

Suppose: ep_i = event-predicate i that does NOT appear inside the sub-ordinate clause
 ep_i' = event-predicate i that appear inside the sub-ordinate clause
 $subj_i$ = subject of ep_i (including all phrases that modify $subj_i$)
 obj_i = object of ep_i (including all phrases that modify obj_i)
 mod_i = ep_i 's modifiers
 $subor_i$ = sub-ordinate clause of ep_i

Zone_Boundary_Generation

```
{
  Scan document for the first event-predicate  $ep_1$ 
  BoundaryExtension(document, 1,  $ep_1$ )
}
```

Boundary_Extension

```
{
  Input: Text,  $i$ ,  $ep_i$ ,
  (1) Check for the  $ep_i$ 's property
      if  $i=1$  or  $ep_i$ 's attributes are not the same as  $ep_{i-1}$ 
      Initialize a new zone with the attributes of
       $ep_i$ 's attributes.
  (2) Extend the zone boundary from  $ep_i$  to the left and
      right to cover all  $subj_i$ ,  $obj_i$ ,  $mod_i$ , and  $subor_i$  that
      appear before the occurrence of  $ep_{i+1}$ .
  (3) If the boundary cover sub-ordinate clauses
      For each sub-ordinate clause,  $subor_i$ 
      Scan  $subor_i$  for the first appearance of  $ep_1'$ 
      BoundaryExtension( $subor_i$ ,  $ep_1'$ , 1)
  (4) Scan for the next event-predicate,  $ep_{i+1}$ , in Text
      (4.1) Update value of  $ep_i$  to  $ep_{i+1}$ 
      (4.2) Update value of  $i$  to  $i+1$ 
  (5) Repeat step (1)
}
```

Example

[The health officials in Pakistan have confirmed that

[the Crimean-Congo hemorrhagic fever has killed at least 5people , including a woman doctor , and infected around 45 people in the country's biggest city of Karachi.]

] [Dengue, commonly known as Congo fever, is spread through the bite of an infected Aedes Aegypti mosquito.]