ku-hawe wen hawe
 1SG.NOM-voice be.bad HEARSAY
 That my voice should be bad (you are saying)!

Unlike evidentials, exclamatives lack a copula and are pronounced with the special “exclamative” intonation. DeLancey (1997: 45-47), referring to Lee (1993) and other sources, discusses the mirative suffix *-kun/-kuna* in Korean. Example: the following sentence can be uttered by someone who enters the house to find the family at dinner:

- (27) cəny’ək tω-si-nωn-kun-yo
 dinner take-HON-PRES-MIR-DEF
 (I see) you are eating dinner.

The suffix is not evidential in meaning: it cannot be used to indicate an indirect source of information similarly to Uralic nominalized constructions. Chang & Prost (1995) analyze *-kun/-kuna* as the exclamative suffix. They support their analysis by the following examples of (a) degree and (b) non-degree exclamatives:

- (28) a. nalssi-ka choh-kun
 weather-NOM be.nice-MIR
 The weather is so nice!
 b. pi-ka o-neun-kuna!
 rain-NOM come-PRES-MIR
 It’s raining!

Thus, in Korean non-evidential miratives pattern together with exclamatives, whereas evidentials are expressed by different grammatical means.

The borderline between miratives and exclamations is not clear-cut. In the absence of prosodic information it is often impossible to tell which of the two constructions one is dealing with. This is not altogether surprising. Both types serve to express that the designated situation fails to correspond to the speaker’s prior expectation, exclamatives doing so somewhat more expressively. In both cases, at any rate, “it is the speaker’s discovery of the fact, rather than the fact itself, which is actually being communicated” (DeLancey 1997: 40). The similarity in this respect to factive constructions is apparent and has presumably helped to motivate the presuppositionality thesis. The DTS account modifies this latter feature from DPRs to PPRs. Would it distinguish miratives from exclamatives if and when prosody does so? Our guess must be that the difference is in the ‘How’: that non-Exclamative miratives work by the ostensibly more laborious, if frequently short-circuited routine which, by partial analogy, will attend the use of English sentence adverbs such as *surprisingly* or *amazingly*.

5.2.2 Optatives

The cover term “optative” is here applied to a variety of constructions expressing wishes. These wishes are unlike wants in not requiring that the speaker believe

the desired state of affairs to be realizable. Within optatives, we distinguish optatives proper from hortatives and jussives, i.e. 3rd person adhortations. There is one crucial decision-theoretic feature of the optative proper which distinguishes it semantically from the imperative. The ‘option’ ostensibly desired by the optative’s speaker is not the value of a present act-variable of the speaker’s. Neither is it the value of some other person’s act-variable which the speaker is ostensibly in a position to affect by social action. For hortatives and jussives, when privatively distinguished from imperatives, this would not be true. We should class them as intermediates, unspecified for ostensible social influence where imperatives are positively specified, and optatives proper, negatively. Optatives and exclamations often find identical or similar grammatical expression. Consider West Greenlandic again. According to Fortescue (1984: 200), the optative is a finite ‘mood’ which expresses the optative/jussive meaning. An example is (29a). However, it is also used for the expression of exclamations, as in (29b).

- (29) a. urnil-li-sigut
 come-OPT.3SG-1PL.OBJ
 Let him come to us.
 b. suuruna annia-qi-li
 of.course hurt-very-OPT.3SG
 Wow, that must have hurt!

In a number of European languages optatives can be expressed by independent constructions with ‘if’-type (30) or ‘that’-type (31) complementizers, whereas the verb stands either in the indicative or subjunctive.

- (30) a. If only you could give me a couple of stamps!
 b. Wenn sie nur schon da wären!⁵¹
- (31) a. Oh, that the lord would give us rest!
 b. Qu’il vienne!
 c. Štob ty sdox!
 so.that you die.PAST.MASC
 Would that you had died!

With different clause contents, notably also mood inflection, constructions with the same complementizers also express exclamations.

- (32) a. If it ain’t him!
 b. Wenn das nicht der Otto selbst ist!
- (33) a. That he didn’t come!
 b. That he should do such a thing!
 c. Que ne fume-t-il pas!
 d. Moi, que je vende cette voiture!

⁵¹For the crucial modal particle uses of *nur* and *only* in (30), see Merin (1994).

- e. Dass er zu so etwas fähig war!
- f. Štob on enilsja Nikogda!
so.that he marry.PAST.MASC never
Him, marry? Never!

Exclamative infinitives and optative infinitives differ in prosody. We must leave open whether identical underlying syntactic structure should be hypothesized.⁵² The fact remains that both constructions employ the same verbal form. What do optatives and exclamations have semantically in common and what sets them apart? We hold that, in both, the current state of the world is presented as deviating grossly from the speaker's expectation. For instance, the optative *Would that she were here!* expresses both a preference of the speaker's for the referent's presence, while diagnosing the actual and as a rule saddening absence of that referent. Absence will be saddening where it is, not least because in typical, properly optative examples, presence will be a causally remote possibility, i.e. a practical near-impossibility. The utterer of a typical optative of English, for one, has exhausted any means that might have been available to bring about the desired state of affairs. Utterers of exclamatives are overwhelmed by something which happens, again beyond their control, and have had no time to try to exert influence or realize the futility of trying. Yet all of these utterance types, including hortatives when compared to imperatives, make no claim on the addressee.

5.2.3 Thetics

A category of 'thetic' utterances exemplified in many language families has been widely discussed in the linguistic literature. Said not to be structured into presupposed topic and asserted comment, thetics are sometimes called 'all-new sentences' for this reason (see Lambrecht 1994). Sasse (1987:526), by contrast, emphasizes the category of situational expectation, with unexpectedness a prominent criterion. One prominent class of English exemplars of thetics were addressed in 4.8. Here we note (i) that *bona fide* instances of thetics in at least some European languages are related to exclamatives in use conditions and prosodic potential (the data of 4.8 are mirrored in German, for one); (ii) that rival theories of thetics relate to one another as domain expansion and expectation-change theories of exclamatives do, and (iii) that in many languages from diverse language families, morpho-syntactic features of these two grammarians' categories correlate. Typological fact (iii) seems not to have been noticed so far, is robust enough to be abstracted from available grammars, and will situate Exclamative in the space of candidate universal speech act types.

Cross-linguistically, there is a tendency for thetics to be realized by subject-predicate inversion (e.g. in Spanish, Italian, Slavic, Hungarian, Chinese, Swahili, modern Arabic dialects; cf. Sasse (1987), Lambrecht (2000). Recall here that Michaelis (2001: 1048-1049) in agreement with others relates exclamative inversion to interrogative inversion. But note also that exclamatives invert in some languages

⁵²Nikolaeva (2008) argues that each type of root infinitive is a construction in its own right. They form a natural class only inasmuch as they represent independently used non-finite forms.

where questions do not, e.g. in Russian. Subject-predicate inversion in Russian is exemplified by Polinsky & Lambrecht (1997):

- (34) a. pticy POJUT
birds sing.3PL
The birds are SINGING.
b. pojut PTICY / PTICY pojut
sing.3PL birds / birds sing.3PL
There are BIRDS singing / The BIRDS are singing.

(34a) is a non-inverted topic-comment structure. (34b) is interpreted as athetic utterance, regardless of whether it is expressed by syntactic inversion of subject and predicate or by inversion of relative prosodic prominence. Subject-predicate inversion also does duty in Russian exclamations (as it does in English Wh-exclamations), e.g.:

- (35) KRASIVYJ on takoj! / on takoj KRASIVYJ!
handsome he such / he such handsome
He is so handsome!

Both the inverted and non-inverted construction express the relevant meaning in (35). However, only the inverted construction is specialized for exclamations. True exclamatives cannot be embedded under assertive verbs, and this is exactly what is observed in Russian.

- (36) Ona govorit, čto on takoj krasivyj / *Ona govorit, čto krasivyj on takoj
she says that he such handsome / she says that handsome he such
She says that he is so handsome.

Note that in the inverted version of (35) the prosodic prominence is on the predicate *krasivyj*, unlike in (34b). In other words, Russian exclamatives require a distinct prosodic pattern which is not observed in thetics (cf. Bonnot & Seliverstova 1995: 200), although the inverted syntactic structure of exclamatives and thetics is very much the same.

Thetic use of nominalization is typical of Austronesian languages and is also found elsewhere (Sasse 1987). In Austronesian, at least some types of thetics are represented by possessive constructions, as in the following examples from Tagalog and Tongan (Sasse 1987: 552-553). Both sentences are construed as answers to the question ‘What happened?’ and so provide all-new information:

- (37) a. kama-matay lang ng lola
REDUP-die just of grandma
GRANDMA just died.
b. ko e ui 'ae tangata
EXIST the call of.the man
The MAN is calling.

The word glossed as a verb is a verbal noun, compatible with the definite article in (37b). The same Austronesian construction serves to render exclamatives.⁵³ This is illustrated by (38a) from Maori (Bauer 1993: 38), (38b) from *Tukang Besi* (Donohue 1999: 458-459), and (38c) from Muna (van den Berg 1989: 172-174).

- (38) a. *te aataahua hoki o te ngahere*
the beauty indeed of the bush
How beautiful the bush is!
- b. *ke to'oge nu ana-'u*
and big of child-3SG.POS
Hasn't your child grown up!
- c. *ka-ghoho-ndo*
NOM-tell.lie-3PL.POS
They are telling a lie!

An intermediate semi-translative gloss for (38a) might be 'the beauty of the bush, indeed', for (38b) 'the bigness of your child', and for (38c) 'their telling of a lie'. As in Russian, Austronesian exclamatives differ from thetics in other properties: they tend to employ emphatic particles, such as *hoki* or *ke* (in the examples above) and, according to Van den Berg (1989: 173), they are characterized by higher pitch and prosodic intensity.

Thetics appear to share with exclamatives (i) the moment of drastic unexpectedness, at utterance time, for the speaker and, in many cases, (ii) a lack of the kind of assertoricity which goes with orderly argumentative support. We hope the general framework of Section 4 will allow further research to check to what extent Lambrecht's and Sasse's terms of reference are two sides of the same coin. The extent to which the English exemplars of Section 4.8, are paradigmatic for a significantly universal utterance type of Thetic remains to be explored. Their brief analysis should at any rate have determined a useful hypothesis space.

5.3 Non-assertoricity and non-finiteness

The proposed semantics makes Exclamatives non-assertoric, given a well-defined concept of assertion. One should thus expect that languages tend to express Exclamatives in a morpho-syntactic form which is not a correlate for the speech act category of assertion. Wh- and YNQ-related exclamatives are one instance of this tendency. Exclamatives also adopt expression forms that prototypically serve to REFER to an actual or possible eventuality rather than to assert that the event is, or has been, taking place. These forms include independently used non-finite verbal forms such as infinitives, gerunds and converbs, canonically used in subordination. Finiteness has been variously analysed as a syntactic concomitant of assertion (see e.g. Klein 1994, 1998, Hoekstra & Hyams 1998, Bianchi 2000, Roussou 2001). Following this line of thought, independent clauses that lack syntactic finiteness will be non-assertoric (Platzack & Rosengren 1998).

⁵³Eric Potsdam (n.d.) has noted this association for an even wider range of languages.

Root infinitives in major European languages can be Exclamative with a polar range of attitude (Rémi-Giraud 1988). They can, for instance, express wishes, if with a decidedly optative feel and, at least in English, French and German, in highly restricted collocations.

- (39) a. To see Paris {?∅/and die}!
 b. Einmal (im Leben) Paris sehen (und dann sterben)!
 c. Voir Paris et mourir!

They can also express indignation or incredulity as in ‘Incredulity Infinitives’ or ‘Mad Magazine Sentences’ (Akmajian 1984) in modern IE languages, which have a decidedly echoic feel and are often analyzed as exclamatives (Lambrecht 1990; Grohmann 1999), though none less than Hermann Paul (1909) takes them to be ‘imperative questions’, presumably of the ‘rhetorical’ kind.

- (40) a. Me, marry you?!
 b. Der (und) Soldat werden!
 c. Moi, faire le premier pas! Jamais!

In Latin and Ancient Greek (cf. Rémi-Giraud 1988: 50f.; Riemann & Goelzer 1897: 641) infinitives have a like use, prominently so with accusative subject case marking.⁵⁴ Outside IE, consider first Amharic (Semitic), where the infinitive, sometimes the gerund, serves in independent exclamatory sentences which express “an indignant answer or reaction to what has just been said, or to a given situation” (Kapeliuk 1988: 58-59).

- (41) ay yə-set libb ay ləbs-o bičča mə-hed
 ah POS-woman heart dress-GER only INF-go
 Ah, a woman’s heart, to walk only [well] dressed up!

In Yakut (Turkic) the converb in *-a(a)n* (with vowel harmony variants) is prototypically employed in adverbial dependent clauses or in clause chaining. However, it is also used as an independent exclamative. Compare examples (42a) and (42b) from Korkina (1982: 243-244).

- (42) a. min üörex ahyll-an internak-ka oloro barbyt-ym
 I study start-CONV.3SG boarding.school-DAT live go.PAST-1SG
 When I began my studies I went to live in a boarding school.
 b. O: ara:s d’on kine:st-e:n-ner!
 INTJ useless people be.prince-CONV-3PL
 Oh, (even) useless people can be princes!

According to Kalinina and Sumbatova (2007), in Bagwalal (Nakh-Daghestanian) deverbals nouns (*masdars*) are used as sentential complements mostly of factive verbs (43a). In independent clauses they do not inflect for tense or any other finite categories and express exclamations (43b).

⁵⁴Latin grammars speak of an *Infinitivus exclamativus* or *Infinitivus indignantis et admirantis*.

- (43) a. ali-r bišał c'aXi-n ebda beta
 Ali-ERG ram look.for-NMLZ self leave
 Ali gave up looking for the ram.
- b. di-ha ongiri ek'_wa-b č'al a-n!
 I-OBL.DAT here be-PART feed.up-NMLZ
 How fed up I am with everything here!

Other non-IE languages that employ non-finite verbal forms in exclamatives are e.g. Turkish (Kornfilt 1997: 208), Basque (Hualde & de Urbina 2003: 571-572), and Abhaz (North-Caucasian) (Hewitt 1979). Recall also from above morphologically derived exclamative nominalizations in West Greenlandic and Uralic and the lack of a 'finite' copula in Ainu and Austronesian exclamatives.

Exclamatives thus frequently take the form of syntactic units which also occur subordinated. Evans (2007) dubs the free-standing use of formally subordinate constructions (complementizer clauses, non-finite forms, nominalizations, and dependent moods) "insubordination". He takes insubordinated constructions as arising in diachronic process involving the ellipsis of the matrix clause. Ellipsis implies a tacit complement, but the hypothesis is neutral between it being 'presupposed' or else 'implicated' in a sense that makes it the main news-item of the utterance.

Either way, insubordinates must—at least ostensibly and in the first place—rely on supplementation, notably so by the hearer, to express what they are intuited as expressing. Of themselves, they make ostensibly no claim on anyone's credulity or compliance. Moreover, unlike familiar declarative or directive ellipsis, they do not rely on contiguous co-text for their supplement. They are *prima facie* nonassertoric. To this extent they fall outside the framework of orderly negotiation which attends evolution of the Joint Commitment State. True to their name, they subvert such orderly procedures. We model this by supposing the speaker's personal commitment context, \mathcal{S} , affecting the hearer's, \mathcal{H} , by ostensibly direct causation. Influence is causal in a privative sense: in being non-evidential, incentive-less, unreasoned.

6. Conclusion

Exclamative utterances are neither assertoric nor, in the familiar sense, presuppositional. This negative thesis contradicts the best-developed family of received views. In support of it, we argued *à propos* pro-form exclamatives of the *Wh-* and *so/such* type that there must be general constraints against presuppositions being 'accommodated' indiscriminately. Bar such constraints, accommodation would subvert the institution of assertion on which presupposing is predicated. Thus, while some pro-form exclamatives might be properly presuppositional, others will not be. Hence, the combination of extreme 'degree' and presupposition will not characterize even the most widely studied form of exclamatives. Our positive argument for characterizing Exclamatives can be summed up as follows:

1. The Exclamative communicates a drastic change of expectation over a partition. Expectation can be analyzed into probability and desiderative valuation.

- It thus allows tradeoffs between the two components. Stochastic distribution laws also allow one component to become, empirically, a function of the other.
2. The change in expectation to be communicated is relative to the speaker's expectational state \mathcal{S} .
 3. The intent imputable to the speaker is to induce a concomitant or at any rate correlative expectation change in the hearer's commitment state, \mathcal{H} .
 4. Exclamatives express what they express, by the interpretive conventions of first resort, as a symptom exhibited by the speaker, not as a demand, proposal, or request for renegotiating the common ground, \mathcal{J} , of shared commitments.
 5. The conversational transaction ostensibly bypasses \mathcal{J} , whose modification is subject to completion of an orderly sequence of negotiation states, e.g. assertions made, corresponding admissions made, or denials properly motivated.
 6. State \mathcal{J} will *ceteris paribus* adjust to conformity with ostensible expectation changes local to \mathcal{S} and \mathcal{H} , and purely epistemic information may be induced within each of \mathcal{S} , \mathcal{H} , and \mathcal{J} from emotively conveyed gross expectation changes.⁵⁵
 7. The theoretical construct \mathcal{J} is independently motivated. The hypothesized order of ostensible state changes is consistent with intuitions that Exclamations affect 'Common Ground' directly. These are predicated on the observation that Exclamatives do not require assent.
 8. The expectation states of speaker and interlocutor-hearer are, in their epistemic component, 'probabilistic presuppositions' ostensibly held by these respective persons. Any resultant change in \mathcal{J} will likewise have this ostensible status, not being subject even to a tacit sequence of proposal and assent, and irrespective of physical time structure.
 9. Probabilistic presuppositions differ in important formal and empirical respects from presuppositions as standardly understood. Informally speaking, probabilistic presuppositions are those which cannot be specified as propositions whose verbal expression does not make essential use of auto-epistemic terms.

The DTS analysis of exclamatives—as utterances expressing drastic deviations from the speaker's expectation and occasioned by an entity or eventuality—covers all forms of exclamatives, including those which have received lesser attention in the recent literature. In addition it allows one to make sense of the taxonomic unity of the optative-type and surprise-type constructions and (see 4.8)

Besides iconic features, exclamatives ostensibly have a pronounced “indexical” component, in the original, mostly 1880s sense of C.S. Peirce.⁵⁶ Apart from any context-reliant underspecification which they exhibit, they purport (i) to have a direct causal connection to their referent like a “symptom”, (ii) to induce a an orienting reflex by “blind compulsion”, and (iii) to be non-assertoric—as a bare, unretortive, deictic *There!* accompanied by an index finger pointing would be. The juncture of these features distinguishes exclamatives from assertions, from questions and also from directives, which all admit of a rich repertoire of negotiation activities, includ-

⁵⁵Recall the principle for ‘scales’ proposed on p. 30.

⁵⁶For this difficult concept best see all of Peirce ([1931]: 2.243–306).

ing simple refusals to be moved to a response. The DTS model explicates these intuitive, but theoretically occult features privatively: by contrast to the due negotiation model for assertoric and directive acts.

The Exclamative falls outside the typology of social acts that underlies those speech acts on which traditional speech act theory has a reasonably secure grasp. This outside status may be reflected statistically in the fact that, in many languages, the Exclamative adopts or minimally adapts syntactic forms which already have other free, main clause uses, or have no other free use at all. What makes it different is not so much what Searle expresses by ‘lack of direction of fit’ for expressives. Neither, save derivatively, is it the fact that its description in terms of ‘illocutionary’ features (Austin 1962) must make essential appeal to features that would be ‘perlocutionary’ in Austin’s terms. Rather, it is the fact that the Exclamative is a verbal action type which is in some sense a non-act.

An act is an act, not just an action, to the extent that it is voluntary. But the exclamative purports to be, by the interpretive convention of first resort, involuntary. A social act is also constrained by juridical or proto-juridical notions of due procedure. The procedures in question may range from exercise of authority as in typical explicit performatives used by state officials, over the take-it-or-leave-it ultimatum, elementary negotiation, to intricate moves in appellate hierarchy. The Exclamative is an ostensible non-act in this sense, too. Nonetheless, it is a mode of communication which is as highly conventionalized as any other speech act type.⁵⁷

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Abbreviations

ACC - accusative, CAUS - 'causative mood', CONV - converb, COP - copula, DAT - dative, DEF - definite, EMPH - emphatic, EXCL - exclamative, ERG - ergative, EXIST - existential copula, FEM - feminine, GER - gerund, IE - Indo-European, INF - infinitive, INTJ - interjection, HON - honorific, MASC - masculine, MIR - mirative, NARR - narrative, NEG - negation, NMLZ - nominalization, NOM - nominative, OBJ - object, OBL - oblique, OPT - optative, PASS - passive, PART - 'participial mood', PL - plural, POS - possessive, PRES - present, PTCL - particle, PRT - participle, REDUP - reduplication, SG - singular.

References

- Akmajian, Adrian. 1984. Sentence types and the form-function fit. *Natural Language and Linguistic Theory* 2, 1-23.
- Aksu, A.A. & D. Slobin. 1986. A psychological account of the development and use of evidentials in Turkish. In: Chafe, Wallace & Johanna Nichols (eds.), *Evidentiality: The Linguistic Coding of Epistemology. Advances in Discourse Processes XX*. Norwood, NJ: Ablex Publishing Corporation, 159-167.
- Allerton, D.J. & Cruttenden, Alan. 1979. Three reasons for accenting a definite subject. *Journal of Linguistics* 15, 49-53.
- Austin, J.L. 1962. *How to Do Things with Words*. Ed. J.O. Urmson. Oxford: Clarendon Press.
- Avis, Franz-Josef d'. 2001. Über w-Exklamativsätze im Deutschen. *Linguistische Arbeiten* 429. Tübingen: Niemeyer.
- Bacha, Jacqueline. 2000. *L'exclamation: approche syntaxique et sémantique d'une modalité énonciative*. Paris: L'Harmattan.
- Bartels, Christine & Merin, Arthur. 1999. Towards a formal semantics for English phrasal intonation. In O. Fujimura, B.D. Joseph und B. Palek (eds.), *Item Order in Language and Speech: Proceedings of LP'98*. Prague: Karolinum Press, 91-110.
- Bauer, Winifred, with William Paker & Te Kareongawai Evans. 1993. *Maori*. London: Routledge.
- Besnier, Niko. 2000. *Tuvaluan. A Polynesian Language of the Central Pacific*. London: Routledge.
- Bianchi, Valentina. 2000. On finiteness and Nominative Case licensing. *Quaderni del Laboratorio di Linguistica (Nuova Serie)* 1, 145-167.
- Binmore, Ken. 1992. *Fun and Games: A Text on Game Theory*. Lexington MA: D.C. Heath.
- Bolinger, Dwight L. 1989. *Intonation and its Uses: Melody in Grammar and Discourse*. Stanford CA: Stanford University Press.
- Bonnot, Christine & Olga Sileverstova. 1995. Ordre des mots et exclamation (à propos du russe moderne). *Faits des langues* 6, 199-209.
- Chafe, Wallace. 1974. Language and consciousness. *Language* 50, 111-133.

- Chang, In-Bong & Martine Prost. 1995. Exclamatif et discours rapporté en coréen contemporain. *Faits des langues* 6, 181-188.
- Cruse, D. Alan. 2000. *Meaning in Language: An Introduction to Semantics and Pragmatics*. Oxford: Oxford University Press.
- Cruttenden, Alan. 1986. *Intonation*. Cambridge: Cambridge University Press. [2nd edn.: 1997].
- DeLancey, Scott. 1997. Mirativity: The grammatical marking of unexpected information. *Linguistic Typology* 1, 33-52.
- . 2001. The mirative and evidentiality. *Journal of Pragmatics* 33, 369-382.
- Dickenson, Connie. 2000. Mirativity in Tsafiki. *Studies in Language* 24, 379-421.
- Dimmendaal, Gerrit J. 1983. *The Turkana Language*. Publications in African Languages and Linguistics 2. Dordrecht: Foris.
- Donohue, Mark. 1999. *A Grammar of Tukang Besi*. Berlin: Mouton de Gruyter.
- Ducrot, Oswald. 1968. La description sémantique des énoncés français et la notion de présupposition. *L'Homme* 1, 37-53.
- . 1972. *Dire et ne pas dire: principes de sémantique linguistique*. Paris: Hermann.
- . 1984. *Le dire et le dit*. Paris: Minuit.
- Efron, Bradley & Ronald Thisted. 1976. Estimating the number of unseen species: How many words did Shakespeare know? *Biometrika* 63, 435-447.
- Elliott, Dale E. 1974. Toward a grammar of exclamations. *Foundations of Language* 11: 231-246.
- Evans, Nicholas. 2007. Insubordination and its uses. In: Irina Nikolaeva (ed.) *Finiteness: Theoretical and Empirical Foundations*. Oxford: Oxford University Press, 366-431.
- Feller, William. 1957. *Introduction to Probability Theory and its Applications*. Vol. 1. New York: Wiley.
- Fortescue, Michael D. 1984. *West Greenlandic*. Croom Helm descriptive grammars. London: Croom Helm.
- Fries, Norbert 1988. Ist Pragmatik schwer? – Über sogenannte Exklamativsätze im Deutschen. In *S&P: Sprache und Pragmatik Arbeitsberichte* 3, Lund University. [Cited after Schwabe 1989]
- Gazdar, Gerald. 1979. *Pragmatics: Implicature, Presupposition, and Logical Form*. London: Academic Press.
- Gérard, Josselyne 1980. *L'Exclamation en français: la syntaxe des phrases et des expressions exclamatives*. Tübingen: Niemeyer.
- Goldie, Charles M. & Pinch, Richard G.E. 1991. *Communication Theory*. Cambridge: Cambridge University Press.
- Goldie, Peter 2000. *The Emotions: A Philosophical Exploration*. Oxford: Clarendon Press.
- Grice, H.P. 1989. *Studies in the Way of Words*. Cambridge MA: Harvard University Press.
- Grimshaw, Jane. 1979. Complement selection and the lexicon. *Linguistic Inquiry* 10, 279-326.
- Grohmann, Kleantes K. 1999. Infinitival Exclamatives. *University of Maryland Working Papers in Linguistics* 8, 213-238.

- Gussenhoven, Carlos. 2004. *The Phonology of Tone and Intonation*. Cambridge: Cambridge University Press.
- Gutiérrez-Rexach, Javier. 1999. Spanish exclamatives and the interpretation of the left periphery. In: D'Hulst, Yves, Johan Rooryck & Jan Schroten (eds.) *Romance Languages and Linguistics 1999*. Selected papers from 'Going Romance' 1999, Leiden, 9-11 December. Amsterdam: Benjamins, 167-194.
- Hamblin, C.L. 1958. Questions. *Australasian Journal of Philosophy* 36, 159–168.
- Haspelmath, Martin. 2003. The geometry of grammatical meaning: Semantic maps and cross-linguistic comparison. In M. Tomasello (ed.) *The New Psychology of Language*, Vol 2. Mahwah, NJ: Erlbaum, 211-242.
- Heim, Irene. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Doctoral dissertation, University of Massachusetts, Amherst.
- Hewitt, B. G. 1979. *Abkhaz*. Amsterdam: North-Holland.
- Hintikka, Jaakko 1962. *Knowledge and Belief*. Ithaca NY: Cornell University Press.
- Hoekstra, Teun & Nina Hyams. 1998. Aspects of root infinitives. *Lingua* 106, 81-112.
- Hualde, José Ignacio & Jon Ortiz de Urbina (eds.) 2003. *A Grammar of Basque*. Berlin: Mouton de Gruyter.
- Huddleston, Rodney & Geoffrey Pullum (eds.) 2002. *The Cambridge Grammar of the English Language*. Cambridge: Cambridge University Press.
- Jeffrey, Richard C. 1965. *The Logic of Decision*. New York: McGraw-Hill. 2nd edn. Chicago: University of Chicago Press, 1983.
- Kalinina, Elena Ju. & Nina Sumbatova. 2007. Clause structure and verbal forms in Nakh-Daghestanian language. In: Irina Nikolaeva (ed.) *Finiteness: Theoretical and Empirical Foundations*. Oxford: Oxford University Press, 183–249.
- Kamp, Hans. 1981. A theory of truth and semantic representation. In: *Formal Methods in the Study of Language*, eds. Jeroen A. G. Groenendijk, T. M. V. Janssen, & Martin B. J. Stokhof. *Mathematical Center Tract* 135, Amsterdam, 277-322.
- Kapeliuk, Olga. 1988. *Nominalization in Amharic*. Wiesbaden: Franz Steiner.
- Kaplan, David. 1997. The meaning of 'Ouch' and 'Oops'. *Explorations in the theory of Meaning as Use*. Draft 2 Ms. UCLA
- Karttunen, Lauri. 1976. Discourse referents. In J.D. McCawley (ed. *Syntax and Semantics 7: Notes from the Linguistic Underground*. New York: Academic Press, 363–385.
- . 1977. Syntax and semantics of questions. *Linguistics and Philosophy* 1, 3–44.
- Kay, Paul, & Charles Fillmore. 1999. 'Grammatical Constructions and Linguistic Generalizations: The What's C doing Y? Construction', *Language* 75:1-33.
- Kiparsky, Paul & Carol Kiparsky. 1970. Fact. In M. Bierwisch & K. Heidolph (eds.) *Progress in Linguistics*. The Hague: Mouton, 143-173
- Klein, Wolfgang. 1994. *Time in Language*. London: Routledge.
- . 1998. Assertion and finiteness. In: Norbert Dittmar & Zvi Penner (eds.) *Issues in the Theory of Language Acquisition: Essays in Honor of Jürgen Weissenborn*. Bern: Peter Lang, 225-245.

- König, Ekkehard & Peter Siemund. 2007. Speech act distinctions in grammar. In: T. Shopen (ed.) *Language Typology and Syntactic Description*. 2nd edn. Vol. 1. Clause structure. Cambridge: Cambridge University Press, 276-324.
- Korkina, E. I. (ed.). 1982. *Grammatika sovremennogo jakutskogo literaturnogo jazyka. Fonetika I morfologija*. [A grammar of modern literary Yakut. Phonetics and morphology.] Moscow: Nauka.
- Kornfilt, Jaklin. 1997. *Turkish*. London: Routledge.
- Kuroda, S.-Y. 1972. The categorical judgement and the thetic judgement. *Foundations of Language* 9, 153-85.
- Lahiri, Utpal. 2002. *Questions and Answers in Embedded Contexts*. Oxford: Oxford University Press.
- Lambrecht, Knud. 1990. "What, me worry?" - 'Mad Magazine sentences' revisited. *BLS* 16, 215-228.
- . 1994. *Topic, Focus, and the Mental Representations of Discourse Referents*. Cambridge: Cambridge University Press.
- . 2000. When subjects behave like objects: an analysis of the merging of S and O in sentence-focus constructions across languages. *Studies in Language* 24, 611-682.
- Lee, Ho-Sang. 1993. Cognitive constraints on expressing newly perceived information, with reference to epistemic modal suffixes in Korean. *Cognitive Linguistics* 4: 135-167.
- Lewis, David K. 1979. Score-keeping in a language game. *Journal of Philosophical Logic* 8, 339-359.
- Sag, Ivan & Liberman, Mark. 1975. The intonational disambiguation of indirect speech acts. *CLS* 11 (R.E. Grossman, L.J.San & T.J.Vance eds. *Papers from the 11th Regional Meeting, Chicago Linguistic Society*, 416-427.
- Makkai, Adam. 1985. Where do exclamations come from? In: Adam Makkai and Alan K. Melby (eds.) *Linguistics and Philosophy: Essays in Honor of Rulon S. Wells*. Amsterdam: Benjamins, 445-472.
- Malinowski, Bronislaw. 1923. The problem of meaning in primitive languages. Appendix to C.K. Ogden & I.A. Richards, *The Meaning of Meaning*. London: Routledge and Kegan Paul, 451-510.
- Martin, Robert. 1987. *Langage et croyance: les 'univers de croyance' dans la théorie sémantique*. Bruxelles: Mardaga.
- Merin, Arthur. 1991. Imperatives: Linguistics vs. Philosophy. *Linguistics* 29, 669-702.
- . 1994. Algebra of elementary social acts. In S.L. Tsohatzidis (ed.) *Foundations of Speech Act Theory*. London: Routledge, pp. 235-263 +[Refs. pp. 478-490].
- . 1999. Information, relevance and social decision making: some principles and results of Decision-Theoretic Semantics. In L.S. Moss, J. Ginzburg, and M. De Rijke (eds.) *Logic, Language, and Computation*, Vol. 2. Stanford CA: CSLI Publications. pp. 179-221. (Online at: semanticsarchive.net)

- . 2003. Presuppositions and practical reason: A study in Decision-Theoretic Semantics. Forschungsberichte der DFG-Forschergruppe ‘Logik in der Philosophie’. No. 114, University of Konstanz. (Online at: semanticsarchive.net)
- . 2006. Decision Theory of Rhetoric. Ms. University of Konstanz.
- . 2007. Unconditionals. Forschungsberichte der DFG-Forschergruppe ‘Logik in der Philosophie’. No. 129, University of Konstanz. (Online at: semanticsarchive.net)
- & Bartels, Christine. 1997. Decision-theoretic semantics for intonation. *Arbeitsberichte des SFB 340* Nr. 88, Universities of Stuttgart and Tübingen. Also online at www.ims.uni-stuttgart.de/projekte/SFB340.html.
- Michaelis, Laura A. 2001. Exclamative Constructions. In Martin Haspelmath (ed.), *Language Typology and Language Universals: An International Handbook*. Vol. 2. Berlin: De Gruyter, 1038-1050.
- Michaelis, Laura A. & Knud Lambrecht. 1996a. The exclamative sentence type in English. In Adele E. Goldberg (ed.) *Conceptual Structure, Discourse and Language*. Stanford CA: CSLI Publications, 375-389.
- . 1996b. Toward a construction-based theory of language function: The case of nominal extraposition. *Language* 72, 215-247.
- Milner, J.-C. 1978. *De la syntaxe à l'interprétation: Quantités, insultes, exclamations*. Paris: Seuil.
- Montague, Richard. 1974. *Formal Philosophy*, ed. R.H. Thomason, New Haven CT: Yale University Press,.
- Nikolaeva, Irina. 1999. The semantics of Northern Khanty evidentials. *Journal de la Société Finno Ougrienne* 88, 131-159
- . 2008. Root infinitive constructions. Paper presented at the 5th International Construction Grammar Conference, 26 September, University of Texas, Austin.
- Obenauer, Hans-Georg. 1994. *Aspects de la syntax A-barre: effets d'intervention et mouvements des quantifieurs*. PhD Diss. University of Paris VIII.
- Paul, Hermann. 1909. *Prinzipien der Sprachgeschichte*. 4th edn. Tübingen: Niemeyer.
- Peirce, Charles Saunders [1931]. *Collected Papers*, Vol. II: *Elements of Logic*, ed. Charles Hartshorne & Paul Weiss. Cambridge MA: Belknap Press.
- Pierrehumbert, Janet. 1980. *The Phonology and Phonetics of English Intonation*. PhD Dissertation, MIT.
- & Hirschberg, Julia. 1990. The meaning of intonational contours in the interpretation of discourse. In P. Cohen, J. Morgan & M. Pollack (eds.) *Intentions in Communication*. Cambridge MA: MIT Press, 271-311.
- Platzack, Christer & Inger Rosengren. 1998. On the subject of imperatives: A Minimalist account of the Imperative clause. *Journal of Comparative Germanic Linguistics* 1, 177-224.
- Polinsky, Maria & Knud Lambrecht. 1997. Typological variation in Sentence-Focus Constructions. In Kora Singer, Randall Eggert & Gregory Anderson (eds.) *CLS 33. Papers from the Panels*, 189-206.

- Portner, Paul & Raffaella Zanuttini. 2000. The force of negation in Wh exclamatives and interrogatives. In: Laurence R. Horn (ed.) *Negation and Polarity: Syntactic and Semantic Perspectives*. Oxford: Oxford University Press.
- Potsdam, Eric. n.d. Expressing exclamatives in Malagasy. Ms.
www.cuhk.edu.hk/lin/nomz/pdf/Potsdam.pdf
- Potts, Christopher 2003. Expressive content. Lecture notes Ling 720, Proseminar in Semantics, Fall 2003, October 6. (Found on www.)
- Quirk, Randolph et al. 1985. *A Comprehensive Grammar of the English Language*. London: Longman.
- Rémi-Giraud, Sylvianne. 1988. Les grilles de procruste: description comparée de l'infinif en français, grec ancien, allemand, anglais et arabe. In: S. R.-G (ed.) *L' infinitif: une approche comparative*. Lyon: Presses Universitaires de Lyon, 11–59.
- Riemann, Othon & Henri Goelzer. 1897. *Grammaire comparée du Grec et du Latin*. Syntaxe. Paris: Armand Colin.
- Romero, Maribel & Han, Chung-Hye. 2004. On negative *yes/no* questions. *Linguistics and Philosophy* 27, 609-658.
- Rosengren, Inger. 1992. Zur Grammatik und Pragmatik der Exklamationen. In I. Rosengren (ed.) *Satz und Illokution*. Vol. 1. Tübingen: Niemeyer, 263-306.
- . 1997. Expressive sentence types – a contradiction in terms. The case of exclamation. In: Swan, Toril & Olaf Jansen Westvik (eds.), *Modality in Germanic Languages: Historical and Comparative Perspectives*. Berlin: Mouton de Gruyter, 151-184.
- Roussou, Anna. 2001. Control and raising in and out of subjunctive complements. In: María Luisa Rivero & Angela Ralli. *Comparative Syntax of Balkan Languages*. Oxford: Oxford University Press, 74-104.
- Russell, Bertrand. 1905. On denoting. *Mind* 14, 479-493.
- Sadock, Jerrold M. & Arnold M. Zwicky. 1985. Speech act distinctions in syntax. In: Timothy Shopen (ed.), *Language typology and syntactic description*. Vol. 1. Clause structure. London: Cambridge University Press, 155-197.
- Salminen, Tapani. 1997. *Tundra Nenets inflection*. Helsinki: Suomalais-ugrilainen seura.
- Sasse, Hans-Jürgen. 1987. The thematic/categorical distinction revisited. *Linguistics* 25, 511-580.
- Schmerling, S. 1976. *Aspects of English Sentence Stress*. Austin: University of Texas Press.
- Schultz, Wolfram. 2006. Behavioral theories and the neurophysiology of reward. *Annual Review of Psychology* 57, 87–115.
- Schwabe, Kerstin. 1989. Überlegungen zum Exklamativsatzmodus. In Ewald Lang (ed.) *Studien zum Satzmodus III*. *Linguistische Studien A 193*. Berlin (East): Akademie der Wissenschaften, 89–117.
- Searle, J. R. 1969. *Speech Acts*. Cambridge: Cambridge University Press
- . 1975. A taxonomy of illocutionary acts. Repr. [inter alia] in *Expression and Meaning: Studies in the Theory of Speech Acts*. Cambridge: Cambridge University Press, 1979, 1–29.

- Spohn, Wolfgang. 2008. *Causation, Coherence, and Concepts. A Collection of Essays*. Dordrecht: Springer.
- Stalnaker, Robert C. 1974. Pragmatic presuppositions. In Milton K. Munitz & Peter K. Unger (eds.) *Semantics and Philosophy*. New York: New York University Press, 197-214.
- Stevenson, C.L. (1937). The emotive meaning of ethical terms. *Mind* 45, 14–31.
- Tamura, Suzuko. 2000. *The Ainu language*. ICHEL Linguistic Studies 2. Tokyo: Sanseido.
- Tereshchenko, Natal'ja M. 1965. *Nenecko-russkij slovar'* [Nenets-Russian dictionary]. Moscow: Sovetskaja ènciklopedija.
- van den Berg, René. 1989. *A Grammar of the Muna Language*. Dordrecht: Foris Publications.
- Vanderveken, Daniel. 1990-91. *Meaning and Speech Acts*. Vol. I, Principles of Language Use; Vol. II, Formal Semantics of Success and Satisfaction. Cambridge: Cambridge University Press.
- Zanuttini, Raffaella & Paul Portner. 2000. The characterization of exclamative clauses in Paduan. *Language* 76, 123-132.
- . 2003. Exclamative clauses: At the syntax-semantics interface. *Language* 79, 39-81.