
This is an original and ambitious book that gives a new theory of definite descriptions and anaphora phenomena via game-theoretical semantics.

The book is divided into three parts. Part I, the shortest of all, presents an overview of game-theoretical semantics (GTS) as a basis for further considerations on definite descriptions and anaphoric pronouns. GTS invented by Hintikka in early 70’s and subsequently developed by himself and his students is a sort of truth-conditional semantics. Its basic concept is that of the semantic game. Semantic games are two person zero-sum games played by Myself and Nature. Let L will be a first order applied language. Now, one can associate a game $G(S)$ with each sentence S of L. If $G(S)$ ends with a true atomic sentence in some extension $L(I)$, which is obtained by supplementing L with a finite set I of individual names of objects which $G(S)$ is played on, then Myself wins and Nature loses; if $G(S)$ results with a false sentence, Nature wins and Myself loses. Intuitively speaking, Myself tries to show that sentences are true and Nature’s aim is to falsify them. This determines strategies associated with particular logical constants, providing that a sentence $S$ is false if there is a winning strategy in $G(S)$ for Nature and $S$ is a true sentence if Myself has a winning strategy in $G(S)$. For instance, if $S = S_1 \land S_2$, the semantical game for $S$ is regulated by the following rule

(G. $\exists$) The game $G(\exists x S(x))$ begins with a choice by Myself of an individual from do (M), i.e. the domain of a model which $G(\exists x S(x))$ is played on. If “b” is the name of this individual either in L or in an extension $L(I)$ of L, then the game in question is continued with respect to $S(b)$, where $S(b)$ is the result of replacing every free occurrence of “$x$” in $S(x)$ by “b”.

(G. V) The game $G(\forall x S(x))$ begins likewise as the game $G(\exists x S(x))$, except that the individual is chosen by Nature, and is continued likewise.

The authors state that any $G(S)$ is finite, i.e. it “will come to an end after a finite number of moves” (p. 5). Moreover, they sketch a proof that GTS for first-order language is equivalent with Tarski-type semantics.

The authors claim that GTS has explicit advantages over the standard semantics. Hintikka in his Introduction to the whole book writes on GTS: “What game-theoretical semantics provides is a theoretical model of the right sort. It is roughly comparable to such familiar frameworks of semantical representation as first-order logic. However, the earlier theoretical frameworks offered by contemporary logic are simply far too distant from the realities of natural languages to be what linguists really need” (p. XI). Thus, on Hintikka’s view, the rule

(G. some) If the game has reached a sentence of the form

\[ X - \text{some } Y \text{ who } Z \rightarrow W \]

then Myself chooses a person from do (M) with respect to which the game is being played. If the name of the individual is “b”, then the game is continued with respect to

\[ X - b \rightarrow W, b \text{ is a } Y, \text{ and } b Z, \]

is more adequate for the meaning of or-
dinary "some", than its counterpart generated by first-order logic; for instance, (G. some) is applicable to the sentence "some man to whom he had spoken saw Tom".

Part II is devoted to definite descriptions. The authors distinguish three uses of the phrases: Russellian ("the present king of Italy is wise"), anaphoric ("if Bill owns a donkey, he beats the donkey") and generic ("the tiger is a dangerous animal"). Although Hintikka and Kulas declare themselves as followers of Russell in the description theory, they regard the anaphoric use as basic. It is regulated by the following rule

(G. anaphoric the) When a semantic game has reached a sentence of the form

\[ X - \text{the}\ Y \ who \ Z - W, \]

then an individual, say \( b \), may be chosen from a set of individuals \( I \) by Myself, whereupon Nature chooses a different individual, say \( d \), from the same set \( I \) (the choice set). The game is then continued with respect to

\[ X - b - W, b \ is \ a(n) \ Y \ and \ b \ Z, \ but \ d \ is \ not \ a(n) \ Y \ who \ Z. \]

If \( I \) is a unit set, the game is continued with respect to a sentence of the form

\[ X - b - W, b \ is \ a(n) \ Y \ and \ b \ Z. \]

The Russellian use is governed by the rule

(G. Russellian the) When a game has reached a sentence of the form

\[ X - \text{the}\ Z - W, \]

an individual, say \( b \), is chosen by Myself, whereupon a different individual, say \( d \), is chosen by Nature. If these individuals do not already have names, the players give them names, which are assumed to be "b". The game is then continued with respect to

\[ X - b - Y, b \ is \ a(n) \ Y, \ b \ Z, \ but \ d \ is \ not \ a(n) \ Y \ who \ Z. \]

Perhaps the following comment concerning the relation of (G. anaphoric the) and (G. Russellian the) is important: "It is thus possible to see in pragmatic terms how the Russellian use of the-phrases can be considered as a variant of the anaphoric use. Briefly, since there is no non-empty set \( I \) in the sense of (G. anaphoric the) available, the hearer interprets the the-phrase by making the next obvious choice, that is setting \( I \) equal to the whole domain of discourse (strictly speaking, to the relevant category)" (p. 67). This treatment of the-phrases is supplemented by considerations which try to show that GTS meets various problems connected with Russellian theory of definite descriptions. The authors discuss i.a. Bach-Peters sentences, primary and secondary occurrences, Donnellan's distinctions and Strawson's criticism of Russell.

Part III, the most extensive of all, contains a detailed analysis of anaphora phenomena in natural language. The authors compare the GTS-oriented theory of anaphoric pronouns with other contemporary approaches: pronouns as placeholders for their heads, repeated reference account of pronouns, bound-variable account, and approaches via coreference assignments. Hintikka and Kulas argue that these accounts are limited by obvious counterexamples and try to show that GTS offers here satisfactory solutions. G-rules for anaphoric pronouns look like this

(G. he) When a semantic game has reached a sentence of the form

\[ X - \text{he} - Y, \]

an individual of the appropriate kind (a person or an animal), say \( b \), may be chosen by Myself from \( I \), whereupon Nature chooses another individual, say \( d \) from \( I \). Then the game is continued with respect to

\[ X - b - Y, b \ is \ male, \ but \ d \ is \ not \ male. \]