External and Internal in Geometry and Logic.

Lobachevsky believed that unlike other axioms of Euclidean geometry which were true \textit{a priori}, the Axiom of Parallels was only (likely to be) true about our empirical world but might be false in a different possible («imaginary») world. His university colleague Vasilyev (1880-1940) applied the Lobachevsky’s idea to logic by supposing that some logical laws (particularly \textit{tertium non datur}) were empirical and hence might not hold in other possible worlds. The consistency of the Lobachevsky’s suggestion remained doubtful until it was supported by Gauss’ method of modeling non-Euclidean geometries as \textit{internal} (otherwise called \textit{intrinsic}) geometries of certain curved surfaces (considered in Euclidean 3D \textit{external} space). Developing Vasilyev’s ideas Smirnov (1931-1996) took a similar approach and put forward the concept of \textit{combined logic} which combines \textit{external} propositional logic with \textit{internal} «logic of events» which supposedly serves to make a formal ontological account of a given model. Since the Gaussian method involves the distinction between \textit{local} and \textit{global} geometrical characteristics we might suggest that combined logics may serve to treat this distinction logically. In my talk I give a reinterpretation of the concept of combined logic based on Quine’s idea of ontological relativity which suggestedly makes this possible.