How to Use Virtual Worlds in Linguistics

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Standard systems of modal logic tried to formalize notions like "necessity" and "contingency" such as treated by traditional philosophy. It doesn't matter much whether this end has been achieved, since these metaphysical concepts are quite foreign to those modalities usual languages actually deal with: possibility and certainty, various fields relating to the speaker's own or reported statements, expressed wills, conditionals (including the counterfactual ones), etc.

Thus, in everyday French with an ordinary context (for instance, Pierre's established absence), the sentence "Il est nécessaire que Pierre soit malade" is unacceptable, while "Il est possible que Pierre soit malade" is quite plausible. On the other hand "Pierre est nécessairement malade" is acceptable but conveys a weaker conviction than the simple sentence "Pierre est malade".

The two following sentences, uttered at half-an-hour distance, "Il est encore possible que Jean ait pris le train de 8h47", and "Maintenant il n'est plus possible qu'il ait pris le train de 8h47" are by no means contradictory: they simply express that the speaker's knowledge changed in the meantime.

A sentence like "Pierre est parti avant qu'on puisse l'en empêcher" stages at least three intertwining universes, including two counterfactual ones.

A coherent semantic treatment of ordinary modalities requires that virtual worlds be arranged into a variety of universes which are linked by much more elaborate relationships than mere "accessibility".

Even inside a single universe, the possible identity of a (variable) entity across several worlds ("transworld heirlines") has to be taken into account. For instance, the well-known ambiguity of the sentence "Marie veut épouser un Allemand" corresponds to the (syntactic) inversion of two quantifications: one existential, ranging on German men, the other universal, ranging on the worlds complying with Marie's wishes.

From the linguistic point of view, the notion of a "real world" is meaningless. For each speaker, the basic universe is made of all the virtual worlds which are consistent with the speaker's knowledge (real or fake) at the time of utterance. But this universe is not preserved under full logical deduction: a mathematician, if asked whether a given integer n is prime (with a short answering time and no computer available) may very well answer "Il est possible que n soit premier et il est possible qu'il ne le soit pas".

In addition, counterfactual universes (i.e. those made of worlds which, among propositions considered true by the speaker, contradict one of them but verify "almost all" the others) cannot be submitted to a rigorous treatment, which fact was noticed long ago by popular wisdom: "Si ma tante en avait, on l'appellerait mon oncle".

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