

Lecture 1: January 21

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Tags: CPG, Intro

1.0.1 Introduction

Panini 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 relations.

The Karaka system serves as the basis for description of Panini's Syntax. It is a syntactico-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 work is explained, extended, commented and reinterpreted by many authors like kAtyayana, patanjali, bhartṛhari and others. This section includes some of the definitions of the "kAraka".

- **Patanjali**, in his Mahabhashya defines "kAraka" as "karOti iti" ("The one that does")
- The author of **kAsika** explains it as being synonymous to "hEtu" and "nimitta" (Cause) - "kArakam hEtuṛ ity anarthAntaram" (" Cause and kArakam are one and the same ")
- **Bhartṛhari** uses the term "sAdhanam" to specify kAraka as the one capable of establishing action which is given the term "sAdhya".
- **NagEsa** defines kAraka as the one that produces the action.

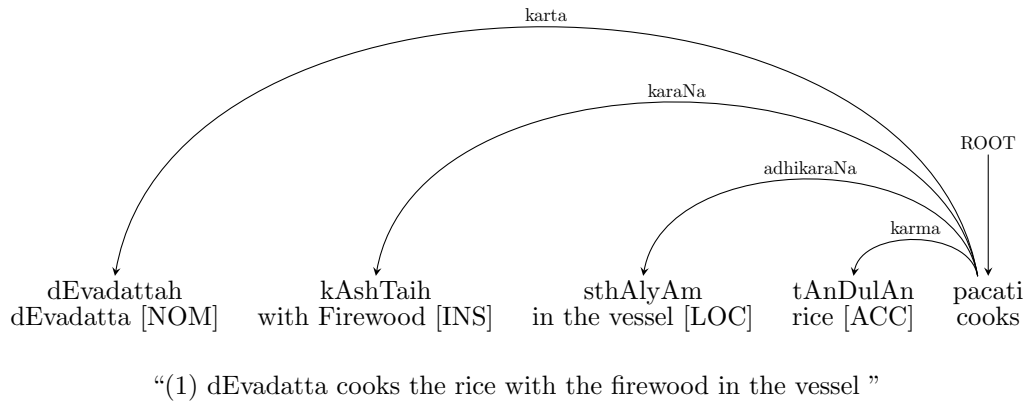
Therefore, we may say that kAraka is a animate/inanimate, passively/actively involved entity in the accomplishment of an action. The relations between the verb ("kriya") and the kAraka are of the type visheshaNā - visheshya (Modifier - Modified).

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

- **apAdAnam** : Defined as "*dhruvam apAye pAdAnam*" - The Entity which remains constant when separation takes place
- **sampradAnam** : "*karmaNā yam abhipraiti sa sampradAnam*" - Is the entity for which the karma is intended.
- **karaNam** : Is defined as the most effective means of accomplishing the action - '*sAhakatamam karaNam*'
- **adhikaraNam** : "*AdhAro' dhikaraNam*" - Specifies the location and time of the activity.
- **karma** :
- **karta** : "*svatantrAh karta*" - This is the entity which is considered by the speaker as the most independent of all the other kArakas in an activity.

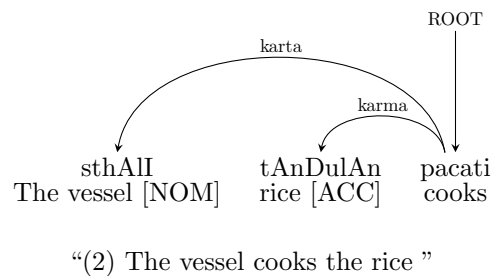
1.0.3 Examples

Consider the following sentence and its respective dependency relations.

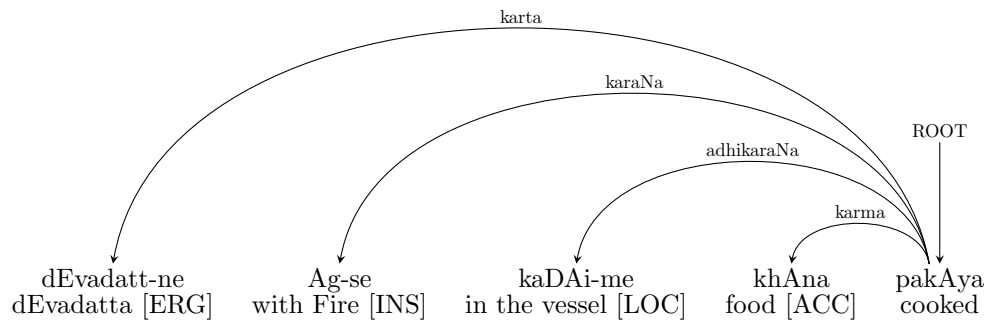


There are four dependency relations in the above sentence. They are karta (which now, is in the role of Agent), karma (which now, acts as the object), karaNa (Instrument), and adhikaraNa (The location).

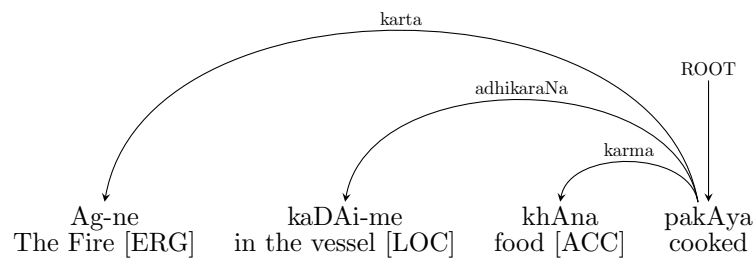
Now, it is the nature of the natural language that it allows its speaker to focus some actors/participants and decrease the relative importance of the others. In that context, the above situation can also be expressed using the following sentence.



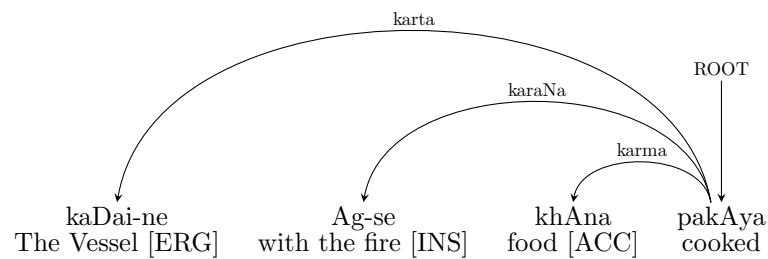
In this sentence (2), the speaker emphasizes upon “sthAli” (the vessel) making it the most independent entity of all other participants in the sentence thus, making it the “karta”, the predominantly important participant in any sentence. Here, the vessel is raised to the level of karta in the absence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



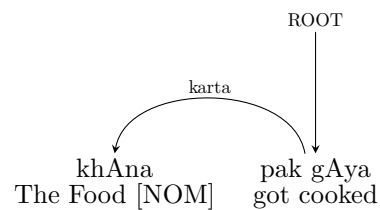
“(3) dEvadatta cooked the rice with the fire in the vessel ”



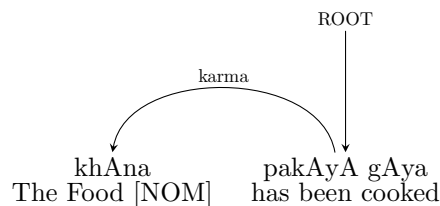
“(4) The fire cooked the rice in the vessel ”



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



“(6) The rice got cooked ”

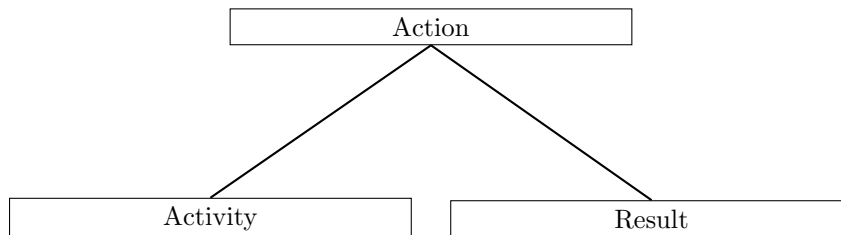


“(7) The rice has been cooked ”

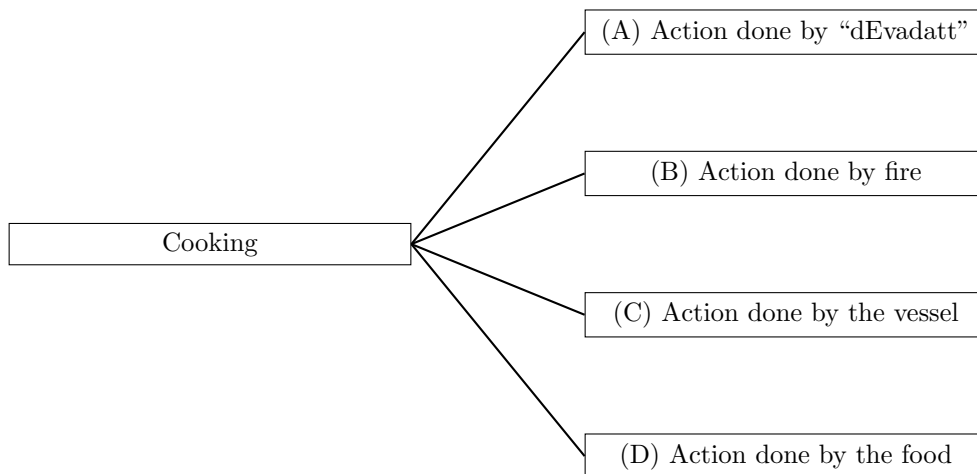
In the above sentences, we can see that different participants can be elevated to the level of karta if the speaker wishes to emphasize on that particular participant and make it independent among the others. At this stage we state that, each action comprises of an “Activity” and a “Result” (8). We then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

Therefore, the act of cooking comprises the subactions performed by “dEvadatt” (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).

karta → locus of the activity, karma → locus of the result.



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



“(9) Action comprises of multiple subactions.”

Out of the subactivities, the speaker can choose to emphasize one entity or action over others promoting it to the position of karta 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 subactivities of the action in which to promote a subactivity it is required to drop some higher priority activity. Its not necessarily a linear priority, but the subactivity 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 karta.
- In sentence (5), the speaker promotes the vessel instead of fire. This denotes the subaction of the vessel (Action C). It is interesting to note that fire is now realized as karana and in the previous sentence, vessel was still realized as adhikarana.
- 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 subaction done by it more than anything else. As the locus of this activity and the locus of this result lie in the same entity, karta takes precedence. This sentence is also called as an “*akarmak*” sentence
- Although the sentence (7) shows only one participant at the surface level, the verb clearly obviates a karta because of its form “pakA”. So, here rice stays as the locus of result, karma.

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

Independent Study: Computational Paninian Grammar

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