***Construction Strategies and Measuring Magnitude of OPTICAL ILLUSION from an empirically derived formula***

The tourists to Taj-Mahal come across an optical illusion in which the size of the Taj, as seen through it’s arch, decreases as one approaches the arch. This phenomenon is observed only beyond the arch and not after one crosses the arch. Not much study has been performed regarding this illusion. After a good search, I’ve found a similar phenomenon even in my locality. Taking help of the two, I’ve designed a 2-D apparatus analogous to the two cases, in order to make my further experimentation handy. The apparatus comprises of two congruent sectors of two concentric circles. These were placed in various orientations in an imaginary co-ordinate system, with smaller arcs of both pieces facing the same direction, in such a way so as to resemble the arch and monument. Several observations such as the sector appearing larger, viewer’s angle of elevation, angle between the two sectors were noted for different orientations. The nature and degree of illusion experienced in each case was also noted. From all the obtained experimental data, an empirical formula was derived to measure the magnitude of optical illusion for any given configuration. This was further analyzed and tested by applying it in the two cases mentioned earlier. Relations between the individual parameters were proved diagrammatically. Based on these relations and the obtained formula, construction strategies have been designed in order to facilitate a similar phenomenon in any of the future constructions.