

# Real and Fake Past

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This little piece is divided into two parts, first some memories concerning Frank, Jeroen and Martin, and secondly an attempt to start a discussion about a linguistic puzzle: the fake past. Since my time with the three of them was so Dutch I decided to relate the first part in that language.

## 1 Echt Verleden

Frank, Jeroen, Martin, ik ken ze sinds de zeventiger jaren. Wanneer en hoe de samenwerking met Jeroen en Martin begon weet ik niet eens meer. Wel dat we het altijd eens geweest zijn over de eenheid van ons onderwerp, logica, taal en betekenis, en dat die eenheid ooit institutioneel gestalte zou moeten krijgen. Ik was een trouw bezoeker van hun Montaguecolloquium vanaf de tijd dat het begon. Het plan een logica-introductie te gaan maken gericht op taal, tezamen met Henk Verkuyl en Johan van Benthem, onstond zo vanzelfsprekend dat ik me ook daar de oorsprong niet meer van herinner. Het maken van dat boek is me wel heel erg bij gebleven omdat het een zeer intensieve samenwerking is geweest, waarbij iedereen zich met alle facetten bemoeide, ieder deel was wel oorspronkelijk door iemand geschreven, maar was absoluut niet het eigendom van die persoon en kon ingrijpende wijzigingen ondergaan als de anderen zich ermee bemoeiden. En ook de Engelse vertaling ervan was weer een nieuwe hele intensieve gebeurtenis, waarbij vaak twee aan twee in allerlei combinaties werd gewerkt, een fascinerende kennismaking met ieder persoonlijk.

Frank kwam van buiten bij de UvA. Toen hij bij ons een praatje kwam houden over counterfactuals wist ik meteen dat hij bij ons hoorde en zo geschiedde. Hij liet me veel meer dan ik me eerder realiseerde voelen dat logica niet alleen toegepast kan worden op taal en dat dat je inzichten in taal kan verrijken, maar dat in omgekeerde richting ook de logica verrijkt kan worden door toepassingen, dat interessante aspecten ervan en een andere visie op de logica kunnen voortkomen uit die toepassingen.

Natuurlijk heb ik gedurende de lange periode dat ik ze ken niet steeds evenveel met ieder van de drie samengewerkt, er waren verschillende perioden waarin hele verschillende dingen zijn gebeurd waarvan ik er maar een paar kan opnoemen.

Al in de tachtiger jaren ontstond het inleidingscollege logica en taal filosofie voor eerstejaars filosofie. Het bleek een heel vruchtbaar idee om dat met ons vieren gezamenlijk te doen. De eerste twee jaar bespraken we dat iedere week uitgebreid en fel met elkaar en ik heb er heel veel van geleerd, van Martin vooral natuurlijk als het ging over de interpretatie van de Tractatus waarover veel van de felle discussies gingen.

Met Frank deelde ik een kamer, we deden het college intensionele logica samen, ontdekten samen facetten van de modale logica en maakten de syllabus daarvan. Eind tachtiger jaren maakte hij de semantiek voor intepreterbaarheidslogica in het verlengde van bewijsbaarheidslogica, en samen produceerden we een aantal cruciale volledigheidsbewijzen, in een harmonieuze samenwerking waarbij vaak bij de bewijzen ieder om de beurt de volgende stap produceerde.

Tezamen met Martin heb ik in een cruciale periode (rond 2003) de nieuwe richting bepaald die het masterprogramma opging in verband met de Bologna agreement. We waren misschien beiden op dat moment niet helemaal tevreden, maar de gekozen weg is zeer succesvol gebleken.

Nog onlangs was voor het voor mij heel opwindend om zijdelings in zekere mate betrokken te zijn bij Jeroens nieuwe succesvolle onderzoeksproject inquisitive semantics dat raakvlakken bleek te hebben met mijn intuitionistische logica.

It is clear that my acquaintance with the three of them was an essential part of my scientific life for which I am very thankful.

## 2 Fake Past

It looks fitting to try to start a small scientific contribution in the direction of natural language. It concerns work by Sumiyo Nishiguchi of Tokyo University of Science, my hostess during my recent visit to Japan, in connection with the so-called fake past construction, Nishiguchi (2004), introduced among others by Teramura (1984) and others. An example of the fake past construction is

There was a party tomorrow (1)

Such a sentence may be uttered, when the speaker suddenly realizes, perhaps after a question like: *What are we doing tomorrow?*, that there is a party the next day. The speaker knew this before, but it slipped from her mind, and she became aware again of the fact only at the moment of the utterance. Such a use of the past tense is called fake past; clearly an event discussed in a manner like this may have happened at some time in the past but it may just as well be an occurrence that takes place in the present or the future.

That such a use to a certain extent really is a simple past can for example be seen from the fact that it conforms to Reichenbach's E,RS structure, Reichenbach (1947). Only the point of reference is not the time of the event discussed itself but the time on which the speaker knew or got to know about the event. The above conversation could for example be continued by the speaker with

Peter told me this when I met him yesterday. Then Paul remarked that Iris would come to the party, so it should be interesting for you as well (2)

It is true that the Reichenbach structure is not always as clear as in normal simple past utterances because the attention will usually shift immediately to the time at which the event itself occurs.

It seems inevitable for a logical explanation of the fake past to introduce awareness: awareness of the event seems central. The logic of awareness has often been discussed, but never better than in the early paper by Fagin and Halpern, Fagin and Halpern (1988). The logic of general awareness discussed there seems pretty close to what is needed here, disregarding the need for temporal operators for the moment. An operator  $A$ , *being aware of*, is added to the language of doxastic logic. The operator  $B$  standing for the standard belief-operator can then be seen as representing *implicit belief*. An agent *explicitly* believing  $\varphi$ ,  $B_e\varphi$ , can be described by  $B\varphi \wedge A\varphi$ . In the Kripke semantics  $A$  is then interpreted in each world as a subset of the set of formulas, those formulas the agent is aware of in the world. A knowledge operator  $K$  can be treated similarly. Implicit knowledge or belief will then have the same properties as in standard epistemic/doxastic logic, explicit knowledge or belief is logically much weaker, although attributing explicit knowledge to a statement is of course much stronger than attributing implicit knowledge to it. Depending on the purposes the set interpreting  $A$  can then be required to satisfy different conditions. In recent papers like van Ditmarsch and French and Velázquez-Quesada and Wang (2013) the choice is to take the set of all formulas constructed from certain

(but not all) propositional variables. For the present purpose that doesn't seem natural and there is no reason to forgo the possibility of awareness of only a finite set of formulas, but conditions requiring closure under subformulas and under single negations seem reasonable. Those conditions can easily be expressed in axioms for  $A$ .

Often the question is whether it is reasonable to interpret  $A$  as the set of statements the agent being able to determine the truth of. That seems to be definitely wrong here. Instead of responding to *What are we doing tomorrow?* with (1) a response

It wasn't yet sure whether there was a party tomorrow or not (3)

or

There was the possibility of a party tomorrow (4)

is quite in order when the agent is not able to determine the truth value of *There will be a party tomorrow*, but is aware of the event either going to take place or not. In these cases a modality must be attached to the sentence. In the standard case treated first this is not needed because it is implicit for pragmatic reasons. But should in that case the modality be belief or knowledge? We have the problem that the speaker is convinced of the truth of of the utterance and of the described event really happening but that the hearer may think differently. Still knowledge is a better choice than belief. An important logical reason is that a speaker  $S$  knowing  $\varphi$  at a certain time will know  $\varphi$  at least implicitly forever whereas a speaker believing  $\varphi$  may lose that belief at any time. The loss of knowledge can occur, but only be the loss of explicit knowledge. And with this in mind, the report of the speaker in our case only makes sense if her intention was to talk about her knowledge. The conclusions the hearer may draw when there is no sufficient common ground, are complicated, I will not go into that now.

Before we end with sketching a translation of (1) it is good to remark that on a different occasion (1) as an answer to *What are we doing tomorrow?* can indicate surprise of the hearer instead of the speaker.

There was a party tomorrow. You told me so yourself. (5)

On such an occasion the speaker was aware of the occurrence of the party all the time (since the hearer told her), but the hearer forgot, even to the point of asking what was going on tomorrow, and is made aware his lapse only by the speaker's answer.

Translation in a temporal modal language of the situation we sketched first is possible, although a first order temporal language seems more convenient. In temporal modal models the  $A$  is interpreted as a subset of the modal formulas at each node. If  $p$  stands for *there is a party tomorrow*, then

$$P(K_e p \wedge F \neg K_e p) \wedge K_e p \wedge H(K_e p \rightarrow S(H \neg K_e p, K_e p))$$

seems to do the right thing, writing  $K_e$  for explicit knowledge and  $S$  for *since* ( $S\varphi\psi$  meaning, there was a time that  $\varphi$  and since that time  $\psi$  held).

I thank Sumyio Nishiguchi for sharing her thoughts concerning the fake past with me and Hans van Ditmarsch for pointing out some literature.

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