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SYSTEM OF TRIANGLE PERSPECTIVES

A new method of constructing $\left(\binom{n+2}{2}_n \binom{n+2}{3}_3\right)$-configurations ($n \geq 3$) is presented and discussed. Investigations on this method originated in an analysis of the classical (self dual) Bol configuration represented as a hexagon inscribed into three lines, and possible generalizations of this representation. Another classical configuration that consists of a hexagon inscribed into three lines is the $10_3 G$-configuration of Kantor. Combining ideas of these two representations an interesting $(15_4 \, 20_3)$-configuration represented as a 9-gon inscribed into three concurrent lines is constructed. Finally, it is realized that the configuration dual to the obtained before can be elegantly presented as a system of n ($n = 3$) Veblen configurations with a common line L (a basis) and a system of $\binom{n}{2}$ ``twisted'' perspectives i.e. of $\binom{n}{2}$ triples of concurrent lines which join in pairs points of two triangles of any two given Veblen configurations, completed by a system of 3-lines which join centers of perspective. This representation can be generalized to arbitrary $n \geq 2$; in effect we obtain a $\left(\binom{n+3}{2}_{n+1} \binom{n+3}{3}_3\right)$-configuration. It is worth to point out that the obtained class of systems of triangle perspectives contains a class of so called multiveblen configurations. Thus, quite surprisingly, investigations on polygons inscribed into lines lead us to considerations on systems of Veblen configurations.

A complete classification of corresponding $(15_4 \, 20_3)$-configurations is given, characterization of their automorphisms is presented, and relationships with the generalized Bol configuration we have started from and some other configurations is discussed.