Natural models for iterated modalities in the Lewis' S4 system

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The primary means of interpretation in the case of modal calculi in contemporary logic is the so-called possible worlds semantics (of the relational and neighbourhood types). In these semantics, the basic concepts include the possible world, the model structure and the accessibility relation between possible worlds. Though possible worlds semantics appear to be more natural than algebraic and topological semantics of modal calculi, their fundamental concepts lack a meaningful interpretation. The problem of interpreting iterated modal operators poses a particular challenge. The article describes a fundamentally new approach to developing modal logic semantics, using only their conventional concepts of logical truth, satisfiability etc. We suggest a natural interpretation of iterated modalities in the S4 system based on this approach.

Keywords: *modality, possible world, model structure, accessibility relation, relatively bounded set of state descriptions, true, false, satisfiability, validity*

REFERENCES

[1] Arkhiereev N.L. *Filosofiya nauki — Philosophy of Sciences*, 2010, no. 2 (45), pp. 78–91.

[2] Arkhiereev N.L. *Logiko-filosofskie issledovaniya — Studies in logic and philosophy*, 2010, issue 4, pp. 123–130.

[3] Ivlev Yu.V. *Modalnaya logika* [Modal logic]. Moscow, Lomonosov Moscow State University Publ., 1991, pp. 168–190.

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