

The Truth-Conditional Treatment of Ambiguity and Chinese Serial Verb Constructions

Alice Yin Wa Chan
City University of Hong Kong
enalice@cityu.edu.hk

Abstract

According to Li & Thompson (1981), Chinese serial verb constructions consisting of two verb phrases denoting two separate events can be classified into those having alternating, consecutive, purpose or circumstance relations. These classifications may overlap and a serial verb construction may be ambiguous between different interpretations. It has been argued in a recent study (Chan 1996) that there exists an entailment relation between the different interpretations of an ambiguous serial verb construction. In the present study, it is argued that because of the entailment relations between the different interpretations, the truth conditional definition of ambiguity has to be modified if it is to be applied to Chinese serial verb constructions which are ambiguous.

In truth-conditional semantics, it is suggested that an ambiguous sentence is true for one interpretation but false for another relative to a certain state of affairs. This definition of ambiguity is not adequate for an ambiguous Chinese serial verb construction because of the entailment relation between the different interpretations. It has to be modified to allow a state of affairs where the sentence is true for both interpretations.

According to Li & Thompson (1981), Chinese serial verb constructions consisting of two verb phrases denoting two separate events can be classified into those having alternating, consecutive, purpose or circumstance relations. These classifications may overlap and a serial verb construction can have more than one interpretation. For example, sentence (1) below is ambiguous between the consecutive and purpose interpretations, sentence (2) between the consecutive and alternating interpretations, and sentence (3) between the purpose and circumstance interpretations.

- (1) 他 買 票 進 去
he buy ticket enter go
(He bought a ticket and went in. [consecutive];
He bought a ticket to go in. [purpose])
- (2) 他 唱 歌 寫 字
he sing song write
(He sings and writes. [consecutive, alternating])
- (3) 他 們 用 筷 子 吃 飯
they use chopsticks eat rice
(They use chopsticks to eat. [purpose, circumstance])

It has been argued in a recent study (Chan 1996) that there exists an *entailment relation* between the different interpretations of an ambiguous serial verb construction. For a serial verb construction which is ambiguous between the consecutive and purpose interpretations such as sentence (1) above, the entailment relation between the interpretations says that if the first event is done in order to carry out the second (i.e. purposefulness) **and** if the first event is completed before the second is carried out (i.e. consecutiveness), then the construction has both the consecutive and purpose interpretations. For a serial verb construction which is ambiguous between the consecutive and alternating interpretations such as sentence (2), the entailment relation between the interpretations says that when the construction has the alternating interpretation, it will also have the consecutive interpretation, because when the two events alternate, they must also be consecutive. For a serial verb construction which is ambiguous between the purpose and circumstance interpretations like sentence (3), the entailment relation between the interpretations says that if the first event is done in order to carry out the second **and** if the first event spans the second, then the sentence has both the purpose and circumstance interpretations.

In the present study, it is argued that because of the entailment relations between the different interpretations, the truth-conditional definition of ambiguity as suggested in Kempson (1977) has to be **modified** if it is to be applied to Chinese serial verb constructions which are ambiguous.

The Definitions of Ambiguity

In formal semantics, a sentence is said to be ambiguous if "it is possible to assert it in both a positive and negative context simultaneously with no anomaly." (Frawley, 1992:58). By this definition, sentence (4) below is ambiguous

(4) John is walking along the *bank*.

because we can assert sentence (5) with no anomaly.

(5) John is walking along the *bank*, but he is not walking along the *bank*.

Sentence (5) is acceptable because the lexical item *bank* is a homonym with two meanings unrelated to each other. It can mean either a financial institution where people keep their money or the raised ground along the edge of a river. That John is walking along a financial institution but at the same time not along the edge of a river is definitely an acceptable situation.

From a **truth-conditional** point of view, an ambiguous sentence like sentence (4) is simultaneously true and false for the different interpretations *relative to a certain state of affairs* (Kempson, 1977). Relative to a state of affairs where John is

walking along a financial institution, the proposition "John is walking along the bank" with the word *bank* meaning the financial institution (first interpretation) is true but the proposition "John is walking along the bank" with the word *bank* meaning the raised ground along the edge of a river" (second interpretation) will be false, since John cannot be walking along a financial institution *and* the raised ground along the edge of a river at the same time. Relative to a second state of affairs where John is walking along the raised ground along the edge of a river, the proposition "John is walking along the bank" with the word *bank* meaning a financial institution is false but the proposition "John is walking along the bank" with the word *bank* meaning the raised ground along the edge of a river will be true. There is, however, no state of affairs where the sentence can be true for both interpretations of the lexical item "bank".

The Truth-Conditional Definition of Ambiguity Applied to Chinese Serial Verb Constructions

If we apply this traditional truth-conditional definition of ambiguity to the kind of ambiguous Chinese serial verb constructions given above (examples 1 - 3) , we will find that the definition is inadequate and has to be modified to accommodate the entailment relations between the different interpretations.

Serial Verb Constructions Ambiguous Between Consecutive and Purpose Interpretations

Sentence (1) is ambiguous between the consecutive and purpose interpretations :

- (1) 他 買 票 進 去
he buy ticket enter go
(He bought a ticket and went in. [consecutive]
He bought a ticket to go in. [purpose])

In this sentence, if the person concerned 他 (*he*, not she or they) 買 (*bought*, not sold) 票 (*the ticket*, not biscuits, or sweets) *first, then* 進去 (*went in*, not out), the consecutive interpretation holds. The entities or events in italics show the state of affairs for the consecutive interpretation. If in this state of affairs the event of buying a ticket is not done in order to carry out the event of going in, the purpose interpretation cannot come into play. Relative to this state of affairs, the sentence is then true for the consecutive interpretation but false for the purpose interpretation.

On the other hand, if the person concerned bought a ticket *in order to* carry out the event of going in, the purpose interpretation holds. This is the state of affairs for the purpose interpretation. If in this state of affairs the events of buying a ticket and going in are not consecutively carried out, the consecutive interpretation will not come into play. Relative to this state of affairs, the sentence is true for the purpose interpretation but false for the consecutive interpretation.

However, since there exists an entailment relation between the consecutive and purpose interpretations of the sentence, there also exists an *extra* state of affairs where the person concerned bought a ticket in order to carry out the event of going in (purposefulness) **and** the event of buying a ticket is completed before the second event of going in is carried out (consecutiveness). Relative to this state of affairs, the sentence will be true for both the consecutive and purpose interpretations.

To represent the relationship between sentences with the consecutive interpretation and sentences with the purpose interpretation, we can use a diagram like the following :



Fig 1

In figure 1, the set headed "Con" represents the set of sentences in which the events denoted by the verb phrases are consecutive: All the sentences in this set have a consecutive interpretation. The set headed "P" represents the set of sentences in which the first event denoted by the first verb phrase is done in order to carry out the second event denoted by the second verb phrase: All the sentences in this set have a purpose interpretation. The intersection of the sets represents the set of sentences in which the first event is being done for the purpose of achieving the second event *and* in which both events are consecutive: All the sentences in this set have *both* the purpose and consecutive interpretations.

From a truth-conditional point of view, sentence (1) is simultaneously true and false relative to a certain state of affairs. Relative to the first state of affairs (Con - P) where the events are consecutive but the first is not done in order to carry out the other, the sentence is true for the consecutive interpretation but false for the purpose interpretation. Relative to the second state of affairs (P - Con) where the first event is done in order to carry out the second but where the events are not consecutive, the sentence is true for the purpose interpretation but false for the

consecutive interpretation. However, there is a *third* state of affairs (Con + P) where the first event is done in order to carry out the second *and* where the events are consecutive. Relative to this state of affairs, the sentence is, nonetheless, true for both the consecutive and purpose interpretations. This state of affairs is, in effect, the state of affairs where the *entailment* relation between the consecutive and purpose interpretations holds.

We can represent the truth values for the different interpretations of sentence (1) using the following table :

Table 1

State of Affairs	Truth Value for Consecutive Interpretation	Truth Value for Purpose Interpretation
Events consecutive only	T	F
First event done for the purpose of the second	F	T
First event done for the purpose of the second and both events being consecutive	T	T

It can be seen from the above table that the situation relative to the first and second states of affairs coincides with the traditional truth-conditional definition of ambiguity which says that relative to the *same* state of affairs an ambiguous sentence can receive simultaneously a true and a false value for different interpretations. However, the third state of affairs diverges from this traditional truth-conditional definition of ambiguity, because in this case, relative to a single state of affairs, the sentence is true for both interpretations. The divergence is, as discussed before, due to the *entailment* relation between the two interpretations.

To formalize the divergence and to attribute it to the entailment relation between the different interpretations of an ambiguous serial verb construction, we have the following modification to the truth-conditional definition of ambiguity :

A serial verb construction is *ambiguous* if it is simultaneously true and false for its different interpretations relative to the same state of affairs.
If there exists an entailment relation between the different interpretations of the construction, there exists an extra state of affairs where the construction is *true* for both interpretations.

Serial Verb Constructions Ambiguous Between Consecutive and Alternating Interpretations

The above modified truth-conditional definition of ambiguity can also be applied to other ambiguous serial verb constructions such as example (2), which is ambiguous between the consecutive and alternating interpretations:

- (2) 他 唱歌 寫字
he sing song write
(He sings and writes. [consecutive, alternating])

In this sentence, if the person concerned 他 (*he*, not she or they) 唱歌 (*sings*, not dances) *first*, then 寫字 (writes, not reads), the consecutive interpretation holds. The entities and events in italics show the state of affairs for the consecutive interpretation. If in this state of affairs the events of singing and writing do not recur, the alternating interpretation cannot come into play. Relative to this state of affairs, the sentence is then true for the consecutive interpretation but false for the alternating interpretation.

On the other hand, if the person concerned sings and writes *many many* times, with *one instance* of *singing* followed by *one instance* of *writing* followed by *another instance* of *singing*, etc., then the alternating interpretation holds. This is the state of affairs for the alternating interpretation. Relative to this state of affairs, the sentence is true for the alternating interpretation. It is also true for the consecutive interpretation because of the entailment relation between the two interpretations, which says that when two events alternate, they must also be consecutive.

To represent the relationship between sentences with the consecutive interpretation and sentences with the alternating interpretation, we have the following diagram :



Fig 2

In figure 2, the set headed "Con" represents the set of sentences in which the events denoted by the verb phrases are consecutive: All the sentences in this set have a consecutive interpretation. The set headed "A" represents the set of sentences in which the events denoted by the verb phrases alternate one after the other: All the

sentences in this set have an alternating interpretation. The set A is a subset of the set Con, showing that all the sentences which have an alternating interpretation also have a consecutive interpretation.

Applying the modified truth-conditional definition of ambiguity to this situation, we can say that relative to a state of affairs where the events are consecutive only (Con - A), sentence (2) is true for the consecutive interpretation but false for the alternating interpretation. Relative to another state of affairs where the two events are consecutive and where the first instance of the first event is followed by the first instance of the second event, which is in turn followed by the second instance of the first event, (A) etc., the sentence is true for both the alternating and consecutive interpretations.

The truth values for the different interpretations of sentence (2) can be represented by the following table :

Table 2

States of Affairs	Truth Value for Consecutive Interpretation	Truth Value for Alternating Interpretation
Events consecutive but not alternating	T	F
Events alternating (and thus consecutive)	T	T

Serial Verb Constructions Ambiguous Between Circumstance and Purpose Interpretations

Sentence (3) is ambiguous between the purpose and circumstance interpretations :

- (3) 他們 用 筷子 吃飯
 they use chopsticks eat rice
 (They use chopsticks to eat. [purpose, circumstance])

In this sentence, if the persons concerned 他們 (*they*, not we or she) 用筷子 (*use chopsticks*) *in order to* 吃飯 (*eat*, not other events) , the purpose interpretation holds. The entities and events in italics show the state of affairs for the purpose interpretation. If in this state of affairs the event of using chopsticks does not span the event of eating, the circumstance interpretation cannot come into play. Relative to this state of affairs, the sentence is true for the purpose interpretation but false for the circumstance interpretation.

On the other hand, if the persons concerned eat *while* they are using the chopsticks, i.e. the event of using chopsticks spans the event of eating, the circumstance interpretation holds. If in this state of affairs the persons concerned do not have the intention of carrying out the first event of using chopsticks in order to carry out the second event of eating, the purpose interpretation cannot come into play. Relative to this state of affairs, the sentence is true for the circumstance interpretation but false for the purpose interpretation.

However, since there exists an entailment relation between the purpose and circumstance interpretations of the sentence, there also exists an extra state of affairs where the persons concerned use chopsticks in order to eat (purposefulness) **and** where they eat while they are using chopsticks (circumstance). Relative to this state of affairs, the sentence is true for both the purpose and circumstance interpretations.

Again, to represent the relationship between sentences with the circumstance interpretation and sentences with the purpose interpretation, we can have the following diagram :

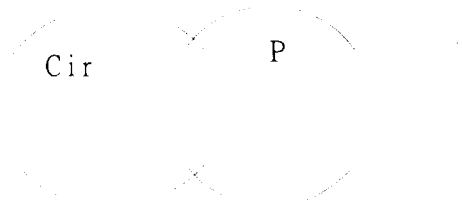


Fig 3

In figure 3, the set headed "P" represents the set of sentences in which the first event denoted by the first verb phrase is done in order to carry out the second event denoted by the second verb phrase: All the sentences in this set have a purpose interpretation. The set headed "Cir" represents the set of sentences in which the first event denoted by the first verb phrase spans the second event denoted by the second verb phrase: All the sentences in this set have a circumstance interpretation. The intersection of the sets represents the set of sentences in which the first event is done in order to carry out the second event *and* in which the first event spans the second: All the sentences in this set have *both* the purpose and circumstance interpretations.

Applying the modified truth-condition definition of ambiguity to this situation, we can say that relative to the first state of affairs (P - Cir) where the first event is done in order to carry out the second event, but the first event does not span the second,

sentence (3) is true for the purpose interpretation but false for the circumstance interpretation. Relative to the second state of affairs (Cir - P) where the first event spans the second but is not done in order to carry out the second, the sentence is true for the circumstance interpretation but false for the purpose interpretation. Relative to the third state of affairs (Cir = P) where the first event is done in order to carry out the second *and* where the first spans the second, the sentence is true for both the purpose and circumstance interpretations.

The truth values for the different interpretations of sentence (3) can be represented using the following table :

Table 3

States of Affairs	Truth Value for Purpose Interpretation	Truth Value for Circumstance Interpretation
First event done for the purpose of the second	T	F
first event spanning the second	F	T
Events both purpose-related and circumstance-related	T	T

Conclusion

Subsequent to the above discussion, we can conclude that the truth-conditional definition of ambiguity is inadequate when applied to ambiguous Chinese serial verb constructions. It has to be modified in such a way as to accommodate the entailment relation between the different interpretations of the constructions. While it is true that an ambiguous serial verb construction can be true for one interpretation but false for another interpretation relative to a certain state of affairs, there should exist an extra state of affairs where the construction is true for both interpretations. The modification as suggested in this paper makes the definition of ambiguity more comprehensive and helps to clarify the truth-conditional treatment of ambiguous Chinese serial verb constructions. Further research can be conducted to investigate its validity for serial verb constructions of other languages.

Bibliography

Allwood, J., L. Anderson and O. Dahl. 1977. *Logic in Linguistics*.
Cambridge: Cambridge University Press.

Cann, R. 1993. *Formal Semantics : an Introduction*. Cambridge: Cambridge
University Press.

Chan, Y.W. 1996. "Entailment Relations Between the Different Interpretations of
an Ambiguous Chinese Serial Verb Construction." Paper presented at the
Eighth North American Conference on Chinese Linguistics,
University of Urbana-Champaign, U.S., June 1996.

Chierchia, G. and S. McConnell-Ginet. 1990. *Meaning and Grammar : an
Introduction to Semantics*. Cambridge, Mass., MIT Press.

Frawley, W. 1992. *Linguistic Semantics*. Lawrence Erlbaum Associates
Publishers:
Hillsdale, New Jersey.

Kempson, R. M. 1977. *Semantic Theory*. Cambridge: Cambridge University
Press.

Larson, R.K. and G. Segal. 1995. *Knowledge of Meaning : an Introduction
to Semantic Theory*. MIT Press: Cambridge, Mass.

Li, C. N. and S. Thompson. 1981. *Mandarin Chinese: a Functional
Reference Grammar*. University of Chicago Press.