ON THE RELATION BETWEEN VERBS OF MOTION AND PATH EXPRESSIONS

---

Seisaku Kawakami

I

In his "Some Problems for Case Grammar" (1971), Fillmore says that Source (So) and Goal (G), the starting point and the destination, do not exhaust the complement possibilities for verbs of motion:

(1) In addition to the complements of Source and Goal, there is the complement type that David Bennett has called "Path," (Bennett 1970) exemplified in the last phrase of [He walked from the cemetery gate to the chapel along the canal]. A particularly interesting property of the Path (or "Itinerative") case is that a sentence with the path designated can contain an unlimited number of Path expressions, as long as these are understood as indicating successive stretches of the same path. This can be seen in a sentence like [He walked down the hill across the bridge through the pasture to the chapel.].

The purpose of the present paper is to look at Path expressions in some detail and to investigate their inherent relationship with verbs of motion. Recently C. R. Stratton wrote a paper "The Pathological

---

1 I am grateful to Dr. D. Bennett, Dr. Larry W. Martin, Mrs. K. Johnson and Prof. M. Soga for their frank comments on the earlier version of this paper.

2 Following Stratton (1971), I use 'So' for Source to avoid confusion with 'S' for Sentence in tree diagrams. Fillmore uses 'S' for Source and 'Sent' for Sentence.

3 In his "The Case for Case" (1968a) Fillmore posited a single Locative as a required case for verbs of motion. In his later article (1968b) he expanded the list of deep cases to include Source(So) and Goal(G). Recently Bennett (1970) has argued for the need to recognize four deep cases associated with the motional verbs: Locative, Source, Path, and Goal. Following Bennett, Fillmore (1971) has proposed the following nine cases: Agent, Experiencer, Instrument, Object, Source, Goal, Path, Time and Place.

[147]
Case” (1971), in which he discusses some characteristics of the Path case. In the course of the following discussion I will point out some problems concerning his treatment of Path expressions and present my own observations on the relation between verbs of motion, Path and the path points.

II

Let us look at Stratton’s analyses, first. He gives a definition of “Path” as follows:

(2) The rock(O) moved from the hill(So) through the squad car window(?) into the officer’s lap(G).

(3) In (2), the “leftover noun phrase seems to describe the space intervening between source and goal or to describe some characteristics of that space. Let us call these manifestations of an additional case Path; and let us insert Path between Object and Source in the case frame for verbs of motion: 

Thus, the phrase “through the squad car window” in (2) is Path case. Other examples of Path which he gives us:

(4) a. Sam(A=O) went to Reno(G) via Chicago(P).
   b. Jim(A=O) went to the Woods(G) by way of (the location of) the hay field(P).

(5) a. Sam(A=O) went to Reno(G) along Interstate 80(P).
   b. Jim(A=O) went to the woods(G) across (the surface of) the hay field(P).

(6) a. Sam(A=O) went through Chicago(P) to Reno(G).
   b. Jim(A=O) went to the woods(G) through (the area of) the hay field(P).

In the sentences given in (4), Path expressions are 1-dimensional since the path is specified by a point or a location. In (5) they are 2-dimensional since the path is specified as a line or a surface. In (6) they are 3-dimensional because the path is specified by an area.

There are no specified Sources in these examples. Sometimes Sources are quite clear to the speakers from the situation, so the sentences need not specify them. We can insert, for example, “from here” as Source in each sentence when we interpret it. Thus, Path is employed “to describe the space intervening between source and...
On the Relation between Verbs of Motion and Path Expressions

goal or to describe some characteristics of that space.” What is important here is that the space described by Path has to be between Source and Goal although the formula given in (3) is \([-A]O(P)(So)(G)\) instead of \([-A]O(So)(P)(G)\).

There are a number of verbs in English that incorporate the notion of Path. Given in (7) are some examples.

(7) a. Sam\((A=O)\) crossed from the bank\((So)\) to the post office\((G)\).
    b. Jim\((A=O)\) climbed to the top of Mt. Rushmore\((G)\).
    c. The bird\((A=O)\) flew out of the bush\((So)\).
    d. The cannon-ball \((O)\) sank to the bottom of the pool \((G)\).

An interesting observation that can be made about motional verbs which incorporate Path is that an overt expression of Path seems to be able to co-occur with such verbs with little or no restriction, as in (8):

(8) a. Sam\((A=O)\) swam through the water\((P)\) to the raft\((G)\).
    b. The mole\((A=O)\) burrowed through the earth\((P)\).
    c. The car\((O)\) crossed over the bridge\((P)\) from Minneapolis\((So)\) to St. Paul\((G)\).

It should be noted that the following sentences are also grammatical as Stratton himself admits:

(9) a. Jim\((A=O)\) crossed the bridge\((P)\).
    b. Salmon\((A=O)\) swim the Columbia every spring.
    c. Have you ever driven Interstate 80\((P)\)?
    d. Go climb a tree\((P)\)!
    e. Sam\((A=O)\) toured the Far East\((P)\).

(10) a. Jim\((A=O)\) crossed over the bridge\((P)\).
     b. Salmon\((A=O)\) swim up the Columbia\((P)\) every spring.
     c. Have you\((A)\) ever driven along Interstate 80\((P)\)?
     d. Go climb up a tree\((P)\)!

Notice that with Path the Accusative Marking Rule must be optional. Thus Path differs from Source and Goal in being able to take Accusative Marking, but differs from Experiencer and Object in that it needn’t take Accusative Marking even when it is eligible.

Another interesting characteristic of Path is that it can be repeated indefinitely many times within a simple clause, as shown in (11):

(11) a. Jim\((A=O)\) went out the door\((P)\), over the hill\((P)\), along the
river(P), through the woods(P), ...(P), to grandmother’s house(G).

b. Sam(A=O) went from Chicago(So) to San Francisco(G) via Joliet(P), Bloomington(P), Springfields(P), St. Louis(P), Kansas City(P), Salina(P), Denver(P), ...(P).

Moreover, multiple points on a path must be listed in their proper temporal sequence with respect to a journey along the path. Thus, (12a) and (12b) represent two different paths—and hence are not paraphrases of one another.

(12) a. Sam(A) drove his car(O) from Louisville(So) to Des Moines(G) by way of Chicago(P) and St. Louis(P).
   b. Sam(A) drove his car(O) from Louisville(So) to Des Moines(G) by way of St. Louis(P) and Chicago(P).

From the foregoing observations, Stratton summarizes the deviant behavior of Path in the following fashions and concludes that Path ought to be included in the case frames for verbs of motion.

(13) a. Verbs that incorporate notions of Path can take overt expressions of Path with little or no restriction.
   b. Path cannot be co-referential with Agent, where other cases can.
   c. Path is typically (always?) inanimate, while Source and Goal often are animate.
   d. When Path is eligible for Accusative Marking, it can undergo it or not optionally, while other cases must undergo Accusative Marking if they are eligible.
   e. Path alone among the cases can be repeated indefinitely.
   f. There are certain temporal and spacial restrictions on the order in which repeated instances of Path can appear in a sentence (i.e. multiple points on a path must be listed in their proper temporal sequence with respect to a journey along the path).

III

I agree with Stratton that Path ought to be included in the list of deep cases associated with verbs of motion. However, although the foregoing observations of Path are almost right, there seem to be some serious problems in his analyses. In the course of the following discussion, I will make more fundamental observations of Path expres-
sions from the following three viewpoints and point out Stratton’s difficulties.

(1) Two types of Path expressions
(2) Motional verbs and Path expressions
(3) Relationship of Path with Place

[1] Two types of Path expressions

First, there seem to be two types of Path expressions. Although Stratton points out the existence of two different types of Path, i.e. (4)–(6) type and (8)–(10) type, he makes no clear grammatical distinction between them. The best way to see the grammatical difference between them would be to make a sentence with both types of Path expression. Among the sentences given in (14), (14a) is (4)–(6) type of sentence, (14b) is (8)–(10) type, and (14c) is a sentence with both types.¹

(14) a. Sam toured from Japan(So) to Taiwan(G) by way of Seoul(P₁) and Shanghai(P₂).
   b. Sam toured East Asia(Ps).
   c. Sam toured East Asia(Ps) from Japan(So) to Taiwan(G) by way of Seoul(P₁) and Shanghai(P₂).

According to Stratton’s summary (13f), if Ps, P₁ and P₂ in sentence (14c) are all Path expressions, five points of the path, that is, So, Ps, P₁, P₂, and G, must be in their proper temporal sequence with respect to the journey along the path. It is quite easy to understand the temporal sequence of four points, So, P₁, P₂, G, but there is no way to place Ps “in its proper temporal sequence”. This means that (13f) does not hold in sentence (14c). Consequently, it may be said that Ps is different from P₁ and P₂ in its inherent nature. If this much is true, it follows that there are two types of Path expressions: (8)–(10) type (‘Ps-type’ for convenience) and (4)–(6) type (‘Pn-type’). Notice once again that (13f) does not hold in sentences with both types of Path expressions (Ps·Pn-type for convenience) in sentences in (15): it holds only among So, Pn, and G.

¹ In (14), ‘P₁’, ‘P₂’ stand for path points. These path points will be generalized as ‘Pn’ later. ‘Ps’ stands for the certain space within which all path points are spatially included.
Seisaku Kawakami

(15)  a. She walked *Iowa City* (Ps) from the Court House (So) to EPB (G) by way of *Whiteway* (P).

   b. Salmon swam up *the Iowa River* (Ps) from Iowa City (So) to Amana (G) through Lake Mbride (P).

   c. He walked *that area* (Ps) from the *hill* (So) across the *bridge* (P) through the *pasture* (P) to the chapel (G).

What is the inherent difference between Ps-type and Pn-type Path expressions, then? Conclusively speaking, there is the important fact that four points of the path in (14c), So, P₁, P₂ and G, are all spatially included in the space specified by Ps. That is to say, *Japan* (So), *Seoul* (P₁), *Shanghai* (P₂), and *Taiwan* (G) are all spatially included in *East Asia* (Ps). The same is true of Ps and path points in (15). Notice that the strangeness of the sentences given in (16) is due to the violation of this principle.

(16)  a. ? Sam toured *East Asia* (Ps) from Japan (So) to South Africa (G) by way of Seoul (P₁) and Shanghai (P₂).

   b. ? Sam toured *East Asia* (Ps) from Japan (So) to Taiwan (G) by way of Shanghai (P₁) and Moscow (P₂).

Accordingly, as shown in (17b) only one So, Pn, or G outside the space of Ps is enough for the illogicality of a sentence.¹ Therefore, for a sentence to make sense, Ps has to be a certain space where all path points are spatially included, as shown in (17a).

(17)

* x S₀, Pₙ or G

 a. logical  b. illogical

However, (17a) is not sufficient for an acceptable sentence: (17a) is only a necessary condition for the acceptableness of Ps.Pn-type Path

¹ When Ps and path points are separated from each other, the sentence is completely unacceptable:

*Marco Polo traveled the Via Appia from Dallas to Mexico City.*
expression. Notice that sentences in (18) are strange even though they satisfy the condition given in (17a).

(18) a. ? Tom traveled Asia(Ps) from Tokyo(So) to Atami(G) by way of Yokohama(Ps).
    b. ? Tom toured North America(Ps) from Iowa City(So) to Des Moines(G) by way of Amana Colony(P).

Sentences in (18) are strange because the space of Ps is too wide or too big for the area which is formed by linking all the path points together. Therefore, it follows that the smaller the spatial discrepancy between the space of Ps and the area made by linking all the path points is, the better it is for the acceptability of the sentence. Accordingly, the necessary and sufficient condition for an acceptable sentence with respect to the relationship of Ps with the path points is that the following two conditions hold in the sentence at the same time: i.e. (1) the path points are spatially included in the space of Ps and (2) the spatial discrepancy between the space of Ps and the area made by linking all the path points together is required to be as small as possible or recognizably suitable.

From the foregoing observations, it is easily understood that the area specified by Ps in a given sentence is the space where the motion described by the motional verb in that sentence takes place and where all the path points are spatially included. On the other hand, the path points, So, Pn, and G, specify the path of the motion in their temporal sequence. It should be noticed, however, that there is no relation of temporal priority between Ps and the path points: it exists only among the path points. Thus Ps specifies the space where the motion described by the motional verb takes place, and the path points specify the path in their temporal sequence. Consequently, their functions are not independent of each other but complementary: they specify the same path of the same motion form the two different angles.

The last thing to discuss here is the grammatical phenomenon that Path can be repeated indefinitely within a simple clause. As shown in (11), Pn can be repeated indefinitely. However, it should be noted that Ps can also be repeated indefinitely as shown in (19).

---

1 This observation is also against Stratton’s summary (13f).
2 If the incorporated path in a verb of motion is taken into consideration, it also plays
The English Society of Japan
NII-Electronic Library Service

(19) Sam traveled Japan(Ps₁), India(Ps₂), Iran(Ps₃) . . . Egypt(Psₙ).

Moreover, it may be said that the principle of the temporal sequence holds in (19) and, logically speaking, the order of Ps₁, Ps₂, Ps₃ . . . Psₙ corresponds to the temporal sequence of the path points. Accordingly, since there is no relationship of temporal priority between Ps and the path points, it follows that the only restriction imposed upon the relationship between the Ps-group (Ps₁, Ps₂ and Ps₃) and the path points (So, P₁, P₂, and G) in sentence (20a) is that the temporal sequence of the Ps-group (Ps₁, Ps₂ and Psₙ), logically speaking, must not be incompatible with that of the path points (So, P₁, P₂ and G).

(20) a. Sam traveled Japan(Ps₁), Korea(Ps₂) and China(Ps₃) from Tokyo (So) to Peking(G) via Seoul(P₁) and Shanghai(P₂).
   b. ? Sam traveled Korea(Ps₁), Japan(Ps₂) and China(Ps₃) from Peking(So) to Seoul(G) via Tokyo(P₁) and Shanghai(P₂).

Sentence (20a) is grammatical, since the temporal order of the Ps (Japan → Korea → China) is not incompatible with the temporal sequence of the path points (Tokyo → Seoul → Shanghai → Peking). Sentence (20b), on the other hand, is less acceptable than (20a) since the restriction in question is not kept here.


Stratton says that there are quite a number of verbs of motion that

---

...
incorporate the notion of Path. Some of the examples are given in (7). However, what he overlooks here is the fact that verbs of motion that incorporate the notion of Path are exactly those which can occur in the same sentence with Path expressions. It may be said that motional verbs which can occur with Path expressions always describe a certain positional movement, and Path expressions are exactly spatial specifications of such verbs of motion.

What, then, is the pre-lexical structure of those motional verbs that can occur with Path expressions? According to Gruber (1965), verbs of motion that specify a certain positional movement can be formalized as follows:

(21) \[
\begin{bmatrix}
V \\
\text{Motional} \\
\text{Positional}
\end{bmatrix}
\]

Here are two verbs which may be examined to see whether or not the notation (21) is sufficient for the general description of the verb class in question. They are *cross* and *reach*. Both of them are [+Motional] and [+Positional]. However, interestingly enough, they behave quite differently in sentences.

(22) a. Harry crossed *the bridge*(P).
    b. Harry reached *the bridge*(G).

The difference between *cross* and *reach* is that the former can take Path expressions while the latter cannot. What is the inherent difference between them, then?

A brief examination of the class of motional verbs that co-occur with Path expressions reveals that such verbs, including *cross*, specify

(23) *a motion that moves between at least two spatially different points with a certain repetitive motion (like walking).*

This means that the motion in question necessarily consists of Source and Goal. Accordingly, Path is also necessarily involved in that motion, because Source and Goal without Path are inconceivable. Therefore, when [Path] is a notation that represents the semantic feature of the motion given in (23), the class of motional verbs that can co-occur with Path expressions would be generalized as follows:
(24) \[
\begin{array}{c}
V \\
\text{Motional}
\end{array}
\]
\[
\begin{array}{c}
\text{Positional}
\end{array}
\]
\[
\begin{array}{c}
\text{Path}
\end{array}
\]
: cross, swim, drive, etc.

On the other hand, the class of motional verbs like reach, which generally do not co-occur with Path expressions, represent

(25) a certain motion that is completed or begins with respect to a specific spatial point.

In this case, since only one specific spatial point is involved in the meaning of the motion, there is no necessity that the notion of Path be incorporated in the motional verbs like reach. So, the generalization of this class of motional verbs would be something like that shown in (26).

(26) \[
\begin{array}{c}
V \\
\text{Motional}
\end{array}
\]
\[
\begin{array}{c}
\text{Positional}
\end{array}
\]
: reach, leave, start, etc.

It can be easily understood from (25) that verbs of this type are likely to co-occur with time adverbs.

The notion of Path can be expressed in three grammatical forms in a sentence: by a verb of the kind specified in (24) (i.e. a verb with a feature \([+\text{Path}])\), by Ps, and by path points (So, Pn, or G). The next question is whether or not a verb of the kind specified in (24) can always occur with Ps or the path points or all of them. Both cross and go are verbs with \([+\text{Path}]\). However, notice that sentences of (27) are completely acceptable while (28a), (28d) and (28e) are ungrammatical.

(27) a. Tom crossed the bridge(Ps).
b. Tom crossed from the bank(So) to the post office(G).
c. Tom crossed from the bank(So) to the post office(G) by way of the marked point in the middle of the street(P).
d. The car crossed the bridge(Ps) from Minneapolis(So) to St. Paul(G).
e. The car crossed the bridge(Ps) from Minneapolis(So) to St. Paul(G) by way of the designated spot on the bridge(P).

(28) a. *Tom went the bridge(Ps).
On the Relation between Verbs of Motion and Path Expressions

b. Tom went from Minneapolis(So) to St. Paul(G).
c. Tom went from Minneapolis(So) to St. Paul(G) by way of the designated spot on the bridge(P).
d. *The car went the bridge(Ps) from Minneapolis(So) to St. Paul(G).
e. *Tom went Japan(Ps) from Tokyo(So) to Fukuoka(G) by way of Kyoto(P).

Since (28b) and (28c) are grammatical, it is certain that go belongs to the class of verbs specified in (24). So, the ungrammaticalness of (28a), (28d) and (28e) probably comes from ‘intransitivity’ of go. With respect to cross, there is no problem because it is a transitive verb. Consequently, it may be said that [Vi] verb like go can occur with only Pn-type Path expressions while [Vt] verb like cross can occur with both Pn-type and Ps-type Path expressions in the same sentence. From these observations, the pre-lexical structure of motional verbs which can occur with Path expressions would be something like that given in (29).1

\[
(29) \left[ \begin{array}{c}
\{ \alpha V_1 \\
-\alpha V_t \\
\text{Motional} \\
\text{Positional} \\
\text{Path} \\
\end{array} \right] (-\alpha P_s)(S_o)(P_n)(G)
\]

The minus value of the ‘α’ variable stands for non-existence of the feature. So, when ‘α’ is a plus value, Vt and Ps are absent from the frame.

Now, it has become clear that Stratton’s summary (13a) is not sufficient for the general explanation of Path expressions. Moreover, his summary (13d) concerning Accusative Marking is not sufficient, either. Sentences given in (30) reveal that Accusative Marking of Ps is not optional in a certain situation.

(30) a. Sue drove Interstate 80(Ps).
b. Sue drove her car(O).
c. *Sue drove her car(O) Interstate 80(Ps).

---

1 Elements within round brackets are optional. Notice that (29) has two Path elements, Ps and Pn, and compare (29) with Stratton’s case frame given in (3). He has difficulty in dealing with the two different types of Path expression.
d. *Sue drove Interstate 80(Ps) her car(O).

e. Sue drove her car(O) along Interstate 80(Ps).

Since Object must undergo Accusative Marking as Stratton himself admits in (13d), Ps in (30e) has to be 'along Interstate 80' instead of 'Interstate 80'. Accordingly, when Ps occurs in the same sentence with Object, Ps cannot undergo Accusative Marking. In other words, the priority of undergoing Accusative Marking is always on the side of Object whenever they occur in the same sentence. This is what Stratton overlooks in (13d). This observation also suggests that Ps and Object are inherently different from each other.

[3] Place and Path expressions

Fillmore in "The Case for Case" (1968a) proposed a single Locative case with a locational and directional interpretation. However, in his recent article (1971) he says that he has become comfortable with the following cases: Agent, Experiencer, Instrument, Object, Source, Goal, Path, Time and Place. Cases relating to the locative-directional distinction associated with verbs of motion are Source, Goal, Path and Place. Among them, Source, Goal and Path are involved in the expression of the path points.

Path and Place are the notions which specify the locational status of a given motional verb. Thus, the two notions play a complementary role in their function of spatial specification of the motional verb. However, since the class of verbs that can occur with Path expressions usually represents a motion with linear movement, the spatial specification of those verbs necessarily appears as Path expressions. On the other hand, motional verbs with the feature [−Path] have no chance to occur with Path expressions since their spatial specification is only that of a specific spot or area where the motion takes place. That is to say, motional verbs with a feature [+Path] always have a possibility of occurring with Path expressions, while those with a feature [−Path] do not.

As mentioned above, Path and Place have a common function of specifying a particular space or path where the motion in question takes place. Sentence (31) is an example of Place expression, and sentences of (32) are examples of Path.

(31) Sam sat [in the park [under a tree [on a bench]]].
(32)  

a. Sam drove from Chicago(So) to San Francisco(G) via Joliet(P₁), Bloomington(P₂), Springfield(P₃), ... San Bernardino(Pn).

b. Sam toured Japan(Pₛ₁), Taiwan(Pₛ₂), India(Pₛ₃), ... Iran(Pₛₙ).

Place expression in (31) is a hierarchical specification of a certain spot by three Place elements. So, the manner of specification in the place expression is to describe a spot or area in question as exactly as possible by using Place elements. Besides, as many place elements as possible may be employed. On the other hand, in the Path expression, since a path between Source and Goal (that is, Pn) is a linear course, it can be divided into many locational points, as shown in (32a). However, the situation is a little different concerning Ps-type Path expression. That is to say, Ps-type expressions are different from Pn-type in that, in Ps-type, only the space where the path points are included is explicit in the sentence while the path itself is implicit, but in Pn-type the path is completely explicit in the sentence. Consequently, the more Pn's, the clearer the path in question becomes. However, concerning Ps-type, Japan (Pₛ₁), Taiwan (Pₛ₂), India (Pₛ₃) ... are all expressions of space rather than path. Besides, they are separate from each other. Therefore, to divide each space into its smaller parts does not help to make the path clearer at all.

(33)  

*?Sam drove Southern Japan(Pₛ₁'), Northern Japan(Pₛ₁''), Southern Taiwan(Pₛ₂'), Northern Taiwan(Pₛ₂''), ...  

IV

In the course of the foregoing discussion, I have looked at the grammatical behavior of Path expressions in some detail and investigated the inherent relationship between verbs of motion and Path expressions. Conclusively speaking, Stratton’s fundamental shortcomings lie in that he did not recognize that there are two types of Path expressions which are grammatically different from each other. As a result, his summary given in (13) is not convincing. For example, (13a) and (13d) hold only in Ps-type Path expressions. On the other hand, (13f) holds only in Pn-type expressions.

Some important observations which became obvious from the foregoing investigations can be summarized as follows:
(a) There are two types of Path expression: Ps-type and Pn-type.
(b) Candidates for path points are So, Pn and G. They are all spatially included in the space specified by Ps.
(c) The spatial discrepancy between the space of Ps and the area made by linking all the path points together is required to be as small as possible or recognizably suitable.
(d) There is no relation of temporal priority between Ps and the path points: it exists only among the path points.
(e) The temporal sequence of Ps group (Ps₁, Ps₂, ...), logically speaking, must not be incompatible with that of the path points (So, P₁, ... Pn and G).
(f) The inherent structure of motional verbs that can co-occur with Path expressions, and the case frame of Path expressions are generalized as follows:

\[
\begin{bmatrix}
\{ αV₁ \} \\
-αVt \\
\text{Motional} \\
\text{Positional} \\
\text{Path}
\end{bmatrix}
\rightarrow
(-αPs)(So)(Pn)(G)
\]

(g) When Ps occurs in the same sentence with Object, the priority of undergoing Accusative Marking is always on the side of Object.
(h) Since motional verbs that can occur with Path expressions represent a motion with linear movement, the spatial specification of those verbs necessarily appears as Path expressions. On the other hand, motional verbs with a feature [—Path] cannot occur with Path expressions since their spatial specification is only that of a specific spot or area where the motion takes place.

REFERENCES
Bennett, David C. “Some Observations Concerning the Locative-Direc-
Fillmore, Charles J. “The Case for Case,” in Universals in Linguistic Theory,
Fillmore, Charles J. “Types of Lexical Information,” in Studies in Syntax
and Semantics, ed. F. Kiefer (D. Reidel Publishing Company, Dordrecht,
1968b), 109–137.
On the Relation between Verbs of Motion and Path Expressions


Received October 4, 1973