ANUSAARAKA
अनुसारक

Appendices
for
Language Resource Development
for
Machine Translation
(For English to Hindi Translation)

Guidelines Version 1.8 (July 2009)

by

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Appendix 1.1
Example Sentences

CASE STUDY 1: English word Way

1. That’s not the right way to hold the pair of scissors.
2. I am not happy with this way of working.
3. I generally get what I want one way or another.
4. That’s no way to speak to your mother.
5. After ten years, I’m used to the strange British ways.
6. I have changed in every way.
7. It has been quite a day ‘one way and another’.
8. He was showing off, as is the way with adolescent boys.
9. Can you tell me the way to get to Birla temple.
10. We went the long way around.
11. We fought our way through the dense vegetation.
12. They ran away by the back way.
13. He did not speak to me, the full way.
14. Which way did they go?
15. Look both ways before crossing the road.
16. A little way up on the left is the Museum of Modern Art.
17. September is a long way off.
18. You shall feel that the audience is with him all the way.
19. By the way, I have found the book you were looking for.
20. By the way, what is the time?
21. She started coming on Television, by the way of the drama school.
22. I hate the way she always criticizes me.
23. I will fight all the way.
24. Kids were running this way and that.

CASE STUDY 2: English word: Catch

1. He shared his catch with the others.
2. She caught her son eating candy.
3. She was caught shoplifting.
4. I caught the aroma of coffee.
5. The dog caught the scent.
6. He caught a glimpse of her saree.
7. The punch caught him in the stomach.
8. We could finally catch the thief.
9. The car caught fire due to heat.
10. We caught the conversation at the next table.
11. This program will be **caught** all over the world.
12. We could **catch** something of his theory in the lecture.
13. She will **catch** hell for this behavior.
14. Innocent passers-by got **caught up** in the riots.
15. He invented a new game, but it never really **caught on**.
16. The fashion did not **catch on**.
17. I was **caught** in traffic and missed the meeting.
18. One foot **caught** in the stirrup.
19. The policeman on the beat got credit for the **catch**.
20. All that money for two hours’ work - what’s the **catch**?

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**CASE STUDY 3 : English word Shelter**

1. They opened a **shelter** to provide temporary housing for the city’s homeless.
2. The trees gave/provided some **shelter** from the rain.
3. We took **shelter** for the night in an abandoned house.
4. We were caught in a thunderstorm, without anywhere to **shelter**.
5. A group of us were **sheltering** from the rain under the trees.
6. Local people risked their own lives to **shelter** resistance fighters.
7. The people rendered homeless due to the earthquake were looking for **shelter**.
8. The street children need some **shelter** at night.
9. After the flood, thousands of people were in need of **shelter**.

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Appendix 1.2
Translation of Example Sentences

CASE STUDY 1: English word Way

1. Thats not the right way to hold the pair of scissors.
   यह कैची पकडने का सही तरीका नहीं है |

2. I am not happy with this way of working
   मैं काम करने के इस ढंग से खुश नहीं हूँ |

3. I generally get what I want one way or another.
   मैं जो चीज़ चाहता हूँ वह मुझे किसी न किसी तरह मिल जाती है |

4. That's no way to speak to your mother.
   अपनी माँ से बात करने का यह कोई ढंग नहीं है |

5. After ten years, I'm used to the strange British ways.
   दस साल बाद मुझे अंग्रेज़ों के विचित्र तरीकों की आदत पड़ गई है |

6. I have changed in every way.
   मैं सब तरह से बदल गया हूँ |

7. It has been quite a day one way and another.
   किसी न किसी कारण से आज का दिन काफी महत्वपूर्ण रहा |

8. He was showing off, as is the way with adolescent boys.
   वह दिखावा कर रहा था, जैसे युवकों का स्वभाव होता है |

9. Can you tell me the way to get to Birla temple.
   क्या आप मुझे बिर्ला मंदिर जाने का रास्ता बता सकते हैं |

10. We went the long way around.
    हमने लंबा रास्ता लिया |

11. We fought our way through the dense vegetation.
    हमने घने जंगल से अपना रास्ता खोज निकाला |

12. They ran away by the back way.
    वे पीछे के रास्ते से भाग गए |

13. He did not speak to me, the full way.
    उन्होंने सारे रास्ते मुझसे बात नहीं की |
14. Which **way** did they go?
   वे किस तरफ गए?

15. Look both **ways** before crossing the road.
    सड़क पार करने से पहले दोनों तरफ देखे |

16. A little **way** up on the left is the Museum of Modern Art.
    थोड़ा आगे जाकर बाई तरफ आधुनिक कला संग्रहालय है |

17. September is a long **way** off.
    सितंबर का महीना अभी दूर है |

18. You shall feel that the audience is with him all the **way**.
    तुम्हें महसूस होगा कि दर्शक पूरी तरह से उनके साथ है |

19. By the **way**, I have found the book you were looking for.
    वैसे आप जो पुस्तक खोज रहे थे, वह मुझे मिल गई |

20. By the **way**, what is the time?
    वैसे समय क्या है?

21. She started coming on Television, by the **way** of the drama school.
    वह नाट्य विद्यालय के माध्यम से टेलीविज़न {के कार्यक्रमों} में आने लगी |

22. I hate the **way** she always criticizes me.
    जिस तरह से वह हमेशा मेरी सन्दर्भ करती है, मुझे पसंद नहीं |

23. I will fight all the **way**.
    मैं अंततः तक लड़ेगा |

24. Kids were running this **way** and that.
    बच्चे सब तरफ भाग रहे थे |

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**CASE STUDY 2 : English word Catch**

1. He shared his **catch** with the others.
   उसने अपनी पकड़न दूसरों के साथ बाँटी |

2. She **caught** her son eating candy.
   उसने अपने बेटे को मिठाई खाते हुए पकड़ा |

3. She was **caught** shoplifting.
   वह दुकान से चोरी करते हुए पकड़ी गई |
4. I caught the aroma of coffee.
मैंने काफी की खुशबू सुंधर ली |

5. The dog caught the scent.
कुत्ते ने खुशबू सुंधर ली |

6. He caught a glimpse of her saree.
उसने उसकी साड़ी की एक झलक देखी |

7. The punch caught him in the stomach.
घूसा उसके पेट में लगा |

8. We finally catch the suspect.
अंत में संदिग्ध व्यक्ति को हम पकड़ लेते हैं |

9. The car caught fire due the heat.
कार ने गर्मी के कारण आग पकड़ ली |

10. We catch the conversation at the next table.
पास वाली मेज पर हो रहे वार्ता को हमने सुना |

11. This program will be caught all over the world.
यह कार्यक्रम पूरी दुनिया में देखा जाएगा |

12. We could catch something of his theory in the lecture.
भाषण में उसके सिद्धांत को हम कुछ कुछ समझ सके |

13. She will catch hell for this behavior.
उसे इस व्यवहार के लिये दंड मिलेगा |

14. Innocent passers-by got caught up in the riots.
बेकसूर राहगीर दंगों में फंस गये |

15. He invented a new game, but it never really caught on.
उसने एक नया खेल खोजा लेकिन वह ज्यादा लोकप्रिय नहीं हुआ |

16. The fashion did not catch on.
वह फैशन लोकप्रिय नहीं हुआ |

17. I was caught in traffic and missed the meeting.
मैं यातायात में फंस गया और मीटिंग में शरीक नहीं हो पाया |

18. One foot caught in the stirrup.
एक पैर रक्काब में फंस गया |
19. The policeman on the beat got credit for the catch.
गशंप पर मौजूद पुलिस को पकड़न का श्रेय मिला |

20. All that money for two hours work- what's the catch?
दो घंटे काम करने का इतना सारा धन - जरूर कुछ गडबड है |

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CASE STUDY 3 : English word Shelter

1. They opened a shelter to provide temporary housing for the city's homeless.
उन्होंने शहर के बेघर लोगों के लिये आश्रय आवास खोले |

2. The trees gave/provided some shelter from the rain.
वृक्ष ने वर्षा से सुरक्षा दी |

3. We took shelter for the night in an abandoned house.
रात को हमने एक परिवर्तक मकान में आश्रय लिया |

4. We were caught in a thunderstorm, without anywhere to shelter.
हम एक तूफान में फंसे हुए थे और कहीं पर आश्रय लेने की जगह नहीं थी |

5. A group of us were sheltering from the rain under the trees.
हम कुछ लोगों ने पेड़ों के नीचे आश्रय लिया हुआ था |

6. Local people risked their own lives to shelter resistance fighters.
स्थानीय लोगों ने प्रतिरोधी सैनिकों को आश्रय देने के लिये अपनी जान को जोखिम में डाला |

7. The people rendered homeless due to the earthquake were looking for shelter.
भूकंप में बेघर हुए लोग आश्रय ढूँढ रहे थे |

8. The street children need some shelter at night.
सड़क के बच्चे को रात के समय आश्रय की आवश्यकता है |

9. After the flood, thousands of people were in need of shelter.
बाढ़ के बाद हजारों लोगों को आश्रय चाहिये था |
Appendix 1.3
Information book-keeping

The sentence given in the Guidelines was just an example of Information book-keeping. Depending on the sentence types, the steps will vary. For example in sentence (1) below, "I am not happy with this way of working." the third step (mentioned in 3.3) is not necessary, so it has not been applied here:

(1) I am not happy with this way of working.
   मैं नहीं खुश साथ यह रास्ता का काम के
   मैं नहीं खुश से इस तरीके के काम के
   मैं नहीं खुश काम के इस तरीके से
   मैं काम के इस तरीके से खुश नहीं हूँ।

(2) I generally get what I want one way or another.
   मैं साधारणतया पा क्या मैं चाह एक रास्ता अथवा दूसरा
   मैं साधारणतया पाता हूँ जो - चाहता हूँ - - किसी न किसी तरह
   मैं साधारणतया पा लेता हूँ जो - चाहता हूँ - - किसी न किसी तरह
   मैं साधारणतया जो चाहता हूँ किसी न किसी तरह पा लेता हूँ

(3) He was showing off, as is the way with adolescent boys.
   वह था दिखा रहा दूर जैसा है - रास्ता साथ किशोर लड़के
   वह था दिखा रहा - - - - जैसा किशोर लड़के
   वह दिखाया कर रहा था जैसे कि किशोर लड़के करते हैं

(4) He caught a glimpse of her saree.
   वह पकड़ा एक झलक का उसकी साड़ी
   उसने देखा एक झलक उसकी साड़ी का
   उसने देखी एक झलक उसकी साड़ी की
   उसने उसकी_साड़ी_की एक झलक देखी
CASE STUDY 1: English word Way

If we look at the translation done in Appendix 1.2, we see about 12 senses in the example sentences for the word ‘way’ given in Appendix 1.2. We will now identify various senses in which the word ‘way’ is translated in the example sentences in Appendix1.1:-

Sense 1: तरीका

1. That is not the right way to hold the pair of scissors.
   यह कैची पकडने का तरीका सही नहीं है |

2. After ten years, I'm used to the strange British ways.
   दस साल बाद मुझे अंग्रेजों के विचित्र तरीकों की आदत पड़ गई है |

Sense 2: स्वभाव

3. He was showing off, as is the way with adolescent boys.
   वह दिखावा कर रहा था, जैसा कि युवकों का स्वभाव होता है |

Sense 3: ढंग से

4. I am not happy with this way of working.
   मैं काम करने के इस ढंग से खुश नहीं हूँ |

5. That's no way to speak to your mother.
   अपनी माँ से बात करने का यह कोई ढंग नहीं है |

Sense 4: तरह से

6. I have changed in every way.
   मैं सब तरह से बदल गया हूँ |

7. I hate the way she always criticizes me.
   जिस तरह से वह हमेशा मेरी निन्दा करती है, मुझे पसन्द नहीं |

8. I generally get what I want one way or another.
   मैं जो चीज़ चाहता हूँ, वह मुझे किसी न किसी तरह मिल जाती है |

9. You shall feel that the audience is with him all the way.
   तुम्हें महसूस होगा कि दशक पूरी तरह से उनके साथ है
10. Can you tell me the way to get to Birla temple. 
क्या आप मुझे बिरला मंदिर जाने का रास्ता बता सकते हैं?

11. We went the long way around.
हमने लंबा रास्ता लिया |

12. We fought our way through the dense vegetation.
हमने घने जंगल से रास्ता खोज निकाला |

13. They ran away by the back way.
वह पीछे के रास्ते से भाग गए |

14. He did not speak to me, the full way.
उन्होंने सारे रास्ते मुझसे बात नहीं की |

15. Which way did they go?
ये किस तरफ गए?

16. Look both ways before crossing the road.
सड़क पर करने से पहले दोनों तरफ देख |

17. Kids were running this way and that.
बच्चे सब तरफ भाग रहे थे |

18. She started coming on Television, by the way of the drama school.
वह नाट्य विज्ञान के माध्यम से टेलीविजन (के कार्यक्रमों) में आने लगी |

19. A little way up on the left is the Museum of Modern Art.
थोड़ा आगे जाकर बाई तरफ आधुनिक कला संग्रहालय है |

20. It has been quite a day one way and another.
किसी न किसी कारण से आज का दिन काफी महत्वपूर्ण रहा |

Sense 5: रास्ता
10. Can you tell me the way to get to Birla temple.

Sense 6: तरफ
15. Which way did they go?

Sense 7: के माध्यम से
18. She started coming on Television, by the way of the drama school.

Sense 8: थोड़ा आगे जाकर
19. A little way up on the left is the Museum of Modern Art.

Sense 9: किसी न किसी कारण से
20. It has been quite a day one way and another.

Sense 10: वैसे
21. **By the way**, I have found the book you were looking for.
    वैसे, आप जो पुस्तक खोज रहे थे, वह मुझे मिल गई |

22. **By the way**, what is the time?
    वैसे, समय क्या है?

Sense 11: अन्त तक

23. I will fight all the way.
    मैं अन्त तक लड़ूगा |

Sense 12: अभी दूर

24. September is a long way off.
    सितंबर का महीना अभी दूर है |

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**CASE STUDY 2 : English word Catch**

From the Hindi translations done in Appendix1.2, we find that there seem to be 12 senses for the word 'catch'.

Identification of various senses in which the word 'catch' is translated in the example sentences in Appendix1.1:-

Sense 1: पकड़न

1. He shared his catch with the others.
    उसने अपनी पकड़न दूसरों के साथ बांटी |

2. The policeman on the beat got credit for the catch.
    गश्त पर मौजूद पुलिस को पकड़न का श्रेय मिला |

Sense 2: पकड़ना

3. She caught her son eating candy.
    उसने अपने बेटे को मिठाई खाते हुए पकड़ा |

4. She was caught shoplifting.
    वह दुकान में से चोरी करते हुए पकड़ी गई |

5. We finally catch the suspect .
    अंत में सदिश व्यक्ति को हम पकड़ लेते हैं |

6. The car caught fire due the heat .
    कार ने गर्मी के कारण आग पकड़ ली |
Sense 3: सूंघना

7. I caught the aroma of coffee.
मैंने कॉफी की खुशबू सूंघ ली।

Sense 4: देखना

8. He caught a glimpse of her saree.
उसने उसकी साड़ी की एक झलक देखी।

9. This program will be caught all over the world.
यह कार्यक्रम पूरी दुनिया में देखा जायेगा।

Sense 5: फँसना

10. One foot caught in the stirrup.
एक पैर रक्ष क्यों में फँस गया।

11. I was caught in traffic and missed the meeting.
मैं यातायात में फँस गया और मीटिंग छूट गयी।

12. Innocent passers-by got caught up in the riots.
बेकसूर राहगीर दंगों में फँस गये।

Sense 6: लगना

13. The punch caught him in the stomach.
उसके पेट में घुसा लगा।

Sense 7: सुनना

14. We caught the conversation at the next table.
पास वाली मेज पर हो रहे वार्तालाप को हमने सुना।

Sense 8: समझना

15. We could caught something of his theory in the lecture.
भाषण में उसका सिद्धांत हम कुछ कुछ समझ सके।

Sense 9: लोकप्रिय होना

16. The fashion did not catch on.
वह फैशन लोकप्रिय नहीं हुआ।
17. He invented a new game, but it never really caught on.  
उसने एक नया खेल खोजा लेकिन वह ज्यादा लोकप्रिय नहीं हुआ |

Sense 10: दंड मिलना

18. She will 'catch hell' for this behaviour.  
उसे इस व्यवहार के लिये दंड मिलेगा |

Sense 11: छुपा हुआ नुकसान

19. All that money for two hours' work—what's the catch?  
दो घंटे काम करने का इतना सारा धन - जरूर कुछ गड़बड़ है |

Sense 12: आकर्षित करना

20. Can you please catch the waiter's eye?  
क्या तुम वेटर का ध्यान आकर्षित कर सकते हैं |

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CASE STUDY 3 : English word Shelter

Sense 1: आश्रय

1. They opened a shelter to provide temporary housing for the city's homeless.  
उन्होंने शहर के बेघर लोगों के लिये आश्रय आवास खोले |

2. The people rendered homeless due to the earthquake were looking for shelter.  
भूकंप में बेघर हुए लोग आश्रय खोज रहे थे |

3. The street children need some shelter at night.  
सड़क के बच्चों को रात के समय आश्रय की आवश्यकता है |

4. After the flood, thousands of people were in need of shelter.  
बाढ़ के बाद हजारों लोगों को आश्रय चाहिये था |

Sense 2: आश्रय_ले

5. We took shelter for the night in an abandoned house.  
रात को हमने एक परित्यक्त मकान घर में आश्रय लिया |

6. We were caught in a thunderstorm, without anywhere to shelter.  
हम एक तूफान में फंसे थे और कहीं पर आश्रय लेने की जगह नहीं थी |
7. A group of us were **sheltering** from the rain under the trees.

Sense 3: आश्रय_दे

8. Local people risked their own lives to **shelter** resistance fighters.

Sense 4: सुरक्षा_दे

9. The trees gave/provided some **shelter** from the rain.

Sense 3: आश्रय_दे
**Appendix 2.1b**
**Minimization of Senses**

**CASE STUDY 1: English word Way**

The Senses 1, 2, 3 and 4 for the word 'way' identified above, in the Appendix-2.1b can be clubbed into one group as they all imply तरीका. Here we will club the senses ढग, तरह से and स्वभाव in the above examples with तरीका since replacing or interchanging the words ढग, तरह से and तरीका would not change the intended meaning. However, we cannot club the sense स्वभाव with तरह से as replacing स्वभाव by तरह से in the sentence (3) given above will give wrong translations. Whereas if we replace स्वभाव by तरीका the sense thus conveyed is quite comprehensible and same as the originally intended.

**Sense 1: तरीका** (2. ढग → तरीका, 3. तरह से → तरीके से, 4. स्वभाव → तरीका)

1. That is not the right way to hold the pair of scissors. यह कैच पकडने का सही तरीका नहीं है |
2. After ten years, I'm used to the strange British ways. दस साल बाद मुझे अंग्रेज़ी के बिचित्र तरीकों की आदत पड गई है |
3. He was showing off, as is the way with adolescent boys. वह दिखावा कर रहा था, जैसा कि छुट्टियों का तरीका है |
4. I am not happy with this way of working. मैं काम करने के इस तरीके से खुश नहीं हूँ |
5. That's no way to speak to your mother. अपनी मां से बात करने का यह कोई तरीका नहीं है |
6. I have changed in every way. मैं सब तरीके से बदल गया हूँ |
7. I hate the way she always criticizes me. जिस तरीके से वह हमेशा मेरी निन्दा करती है, मुझे पसन्द नहीं |

**Sense 2: रास्ता**

8. Can you tell me the way to get to Birla temple? क्या आप मुझे बिरला मंदिर जाने का रास्ता बता सकते हैं?
9. We went the long way around.
10. We fought our way through the dense vegetation.
हमने घन जगल से रास्ता खोज निकाला।

11. They ran away by the back way.
वह पीछे के रास्ते से भाग गए।

12. He did not speak to me, the full way.
उन्होंने सारे रास्ते मुझसे बात नहीं की।

Sense 3:  तरफ

13. Which way did they go?
वे किस तरफ गए?

14. Look both ways before crossing the road.
सड़क पर करने से पहले दोनों तरफ देखे।

So from the above we see that after clubbing the senses we are left with 3 senses instead of 12 senses. Senses 7 to 12 are examples of Multi Word Expressions (MWEs). As explained in the main body of the Guidelines, these expressions occur in phrases and the entire phrase gives one meaning. We will separate these expressions at this stage along with their meanings and store them in the form of a dictionary in Appendix 2.2.

CASE STUDY 2: English word Catch

Here we find that there are 12 senses for the word ‘catch’. Now we will try to minimize the number of senses by clubbing them together without compromising on the natural intended meanings.

In case of the word catch out of the 12 senses, only two of them can be combined together. These senses are sense 2 घटना and sense 8 अन्तर. Thus, instead of 12 senses we are left with only 11 senses.

Sense 1: घटना (Sense 8. अन्तर → घटना में आना → घटना)

1. She caught her son eating candy.
उसने अपने बच्चे को मिलाई खाते देख पकड़ा।

2. She was caught shoplifting.
वह दुकान में से चोरी करते हुए पकड़ी गई।
3. We finally caught the suspect.
   अंत में संदिग्ध व्यक्ति को हमने पकड़ लिया |

4. The car caught fire due to the heat.
   कार ने गर्मी के कारण आग पकड़ ली |

5. We could catch something of his theory in the lecture.
   हम भाषण में उसका सिद्धांत कुछ कुछ पकड़ सके |

Sense 2. पकड़न

1. He shared his catch with the others.
   उसने अपनी पकड़ दूसरों के साथ बाँटी |

2. The policeman on the beat got credit for the catch.
   गश्त पर मौजूद पुलिस को पकड़न का श्रेय मिला |

Sense 3. स्वाध्याय

7. I caught the aroma of coffee.
   मैंने कॉफी की खुशबू स्वाध्याय |

Sense 4. देखना

8. He caught a glimpse of her saree.
   उसने उसकी साड़ी की एक झलक देखी |

9. This program will be caught all over the world.
   यह कार्यक्रम पूरी दुनिया में देखा जायेगा |

Sense 5. लग

13. The punch caught him in the stomach.
    उसके पेट में घूंसा लगा |

Sense 6. सुनना

14. We caught the conversation at the next table.
    पास वाली मेज पर हो रहे वार्तालाप को हमने सुना |

The remaining 10 senses cannot be clubbed with पकड़ना or with any other sense. So we now have 11 senses for the word ‘catch’. Out of these 11 senses, senses 5, 9, 10, 11 and 12 are frozen expressions. We will separate them out.
along with their meanings in the next Appendix 2.2. Thus, we are left with six senses of the word 'catch'.

~~~

CASE STUDY 3 : English word Shelter

We found four senses of the word 'shelter' in Hindi: आश्रय, आश्रय_ले, आश्रय_दे and सुरक्षा_दे. It seems possible for us to club the senses 3 and 4 (आश्रय_दे and सुरक्षा_दे) We can replace सुरक्षा_दे by आश्रय_दे in the following sentence without compromising on the Hindi meaning:

The trees gave/provided some shelter from the rain.

Thus, after sense minimization we are left with three senses.

Sense 1. आश्रय

1. They opened a shelter to provide temporary housing for the city's homeless.
   उन्होंने शहर के बेघर लोगों के लिये आश्रय आवास खोले।

2. The people rendered homeless due to the earthquake were looking for shelter.
   भूकम्प में बेघर हुए लोग आश्रय ढूँढ रहे थे।

3. The street children need some shelter at night.
   सड़क के बच्चों को रात के समय आश्रय की आवश्यकता है।

4. After the flood, thousands of people were in need of shelter.
   बाढ़ के बाद हजारों लोगों को आश्रय चाहिये था।

Sense 2. आश्रय_ले

5. We took shelter for the night in an abandoned house.
   रात को हमने एक परिस्थिति मकान घर में आश्रय लिया।

6. We were caught in a thunderstorm, without anywhere to shelter.
   हम एक तुफान में फंसे हुए थे और कहीं पर आश्रय लेने की जगह नहीं थी।

7. A group of us were sheltering from the rain under the trees.
   हम कुछ लोगों ने पेड़ों के नीचे आश्रय लिया ढूँढा था।

Sense 3. आश्रय_दे
8. Local people risked their own lives to **shelter** resistance fighters.
स्थानीय लोगोंने प्रतिरोधी सैनिकों को आश्रय देने के लिये अपनी जान को जोखिम में डाला।

9. The trees gave/provided some **shelter** from the rain.
वृक्षों ने वर्षों में आश्रय दिया।
CASE STUDY 1: English word Way

1. by the way of - के माध्यम से
She started coming on Television, by the way of the drama school. वह नाट्य विद्यालय के माध्यम से टेलीविजन {के कार्यक्रमों} में आने लगी |

2. a little way up - थोड़ा आगे जाकर
A little way up on the left is the Museum of Modern Art. थोड़ा आगे जाकर बाएँ तरफ आधुनिक कला संग्रहालय है |

3. one way or another - किसी न किसी तरह
I generally get what I want one way or another. मेरे द्वारा चाहिए चीज, मुझे किसी न किसी तरह मिल जाती है |

4. one way and another - किसी न किसी कारण से
It has been quite a day one way and another. किसी न किसी कारण से आज का दिन काफी महत्वपूर्ण रहा |

5. By the way - वैसे
By the way, I have found the book you were looking for. वैसे, आप जो पुस्तक खोज रहे थे, वह मुझे मिल गई |

6. By the way, what is the time? वैसे, समय क्या है?

7. all the way - पूरी तरह से, अन्त तक
I will fight all the way. मैं अन्त तक लड़ूंगा |

8. You shall feel that the audience is with him all the way. तुम्हें महसूस होगा कि दर्शक पूरी तरह से उनके साथ है |

9. this way and that - सब तरफ
Kids were running this way and that. बच्चे सब तरफ भाग रहे थे |

10. long way off - बहुत दूर
September is a long way off. सितम्बर का महीना अभी बहुत दूर है |
How do we differentiate the meaning of the phrase 'by the way' in sentence 1 on the one hand and sentences 5 and 6 on the other?

In sentence 1, the phrase 'by the way' is followed by 'of'. In sentences 5 and 6 it is followed by a sentence.

Please note that even MWEs can be ambiguous. Rules can be framed to disambiguate them as well.

**CASE STUDY 2 : English word Catch**

1. **catch** somebody’s eye - किसी का ध्यान आकर्षित करना
   Can you **catch** the waiter’s eye?
   क्या तुम वेटर का ध्यान आकर्षित कर सकते हो?

2. **catch** somebody red-handed - रंगे हाथ पकड़ना
   She was **caught** red handed while stealing.
   वह चोरी करते हुये रंगे हाथ पकड़ी गई?

3. **catch on** - लोकप्रिय होना
   He invented a new game, but it never really **caught** on.
   उसने एक नया खेल खोजा लेकिन वह ज्यादा लोकप्रिय नहीं हुआ?
   
   The fashion did not **catch** on.
   वह फाशन ज्यादा लोकप्रिय नहीं हुआ?

4. **get caught up in something** - फँस जाना
   Innocent passers-by got **caught** up in the riots.
   बेकसूर राहने दर्जनों में फँस गये?

5. **catch** up (with somebody) - बराबर के स्तर पर आना
   He had to work hard to **catch** up with the others.
   औरों के बराबर पहुँचने के लिये उसे बहुत परिश्रम करना पड़ा?

6. **catch** on (to something) - तेज (कुशाय) होना
   He is very quick to **catch** on to things.
   वह चीजों को समझने में बहुत तेज़ है?

---

**CASE STUDY 3 : English word Shelter**

There are no MWEs for the word 'shelter' in the examples given here.
CASE STUDY 1: English word Way

In Appendix 2.1b, we observed that after minimization of senses the sense 'तरीका' for the word 'way' occurs most of the time and therefore appears to be the default sense for the word 'way'. In order to arrive at the correct default sense, one must consider a large number of sentences for the given word.

Based on the example sentences given in Appendix1.1, here we will write the simple statements explaining how and what triggers a particular sense for the word 'way'.

We will first write the statement for the default sense of the word 'way' i.e. तरीका

Word: way
Example: Thats not the right way to hold the pair of scissors.  
I am not happy with this way of working.  
That's no way to speak to your mother.

Rule id: way 1  
Saliency: low  
If the root is way  
If way is a noun  
Then its Hindi meaning is: तरीका  
Which is a root  
Sentence type: any

Word: way
Example: They ran away by the back way.  
He kept on speaking the full way.  
We went the long way around.

Rule id: way 2  
Saliency: normal  
If the root is way  
If way is a विशेष्य and it has विशेषण as its विशेषण and  
?विशेषण belongs to the list (long,full,back ...)  
Then its Hindi meaning is: रास्ता  
Which is a root  
Sentence type: any

Word: way
Example: I hate the way she always criticizes me.
Saliency: normal
Rule id: way 3
If the root is way
If क्रिया has way as its object
Then its Hindi meaning is: तरीके से
Which is a root
Sentence type: any

CASE STUDY 2: English word Catch

The word 'catch' appears most of the time in the sense of पकड़ना, and therefore the default meaning of the word 'Catch' is पकड़ना. The default rule will be written as:

Word: catch
Example: She caught her son eating candy.
We finally catch the suspect.
The car caught fire due the heat.
I caught a rabbit in the trap today.

Rule id: catch 1
Saliency: low
If the root is catch
If catch is a verb
Then its Hindi meaning is: पकड़
Which is a root
Sentence type: any

Word: catch
Example: He shared his catch with the others.
The policeman on the beat got credit for the catch.

Rule id: catch 2
Saliency: high
If the root is catch
If catch is a विशेष्य and it has a ?det as its det_विशेषण
and ?det belongs to the list possessive pronoun/article
Then its Hindi meaning is: पकड़न
Which is a root
Sentence type: any

Word: catch
Example: The rock caught her in the back of the head.
The blow caught him in the back.
The punch caught him in the stomach.

Rule id: catch 3
Saliency: high
If the root is catch
If catch is क्रिया and it has ?noun as its subject
and
If ?noun has the semantic property inanimate
and
If catch has ?noun1 as its object
and
If ?noun1 is animate
Then its Hindi meaning is: लग
Which is a root
Sentence type: any

CASE STUDY 3: English word Shelter

After sense minimization we find that the sense आश्रय occurs most frequently
and seems to have the most general meaning of the word 'shelter'. We treat this
sense as the default sense and formulate the following contextual rule for it.

Word: shelter
Example:
They opened a shelter to provide temporary housing for the city’s
homeless.
The people rendered homeless due to the earthquake were looking for
shelter.
The street children need some shelter at night.
After the flood, thousands of people were in need of shelter.

Rule id: shelter1
Saliency: low
If the root is shelter
If shelter is noun
Then its Hindi meaning is: आश्रय
Which is: root
Sentence type: सामान्य वाक्य - declarative

Given below are the rules for the other two senses:

Word: shelter
Example: We took shelter for the night in an abandoned house.
We were caught in a thunderstorm, without anywhere to shelter.
We were caught in a thunderstorm, without anywhere to shelter.
A group of us were sheltering from the rain under the trees.

Rule id: shelter2
Saliency: low
If the root is shelter
If shelter is ?verb
and
If ?verb is intransitive
Then its Hindi meaning is: आशय_ले
Which: is root
Sentence type: सामान्य वाक्य - declarative

Word: shelter
Example: Local people risked their own lives to shelter resistance fighters.
The trees gave/provided some shelter from the rain.

Rule id: shelter3
Saliency: low
If the root is shelter
If shelter is ?verb
and
If ?verb is transitive
Then its Hindi meaning is: आशय_दे
Which is:root
Sentence type: सामान्य वाक्य - declarative

~ ~ ~

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Appendix 3.2a
Some Lakshanchart Rule Forms

WSD FORM

Root/Word: way
Rule File: way.clp

Example Sentences:
That’s not the right way to hold the pair of scissors. I am not happy with this way of working. That’s no way to speak to your mother.

Rule id: The rule id is system generated. Read the message after posting the form to know the rule id.

Saliency: LOW

if the root is way

Add Remove
if category

category: if way is noun

And/Or Remove

Then its Hindi meaning is तरीका which is Root

Sentence type: select appropriate Option

Submit
Abort
WSD FORM

Root/Word: Way

Rule File: way.clp

Example Sentences:

They ran away by the back way. He kept on speaking the full way. We went the long way around.

Rule ID: The rule id is system generated. Read the message after posting the form to know the rule id.

Saliency: Normal

Add Remove

<table>
<thead>
<tr>
<th>related</th>
<th></th>
</tr>
</thead>
</table>

Related:

<table>
<thead>
<tr>
<th>way</th>
<th>is</th>
<th>long, full, back</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>none</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>list</th>
<th></th>
</tr>
</thead>
</table>

list-of: Avishsha belongs to long, full, back

And Or Remove

The its

Hindi meaning is: राह which is Root

Sentence type: select appropriate Option

Submit
Abort
WSD FORM

Root/Word
way

Rule File
way.clp

I hate the way she always criticizes me.

Example Sentences

Rule Id
The rule id is system generated. Read the message after posting the form to know the rule id.

Saliency
Normal

Add Remove
if related

Related: if the जिसे क्यों नहीं करता is किया as its object and it has
way as its object

And/Or Remove

Then its Hindi meaning is जिसे_तरीके_से which is Root

Sentence type
select appropriate Option

Submit
Abort
**WSD FORM**

**Root/Word**  
catch

**Rule File**  
catch.clp

**Example Sentences**  
She caught her son eating candy. We finally catch the suspect. The car caught fire due to the heat. I caught a rabbit in the trap today.

**Rule id**  
The rule id is system generated. Read the message after posting the form to know the rule id.

**Saliency**  
Low

**Add Remove**

If the root is catch

**And/Or Remove**

Then its Hindi meaning is एकड़ which is Root

**Sentence type**  
select appropriate Option

[Submit]  
[Abort]
### WSD FORM

<table>
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<th>catch</th>
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</thead>
<tbody>
<tr>
<td>Rule File</td>
<td>Rule file is system generated</td>
</tr>
<tr>
<td>Example Sentences</td>
<td>He shared his catch with the others. The policeman on the beat got credit for the catch.</td>
</tr>
<tr>
<td>Rule id</td>
<td>The rule id is system generated. Read the message after posting the form to know the rule id.</td>
</tr>
<tr>
<td>Saliency</td>
<td>High</td>
</tr>
<tr>
<td>Add Remove</td>
<td>if related</td>
</tr>
<tr>
<td>Related: if the</td>
<td>catch is and it has</td>
</tr>
<tr>
<td>?det</td>
<td>as its</td>
</tr>
<tr>
<td>And/Or Remove</td>
<td>Then its Hindi meaning is which is Root</td>
</tr>
<tr>
<td>Sentence type</td>
<td>select appropriate Option</td>
</tr>
</tbody>
</table>

[Submit]
[Abort]
Root/Word: way

Thats not the right way to hold the pair of scissors. I am not happy with this way of working. That’s no way to speak to your mother.

Example Sentences:

rule id: the rule id is system generated. Read the message after posting the form to know the rule id.

Saliency Low

If the root occur way

Add/Remove root/word/phrase remove

if category

category: if way is noun

and/or remove

Then its Hindi meaning is तरात जिस Select Appropriate Option

Sentence type Select Appropriate Option
CASE STUDY 1: English word Way

Example: Thats not the right way to hold the pair of scissors. I am not happy with this way of working. That's no way to speak to your mother.

(defun rule way1
  (declare (salience 40))
  (id-root ?id way)
  (id-cat_coarse ?id noun)
  →
  (assert (id-wsd_root_mng ?id तरीका)))
)

;Example: They ran away by the back way. He kept on speaking the full way. We went the long way around.

(defun rule way2
  (declare (salience 200))
  (id-root ?id way)
  (id-cat_coarse ?id noun)
  (viSeRya-viSeRaNa ?id ?id1)
  (id-word ?id1 long|back|full)
  →
  (assert (id-wsd_root_mng ?id रस्ता)))
)

;Example: I hate the way she always criticizes me.

(defun rule way3
  (declare (salience 200))
  (id-root ?id way)
  (kriyA-object ?id1 ?id)
  →
  (assert (id-wsd_root_mng ?id तरीके से)))
)

CASE STUDY 2: English word Catch

;Example: She caught her son eating candy. We finally catch the suspect. The car caught fire due the heat.
I caught a rabbit in the trap today.
(defrule catch1
 (declare (salience 40))
  (id-root ?id catch)
  (id-cat_coarse ?id verb)
  →
  (assert (id-wsd_root_mng ?id पकड़))
)

;Example: He shared his catch with the others.
  The policeman on the beat got credit for the catch.
(defrule catch2
 (id-root ?id catch)
  (or (RaRTI_viSeRya-RaRTI_viSeRaNa ?id ?id1) (viSeRya-det_viSeRaNa ?id ?id1))
  →
  (assert (id-wsd_root_mng ?id पकड़न))
)

;Example: The rock caught her in the back of the head.
  The blow caught him in the back.
  The punch caught him in the stomach.
(defrule catch3
 (id-root ?id catch)
  (kriyA-subject ?id ?noun)
  (id-cat_coarse ?noun noun)
  (id-word ?noun ?str&:(gdbm_lookup_p inanimate.gdbm" ?str))
  (kriyA-object ?id ?noun1)
  (id-word ?noun1 ?str1&:(gdbm_lookup_p animate.gdbm" ?str1))
  (assert (id-wsd_root_mng ?id लग))
)

;Example: They opened a shelter to provide temporary housing for the city's
  homeless.
  The people rendered homeless due to the earthquake were looking
  for shelter.
  The street children need some shelter at night.
  After the flood, thousands of people were in need of shelter.
(defrule shelter1
 (declare (salience: low))
 (id-root ?id shelter)
  ?mng <- (meaning_to_be_decided ?id)
  (id-cat_coarse ?id noun)
  →
)
CASE STUDY 3: English word Shelter

; Example: We took shelter for the night in an abandoned house. We were caught in a thunderstorm, without anywhere to shelter. A group of us were sheltering from the rain under the trees.

(defrule shelter2
  (declare(salience-low)
  (id-root ?id shelter
 ?mng <- (meaning_to_be_decided ?id)(id-cat_coarse ?id Intransitive verb)
  →
  (retract ?mng)
  (assert (id-H_word_mng ?id आश्रय))

; Example: Local people risked their own lives to shelter resistance fighters. The trees gave/provided some shelter from the rain.

(defrule shelter3
  (declare(salience-low)
  (id-root ?id shelter
 ?mng <- (meaning_to_be_decided ?id)(id-cat_coarse ?id Transitive verb)
  →
  (retract ?mng)
  (assert (id-H_word_mng ?id आश्रय देना))

~ ~ ~
### Procedure

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Task</th>
<th>Command (if any)</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Login to Ubuntu – after opening the VirtualBox</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Open a screen – by clicking on the Terminal icon which appears at the top of the Ubuntu screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Open WordNet and select a word which you are going to work on</td>
<td></td>
<td>Search word: Walk</td>
</tr>
<tr>
<td>4</td>
<td>Mark all the sentences that appear for a word in the WordNet Search by dragging the cursor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Copy (using the Ctrl+C keys) all these sentences</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Go to the CLIPS program by typing the following command in the Ubuntu terminal screen that is open.</td>
<td>$ xclips</td>
<td>user@user-machine:~$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>xclips</td>
</tr>
<tr>
<td>7</td>
<td>Create a file in the 'wsd_rules' directory and paste (using the right click option on the mouse and selecting the 'paste' option from the drop down Menu), the sentences copied from WordNet into this file. (Note: you can also paste using the CTRL+SHIFT+V keys)</td>
<td>vi &lt;filename&gt; / vim &lt;filename&gt;</td>
<td>user@user-machine:~$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>vi walk / user@user-machine:~$</td>
</tr>
<tr>
<td>8</td>
<td>Save the above file and quit to go to the main Terminal screen.</td>
<td>Esc + : + wq</td>
<td>(Esc key):wq</td>
</tr>
<tr>
<td>9</td>
<td>Get all the sample sentences from the text copied from the</td>
<td>grep -o &quot;&quot;&quot;&quot;.&quot;&quot;&quot;&quot;&lt;filename+one space&gt;</td>
<td>user@user-machine:~$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>grep -o &quot;&quot;&quot;&quot;.&quot;&quot;&quot;&quot;&lt;walk &gt; walk-</td>
</tr>
<tr>
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<td>---</td>
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<td></td>
</tr>
<tr>
<td><strong>WordNet file and save it to a new file (grep command=grab)</strong> (first use single quote and then the double quotes in the command)</td>
<td>new filename without space (use hyphen)</td>
<td>examples</td>
<td></td>
</tr>
<tr>
<td><strong>Open the file with examples in gedit, so that rules can be framed here.</strong></td>
<td>gedit &lt;filename&gt;</td>
<td>gedit walk-examples</td>
<td></td>
</tr>
<tr>
<td><strong>Delete all quote marks in the file with examples using the 'Replace' command that appears in the gedit screen. Replace with may be left blank.</strong></td>
<td>Search for: “ and leave Replace with blank.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sentences which may be separated by “;,” marks may be separated by giving the ‘\n’ command in the Replace with command</strong></td>
<td>Search for: ; and replace with: \n</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Save and close the above file by clicking on the ‘Save’ icon and closing the file.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Open the file with samples sentences using vim editor</strong></td>
<td>vi &lt;filename&gt; / vim &lt;filename&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Here insert a “;” at the beginning of each example sentence to be able to comment on the sentences.</strong></td>
<td>Esc + :%s/^/;/</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Write the Hindi meaning in which the term has been used at the end of each sentence using wxnotation. Write the Hindi meaning within '&lt; &gt;', so that it can be easily identified.</strong></td>
<td>To go to the end of a sentences press 'a' or 'End' key and then type in the hindi meaning using the wx_notation. For insert mode, press 'I' key.</td>
<td>The wx_notation key is available at the following url: <a href="http://ltrc.iiit.net/~anusaara">http://ltrc.iiit.net/~anusaara</a> ka/SAN_MO/help.html</td>
<td></td>
</tr>
<tr>
<td><strong>Save and quit this file to go back to the main terminal</strong></td>
<td>Esc + : + wq</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group sentences according to the hindi meanings, so that rules can be framed for each set of sentences where the same meaning occurs.</strong></td>
<td>grep “&lt;Hindi meaning&gt;” &lt;walk-examples &gt;&gt;walk.clp</td>
<td>user@user-machine:~$ grep “mArga” &lt;walk-examples &gt;&gt;walk.clp</td>
<td></td>
</tr>
<tr>
<td>Step</td>
<td>Description</td>
<td>Command</td>
<td>Output</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>19</td>
<td>The above step would need to be repeated for various hindi meanings; changing the meaning each time; till all hindi meanings found in the file have been appended.</td>
<td>grep &quot;&lt;Hindi meaning&gt;&quot; &lt;walk-examples &gt;&gt;walk.clp</td>
<td>user@user-machine:~$ grep &quot;pExala calana&quot; &lt;walk-examples &gt;&gt;walk.clp ( &amp; so on)</td>
</tr>
<tr>
<td>20</td>
<td>Open the file using the vi / vim command, for making rules.</td>
<td>vi &lt;filename&gt; / vim &lt;filename&gt;</td>
<td>user@user-machine:<del>$ vi walk.clp / user@user-machine:</del>$ vim walk.clp</td>
</tr>
<tr>
<td>21</td>
<td>Make rules for each hindi meaning, in the format for making rules in CLIPS).</td>
<td>Refer to the sheet in this file titled 'Rule Formation'.</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Shift to the wsd testing directory's wsd_rules folder, with the appropriate command.</td>
<td>cd &lt;file name&gt;/&lt;path&gt;</td>
<td>user@user-machine:~$ wsd_testing_8.6.08/wsd_rules</td>
</tr>
<tr>
<td>23</td>
<td>In this directory, create a file titled 'test&lt;word&gt;' using the vi / vim command. Alternatively, one can create a test file using the 'gedit' command.</td>
<td>vi &lt;filename&gt; / vim &lt;filename&gt; / gedit &lt;filename&gt;</td>
<td>user@user-machine:~$ wsd_testing_8.6.08/wsd_rules/ vi testwalk OR vim testwalk OR gedit testwalk</td>
</tr>
<tr>
<td>24</td>
<td>To check whether the rules are working, enter a single sample sentence (for which you want to test the rule) in the test file in the format specified alongside. If the file has been created using the vi / vim command, you would need to press the 'I' key (i.e. the insert function) to start writing. (Important: The sample sentence must be between &lt;p&gt; and &lt;/p&gt; and with correct punctuation and cases.)</td>
<td>&lt;TITLE&gt; 'word' &lt;/TITLE&gt; &lt;p&gt; 'sample sentence' &lt;/p&gt;</td>
<td>&lt;TITLE&gt; walk &lt;/TITLE&gt; &lt;p&gt; We walked instead of driving. &lt;/p&gt;</td>
</tr>
<tr>
<td>25</td>
<td>Save and close / quit from the above file, back to the mail terminal.</td>
<td>Esc : + wq</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Run the test file using the appropriate command. If the rule is correct then you will get the Hindi meaning in the last</td>
<td>/run.sh &lt;filename&gt; OR sh run.sh &lt;filename&gt;</td>
<td>user@user-machine:~$ wsd_testing_8.6.08/wsd_rules/ sh run.sh testwalk</td>
</tr>
</tbody>
</table>
If there is an error in the output, go back to the rules file and edit the rules and try the test procedure again. (Please refer to the sheet titled 'Rule formation' in this file for details and guidelines.)

**Commands:**

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To go back to the Command prompt at any time in the program</td>
<td>Ctrl + C</td>
</tr>
<tr>
<td>2</td>
<td>To save a file</td>
<td>Esc+:+w</td>
</tr>
<tr>
<td>3</td>
<td>To quit from a file</td>
<td>Esc+:+q</td>
</tr>
<tr>
<td>4</td>
<td>To save and quit</td>
<td>Esc+:+wq</td>
</tr>
<tr>
<td>5</td>
<td>To list files in a directory</td>
<td>Is</td>
</tr>
<tr>
<td>6</td>
<td>Insert</td>
<td>I</td>
</tr>
<tr>
<td>7</td>
<td>Go to end of a sentence</td>
<td>end key</td>
</tr>
<tr>
<td>8</td>
<td>Immediately after end of a sentence</td>
<td>a</td>
</tr>
<tr>
<td>LINGUISTICS RELATION (NAME)</td>
<td>OUR RELATION (NAME)</td>
<td>EXAMPLES</td>
</tr>
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</tr>
<tr>
<td>subject-verb</td>
<td>क्रिया-subjekt</td>
<td>The DOG CHASES the cat. There ARE FLOWERS in the garden. I must not GO to the store. ARE there FLOWERS in the garden? ARE YOU ready for next week.</td>
</tr>
<tr>
<td>verb-locus</td>
<td>क्रिया-अधिकरण</td>
<td>I DID it in LATE DECEMBER. WHERE ARE you? He CAME early TODAY.</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>LINGUISTICS RELATION (NAME)</th>
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</thead>
<tbody>
<tr>
<td>verb-adverb</td>
<td>क्रिया-ववशषण</td>
<td>He RUNS QUICKLY. I wonder how QUICKLY Jane RAN? He is APPARENTLY LEAVING. How QUICKLY did you RUN? He didn't run QUICKLY ENOUGH. It IS LIKELY that Jane will go.</td>
<td>Only those adverbs that modify verbs are labeled as &quot;क्रिया ववशषण&quot;.</td>
</tr>
<tr>
<td>verb-object</td>
<td>क्रिया-object</td>
<td>The dog CHASED a CAT.</td>
<td>If there is only one object in a sentence than that object is labeled as object.</td>
</tr>
<tr>
<td>verb-object_1</td>
<td>क्रिया-object_1</td>
<td>I GAVE HIM on Tuesday five expensive presents.</td>
<td>If there are two objects in a sentence than the first object is labeled as object_1.</td>
</tr>
<tr>
<td>verb-object/indirect object</td>
<td>क्रिया-object_2</td>
<td>I GAVE him on Tuesday five expensive PRESENTS.</td>
<td>If there are two objects in a sentence than the second object is labeled as object_2.</td>
</tr>
<tr>
<td>verb-dummy subject</td>
<td>क्रिया-dummy_subj</td>
<td>THERE ARE flowers in the garden. ARE THERE flowers in the garden?</td>
<td>Dummy subject (there) is the only subject relation that is not equivalent to the अभिधित concept.</td>
</tr>
<tr>
<td>verb-dummy subject</td>
<td>क्रिया-raised_subj</td>
<td>JOHN IS easy to hit.</td>
<td>&quot;John&quot; is the argument of &quot;hit&quot; and also the object of hit, as in this example: &quot;It is easy to hit John&quot;. In our example it (John) has raised to the subject position from its object position therefore John is actually the object and it has raised to the subject position.</td>
</tr>
<tr>
<td><strong>LINGUISTICS RELATION</strong></td>
<td><strong>OUR RELATION</strong></td>
<td><strong>EXAMPLES</strong></td>
<td><strong>COMMENTS</strong></td>
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<td>(NAME)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>position, this is the reason we are calling it &quot;raised_subject&quot;.</td>
</tr>
<tr>
<td>verb-infinitival phrase</td>
<td>क्रिया-क्रियार्थ क्रिया</td>
<td>I had to RUN fast to CATCH the bus. I WENT to READ.</td>
<td></td>
</tr>
<tr>
<td>verb-particle</td>
<td>क्रिया-उपसर्ग</td>
<td>He STOOD UP and WALKED OUT.</td>
<td></td>
</tr>
<tr>
<td>verb-objectival complement</td>
<td>क्रिया-समाना</td>
<td>I MADE him HAPPY. You MAKE me HAPPY.</td>
<td></td>
</tr>
<tr>
<td>verb-present participle</td>
<td>क्रिया-कुदन्त समाना</td>
<td>I ENJOY RUNNING.</td>
<td></td>
</tr>
<tr>
<td>paraphrasing verb-verb or verb-verb of embedded clause</td>
<td>क्रिया-वाक्यकर्म</td>
<td>The players, she SAID PLAYED well. I LIKE the way you DO that.</td>
<td>Here we show the relation of main verb with the verb of the embedded clause because that is the head of the entire embedded clause.</td>
</tr>
<tr>
<td>verb-preposition</td>
<td>क्रिया-&quot;विभिन्नि word&quot; सम्बन्ध</td>
<td>the dog RAN in the YARD. We DID it IN December.</td>
<td>This relation is bahuvrIhi-samAsa type relation. This relation connects verb with noun through prepositions.</td>
</tr>
<tr>
<td>verb-wh object</td>
<td>क्रिया-wh_object</td>
<td>The dog WHO I CHASED was black.</td>
<td></td>
</tr>
</tbody>
</table>
| infinitive/causative verb-verb | क्रिया-क्रिया प्रेरक | I MADE him GO. The teacher MADE the students STAY after class. She HAD her children COOK dinner for | causative verbs (make, have, get etc) loose their own meaning and add an extra meaning "to convince to do
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>her.</td>
<td></td>
<td>something&quot; or &quot;to trick someone into doing something.&quot; to the other verbs</td>
</tr>
<tr>
<td></td>
<td>GM stock FELL 2%. the water column ROSE four FEET.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I WONDER WHAT to buy. I am WONDERING WHICH question to ask first.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>He IS PRESIDENT of the company.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The BIG BLACK UGLY DOG chased me. We will do it MONDAY MORNING How BIG is IT? How much BETTER is IT? ALL THE PEOPLE are here. How BIG a DOG was it? I'm going to London NEXT WEEK. He has the BIGGEST ROOM.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HE is PRESIDENT of the company. IS he PRESIDENT of the company. HE is more INTELLIGENT than attractive. HE is more intelligent than ATTRACTIVE. Are YOU READY for next week The ACTOR Eddie MURPHY</td>
<td></td>
<td></td>
</tr>
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<tr>
<td></td>
<td>attended the event. I am PROUD of you. I am a PLAYER. Are YOU a DOCTOR? How STUPID can YOU be?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>subjective object-pronoun</td>
<td>object-सर्वनाम</td>
<td>The DOGS WHO I chased were black.</td>
<td></td>
</tr>
<tr>
<td>subject-relative pronoun</td>
<td>subject-सर्वनाम</td>
<td>The DOGS WHO chased me were black. The DOG WHO chased me was black.</td>
<td></td>
</tr>
<tr>
<td>adverbs-adjective</td>
<td>इतना-विशेषण</td>
<td>He is AS SMART. It was SO COLD that we decided not to go. He was SO ANGRY that he left.</td>
<td></td>
</tr>
<tr>
<td>determiner-noun</td>
<td>विशेष्य-det_विशेषण</td>
<td>THE DOG chased A CAT and SOME BIRDS. he eats MUCH RICE. She was such A good PROGRAMMER that they had to keep her. WHICH BOOK do you want? I'm going to London THIS MONDAY. I saw him A WEEK ago. I saw him AN YEAR ago. I saw him ONE WEEK ago. I saw him 1 WEEK ago.</td>
<td></td>
</tr>
<tr>
<td>&quot;the&quot;-comparative adjective</td>
<td>उतना-तुलनात्मक_विशेषण</td>
<td>The faster it is, THE MORE they will like it</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>object-adjective</td>
<td>object-object</td>
<td>I made HIM HAPPY. I found HIM INTELLIGENT.</td>
<td></td>
</tr>
<tr>
<td>&quot;how&quot;-adjective</td>
<td>कितना-विशेषण</td>
<td>HOW STUPID can you be?</td>
<td></td>
</tr>
<tr>
<td>number-noun expression</td>
<td>विशेष्य-संख्या_विशेषण</td>
<td>I saw him THREE WEEKS ago. FIFTY PERCENT of them were women. THREE OTHER people are coming.</td>
<td></td>
</tr>
<tr>
<td>opener-subject</td>
<td>subject-opener</td>
<td>ON Tuesday, THEY went to a movie. APPARENTLY, THEY went to a movie</td>
<td></td>
</tr>
<tr>
<td>conjunction-subject of embedded clause</td>
<td>subject-conjunction</td>
<td>I wonder WHEN HE will come. He wondered WHY SHE will not go.</td>
<td></td>
</tr>
<tr>
<td>expression as modifier-adjective</td>
<td>परिमाणवाची-विशेषण</td>
<td>He is three FEET TALL.</td>
<td></td>
</tr>
<tr>
<td>verb-dummy object</td>
<td>क्रिया-dummy_objec t</td>
<td>That MAKES IT unlikely that she will come.</td>
<td></td>
</tr>
<tr>
<td>subjunctive constructions</td>
<td>क्रिया-विधि_वाक्यकर्म</td>
<td>I SUGGESTED that he GO.</td>
<td>This relation connects main verb with the subjunctive verbs.</td>
</tr>
<tr>
<td>comparative adjective-noun</td>
<td>विशेष्य-तुलनात्मक_विशेषण</td>
<td>He is a TALLER MAN. The little young girl will present a beautiful doll to her YOUNGER BROTHER.</td>
<td></td>
</tr>
<tr>
<td>LINGUISTICS RELATION (NAME)</td>
<td>OUR RELATION (NAME)</td>
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<td>----------------------------</td>
<td>---------------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>noun-noun</td>
<td>विशेषण-&quot;विभक्ति word&quot;_विशेषण</td>
<td>The SALARIES of the PROGRAMMERS are excellent.</td>
<td>This relation connects two nouns via preposition. While using this relation, replace &quot;विभक्ति word&quot; by preposition. e.g. in our example sentence this relation can be used as: - विशेषण-of_विशेषण, to show relation between 'salaries' and 'programmers'.</td>
</tr>
<tr>
<td>here, there, somewhere, anywhere, everywhere</td>
<td>क्रिया-लूस_prep_सम्बन्धी</td>
<td>I WENT THERE. He IS HERE.</td>
<td>This relation connects forms of &quot;be&quot; verb and other verbs with the words which have prepositional meaning in them (which means that the object has a non-overt preposition in it.) but the preposition is not explicit.</td>
</tr>
<tr>
<td>verb-causative verb</td>
<td>क्रिया-प्रयोज्य_कर्ता</td>
<td>Peter made her do her homework.</td>
<td>The object of the first verb (i.e. causative verb) becomes prayojya_कर्ता according to Sanskrit grammar, so we have given this object a prayojya_कर्ता relation but we are also showing the prayojya_कर्ता as an object of the causative verb. e.g. &quot;Peter made her(1) do her homework.&quot; here 'her(1)' is prayojya_कर्ता and is the object of 'made'.</td>
</tr>
<tr>
<td>LINGUISTICS RELATION (NAME)</td>
<td>OUR RELATION (NAME)</td>
<td>EXAMPLES</td>
<td>COMMENTS</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>than-&quot;BE&quot; verb</td>
<td>क्रिया-conjunction</td>
<td>It is more likely that Joe will come THAN it IS that Fred will go.</td>
<td></td>
</tr>
<tr>
<td>verb-gerund</td>
<td>क्रिया- समानकालिक क्रिया</td>
<td>Rama was TALKING while EATING fruits. I LEFT when I SAW you.</td>
<td>When a doer does two activities simultaneously this relation occur for those activities.</td>
</tr>
<tr>
<td>verb-gerund and S* with CO* and Cs</td>
<td>क्रिया- समानकालिक क्रिया</td>
<td>Rama was TALKING while EATING fruits. I LEFT when I SAW you.</td>
<td>When a doer does two activities simultaneously this relation occur for those activities.</td>
</tr>
<tr>
<td>idiomatic expressions</td>
<td>idiom_type_1</td>
<td>Passion is A MUST to reach your potential.</td>
<td>This relation shows idiomatic expressions.</td>
</tr>
<tr>
<td>verbs-idiom</td>
<td>idiom_type_2</td>
<td>He did nothing but complain. I held him responsible.</td>
<td>This relation connects verbs with certain words which are a kind of idiomatic expressions.</td>
</tr>
<tr>
<td>verb-object</td>
<td>क्रिया- GNP_agr_sub ject</td>
<td>There ARE FLOWERS in the garden. There IS a FLOWER in the garden.</td>
<td>The object in these examples (FLOWER/FLOWERS) is not actually object (karma) but is the subject (अभिविन्दक) of the verb. The verb has gender, number and person agreement with it, that is why we are naming it क्रिया-GNP_agr_subject. (GNP_agr = Gender Number person agreement)</td>
</tr>
<tr>
<td>verb-verb</td>
<td>पूर्वकालिक क्रिया-अनल्तरकालिक_क्रिया</td>
<td>The man I SAW after I LEFT your party is here.</td>
<td></td>
</tr>
<tr>
<td>noun-participle</td>
<td>विशेष्य- कृटदन्त_विशेषण</td>
<td>The DOG CHASING the man died. The BOY</td>
<td></td>
</tr>
<tr>
<td>LINGUISTICS RELATION (NAME)</td>
<td>OUR RELATION (NAME)</td>
<td>EXAMPLES</td>
<td>COMMENTS</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>modifiers</td>
<td>RUNNING</td>
<td>plucked the flower.</td>
<td></td>
</tr>
<tr>
<td>possessive pronouns or nouns-nouns</td>
<td>उपस्मी विशेषण</td>
<td>JOHN 's DOG is black&quot;. The STUDENTS' ROOMS are large.</td>
<td>This relation connects possessive pronouns and nouns that have possessive suffix &quot;'s&quot; or &quot;'&quot; to a noun</td>
</tr>
<tr>
<td>present participles-present participles</td>
<td>क्रिया-क्रूंदन्त_object</td>
<td>They ENJOY RUNNING.</td>
<td>Here the verbal noun (gerund/क्रूंदन्त) is the object of the verb, that is why this name is given.</td>
</tr>
<tr>
<td>name-abbreviation</td>
<td>नाम-संक्षिप्त_नाम</td>
<td>The INTERNATIONAL INSTITUTE of INFORMATION TECHNOLOGY (IIIT) is good.</td>
<td>This relation connects nouns wit their abbreviated forms.</td>
</tr>
<tr>
<td>noun-noun modifier</td>
<td>संज्ञा-संज्ञा_समानाधिकरण</td>
<td>The DOG, WHO was black, barked loudly. Rama gave a book to DASHARAT, the KING of Ayodhya.</td>
<td>This relation connects nouns to post-nominal noun modifiers surrounded by commas.</td>
</tr>
<tr>
<td>imperative verb-predicative adjective</td>
<td>क्रिया_क्रिया_मुल</td>
<td>KEEP QUIET, she said. BE CAREFUL, she said.</td>
<td>This relation connects imperative verb to their predicate which becomes क्रिया_मूल and the imperative verb becomes क्रिया. Though, technically, क्रिया is the head in this relation but semantically क्रिया_मूल is the head.</td>
</tr>
<tr>
<td>noun-to infinitive</td>
<td>संज्ञा-क्रूंदन्त</td>
<td>He wasted his golden OPPORTUNITY to PLAY in</td>
<td></td>
</tr>
<tr>
<td>LINGUISTICS RELATION (NAME)</td>
<td>OUR RELATION (NAME)</td>
<td>EXAMPLES</td>
<td>COMMENTS</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td>the national team.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>क्रिया-कृदन्त_विशेषण</td>
<td>This table is made up of wood.</td>
<td>This कृदन्त_विशेषण occurs always in predicative position.</td>
</tr>
<tr>
<td>comparative constructions</td>
<td>more_उपमेय-than_उपमान</td>
<td>We do this more for PLEASURE than for MONEY. He has more MONEY than TIME.</td>
<td>This and the next relation &quot;less_उपमेय-than_उपमान&quot; connect two nouns in comparative constructions.</td>
</tr>
<tr>
<td>comparative constructions</td>
<td>less_उपमेय-than_उपमान</td>
<td>Count Sara eats less food than fruits.</td>
<td></td>
</tr>
<tr>
<td>idiomatic time expressions</td>
<td>क्रिया-कालवाची</td>
<td>I'm GOING to London NEXT WEEK.</td>
<td>If the time expressions do not take any preposition this relation is used.</td>
</tr>
<tr>
<td>how-adjective</td>
<td>विशेष्य-कितना_विशेषण</td>
<td>HOW STUPID can you be?</td>
<td>This relation connects only the word &quot;how&quot; to adjectives.</td>
</tr>
</tbody>
</table>
### Appendix 4
Examples - Transfer Verb Frames

English Verb: catch

<table>
<thead>
<tr>
<th>ID-Sense</th>
<th>catch1a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headword</td>
<td>catch</td>
</tr>
<tr>
<td>Hin_Meaning</td>
<td>पकड</td>
</tr>
<tr>
<td>Eng_Example</td>
<td>He catches the ball.</td>
</tr>
<tr>
<td>Hin_Trans</td>
<td>यह गेंद को पकडता है</td>
</tr>
<tr>
<td>Frame_Eng</td>
<td>A catches B</td>
</tr>
<tr>
<td>Frame_Hin</td>
<td>A B को पकडता है</td>
</tr>
<tr>
<td>Constraints</td>
<td>B has to be definitive</td>
</tr>
<tr>
<td>ID-Sense</td>
<td>mark1a</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Headword</td>
<td>mark</td>
</tr>
<tr>
<td>Hin_Meaning</td>
<td>चिह्नित कर</td>
</tr>
<tr>
<td>Eng_Example</td>
<td>I mark the bottles.</td>
</tr>
<tr>
<td>Hin_Trans</td>
<td>में बोतलों को चिह्नित करता हूँ</td>
</tr>
<tr>
<td>Frame_Eng</td>
<td>A marks B</td>
</tr>
<tr>
<td>Frame_Hin</td>
<td>A B को चिह्नित करता है</td>
</tr>
<tr>
<td>Constraints</td>
<td></td>
</tr>
<tr>
<td>ID-Sense</td>
<td>meet2</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Headword</td>
<td>meet</td>
</tr>
<tr>
<td>Hin-Meaning</td>
<td>पूरा कर</td>
</tr>
<tr>
<td>Eng_Example</td>
<td>The money can not meet my needs.</td>
</tr>
<tr>
<td>Hin_Trans</td>
<td>धन मेरी आवश्यकताओं को पूरा नहीं कर सकता</td>
</tr>
<tr>
<td>Frame_Eng</td>
<td>A can not meet B</td>
</tr>
<tr>
<td>Frame_Hin</td>
<td>A B को पूरा नहीं कर सकता</td>
</tr>
<tr>
<td>Constraints</td>
<td></td>
</tr>
<tr>
<td>ID-Sense</td>
<td>meet1a</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Headword</td>
<td>meet</td>
</tr>
<tr>
<td>Hin_Meaning</td>
<td>मिलना</td>
</tr>
<tr>
<td>Eng_Example</td>
<td>Ravi meets Hari everyday.</td>
</tr>
<tr>
<td>Hin_Trans</td>
<td>रवि हरि से प्रतिदिन मिलता है</td>
</tr>
<tr>
<td>Frame_Eng</td>
<td>A meets B</td>
</tr>
<tr>
<td>Frame_Hin</td>
<td>A B से मिलता है</td>
</tr>
<tr>
<td>Constraints</td>
<td>B has to be human</td>
</tr>
</tbody>
</table>
English verb – write

<table>
<thead>
<tr>
<th>Id-Sense</th>
<th>Write1a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headword</td>
<td>write</td>
</tr>
<tr>
<td>Hin_Meaning</td>
<td>लिख</td>
</tr>
<tr>
<td>Eng_Example</td>
<td>She writes a letter</td>
</tr>
<tr>
<td>Hin_Trans</td>
<td>वह एक पत्र लिखती है</td>
</tr>
<tr>
<td>Frame_Eng</td>
<td>A writes B</td>
</tr>
<tr>
<td>Frame_Hin</td>
<td>A B लिखता है</td>
</tr>
<tr>
<td>Constraints</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 5.1
Examples - Padasutras

Headword: absorb
$Latin 'absorbere' - to suck in
Examples:

Plants absorb oxygen
पौधे ऑक्सीजन अन्दर को खींचते हैं। (अन्दर ~ खींचना ← सोख)

Ours is a society that has absorbed others' cultures.
हमारा समाज एक ऐसा समाज है जिसने दूसरों की संस्कृतियों को आदतसात कर लिया है।

(आदतसात ~ कर ← अपने अन्दर खींचना ← सोखना)

The suburbs have now been absorbed by the main city.
महानगरों ने अपने उपनगरों को निगित लिया है।
निगित ← अन्दर ~ खींचना ← सोखन।

Children these days absorb information.
आजके बच्चे सूचना निगित हैं। निगित अन्दर ~ खींचना सोखना

Shock absorber*
शक्ति आदतसात कर आदतसात ~ कर ← अपने अन्दर खींचना ← सोखना

He is completely absorbed by his work.
वह अपने काम में पूरी तरी क से तल्लीन है। तल्लीन होना ← किसी चीज़ में खोना ← के अन्दर खींचना ← के द्वारा सोखे जाना

He is completely absorbed in the book.
वह पुस्तक में पूरी तरी क से तल्लीन है। तल्लीन होना ← किसी चीज़ में खोना ← के अन्दर खींचना ← के द्वारा सोखे जाना

Defense expenditures absorb over half of the public funds.
रक्षा साधनों पर होने व्यय सार्वजनिक खजाने के आधे से अधिक भाग को चूँच लेता है।
चूँचना /निगिता ← सोखना

अन्तर्विहत सूत्र:
सोखना → किसी चीज़ को निगित/किसी चीज़ के द्वारा निगित लेना → तल्लीन होना
इसका सूत्र बनता है—

सूत्र : सोख' [अन्दर-खीचनाः]

‘सोख’ यह बताता है कि ‘सोख’ मात्र हिंदी में समझा जानेवाला ‘सोखना’ नहीं है, बल्कि उसी भाव को आगे ले जाया जा सकता है तथा यदि कोई किसी वस्तु या भाव में पूरी तरह से इधू जाए (तल्लीन हो जाए) या किसी को पूरी तौर से अपने में खीच ले- ये सभी भाव ‘सोख’ में आए जाते हैं। तथा इन सभी अर्थों का तार के बाद सोख[अन्दर-खीचनाः] 'सूत्र में है।

Headword : abstract
Examples :
"abstract","N",

"1. सारांश"

This book is an abstract of Ramayana.

"2. अमृत्वता 
You need to go to abstracts to understand certain phenomena.

"3. अमृत्व भाव"

He is a painter of abstracts.

"abstract","Adj",
--"1. अमृत्व" ← भाव

It is an abstract painting.

--"2. निराकार" ← अमृत्व

Beauty and love are abstract.

--"3. सामान्य" ← जो सबमें समान ← जिसका सार समान है

He has an abstract notion to change the nation.

"abstract","V", 
Two other points must be abstracted from the lecture.

"Two other points must be abstracted from the lecture.

Most of the famous novels are abstracted.

Note: -- "abstract", the word refers to abstracting all words, expression and action of the sentence. By referring to the root of this word, the root of the sentence can be found out and it can be abstracted from the sentence.

Note: To abstract the root of a sentence, go as follows:

Amoot → Action → Samanay → Bhav → Saransh

As in the words, abstract the root of the sentence and refer to the root.

Source: Amoot [Saransh]
Appendix 5.2
Notations for Formulating Padasutra

Some special notations used in the *sutras*:

‘/’ and ‘[]’: Though these two signs are indicative of alternation among words, they indicate different types of alternation.

‘/’:
This sign is used between the different meanings of a word to indicate alternative meanings but it also tells us that the given meanings are unrelated. For instance,

“*lie* -> झठ~बलन/लटन”

Here the word ‘*lie*’ has two senses, ‘झठ~बलन’ and ‘लटन’ but these two senses are not related. It is just a coincidence that in English there is one form for the two words. Originally English had two distinct words which in the process of linguistic evolution have come to acquire the same form.

‘[]’:
This sign also indicates alternative meanings but here the meanings are related. For instance,

अनुच्छेद मार्ग[(क्रिया)]

Here, ‘अनुच्छेद’ or ‘मार्ग’ can be selected on the basis of the context. ‘~’ tells us that though there are several steps to arrive at ‘अनुच्छेद’ from ‘मार्ग’ the two meanings are nevertheless related.

‘~[]’:
This sign also indicates the alternation among the words given in the brackets but here the alternation is not between the words given within and outside the brackets. Wherever this sign is used the word outside the brackets must appear. The word given in the brackets is
variable in itself, i.e., its occurrence depends upon the context. For instance,

प्रकाश~[के~योग्य~करना]

Here, ‘के~योग्य~करना’ is in fact connected with ‘प्रकाश’. Depending upon the context, ‘के~योग्य~करना’ or ‘प्रकाश’ may be selected. It does not suggest that one of the two, i.e., either ‘प्रकाश’ or ‘के~योग्य~करना’ have to occur. What it suggests is that ‘प्रकाश’ would definitely occur and ‘के~योग्य~करना’ may also be optionally there depending on the context.

‘<’ and ‘>’: These two signs indicate the source of a word.

‘<’:
The word appearing on the right hand side of this sign is the source of the word. For instance,

“absorb -> सोख [<अन्दर~खीचना]”

Here the sign ‘<’ tells us that the core meaning of the English word ‘absorb’ is ‘अन्दर~खीचना’ and we have arrived at ‘सोख’ through semantic extension.

‘>’:
The word given on the left hand side of this sign is the source and the word given on the right hand side is the derivation as opposed to the previous symbol. For instance,

“fire -> आग~[>फेकना]~लगाना”

Here ‘आग’ is the source and ‘फेकना’ is an extension of the meaning of ‘आग’.

‘~’:
This sign indicates the different steps involved in semantic extension. There can be one or more than one step. Using this sign more than once is indicative of more than one step involved. For instance,

“issue ->विषय[~~<लिप्पादन]”
Here '~~' indicates that the source of the word 'issue' is 'निझ्यादन' but we have arrived at 'विषय' after several steps of semantic extension.

'{ }':

These brackets give additional information about a particular word. For instance,

अनुचछद[~मार्ग{क्रिया}]  

Here the word 'क्रिया' given in the brackets after the word 'मार्ग' gives us the additional information that the function of 'क्रिया' is inherent in the word 'मार्ग'.

'**':

This sign appearing after a word tells us that this word has additional meanings inherent in it. For instance,

ताला'  
Here the word ताला', apart from the meaning 'lock', has the meaning of 'बॉँध' inherent in it.

'{7}':

The numbers given in the brackets indicate the 'kaaraka' कारक information. Here the given number '{7}' indicates अधिकरण कारक. Similarly, {5} indicates 'apaadaana' अपादान and {2} indicates कर्म. For instance,

अनुचछद [~गुजरना{7}]  

'*':

This sign indicates that there are several possible entities and the appropriate entity should be selected on the basis of the context. For instance,
“term -> लिखित_*_सीमा”

Here, the sign ‘*’ tells us that the word ‘term’ has an inherent meaning of ‘लिखित~सीमा’ and it can be related to ‘शब्द’, ‘शर्त’ or ‘अवधि’ . Whatever is appropriate in a given context will appear in the place of ‘*’.

'^' :

This symbol represents a kind of 'compound' information. Often the concept expressed by a word in English may be difficult to express by a single word in Hindi. However, it is possible to express it by using a 'compounding' of some words. Such expressions are indicated in a पदसूत्र by the symbol '^'. For example :

"contact -> संपर्क^सम्बन्ध"

Symbol '^' here indicates that neither 'संपर्क' nor 'सम्बन्ध' on its own can fully express the concept expressed by the English word 'contact. However, if we take them both together, the intended meaning of 'contact' is captured in Hindi.