

6. Concluding remarks

The Boolean modeling of analogical proportions leads to a set of 120 derived proportions: the logical proportions. Among this set, 4 proportions, the homogeneous ones, have already been deeply investigated, not only in terms of formal properties but also in terms of practical applications. In this paper, we have shown that 4 other proportions stand out from the set of logical proportions, namely the heterogeneous proportions, because of their syntactic definitions and their semantics. From a syntactic viewpoint, they differ from the homogeneous ones with the addition of a negation in their definition, which leads to heterogeneous truth tables where an odd number of 1 is necessary for such a proportion to hold. From a semantic viewpoint, they satisfy properties which are not satisfied by any of the homogeneous proportions. More than that, while the use of homogeneous proportions leads to mechanisms allowing to deal with IQ tests of the type "Find the Missing One", heterogeneous proportions underlies a mechanism allowing us to deal with quiz of the type "Find the Odd One Out". Thus, both from a formal viewpoint and from an applicative viewpoint, heterogeneous proportions appear as a perfect dual of the homogeneous ones. Ultimately, logical proportions provide an elegant framework to deal with IQ tests, from Raven Progressive Matrices to Find the Odd One Out quizzes, in a uniform way. Still the investigation of the most appropriate multiple-valued extension(s) for heterogeneous proportions remains an open question.

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