On Self-Sustenance in Systems
of Epistemic Logic

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I wish to make some brief remarks about systems that are specified in terms of conditions upon model sets.* The appendix to Hintikka [2] contains thirty-nine such conditions involving epistemic and doxastic relationships; elsewhere [5], he discusses conditions on model sets in relation to alethic and deontic notions, as well as epistemic ones. I shall assume familiarity with the above works and the methodology whereby, in a system S that is specified via conditions on model sets, self-sustenance of a formula ϕ is established by showing that no model set μ in any model system meeting the conditions for S can contain $\sim\phi$. I shall write '$\vdash_{\overline{S}}\phi$' to indicate that ϕ is self-sustaining in S; a formula will be referred to as a sentence if it has no free variables.

For Hintikka self-sustaining sentences are, with caveats, somewhat akin to valid sentences in systems of quantification theory; and, as the following passage shows, he has proposed that self-sustenance in a system of epistemic logic be understood in terms of truth in all worlds of a particular sort:

> Our results are not directly applicable to what is true or false in the actual world of ours. They tell us something definite about the truth and falsity of statements only in a world in which everybody follows the consequences of what he knows as far as they lead him. A sentence is self-sustaining if it is true in all such worlds, defensible if it is true in at least one such world, and so on. ([2], p. 36)

After mentioning his rejection of the interpretation of self-sustenance as truth in *all* possible worlds, Hintikka says: