Truth Value Table

Assumption:
- There is a time-delay for visitors to move from one area to another area.
- At the same time step: $z = x+y$
- Estimate of # of visitors in each area is independent from each other.

Change type of estimated # of visitors between two consecutive time steps:
- Increase: $\uparrow$
- Decrease: $\downarrow$
- Hold: —

Truth value:
- 1 means possible
- 0 means impossible

# of visitors in core area: x	# of visitors in margin: y	# of visitors in whole interest area: z	Truth value	Explanation
—	—	—	1	**No people transform between space.**
—	—	$\uparrow$	0	Impossible
—	—	$\downarrow$	0	Impossible
—	$\uparrow$	—	0	Impossible
—	$\uparrow$	$\uparrow$	0	New people come in
—	$\uparrow$	$\downarrow$	0	Impossible
—	$\downarrow$	—	0	Impossible
—	$\downarrow$	$\uparrow$	0	Impossible
—	$\downarrow$	$\downarrow$	1	**People get out**
$\uparrow$	—	—	0	Impossible
$\uparrow$	—	$\uparrow$	1	**New people come in and people move from margin to core area.**
$\uparrow$	—	$\downarrow$	1	**People move from margin to core area and more people in margin get out of whole interest area.**
$\uparrow$	$\uparrow$	—	0	Impossible
$\uparrow$	$\uparrow$	$\uparrow$	1	**People move from margin to core area and more new people come into the margin area.**
$\uparrow$	$\uparrow$	$\downarrow$	0	Impossible
$\uparrow$	$\downarrow$	—	1	**People move from margin into core interest area.**
$\uparrow$	$\downarrow$	$\uparrow$	1	**New people come in and more people move from margin into core interest area.**
$\uparrow$	$\downarrow$	$\downarrow$	1	**People move from margin into core interest area and more people get out of whole interest area.**
$\downarrow$	—	—	0	Impossible
$\downarrow$	—	$\uparrow$	0	Impossible

↓	—	↓	1	**People get out of core area into margin, and the same # of people get out of whole interest area.**
↓	↑	—	1	**People get out of core area into margin, and no people get out of whole interest area.**
↓	↑	↑	1	**People get out of core area into margin, and new people come in.**
↓	↑	↓	1	**People get out of core area into margin, and less than this # of people get out of whole interest area.**
↓	↓	—	0	Impossible
↓	↓	↑	0	Impossible
↓	↓	↓	1	**People get out of core area into margin, and more people get out of whole interest area.**

- 27 combinations
- only 13 of 27 combinations are possible
- only 4 of the 13 possible cases in where new visitors come in.
- only 6 of the 13 possible cases in where visitors leave from the whole interest area.
- Only 3 of the 13 possible cases in where the # of visitors remain unchanged.

If we have this Truth Table, and we can estimate the change of the # of visitors in each area of two consecutive time steps, we can infer which scenario is happening.