

## Letter from A.N. Prior to Hans Kamp, March 26, 1967

Balliol, March 26, 1967

Dear Hans<sup>1</sup>,

I think I know the answer to the query I put to you in my last note, but wd. be glad if you would confirm that I have it correctly.

I suppose Theorem 1 of your Colloquium paper might be expressed in the following rough way: -- If we treat the propositions of tense-logic as one-place predicates attached to an arbitrary individual a, certain functions of them may be defined within the lower predicate calculus (with identity) supplemented by a 2-place predicate constant  $<$ , with postulates asserting that its terms form an infinite linear series, † [i.e., these functions have definitions of the form

$$(f(p_1, p_2 \dots p_n))a \\ = f'(p_1, p_2 \dots p_n, a)$$

where the definition is a function in a first-order theory with the  $<$  as the only non-logical constant.]<sup>2</sup>

and all that can be so defined, can be defined within<sup>3</sup> tense-logic itself, as functions of propositions, in terms of truth-functions supplemented by your S & U.

If we wanted to state in this first-order theory of yours that the term b is between a and c, I suppose our definition would be  $\underline{a} < \underline{b} < \underline{c}$ . If the  $<$ -series were circular, however, this relation would hold between any 3 terms whatever\* [because  $<$  itself would hold between any two.]<sup>4</sup>; or betweenness that would not be trivial in a circular  $<$ -series is just not definable in terms of your  $<$ , or in indeed in terms of any dyadic relation at all (I'm told that this is not difficult to prove). So that a tense-logical function which, when treated as a function of predicates, required this non-definable between-ness for its definition, would not be definable in terms of your S & U. And this non-definable between-ness is required, if I am not mistaken, for distinguishing discrete from dense circular time. (In dense but not in discrete circular time it wd. be true that for every distinct a & b there is a c that is in this sense between them). -- I hope I've got this straight.

– Yours,

Arthur Prior

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<sup>1</sup> Editors' note: This letter has been transcribed by Woosuk Park, Adriane Rini and David Jakobsen. It is located at the Bodleian Library Oxford in the Arthur Prior Collection, box 2. The letter is written on an Aerogramme addressed to H. Kamp, 10949 Williams Avenue, Los Angeles, California 90024 USA.

<sup>2</sup> Editors' note: The passage in brackets after the dagger is written by Prior in the margin.

<sup>3</sup> Editors' note: The text and the marginal note are difficult to read.

<sup>4</sup> Editors' note: The passage in brackets after the star is written by Prior in the margin.