

Preface

Point-free topology is based, roughly speaking, on the fact that the abstract lattice of open sets can contain a lot of information about a topological space, and that an algebraic treatment can provide new insights into the nature of spaces. The intuition behind this approach is quite natural: one thinks of a space as consisting of “realistic places” of non-trivial extent endowed with the information of how they meet and how a bigger place is composed from smaller ones.

During the time this theory has been cultivated (the concepts as we use them today – frame, frame homomorphism, etc. – were coined in the late 1950s) the abstract lattice approach proved to be able to replace the classical one, and in many respects to advantage: it turned out that some results are in a sense better. For instance, one has fully constructive counterparts of facts that are, in classical topology by necessity, heavily choice dependent, such as the compactness of products of compact spaces. Sometimes one obtains satisfactory facts instead of classically unsatisfactory ones, for instance, the behaviour of paracompact spaces. And one gains new and useful insights into many space phenomena.

Twenty years after the theory started to develop there appeared, in 1983, Johnstone’s excellent monograph “Stone Spaces” which is still, after a quarter of a century, the standard reference book. Since then a lot has happened in the area; however, it is all in (numerous) journal articles, and with the exception of two chapters in handbooks and a slim booklet on the covariant approach, there is no new comprehensive literature available. The aim of the present book is to fill this gap.

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