

## Lecture 1: January 21

Professor: Dr. Dipti Misra

Tags: CPG, Intro

## 1.0.1 Introduction

Panini (पाणिनि) wrote a computational grammar for the Sanskrit language and a framework in general for modelling language. In his grammar, he builds on the fact that all the words in a sentence are linked and convey information. Out of the many relation types, there are the kAraka (कारक) relations.

The Karaka (कारक) system serves as the basis for description of Panini's (पाणिनि) Syntax. It is a syntacito-semantic representation of the relations between the verb/its derivatives and the direct participants of the action in the sentence.

## 1.0.2 Definitions

Panini's (पाणिनि) work is explained, extended, commented and reinterpreted by many authors like kAtyayana (कात्यायन), patanjali (पतञ्जलि), bhartRhari (भर्तृहरि) and others. This section includes some of the definitions of the "kAraka" (कारक).

- **Patanjali** (पतञ्जलि), in his Mahabhashya defines "kAraka" (कारक) as "karOti iti" (करोति इति) ( "The one that does" )
- The author of **kAsika** (कासिका) explains it as being synonymous to "hEtu" (हेतु) and "nimitta" (निमित्त) (Cause) - "kArakam hEtu ity anarthAntaram" (कारकम् हेतुर् इति अनर्थान्तरम्) ( " Cause and kArakam are one and the same " )
- **BhartRhari** (भर्तृहरि) uses the term "sAdhanam" (साधनम्) to specify kAraka (कारक) as the one capable of establishing action which is given the term "sAdhya" (साध्य).
- **NagEsa** (नागेश) defines kAraka (कारक) as the one that produces the action.

Therefore, we may say that kAraka (कारक) is a animate/inanimate, passively/actively involved entity in the accomplishment of an action. The relations between the verb ( "kriya" (क्रिया)) and the kAraka (कारक) are of the type (विशेषण - विशेष्य) ( Modifier - Modified ).

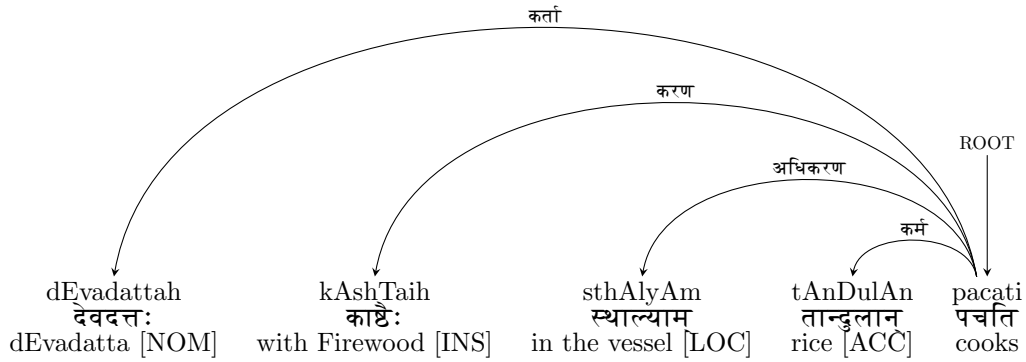
There are six kArakas (कारक). They are specified below briefly. ( Written as per the order )

- **apAdAnam** (अपादानम्) : Defined as "ध्रुवम् अपाये पादनम्" - The Entity which remains constant when separation takes place
- **sampradAnam** (सम्प्रदानम्) : "कर्मणा यम् अभिप्रैति स सम्प्रदानम्" - Is the entity for which the karma is intended.
- **karaNam** (करणम्) : "साहकतमम् करणम्" - Is defined as the most effective means of accomplishing the action

- **adhikaraNam** (अधिकरणम्) : “आधारो धिकरणम्” - Specifies the location and time of the activity.
- **karma** : (कर्म)
- **karta** (कर्ता) : “स्वतन्त्रः कर्ता” - This is the entity which is considered by the speaker as the most independent of all the other kArakAs (कारक) in an activity.

### 1.0.3 Examples

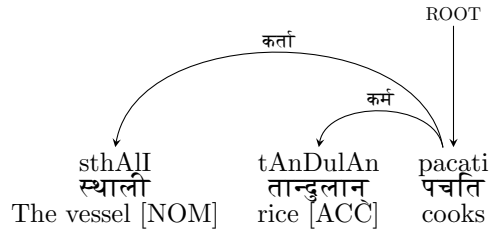
Consider the following sentence and its respective dependency relations.



“(1) dEvadatta cooks the rice with the firewood in the vessel ”

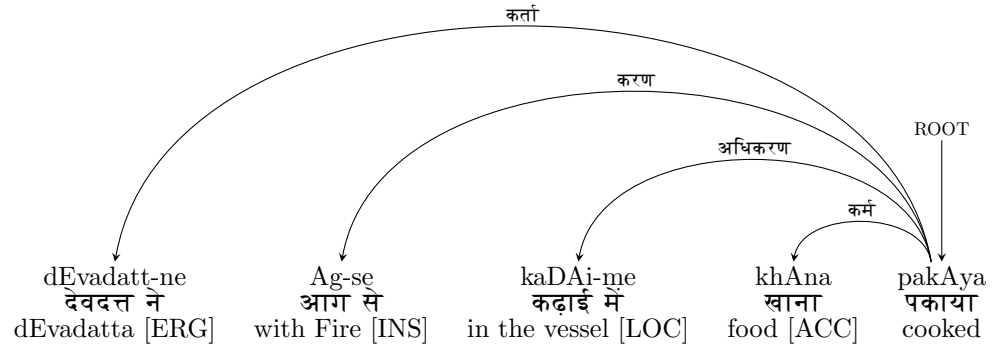
There are four dependency relations in the above sentence. They are karta (कर्ता) ( which now, is in the role of Agent ), karma (कर्म) ( which now, acts as the object ), karna (करण) ( Instrument ), and adhikarana (अधिकरण) ( The location ).

Now, it is the nature of the natural language that it allows its speaker to focus some actors/participants and decrease the relative importance of the others. In that context, the above situation can also be expressed using the following sentence.

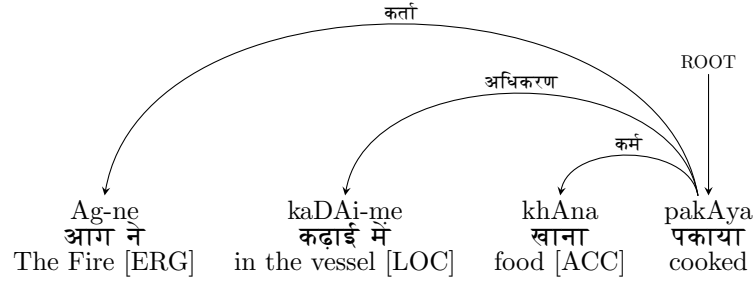


“(2) The vessel cooks the rice ”

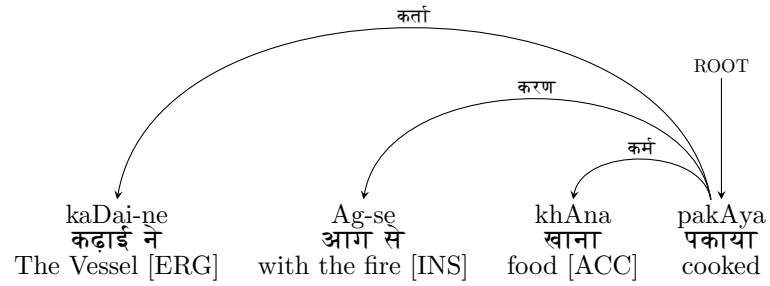
In this sentence (2), the speaker emphasizes upon “स्थाली” (the vessel) making it the most independent entity of all other participants in the sentence thus, making it the “कर्ता”, the predominantly important participant in any sentence. Here, the vessel is raised to the level of कर्ता in the absence of “देवदत्त”, so as to give importance to the vessel. Similarly, any other participants (\*) may be raised to the level of कर्ता. To illustrate this, consider the following sentences in Hindi.



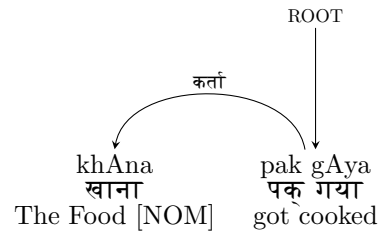
“(3) dEvadatta cooked the rice with the fire in the vessel ”



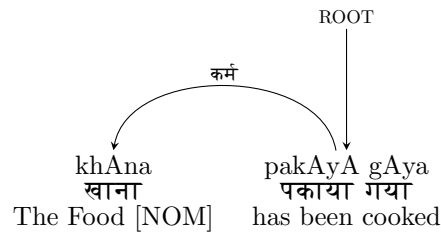
“(4) The fire cooked the rice in the vessel ”



“(5) The vessel cooked the rice with the fire ”



“(6) The rice got cooked ”



“(7) The rice has been cooked ”

In the above sentences, we can see that different participants can be elevated to the level of karta if the speaker wishes to emphasize on that particular participant and make it independent among the others. At this stage we state that, each action comprises of an “Activity” and a “Result” (8). We then define the “कर्ता” as the locus of the activity and “कर्म” as the locus of the result. The accomplishment of an action requires other participants and these are the actors of a series of sub-actions that complete it (9).

Therefore, the act of cooking comprises the sub-actions performed by “देवदत्त” ( Say, putting the vessel on the fire ), the action performed by the fire ( Heating ), the vessel ( Transmission of the heat) and the food ( Getting cooked ).

कर्ता → locus of the activity, कर्म → locus of the result.

“(8) Action comprises of an activity and a result.”

“(9) Action comprises of multiple sub-actions.”

Out of the sub-activities, the speaker can choose to emphasize one entity or action over others promoting it to the position of कर्ता in the realized sentence. Given this, the verb form may be transformed to represent any of the above activities. So, the sentences (3),(4),(5),(6) can be explained as follows.

\* There does seem to be a presence of priority in the sub-activities of the action in which to promote a sub-activity it is required to drop some higher priority activity. Its not necessarily a linear priority, but the sub-activity we choose transforms as the locus of action and result respectively in the realized sentence.

- In sentence (3), the speaker laid most emphasis on devadatt and his action(s) of cooking (Action A in Figure 9).
- In sentence (4), the emphasis is on the fire and its action of cooking the rice ( Action B ). We deliberately drop the part of devadatt here so as to promote Ag as the कर्ता.
- In sentence (5), the speaker promotes the vessel instead of fire. This denotes the sub-action of the vessel ( Action C ). It is interesting to note that fire is now realized as करण and in the previous sentence, vessel was still realized as अधिकरण.
- In sentence (6), the speaker focuses on the fact that the rice is cooked ( Action D ). This sentence focuses on the participant “rice” and the sub-action done by it more than anything else. As the locus of this activity and the locus of this result lie in the same entity, कर्ता takes precedence. This sentence is also called as an “अकर्मक” sentence

- Although the sentence (7) shows only one participant at the surface level, the verb clearly obviates a कर्ता because of its form “पका”. So, here rice stays as the locus of result, karma.

This selection / emphasis of the actions by the speaker from a set of sub-actions is विवक्षा.(what the speaker chooses/intends/desires/ to express.

**Independent Study: Computational Paninian Grammar**

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