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The Verifier–Falsifier games with restrictions on computational complexity of strategies

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Traditionally, game semantics was developed to confirm or complement some existing semantics of logical systems. Usually it was established that the Verifier has a winning strategy in the game associated with the formula A iff A is derivable in some corresponding deductive system or true in a model-theoretical sense. It is well known that the restrictions on the classes of strategies used by Verifier and Falsifier may break this relationship, so the question of "admissible" restrictions has been studied: for example whether it is possible to consider only computable strategies and still obtain the same "adequate" semantics. We study the restrictions from a different point of view: how much the semantics may be deformed due to some natural asymmetry between players. We consider various kinds of semantic games (for example, games with backward moves). It turns out that under some conditions the Verifier may win even if the formula is not true in ordinary logical semantics. The conditions like the Verfier being able to compute an universal function for all possible strategies of Falsifier were considered. Our main concern is not foundational, but rather philosophical: nowadays more and more often one has to deal with different forms of "scientific" confirmation based on tests rather than proofs (that is closer to game semantics) and biased (or even dishonest) players that may have considerable computational resources.