Finitary Logical Semantics
(Abstract)

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Stone dualities allow to describe special classes of topological spaces by means of (possibly finitary) partial orders. Typically, these partial orders are given by the topology, a basis for it, or a subbasis for it. The seminal result is the duality between the categories of Stone spaces and that of Boolean algebras (see [4]). Other very important examples are the descriptions of *Scott domains* as *information systems* [5] and the description of *SFP domains* as *pre-locales* [1].

Intersection types can be viewed also as a restriction of the domain theory in logical form, see [1], to the special case of modeling pure lambda calculus by means of ω-algebraic complete lattices. Intersection types have been used as a powerful tool both for the analysis and the synthesis of λ-models, see *e.g.* [2]. On the one hand, intersection type disciplines provide finitary inductive definitions of interpretation of λ-terms in models. On the other hand, they are suggestive for the shape the domain model has to have in order to exhibit certain properties [3].

References

[1] S. Abramsky. Domain theory in logical form. *Ann. Pure Appl. Logic*, 51(1-2):1–77, 1991.

[2] M. Coppo, M. Dezani-Ciancaglini, F. Honsell, and G. Longo. Extended type structures and filter lambda models. In *Logic colloquium '82*, pages 241–262. North-Holland, Amsterdam, 1984.

[3] M. Dezani-Ciancaglini, F. Honsell, and Y. Motohama. Compositional characterization of λ-terms using intersection types. In *MFCS'00*, vol. 1893 of *LNCS*, pages 304–313. Springer, Berlin, 2000.

[4] P. T. Johnstone. *Stone spaces*. Cambridge University Press, Cambridge, 1986.

[5] D. S. Scott. Domains for denotational semantics. In *ICALP'82*, vol. 140 of *LNCS*, pages 577–613. Springer, Berlin, 1982.