

The Inner Dialogue: Pragmatics for One Person

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Abstract

Pragmatics is typically concerned with clarifying the role of communication between speaker and hearer. However, I understand pragmatics principally as the research into the use of language. Moreover, I hold that language is also used by a single person to codify and reason with the knowledge that s/he has. The idea is that understanding what is said is a process whereby the hearer engages in a dialogue with him- or herself, being speaker and hearer at the same time. It shall be shown that viewing matters this way yields a better understanding of the role of semantics, too. It can elucidate the meaning (or role) of non-truth functional parts, in particular topic and focus.

*This research took its beginning somewhere in 1988 while I was working on the logical foundations of presuppositions. Somehow this work never got completed, and I owe special thanks to Sebastian Bab for inviting me to present this work at the workshop at the TU Berlin. Thanks to the audience of the TU Workshop to Hans-Martin Gärtner, Christian Ebert and Christian Wurm for critical comments. Finally, special thanks to Klaus Robering for reading the prefinal draft of this paper and giving me useful feedback.

1 Thinking and Saying

In [Vendler, 1972], Vendler drew attention to the fact that in the same way as there are verbs referring to speech acts there also are verbs referring to acts of thinking. These do not denote propositional attitudes, which are essentially mental states, rather they talk about the mind *doing* something or *changing* in some way. While speech acts require some sort of communication with someone else, the latter need only one person. Yet, despite this striking analogy, linguistic theory has been preoccupied, for obvious reasons perhaps, with analysing speech acts and speech act verbs at the expense of verbs denoting acts of thought. It is the purpose of this paper to rectify this imbalance by looking at ways to understand the nature of understanding. Moreover, it is my intention to show that a proper analysis of thought acts sheds important light on some basic, if not fundamental, questions in semantic theory. One such problem is the meaning of theme-rheme (or topic-focus) articulation. It is clear that a purely model theoretic (or truth based) account of topic and focus must fail. For what can be the source of the difference in truth-conditions between “John only [DRINKS]_F beer” and “John only drinks [BEER]_F” if there is none between “John [DRINKS]_F beer” and “John drinks [BEER]_F”?^{1 2}

The problem is however much deeper, and this is the reason why this paper is not about a theory of focus in the first place. It is primarily about how we *use* language in thinking. For I contend that pragmatics in the sense of “doing” is more than the science of language used in communication. I propose to read “pragmatics” as the science of the *use* of language simpliciter. Thus, pragmatics in this sense is about how we put language to use; it is the science of language in action. Moreover, I claim that knowing *how* we use language is as important as knowing language itself. This—although not a new idea—is still hardly an orthodox view. Chomsky has insisted that linguistics is basically about the knowledge of language. The idea that performance is just as important as competence is a recent one.

Seen my way, however, there is pragmatics in every branch of linguistics: there is pragmatics in syntax (called, among other, *parsing* and *generation*), and there is pragmatics in semantics. It is the latter that interests me here. It does not look primarily at what things mean; it asks how one can get to know the meaning of an utterance, not only in the sense of acquiring the language. While this seems a

¹I denote the focused constituent by enclosing it in square brackets like this: [\cdots]_F. Stress is marked by rendering the part in upper case.

²I shall consider below in 5.4 some rival theories of focus.

trivial matter for basic concepts (you just know what a cat is or a table), it is far from trivial to know what it means for abstract concepts (what, for example, is “dialectical materialism”, “compassionate capitalism” etc.) and becomes utterly difficult when we turn to mathematics (“a forcing extension of ZFC”, “a proper class of Woodin cardinals”). The problem runs very deep: we standardly model the objects of beliefs as propositions; so, if two sentences express the same proposition we should believe both of them or neither. Yet, when their equivalence is hard to see we might end up believing one and not the other. (We may even claim to know one and not know the other.) What has gone wrong is that we failed to see that they are equivalent. But how can we fail to see that if they simply denote one and the same proposition? The answer of course is that the proposition it denotes is not necessarily what we (can) get out of a sentence; anything that is beyond the absolutely obvious requires our attention to see that it is really so. We need to confront things head on, spend time with them. There are only so many facts we can thus treat. The rest is out of our immediate intellectual reach.³ Notice that usually the deficits of semantics are remedied by using pragmatics and an appeal to nonstandard (utterance) meanings (see [Beaver, 2002] or [Stokhof, 2002] for recent ideas in this direction). I am not denying that they are necessary; all I am saying is that there is something in addition that we need: a theory of interpretation as an activity.

The pragmatic view does not force us to abandon logic; for there is more to logic than just model theory or truth conditions. There is also *proof theory*, which is the study of how one can factually *establish* the validity of a formula. While mathematical proof theory deals with proofs as static objects, we consider them here as dynamic objects, made on the fly. It is this dynamic aspect that will carry much of the explanatory weight. The logical underpinnings of this theory are explained in more detail in [Kracht, 2009], though I hope that the paper is understandable even without reading that paper.

³Another option, brought up by Klaus Robering, is to say that propositions are not fine grained enough. The problem is however that this diminishes the explanatory value of propositions. For it also turns out that intersubstitutability depends on my subjective knowledge. If I do not know that the morning star is the evening star I can have beliefs that are inconsistent for others. Is it then so that the sentence “Linda saw the morning star.” denotes a different proposition for me than it does to you? We could say so, but use is there in propositions if we cannot say which proposition a sentence denotes or else simply use formulae as objects of attitude?

2 Making Sense

The standard model of communication is the following. If S wants to tell H that it is raining, she “encodes” this message into a string, say */It is raining./*, which she utters aloud in front of H. H in turn picks up the sounds, decodes them into the original message (viz. that it is raining), and thus S succeeds in her goal.⁴ Pragmatics concerns itself with the aspect of communicating the message between S and H. For it has been noted already by [Austin, 1957] that H does not simply decode the message. H may also ask himself whether S actually understood what she was saying (maybe S does not know English at all and is simply mumbling some English phrase) and whether S actually meant what she was saying (as opposed to repeating some phrase to annoy H).

All this goes into the study of speech acts. Yet, it seems as if there is not much concern at all in knowing how it is that S gets to phrase her message as she does, and how H is able to understand it as he does. Is this really such a trivial affair?

I argue that the process is first of all not a trivial execution of translation procedures (à la Montague Grammar, say) because the content may simply not fit into our brain like that; and second that the process itself can be the denotation of certain words, that is, that there are ways of expressing yourself that suggest a specific process of understanding the meaning. I have outlined this process at length [Kracht, 2009], so I will not go into every detail of it here.

1. The propositional behaviour of a person can be described in terms of his (or her) dispositions to judge a proposition in one or the other way (s/he can consent to it, reject it, believe it, and so on).
2. The knowledge of what proposition a person will judge in what ways is (to large degree) subconscious. We mostly do not know why it is that we issue a particular judgement.
3. The attention focus of a person consists of merely one proposition. A person can look at one proposition at a time and judge it. When the judgement is made, it can be recorded as a matter of fact. In this way, the judgement becomes episodic and can be recalled.
4. My previous and future selves are out of direct reach more or less like another person. I cannot feel like them, I can only reason about them. When

⁴I leave the possibility of misunderstanding or imperfect knowledge of language out of consideration here. Thus, successful communication is for now guaranteed; but see below.

I reenact the feeling of joy of having proved some theorem this is certainly not the same feeling—yet how do I know?

5. It is by looking at my own episodic memory that I can assert, for example, that I “realised” that Rome is almost 2800 years old. All I need to check is at which times I actually knew of this fact. I need not reenact my judgements, however, I just need to see what my episodic memory tells me.
6. The act of judging “ φ ” true is distinct from the act of judging that “it is true that φ ” is true. They may be truth conditionally equivalent, but my consent to the first does not mean I gave consent to the second, even though I might be taken to have done just that (implicitly).

Many points here bear resemblance to the theory of judgement by Brentano ([Chisholm, 1986], [Parsons, 2004]), and Husserl ([Husserl, 1975]) though I will not go into details here. [Hintikka, 1962] draws a distinction between explicit knowledge and implicit knowledge. In epistemic logic one has instead added an awareness operator ([Levesque, 1984], [Fagin and Halpern, 1985]). Implicit knowledge is knowledge of which I am not necessarily aware. If I am aware of something it becomes explicit knowledge. This might be useful in describing an agent’s mental state, but is hardly helpful in explaining what the agent makes of this himself. For the knowledge he is unaware of is for him simply indistinguishable from something he doesn’t know. You may be unaware that groups of odd order are solvable, but is it something that you do not know or something that you know implicitly—and how can you tell the difference? (See [Konolige, 1986] for a criticism of the propositional account of attitudes.)

Instead of increasing the complexity of the model theoretic apparatus it seems more profitable to reject it altogether and turn to a symbolic account.

3 Acts of Thinking

Thinking consists of several acts, some of which we shall look at in greater detail below. Here I shall outline the full picture. We need to distinguish at least two distinct activities: *scheduling* and *articulation*. Scheduling is the problem of knowing what to think about. It is the art of planning your thoughts. Scheduling is an integral part of thinking; in fact, logical thinking requires that you can do a proper job at it. For example, faced with the proposition “ $\varphi \wedge \chi$ ” there are essentially two ways to come to know whether it is true: either you know its truth off

hand or you know that φ is true, and that χ is true as well. Thus, before you can form a judgement on the composite expression you must form judgements on its parts, and remember them. To be able to do this properly is the task of scheduling.

In this paper I shall however ignore the problem of scheduling and take it for granted that the agents know how to do it. This allows me to concentrate on the act of judgement itself, to which I now turn.

Judgement is judgement of a proposition (more exactly: a formula) as having some, mainly alethic or epistemic, property called *dimension*. The properties we look at are: “being true”, “being false”, “being possible”.⁵ A judgement itself consists in two phases: the first phase is the *apprehension*, and the second the actual judgement phase, called *judgement articulation*. (Here, articulation is not taken to mean that something is uttered.) What we do when we judge is that we take a certain proposition φ , say “Paris is the capital of Italy.”, and a dimension D , say “truth”, and ask ourselves whether φ is judged D . There are only two outcomes: either φ is judged D , or it is not. In the latter case there is no verdict of any sort. This is exactly like in a court case. “Not guilty” means “not guilty of the charge”, and does not mean “innocent”. The latter requires bivalence,⁶ which generally does not hold (see [Dummett, 1978] for an early defence, which goes in the direction I am favouring, and [Blau, 1978] and [Löbner, 1990] for argumentation for three-valuedness). If I reject to call this book “bad” then I do not say that it is good. Indeed, one of the virtues of the present account is that it does not require to say how many (and what kinds of) truth values there are. It should be stressed, though, that when I say the book is not bad, that is, if I reject to judge it “bad”, then on a normal account I am taken to reject the judgement because I consider it incorrect to apply the predicate. In turn this may be taken as evidence that I consider the book “not bad” in a positive sense. The rejection of a judgement can therefore be taken as evidence that I would have made some other judgement. If there are, for example, exactly two truth values, then rejecting to judge “ φ ” true seems tantamount to judging it false. It is important, though, to distinguish between being committed to a judgement and having made one. Though rejecting to judge “ φ ” true must commit me to judging it false, I may be unaware that this is so for failure of having scheduled that kind of judgement. (I may have failed to ask myself that question.) A point of subtlety is to be noted. There is one more difference, namely between not judging something and not

⁵There is also an additional dimension, that of “assumption” that does not function in quite the same way. But for the present purposes we can subsume it here.

⁶Actually, it requires more, but that it requires bivalence is enough at this moment.

being able to judge it. The difference is between a court that simply never comes to a conclusion—as may be the case when for procedural reasons prolong the case indefinitely—and one that acquits the defendant. In this case the rule is to acquit the defendant. And the same holds here, too. If I do not know whether “ φ ” is true or false, I refrain from a judgement. This is why it is illicit to conclude from my not judging the book bad that I positively think it is not bad (or even good).

If D is “truth”, then we write “ $\vdash \varphi$ ” if the judgement goes through, and “ $\nvdash \varphi$ ” if it does not. The latter does not mean, however, that “ φ ” is judged false. It means here that the judgement is actively rejected or refrained from. Also, there could be more than one truth value. Whence we use the notation “ $\dashv \varphi$ ” to say that “ φ ” is judged false; and “ $\nDash \varphi$ ” that it is not judged false. Pace [Vendler, 1972] I actually do consider judgements to be dispositions. Some justification is therefore necessary. Notice that I have distinguished apprehension from articulation. There is not much sense to consider the apprehension of “ φ ” and D automatic. That would require at any rate a closer look at the schedule. For the schedule (at least partly) determines what it is that we look at next. It is immediately clear, I guess, that this cannot be a deterministic process. However, once we have apprehended “ φ ” and D for judgement, the articulation of the judgement is bound to happen; and it happens in just one way. On the other hand, what we think and what we actually say is a different matter. The priest, knowing what the mafia boss confessed to him, may openly lie about knowing who killed Jones. But that simply means that he does not say what he knows; so he is not faithfully reporting his own judgement of the matter. This is called lying.

Judgements on the other hand can also be fragile. For example, I may consider someone an incompetent politician. However, on closer reflection, I may come to the conclusion that I was wrong. Now I articulate a different judgement. And again, I may have second thoughts about that, too. It depends, in part at least, on how I look at the matter, how many things I bring to my awareness. This is different from coming to know different facts about the same person. I can change my mind in the absence of any new knowledge. This is unfortunate, but we should accept this as is. One day I judge the matter this way, the next day in a different way. Each judgement is however done at a time, and is therefore unique at its own time. I perform it, then it turns into history, whereupon I can again look at it and ask myself: was I right?

4 A Formal Calculus

This is a quick rehearsal of the calculus exposed in [Kracht, 2009]. I put in some minor variations, none of which are essential. The idea is to provide something of a logical underpinning for the theory of illocutions as outlined in [Searle and Vanderveken, 1985].⁷ Although strictly speaking theirs is a theory of speech acts and mine a theory of judgement acts I consider it a matter of pursuing the matter until the two can be made to fully converge. It would take me too far afield to discuss why, despite all differences, the present project goes in the same direction towards illocutionary logic after all.

4.1 Dispositions and Acts

Let \mathcal{L} be a language of formulae members of which are also called **well-formed strings**. For our purposes, \mathcal{L} will be the language of classical boolean logic (with propositional variables and constants, \top , \perp , \neg , \wedge , \vee and \rightarrow). Let \mathcal{A} be a finite set of so-called **attitudes**; and, finally, let \mathcal{P} be a set of **persons**. \mathcal{A} contains minimally the symbols “ \neg ” (“assume”), “ \vdash ” (“is true”). A generic symbol for an attitude is “ \succ ”; a generic symbol for a member of \mathcal{P} is “ P ”.⁸

For an attitude “ \succ ” we also have an opposite attitude, denoted here by “ \prec ”. I will not say much about how the opposite attitude is identified; this requires an analysis of the dimensions. Suffice it to say that a person cannot hold (or be disposed to) both an attitude and the opposite attitude at the same time with respect to the same formula.

A **conditional judgement disposition** is an element of $\wp_f(\mathcal{L}) \times \mathcal{A} \times \mathcal{L}$, which we write “ $\Delta \succ \varphi$ ” in place of $\langle \Delta, \succ, \varphi \rangle$. ($\wp_f(\mathcal{L})$ is the set of finite subsets of \mathcal{L} ; hence Δ is a set. However, we identify sets with unordered, repetition free sequences here.) A **behavioural base** is a set of conditional judgement dispositions. A person will among other things have a behavioural base.

⁷Another attempt has been provided in [Kearns, 1997], who also deals with the special role of assumptions. In many ways, Kearns’ approach is quite different from the one pursued here, though.

⁸I realise that calling “ $\neg \varphi$ ” a judgement is somewhat misleading. If I make an assumption, I do not judge a formula assumed. On the other hand, judgement is an action, so I may be excused here for using the more specific term to make the exposition more vivid.

4.2 Formal Acts of Thinking

The model I am going to present below is a simplification; it does not take into account scheduling and represents apprehension and articulation as one step.

The state of a person P is modelled as a triple $\langle T, S, A \rangle$, where T is a set of dispositions, S a so-called *slate* and A the *attention cell*. A **slate** is a member of $(\mathcal{L} \cup \ulcorner \mathcal{L})^*$, that is, a sequence of formulae or assumptions, where an **assumption** is of the form $\ulcorner \varphi$, φ a formula. An **attention cell** is either empty or contains a judgement. If “ \succ ” is the sign of judgement along the dimension D we write “ $\succ \varphi$ ” for the judgement that “ φ ” has D and “ $\neg \varphi$ ” if the judgement is rejected.

When $A = \succ \varphi$ we say that P makes the judgement “ $\succ \varphi$ ” in the context S . The calculus describes rules by which P can change from a state $\langle T, S, A \rangle$ to a state $\langle T', S', A' \rangle$. Since the change of the theory is a slow process, I generally assume $T' = T$ here. A point of notation: I write $(\ulcorner) \varphi$ to cover both $\ulcorner \varphi$ and φ .

Assumption From $\langle T, S, \emptyset \rangle$ go to $\langle T, S, \neg \varphi \rangle$.

Firing If $(\ulcorner) \varphi \rightarrow \chi \in S$ then step from $\langle T, S, \ulcorner \varphi \rangle$ to $\langle T, S, \ulcorner \chi \rangle$.

Phatic Enaction If $(\ulcorner) \varphi \in S$ then step from $\langle T, S, A \rangle$ to $\langle T, S, \ulcorner \varphi \rangle$.

Forgetting From $\langle T, S \frown \varphi \frown S', A \rangle$ go to $\langle T, S \frown S', A \rangle$.

Reflection From $\langle T, S \frown \ulcorner \varphi, \ulcorner \chi \rangle$ go to $\langle T, S, \ulcorner \varphi \rightarrow \chi \rangle$.

\wedge -Reflection From $\langle T, S \frown \varphi, \ulcorner \chi \rangle$ go to $\langle T, S, \ulcorner \varphi \wedge \chi \rangle$.

Using phatic enaction we can simplify the rules; instead of requiring that either $\ulcorner \varphi \in S$ or $\varphi \in S$ it is enough to require $\varphi \in S$, though it comes at the costs of making the derivation longer. (The rule \wedge -Reflection is not found in [Kracht, 2009], where we only dealt with implication. It is however needed here later on. Notice that φ must be last in the sequence.) Most of the work is done actually by so-called *conversions*. Conversion rules allow to enter an element from A into S . Notice, however, that while A may contain judgements, S contains only formulae or hypotheses. Thus, in order to enter formulae, the judgements have to be *converted*. A judgement $\succ \varphi$ made by P at t is converted into the formula $\text{judge}'(\succ, P, t, \varphi)$. This is nothing more than a factual record; it says “ P judged the formula φ to be \succ at t ”. We shall for simplicity suppress the variables P and t ; note that the counterpart of “ $\neg \varphi$ ” is “ $\ulcorner \varphi$ ” and the counterpart of “ $\ulcorner \varphi$ ” is “ φ ”. Thus we have the following conversions:

\neg -Conversion From $\langle T, S, \neg \varphi \rangle$ go to $\langle T, S^{\neg} \varphi, \emptyset \rangle$.

\vdash -Conversion From $\langle T, S, \vdash \varphi \rangle$ go to $\langle T, S^{\vdash} \varphi, \emptyset \rangle$.

The reversal of a conversion is an activation. We may add the following rules here that are quasi the inverse to the previous.

\neg -Activation From $\langle T, S^{\neg} \varphi, A \rangle$ go to $\langle T, S, \vdash \varphi \rangle$.

\vdash -Activation From $\langle T, S^{\vdash} \varphi, A \rangle$ go to $\langle T, S, \vdash \varphi \rangle$.

Finally, the behavioural base enters in the following form.

Reasoning If $\Delta \succ \varphi \in T$ and $\Delta \subseteq S$ then go from $\langle T, S, A \rangle$ to $\langle T, S, \succ \varphi \rangle$.

A derivation of $\langle T, S, A \rangle$ is a finite sequence $\langle \sigma_i : i < n+1 \rangle$ of states such that $\sigma_n = \langle T, S, A \rangle$ and for every $i < n$, σ_{i+1} is obtained from σ_i by applying one of the above rules. We assume that every person P has a behavioural base T_P . We therefore say that P **derives** $\succ \varphi$ (or that T derives it) if there is a derivation of $\langle T_P, \emptyset, \succ \varphi \rangle$ from $\langle T_P, \emptyset, \emptyset \rangle$. If P derives $\vdash \varphi$ we say that P **accepts** φ unconditionally. If $T = \emptyset$, then “ φ ” is acceptable **a priori** if $\langle \emptyset, \emptyset, \vdash \varphi \rangle$ is derivable. It is easy to see that anything that is acceptable a priori is accepted by any person P .

4.3 Predicate Logic

The approach can be generalised to predicate logic. Nothing much changes. What we need to do, though, is to modify the reflection rule. The new reflection rule is this.

Reflection From $\langle T, S^{\neg} \varphi, \vdash \chi \rangle$ go to $\langle T, S, \vdash \forall \vec{x}(\varphi \rightarrow \exists \vec{y} \chi) \rangle$.

Here, \vec{x} collects all variables that are free in φ but not free in T or any formula in S , while \vec{y} collects all variables that are free in χ but in no other formula of S , φ , or T .

The reflection rule is not enough, though, to establish the meaning of the quantifiers. For that, we need some more rules.

Instantiation From $\langle T, S, A \rangle$ go to $\langle T, S, \vdash \varphi(t) \rangle$, provided that $(\neg)(\forall x)\varphi(x)$ is in S .

Abstraction I From $\langle T, S, \vdash \varphi(x) \rangle$ go to $\langle T, S, \vdash (\forall x)\varphi(x) \rangle$, provided that x is not free in T or S .

Abstraction II From $\langle T, S, \vdash \varphi(t) \rangle$ go to $\langle T, S, \vdash (\exists x)\varphi(x) \rangle$.

This allows to deduce quantifier distribution, see Figure 1.

Figure 1: Deriving Quantifier Distribution

S	A
\emptyset	$\neg \exists (\forall x)(\varphi(x) \rightarrow \psi(x))$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x))$	\emptyset
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x))$	$\neg \exists (\forall x)\varphi(x)$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x)$	\emptyset
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x)$	$\vdash \varphi(x) \rightarrow \psi(x)$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x) \neg \varphi(x) \rightarrow \psi(x)$	\emptyset
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x) \neg \varphi(x) \rightarrow \psi(x)$	$\vdash \varphi(x)$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x) \neg \varphi(x) \rightarrow \psi(x)$	$\vdash \psi(x)$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x)$	$\vdash \psi(x)$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x)) \neg \Gamma(\forall x)\varphi(x)$	$\vdash (\forall x)\psi(x)$
$\Gamma(\forall x)(\varphi(x) \rightarrow \psi(x))$	$\vdash (\forall x)\varphi(x) \rightarrow (\forall x)\psi(x)$
	$\vdash (\forall x)(\varphi(x) \rightarrow \psi(x))$ $\rightarrow ((\forall x)\varphi(x) \rightarrow (\forall x)\psi(x))$

4.4 Refinements

Actually, in addition to the logical base an agent also needs to have access to the context. The **context** minimally includes the three basic coordinates (me-here-now), that is, a triple $\langle P, \ell, t \rangle$. These coordinates become useful when investigating effects due to change. Consider, by way of example, the rule of \vdash -Conversion. The simplified account was that we may go from $\langle T, S, \vdash \varphi \rangle$ to $\langle T, S \neg \varphi, \emptyset \rangle$. Yet, this ignores a potential time dependency of φ . Therefore, a more accurate statement would be this:

$$(1) \quad \frac{\langle T, \langle P, \ell, t \rangle, S, \vdash \varphi \rangle}{\langle T, \langle P, \ell', t' \rangle, S \neg \text{judge}'(\vdash, P, t, \varphi), \emptyset \rangle}$$

Prefixing φ by an empty string (as opposed to “ \vdash ”) is just a typographical simplification of no significance. It hides a conversion of a formula to a statement.

Notice that t' and ℓ' are the new time and location of P (obtained at the moment of judgement). In linear logic, a translation of the linear implication $\varphi \multimap \chi$ has been suggested by Girard to be “if φ is true at t then at some later point t' χ is true”. In this sense the formula $\text{H}_2 + \frac{1}{2}\text{O}_2 \multimap \text{H}_2\text{O}$ is true, using a standard implication

would be incorrect. In fact and using the standard implication is justified only if the truth of the premiss is shown to be time independent (at least to the extent needed).

5 Theme Rheme Articulation

5.1 Articulation

In this section we shall apply the theory to topic-focus articulation. I prefer to call the two theme and rheme, in accordance to [Zemb, 1978], where I first saw the idea in print. According to Zemb, theme and rheme do not exhaust the elements of the sentence; there is an additional third element: the pHEME. A simple sentence is structured as follows.

$$(2) \quad \begin{array}{ccccccc} \varphi_1 & \varphi_2 & \cdots & \varphi_n & \succ & \chi \\ T_1 & T_2 & \cdots & T_n & P & R \end{array}$$

Here, T_i are the **themes**, P is the **pHEME**, and R the **rheme**. Zemb claims that the German sentence is exactly built in the way shown in (2); that is to say, the themes precede the pHEME, and the pHEME precedes the rheme. The boundary is marked by certain sentential adverbs (negation, conversational particles, subjective assessment adverbs). Due to verb movement this holds only for subordinate clauses. To distinguish the various rhematic arguments, Zemb uses the following numbering scheme: the main verb has number $_0$, the rhematic arguments are numbered descendingly from right to left.⁹

$$(3) \quad \begin{array}{ccccccccc} \text{dass} & \text{er} & \text{wahrscheinlich} & \text{sein Amt} & \text{niederlegen} & \text{wollte.} \\ & T_1 & & P & & R_{-2} & R_{-1} & R_0 \end{array}$$

$$(4) \quad \begin{array}{ccccccccc} \text{dass} & \text{er} & \text{sein Amt} & \text{wahrscheinlich} & \text{niederlegen} & \text{wollte.} \\ & T_1 & T_2 & & P & & R_{-1} & R_0 \end{array}$$

that he probably wanted to resign from his position.

The placement of the adverbial, here /*wahrscheinlich*/ ‘probably’, seems at first sight to be just of stylistic significance.

⁹That is to say, assuming the order of the German clause. In other languages no such simple description may exist. I shall not pursue that problem here, though.

However, look at the following contrast.

- (5) dass er einen Fehler wahrscheinlich entdeckt hätte.
 that he would probably have spotted any mistakes.
- (6) dass er wahrscheinlich einen Fehler entdeckt hätte.
 that he probably would have spotted a mistake.

The placement of the adverb changes the quantificational force of the indefinite article; before the adverbial, in thematic position, the indefinite has universal force. After the adverbial, in rhematic position, it has existential force. This is one of the facts that the present theory is designed to explain.

A different, yet related, phenomenon is focus. Like theme and rheme articulation, focus establishes a scope difference. Look for example at the following sentences.

- (7) dass Wolfgang ein Buch gestohlen hat.
 that Wolfgang has stolen a book
- (8) dass Wolfgang [EIN BUCH]_F gestohlen hat.
 that Wolfgang has stolen [A BOOK]_F
- (9) dass [WOLFGANG]_F ein Buch gestohlen hat.
 that [WOLFGANG]_F has stolen a book

In (8) it is claimed that something is a book; it is assumed that Wolfgang stole that something. (9) assumes that someone stole a book and says that Wolfgang is that person. The difference is not only pragmatically relevant. Also in embeddings there are tangible differences.

- (10) Jan verneinte, dass Wolfgang ein Buch gestohlen hat.
 Jan denied that Wolfgang had stolen a book.
- (11) Jan verneinte, dass Wolfgang [EIN BUCH]_F gestohlen hat.
 Jan denied that Wolfgang had stolen [A BOOK]_F.
- (12) Jan verneinte, dass [WOLFGANG]_F ein Buch gestohlen hat.
 Jan denied that [WOLFGANG]_F had stolen a book.

While in (10) the whole proposition is negated by Jan, (11) is explicitly denying only that the person is Wolfgang. (Scenario: Wolfgang is accused of emptying someone's apartment. Jan, as a witness, does not fully acquit Wolfgang; he only

denies that he has stolen any books.) In (12) Jan is explicitly denying that Wolfgang is the book stealer. (Scenario: books have been stolen. People are trying to find out who did it. Some suspect Wolfgang. Jan acquits him of the charge.) In (12) it is assumed that a book has been stolen, something which (11) does not assume. (10) can be felicitous even when no one has stolen anything.

5.2 A Formal Approach

In [Kracht, 2009] I have called the representation (2) the **phatic contour** of a sentence. This contour is notationally like a conditional judgement disposition. This formal analogy is the core of the theory I am presenting. First note however (2) is not a conditional judgement *disposition* nor does it express one. For a disposition is something that people have. I could have a disposition of that sort but that need not be the case. So what (2) in fact represents is, simply put, a conditional judgement. However, one needs to be careful again. We need to distinguish between an actual judgement (made at a certain moment) and the means to express it. (2) is as such a representation and becomes a judgement only when uttered. Moreover, the utterance of (2) is not necessarily the judgement itself but rather the public announcement thereof.¹⁰ Space forbids me to comment further on this problem.

Now, as I discussed at length in [Kracht, 2009], a conditional judgement disposition corresponds to an *enaction* sequence; thus its content can be paraphrased as follows. sort.

Suppose φ_1 , suppose φ_2 etc., and suppose φ_n . Then one will judge χ to be \succ .

This is not quite how matters will turn out to be, but let's follow that line. On the part of the hearer the way to check whether this is so is to just follow that procedure. Thus, the hearer will assume first φ_1 , then φ_2 , and so on; finally, s/he will apprehend χ and judge it along the dimension of \succ . Thus, the basic idea is that the theme-rheme articulation is a way to schedule the sequence of judgements in the hearer.

Here is an example. The sentence /Tullius is Cicero./ may be articulated in various ways. To simplify matters to the greatest extent, we ignore tense and consider the sentence to consist of two meaningful parts: /Tullius/, and /Cicero/, which we translate as " $x = \text{tullius}$ " and " $x = \text{cicero}$ ", respectively.

¹⁰On rare occasions these could coincide, as is the case with performatives.

There are various articulations of this sentence:

- (13a) $x = \text{tullius}' \vdash x = \text{cicero}'$
- (13b) $x = \text{cicero}' \vdash x = \text{tullius}'$
- (13c) $\vdash x = \text{tullius}' \wedge x = \text{cicero}'$

(The choice of transliteration into logic is actually immaterial; we might choose to write “tullius’(x)” in place of “ $x = \text{tullius}'$ ”. Nothing of substance will change. Note that (13c) is equivalent to “ $\vdash \text{tullius}' = \text{cicero}'$ ”.) The first of them can be paraphrased as “whatever is Tullius also is Cicero”, the second as “whatever is Cicero also is Tullius”. The third reads “something both is Tullius and Cicero”. (Notice the change in quantificational force.) Now, there is a sense in which the first of these is about Tullius, the second about Cicero, and the last about neither. This has to do with the way in which objects get introduced. What is part of a theme is considered topical.

We can naturally associate these articulations with the following sentences.

- (14a) $[\text{Cicero}]_F \text{ is Tullius.}$
- (14b) $[\text{Tullius}]_F \text{ is Cicero.}$
- (14c) $[\text{Tullius is Cicero.}]_F$

Also, the articulations fit naturally with the following questions:

- (15a) Who is Tullius?
- (15b) Who is Cicero?
- (15c) What is the case?

This representation has the advantage to disentangle two different notions of negation: sentence negation and denial.

- (16) John is not drunk.

This may either be saying that the judgement of “John is drunk.” along the dimension of falsity does go through.

- (17) $\neg \text{drunk}'(\text{john}')$

Or this may be saying that the judgement concerning “John is not-drunk.” along truth goes through.

- (18) $\vdash \neg \text{drunk}'(\text{john}')$

Finally, it may say that the judgement concerning “John is drunk.” along the dimension of truth does *not* go through:

(19) $\nmid \text{drunk}'(\text{john}')$

These are three different kinds of negation. (18) negates thus predicate (of being drunk), (17) negates the judgement (by changing the dimension to falsity) while (19) negates the judgement. (19) is the least committal: it simply refuses to make a judgement.

In a bivalent logic (17) and (18) are the same. (19) on the other hand is different even in a bivalent logic. Speaker is not making any judgement. By refraining to say that John is drunk he is not saying that he is not drunk.

The nonidentity of the sentences (14a), (14b) and (14c) becomes manifest in their behaviour under a propositional operator, for example negation. Propositional operators attach to a proposition, and there is one which is highlighted in a sentence: the rheme. Hence a propositional operator takes scope over the rheme only. In this way a different theme rheme articulation leads to different scopal behaviour under embedding. Sentence negation therefore leaves themes unaffected; it attaches to the rheme (negation) or the pheme (denial). Look at the truth conditions of the following sentences:

(20a) It is not the case that $[\text{Cicero}]_F$ is Tullius.

(20b) It is not the case that $[\text{Tullius}]_F$ is Cicero.

(20c) It is not the case that $[\text{Tullius is Cicero}]_F$.

These sentences shall be represented as follows.

(21a) $x = \text{tullius}' \vdash \neg(x = \text{cicero}')$

(21b) $x = \text{cicero}' \vdash \neg(x = \text{tullius}')$

(21c) $\vdash \neg(x = \text{tullius}' \wedge x = \text{cicero}')$

Now, at this point it is not apparent that there is any difference in the theme rheme articulations in terms of truth conditions. In fact, negation is not a good test for the following reason.

Proposition 1 *The following are equivalent in classical logic:*

- $\Delta \vdash \neg(\varphi \wedge \chi)$.
- $\Delta; \varphi \vdash \neg\chi$.

- $\Delta; \chi \vdash \neg\varphi$.

Thus, despite appearances, there is no scope sensitivity for negation. I shall return to this matter below. Yet, for other operators such scope sensitivity is to be expected. For a modal operator \Box , for example, $\Delta \vdash \Box(\varphi \wedge \chi)$, $\Delta; \varphi \vdash \Box\chi$ and $\Delta; \chi \vdash \Box\varphi$ are all different. Here is an example that shows the difference.

- (22) ?dass eine Flutwelle wahrscheinlich kommt.
 ?*(lit.) that a flood wave probably arrives.*
- (23) dass wahrscheinlich eine Flutwelle kommt.
 (lit.) that probably a flood wave arrives.
- (24) dass auf eine Flutwelle wahrscheinlich eine zweite
 folgt.
 (lit.) that on a flood wave probably a second follows.

The first claims that whatever is a flood wave, it is probably arriving. This makes little sense. The second sentence says that probably there is a flood wave arriving. It is possible to have the flood wave as a theme, as the third example shows. Similarly with /öfter/ ‘often’.

- (25) ?dass in dieser Gegend eine Flutwelle öfter kommt.
 (lit.) that in this region a flood wave frequently arrives
- (26) dass in dieser Gegend öfter eine Flutwelle kommt.
 (lit.) that in this region frequently a flood wave arrives
- (27) dass in dieser Gegend auf eine Flutwelle öfter eine
 zweite folgt.
 (lit.) that in this region on a flood wave frequently another follows

I should also mention that the difference in theme-rheme articulation also has effects for anaphora.

- (28) dass man ein Tier nicht quälen soll. Denn es
 leidet wie ein Mensch.
 that one should not torture animals. For they (lit. it) suffer like a human.
- (29) dass man nicht ein Tier quälen soll. ?Denn es
 leidet wie ein Mensch.
 that one should not torture an animal. For it suffers like a human.

This is somewhat surprising under standard views of quantification in dynamic semantics. Notice namely that (28) in effect says that we should torture no animal (universal quantification). So the pronoun must be understood as subordinated. But why is the sentence in the indicative? (29) on the other hand is likewise universal (negation plus existential interpretation for rhematic indefinites). Yet the pronoun is not licit. (29) indeed sounds more like incorporated objects in Hungarian of [Farkas and de Swart, 2003]. As Farkas and de Swart observe, incorporated objects cannot be referred to by pronouns even if they are existential. In German, similar facts can be observed for rhematic existentials, though in my judgement only for singular existentials.

(30) Zahnärzte sagen, dass man gelegentlich einen Apfel
essen soll. ?Er schützt vor Karies.

(31) Zahnärzte sagen, dass man gelegentlich Äpfel essen
soll. Sie schützen vor Karies.

*Dentists say one should eat an apple from time to time. It prevents
caries.*

5.3 More on Themes

The previous account is in the right direction, but there are still problems. Notice that the phatic contour (2) evokes, on enaction, the following sequence in the hearer.

(32)

S	A
S	$\neg \varphi_1$
$S \smallfrown \varphi_1$	\emptyset
$S \smallfrown \varphi_1$	$\neg \varphi_2$
$S \smallfrown \varphi_1 \smallfrown \varphi_2$	\emptyset
\dots	\dots
$S \smallfrown \varphi_1 \dots \smallfrown \varphi_n$	$\succ \chi$

(Notice that every introduction of a theme is accompanied by a step of conversion.) Though this is what could happen, I have warned in [Kracht, 2009] that there is no guarantee that the hearer will proceed in exactly that way. But even if that is taken into account, there still remain issues. For example, it may be asked whether themes need to be assumed. Can it not be the case that they already are

true? What if some of the assumptions turn out not be necessary? It seems there are additional reasoning steps involved where the hearer checks each theme for whether it is true. Only if that fails it will be assumed.

Additionally, as is well known, the sentence itself can present certain parts of the theme as factual. This is called a **presupposition**. In the following example, the phrase /den Präsidenten/ is a presupposition.

(33) dass er den Präsidenten nicht noch einmal mit Eiern
bewerfen wird.

(34) dass er nicht noch einmal den Präsidenten mit Eiern
bewerfen wird.

that he shall not throw eggs at the president again

In both sentences the uniqueness of the president (and his existence) are taken to be true. If the uniqueness condition of a theme was simply assumed, (33) would mean something like “that, should there be exactly one president, he will not again throw eggs at him”. This is incorrect.

Thus, in order to account for presuppositions, we modify (32) in an important way. We allow to introduce “ φ_i ” also in the form of “ $\vdash \varphi_i$ ”. In this case I speak of “ φ_i ” as a **presupposition** (as opposed to a theme). Of course, it is a matter of linguistic form to indicate when something is a presupposition, and when it is merely a theme.¹¹

It would thus be mandatory to rehearse the previous examples (14a), (14b) and (14c). However, since they involve proper names they do not reveal the logical problem as clearly. Instead let us look at the following example.

(35) Delia married a man who she met in Rome.

Let us analyse this sentence as carrying just four meaningful components (again, the fact that our analysis is shallow just simplifies matters; a finer translation will just introduce more subtleties). The components are

(36) marry'(delia', y); man'(y); meet'(delia', y, ℓ); in'(ℓ , rome')

¹¹I am inclined to think that again the idea of denotations as action sequences has something to offer for presuppositions as well. Basically, my intuition is that presuppositions ask to be evaluated. Should they not turn out true there is a process of *accommodation*, whereby the presupposition is added to the slate whereupon the evaluation succeeds in the desired way.

Let us put focus on a particular constituent.

(37) Delia married a man who she met in [ROME]_F.

This intuitively says that the location where Delia met a man who she married is somewhere in Rome. It is therefore a sentence *about* a man who she met and married, which means that these parts of the sentence are thematic. Furthermore, each of the themes is actually held to be true, not just assumed.¹² Hence (37) should be “represented” by the following action sequence.

(38)		S	A
		S	$\vdash \text{marry}'(\text{delia}', y)$
		$S \frown \text{marry}'(\text{delia}', y)$	\emptyset
		$S \frown \text{marry}'(\text{delia}', y)$	$\vdash \text{man}'(y)$
		$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y)$	\emptyset
		$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y)$	$\vdash \text{meet}'(\text{delia}', y, \ell)$
		$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y) \frown \text{meet}'(\text{delia}', y, \ell)$	\emptyset
		$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y) \frown \text{meet}'(\text{delia}', y, \ell)$	$\vdash \text{in}'(\ell, \text{rome}')$

If we want to know what the propositional content of this sentence is we just need to apply \wedge -Reflection 3 times and get

(39) $\vdash \text{marry}'(\text{delia}', y) \wedge \text{man}'(y) \wedge \text{meet}'(\text{delia}', y, \ell) \wedge \text{in}'(\ell, \text{rome}')$

Yet, propositional content is not everything. For the difference between theme and rheme is also in context acceptability conditions. We shall return to the matter below.

Consider now the somewhat more delicate

(40) Delia married a [MAN]_F who she met in Rome.

This is saying that the person who Delia met in Rome and ended up marrying is

¹²The reader should be aware that I am not investigating here what it takes for a theme to be a presupposition. Languages have particular means to denote that something is merely assumed as opposed to presupposed, as it has means to say whether a constituent is thematic or rhematic. My concern here is to see what follows if a particular meaning is targeted. Also, it need not be the case that the stressed constituent equals the rheme. Thus, we could in principle see (37) as being completely rhematic. In that case, the action sequence is yet again different.

(or was) a man—not a woman. The corresponding action sequence is then this.

	S	A
	S	$\vdash \text{marry}'(\text{delia}', y)$
	$S \frown \text{marry}'(\text{delia}', y)$	\emptyset
(41)	$S \frown \text{marry}'(\text{delia}', y)$	$\vdash \text{meet}'(\text{delia}', y, \ell)$
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{meet}'(\text{delia}', y, \ell)$	\emptyset
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{meet}'(\text{delia}', y, \ell)$	$\vdash \text{in}'(\ell, \text{rome}')$
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{meet}'(\text{delia}', y, \ell) \frown \text{in}'(\ell, \text{rome}')$	\emptyset
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{meet}'(\text{delia}', y, \ell) \frown \text{in}'(\ell, \text{rome}')$	$\vdash \text{man}'(y)$

At first it seems that the only difference between these readings is the order of the judgements. However, there is an additional difference. If a sentence is embedded, then the scope of the propositional operator is only the rheme.

(42) Alfred believes that Delia married a $[\text{MAN}]_F$ who she met in Rome.

(43) Alfred believes that Delia married a man who she met in $[\text{ROME}]_F$.

The first, (42), is saying that Alfred believes Delia to have married a man. (Speaker might think differently but not about Delia having married someone she met in Rome.) The second is to say that Alfred believes that the man she married she has met in Rome (and speaker might think it was in Athens). Here for example is the action sequence for (42).

	S	A
	S	$\vdash \text{marry}'(\text{delia}', y)$
	$S \frown \text{marry}'(\text{delia}', y)$	\emptyset
	$S \frown \text{marry}'(\text{delia}', y)$	$\vdash \text{man}'(y)$
(44)	$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y)$	\emptyset
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y)$	$\vdash \text{meet}'(\text{delia}', y, \ell)$
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y) \frown \text{meet}'(\text{delia}', y, \ell)$	\emptyset
	$S \frown \text{marry}'(\text{delia}', y) \frown \text{man}'(y) \frown \text{meet}'(\text{delia}', y, \ell)$	$\vdash \text{believe}'(\text{alfred}', \text{in}'(\ell, \text{rome}'))$

Hearer is asked to verify that Delia married a man, and it is then asserted that the place where Delia met this man was believed by Alfred to be Rome.

5.4 Other Approaches

Our approach is different from much of previous work in that it claims not to have a semantics for focus in the usual denotational sense, but a semantics in terms of denoting aspects of the creative process for meanings. This theory is perhaps best compared with that of [Vallduví, 1990]. I agree with Vallduví in that the topic-focus articulation has to do more with processing than with meaning (in the sense of truth conditions). However, for Vallduví, the articulation is a means to allow for efficient processing of information. He divides the sentence into **focus** and **ground**, and ground into **link** and **tail**. Link provides an instruction (in terms of memory locations) where to store the information provided by the focus. From this it is clear that the assessment of what topic is as opposed to focus is completely different from mine. Where Vallduví sees the topic focus articulations at heart to be about storing information, I see it to be about understanding. The point of phatic articulation is in my view not efficient or proper update of the memory but rather to make the content better understandable. To say what that means and why it is different from information processing has been the point of [Kracht, 2009].

Let's now turn to the alternative semantics of [Rooth, 1992]. According to Rooth, a sentence has both a topic and a focus meaning. The topic meaning of $/[\text{Mary}]_F \text{ likes Sue}/$ is the set of all propositions “ x likes Sue” obtained by inserting an object for x , while the focus meaning is the set of a propositions “Mary likes y ” where y is in the domain.

$$(45) \quad \llbracket [\text{Mary}]_F \text{ likes Sue} \rrbracket^t = \{\text{likes}'(x, \text{sue}') : x \in E\}$$

$$(46) \quad \llbracket [\text{Mary}]_F \text{ likes Sue} \rrbracket^f = \{\text{likes}'(\text{mary}', y) : y \in E\}$$

The standard meaning of “Mary likes Sue” therefore is a member both of the topic and the of the focus meaning. In fact, what we observe to be the truth conditions of the sentence simply is the truth condition of that sentence in the intersection. However, the definition as given is highly problematic. Suppose we are just dealing with extensional meanings. Then the topic and focus meanings are sets of truth values. For example, suppose that Mary likes Sue, Claude does not like Sue, and Mary does not like Claude. Then we get that both meanings are identical:

$$(47) \quad \llbracket [\text{Mary}]_F \text{ likes Sue} \rrbracket^t = \{\top, \perp\}$$

$$(48) \quad \llbracket [\text{Mary}]_F \text{ likes Sue} \rrbracket^f = \{\top, \perp\}$$

To prevent this we need some conditions on the model, namely that it differentiates the sentences to a sufficient degree. Such a requirement strikes me as artificial,

though. For we can use focus even when no intensionality is in sight, as in /Two plus two is [four]_F./.

We might think of repairing the situation along the lines of structured meanings. The parts denote what they ordinarily denote if considered in isolation. The topic meaning of a sentence is the meaning of its topic, and the focus meaning the meaning of its focus, like this.

$$(49) \quad \llbracket [\text{Mary}]_F \text{ likes Sue} \rrbracket^t = \lambda x. \text{likes}'(x, \text{sue}')$$

$$(50) \quad \llbracket [\text{Mary}]_F \text{ likes Sue} \rrbracket^f = \text{mary}'$$

The copula is then the sign of predication. This is a much better variant. But it, too, is not without problems; one problem is that it multiplies the types for simple sentences (for each focus articulation we need a different complementiser, for example). Also, it allows in principle to have operators that are sensitive to the topic-focus articulation of their complements. Such operators are not found, however. It seems therefore that the topic-focus articulation is not part of the input for the operator.

Focus semantics implicitly assumes that a sentence is asserted to answer an implicit question. (Notice the similarity between the alternative semantics and the semantics for questions.) No such assumption is used here; our representations are only slightly more complex than mere propositions and we do not need to make use of sets or other higher order objects. Instead, focusing merely distinguishes the part of the sentence to which the pheme attaches, that is to say, that part that is under judgement.

5.5 Presuppositions

Presuppositions are different from overt claims to the truth. This sets them apart from themes whose truth is not required. In addition to this difference there is also another one, namely in terms of context acceptability. Recall the sentence (37) repeated here as (51).

$$(51) \quad \text{Delia married a man who she met in [ROME]}_F.$$

It is not simply the case that this sentence is false when Delia is still unmarried. This sentence is also inappropriate. There is however no semantic reason why this should be so. Rather, this is an effect from discourse pragmatics (observe that we are talking about “appropriateness”). I propose that there is the following rule governing utterances.

Context Condition. The utterance of (2) is felicitous in a context Γ only if all topics are true in Γ .

The Context Condition can be traced back to a somewhat more general property.

Force Uniqueness. An utterance should contain only one judgement.

How can it be that (51) carries only one judgement? The idea is simple: this is the case if the topics turn out to be true, that is, supported by the behavioural base of the hearer. If that is so the hearer can actually refrain from adding them to the slate. Thus, a sentence passes the Force Uniqueness filter if all topics are supported by the behavioural base. Thus Force Uniqueness implies the Context Condition.

Notice that neither condition is about sentences; it is about utterances. This explains why the felicity of utterances depends on the knowledge of speakers. If I utter (37) in front of someone who knows nothing about Delia this would count as an infelicitous utterance. If you know that Delia married someone she met in a special place, then telling you (37) might be quite appropriate if you don't also know where that was. The context clearly also plays a role. Anything that has been asserted in conversation and so far not been challenged may be taken as common knowledge.

There also is a distinction in judgement between topic and focus. Recall that in a standard conversation, S communicates to H a sentence. In this setting there are several different judgement operations: one for S ("S judges"), one for H ("H judges") and one for S and H together ("S and H judge"). With respect to "┐" the first represents speakers knowledge, the second hearers knowledge and the third common knowledge. In a communicative setting, it is generally assumed that topics represent common knowledge; focus, or rheme, however, does not. So, there are even stronger conditions on topics: not only should they be true (given the behavioural base of the hearer) but they should be common knowledge, thus also true according to speaker (not to mention the typical ladder of "speaker knows that hearer knows", "hearer knows that speaker knows that hearer knows" and so on). On the other hand, it is expected of the rheme (or focus) that it presents something to the hearer (informativity condition).

This is especially salient in questions.

(52) Did Delia marry a man who she met in [ROME]_F?

In this question speaker assumes that hearers also knows that Delia married a man whom she met somewhere. But speaker reveals he does not know (but wants to know) where it was that Delia has met this man.

Clearly, then, we should go back and refine our representation as follows. Rather than simply writing “ \vdash ” or “?” we shall now write “ \vdash_P ” (“ P judges to be true”) or “ $?_{P,Q}$ ” (“both P and Q want to know”). Topics will be prefixed by “ $\vdash_{S,H}$ ” (where S and H are to be filled by the persons in question) and the rheme is prefixed by “ \succ_S ”.

The distinction between speaker and hearer and what they know is especially relevant in the semantics (!) of questions. The canonical tradition in the semantics of questions is to assume that there is a model and that answers refine an equivalence relation over worlds of that model (see [Groenendijk and Stokhof, 1984]). [Aloni, 2002], notices that certain answers, though effective in the sense of refining the equivalence, still do not count as valid answers and proposes a refinement in terms of covers. Covers are sets of propositions that partition the space of possible worlds “in the right way”. All this however fails to acknowledge a basic fact of life: hearer and speaker know different things. The idea that there is a unique model that has been tacitly assumed in semantics is simply an illusion. No one knows how that model looks like and in which of all these worlds we are living. Without such knowledge these computations are pretty futile for they cannot be reproduced by those that engage in the dialogue. Instead, what we do is simply reason in the way we know, and about what we think the other knows.

6 Conclusion

In this paper I have argued that an approach centred on understanding or the construction of meaning can do much better in capturing the distinctions between theme and rheme or topic and focus. And this is because from a truth conditional perspective many meaning distinctions simply do not exist. They only manifest themselves indirectly, under embedding, for example. Many details have to be filled; a bottom-up algorithm to determine the meaning of sentences is, for example, still missing. Yet I believe that the proposal is clearly visible from the outline given here.

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