Complementary Distribution

Consider the distribution of the following characters:

<table>
<thead>
<tr>
<th>Bruce Wayne</th>
<th>Batman</th>
<th>Peter Parker</th>
<th>Spiderman</th>
</tr>
</thead>
<tbody>
<tr>
<td>executive office, Gotham</td>
<td>sleazy street, Gotham</td>
<td>newspaper office, NYC</td>
<td>sleazy street, NYC</td>
</tr>
<tr>
<td>Wayne Mansion, Gotham</td>
<td>Bat cave, Gotham</td>
<td>college class, NYC</td>
<td>side of building, NYC</td>
</tr>
<tr>
<td>dinner party, Gotham</td>
<td>fighting villains, Gotham</td>
<td>eating with Aunt May, NYC</td>
<td>fighting villains, NYC</td>
</tr>
<tr>
<td>Rolls Royce, Gotham</td>
<td>Batmobile, Gotham</td>
<td>doing homework, NYC</td>
<td>slingling web, NYC</td>
</tr>
<tr>
<td>with Dick, Gotham</td>
<td>with Robin, Gotham</td>
<td>dating Mary Jane, NYC</td>
<td>saving Mary Jane, NYC</td>
</tr>
<tr>
<td></td>
<td>Superhero Convention, LA</td>
<td>Superhero Convention, LA</td>
<td></td>
</tr>
</tbody>
</table>

1- Which characters are in complementary distribution?
   - Bruce and Batman
   - Bruce and Peter
   - Bruce and Spiderman
   - Batman and Peter
   - Peter and Spiderman

   They never appear in the same context so there are several possible relationships.
2-Which characters are in contrasting distribution?
   Batman and Spiderman

   They appeared together at the Superheroes Convention so they must be different individuals.

   ![Diagram showing two possibilities for the distribution of Batman and Spiderman.]

   There are two possibilities:

   **ONE**
   / P.P. /      / B.W. /
   / |       | \ 
   / |       |  
   / |       |   
   ![Characters representing Peter Parker and Bruce Wayne.]

   This means:
   - Peter Parker transforms into Batman.
   - Bruce Wayne transforms into Spiderman.
   - Peter Parker travels from NYC to Gotham to fight bad guys.
   - Bruce Wayne travels from Gotham City to NYC to fight bad guys.

   **TWO**
   / B.W. /      / P.P. /
   / |       | \ 
   / |       |  
   / |       |   
   ![Characters representing Peter Parker and Bruce Wayne.]

   This means:
   - Peter Parker transforms into Spiderman.
   - Bruce Wayne transforms into Batman.

   No one has to travel to another city in order to fight crime so this situation is most probably correct.