

Basic Definitions of the Forms of Causation			
1	<u>complete causation by X of Y</u>	symbol: m	comparisons
a)	if X, then Y	(X + notY) is impossible	
b)	if notX, not-then Y	(notX + notY) is possible	<=> 2(c)
c)	X is possible	(X + Y) is possible	<=> 2(b)
2	<u>necessary causation by X of Y</u>	symbol: n	
a)	if notX, then notY	(notX + Y) is impossible	
b)	if X, not-then notY	(X + Y) is possible	<=> 1(c)
c)	notX is possible	(notX + notY) is possible	<=> 1(b)
3	<u>partial causation by X (with Z) of Y</u>	symbol: p rel to Z	=> not-1
a)	if (X + Z), then Y	(X + Z + notY) is impossible	<= 1(a)
b)	if (notX + Z), not-then Y	(notX + Z + notY) is possible	=> 1(b)
c)	if (X + notZ), not-then Y	(X + notZ + notY) is possible	=> not-1(a)
d)	(X + Z) is possible	(X + Z + Y) is possible	=> 1(c)
4	<u>contingent causation by X (with Z) of Y</u>	symbol: q rel to Z	=> not-2
a)	if (notX + notZ), then notY	(notX + notZ + Y) is impossible	<= 2(a)
b)	if (X + notZ), not-then notY	(X + notZ + Y) is possible	=> 2(b)
c)	if (notX + Z), not-then notY	(notX + Z + Y) is possible	=> not-2(a)
d)	(notX + notZ) is possible	(notX + notZ + notY) is possible	=> 2(c)
5	<u>partial causation by X of Y (absolute)</u>	symbol: p abs	<= 3, => not-1
a)	if X, not-then Y	(X + notY) is possible	<=> not-1(a)
b)	if notX, not-then Y	(notX + notY) is possible	<=> 1(b), 6(c)
c)	if X, not-then notY	(X + Y) is possible	<=> 1(c), 6(b)
6	<u>contingent causation by X of Y (absolute)</u>	symbol: q abs	<= 4, => not-2
a)	if notX, not-then notY	(notX + Y) is possible	<=> not-2(a)
b)	if X, not-then notY	(X + Y) is possible	<=> 2(b), 5(c)
c)	if notX, not-then Y	(notX + notY) is possible	<=> 2(c), 5(b)

Note that ALL the clauses of a definition must be applicable before the corresponding determination of causation can be claimed. It is not enough if only one or two of them are true.

Note also : the numbering system above used is not to be confused with the one used in the following pages.

Its purpose here is just to allow us to interrelate the building blocks of the various forms (as indicated on the right).

Compound and Elementary Forms of Causation		
#	symbol	text
CAUSATIVE FORMS (XY)		
1	mn	X is a complete and necessary cause of Y
2a	mq abs	X is a complete and contingent cause of Y
2b	mq rel to Z	X is a complete and (complemented by Z) contingent cause of Y
2c	mq rel to notZ	X is a complete and (complemented by notZ) contingent cause of Y
3a	np abs	X is a necessary and partial cause of Y
3b	np rel to Z	X is a necessary and (complemented by Z) partial cause of Y
3c	np rel to notZ	X is a necessary and (complemented by notZ) partial cause of Y
4a	pq abs	X is a partial and contingent cause of Y
4b	pq rel to Z	X (complemented by Z) is a partial and contingent cause of Y
4c	pq rel to notZ	X (complemented by notZ) is a partial and contingent cause of Y
5	m	X is a complete cause of Y
6	n	X is a necessary cause of Y
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
PREVENTIVE FORMS (XnotY)		
1	mn	X is a complete and necessary cause of notY
2a	mq abs	X is a complete and contingent cause of notY
2b	mq rel to Z	X is a complete and (complemented by Z) contingent cause of notY
2c	mq rel to notZ	X is a complete and (complemented by notZ) contingent cause of notY
3a	np abs	X is a necessary and partial cause of notY
3b	np rel to Z	X is a necessary and (complemented by Z) partial cause of notY
3c	np rel to notZ	X is a necessary and (complemented by notZ) partial cause of notY
4a	pq abs	X is a partial and contingent cause of notY
4b	pq rel to Z	X (complemented by Z) is a partial and contingent cause of notY
4c	pq rel to notZ	X (complemented by notZ) is a partial and contingent cause of notY
5	m	X is a complete cause of notY
6	n	X is a necessary cause of notY
7a	p abs	X is a partial cause of notY
7b	p rel to Z	X (complemented by Z) is a partial cause of notY
7c	p rel to notZ	X (complemented by notZ) is a partial cause of notY
8a	q abs	X is a contingent cause of notY
8b	q rel to Z	X (complemented by Z) is a contingent cause of notY
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of notY
INVERSE CAUSATIVE FORMS (notXnotY)		
1	mn	notX is a complete and necessary cause of notY
2a	mq abs	notX is a complete and contingent cause of notY
2b	mq rel to Z	notX is a complete and (complemented by Z) contingent cause of notY
2c	mq rel to notZ	notX is a complete and (complemented by notZ) contingent cause of notY
3a	np abs	notX is a necessary and partial cause of notY
3b	np rel to Z	notX is a necessary and (complemented by Z) partial cause of notY
3c	np rel to notZ	notX is a necessary and (complemented by notZ) partial cause of notY
4a	pq abs	notX is a partial and contingent cause of notY
4b	pq rel to Z	notX (complemented by Z) is a partial and contingent cause of notY
4c	pq rel to notZ	notX (complemented by notZ) is a partial and contingent cause of notY
5	m	notX is a complete cause of notY
6	n	notX is a necessary cause of notY
7a	p abs	notX is a partial cause of notY
7b	p rel to Z	notX (complemented by Z) is a partial cause of notY
7c	p rel to notZ	notX (complemented by notZ) is a partial cause of notY
8a	q abs	notX is a contingent cause of notY
8b	q rel to Z	notX (complemented by Z) is a contingent cause of notY
8c	q rel to notZ	notX (complemented by notZ) is a contingent cause of notY
INVERSE PREVENTIVE FORMS (notXY)		
1	mn	notX is a complete and necessary cause of Y
2a	mq abs	notX is a complete and contingent cause of Y
2b	mq rel to Z	notX is a complete and (complemented by Z) contingent cause of Y
2c	mq rel to notZ	notX is a complete and (complemented by notZ) contingent cause of Y
3a	np abs	notX is a necessary and partial cause of Y
3b	np rel to Z	notX is a necessary and (complemented by Z) partial cause of Y
3c	np rel to notZ	notX is a necessary and (complemented by notZ) partial cause of Y
4a	pq abs	notX is a partial and contingent cause of Y
4b	pq rel to Z	notX (complemented by Z) is a partial and contingent cause of Y
4c	pq rel to notZ	notX (complemented by notZ) is a partial and contingent cause of Y
5	m	notX is a complete cause of Y
6	n	notX is a necessary cause of Y
7a	p abs	notX is a partial cause of Y
7b	p rel to Z	notX (complemented by Z) is a partial cause of Y
7c	p rel to notZ	notX (complemented by notZ) is a partial cause of Y
8a	q abs	notX is a contingent cause of Y
8b	q rel to Z	notX (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	notX (complemented by notZ) is a contingent cause of Y

Note: Preventive forms may be expressed as modified causatives (XnotY) as above, or as specifically preventive (XY). Thus, "X is a preventive of Y" is equivalent to "X is a causative of notY".

MAIN OPPOSITIONS OF THE CAUSATIVE FORMS		
5	m	X is a complete cause of Y
DENIES (is contrary to)		
<u>causatives:</u>		
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
<u>preventives:</u>		
5	m	X is a complete cause of notY
6	n	X is a necessary cause of notY
7a	p abs	X is a partial cause of notY
7b	p rel to Z	X (complemented by Z) is a partial cause of notY
7c	p rel to notZ	X (complemented by notZ) is a partial cause of notY
8a	q abs	X is a contingent cause of notY
8b	q rel to Z	X (complemented by Z) is a contingent cause of notY
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of notY
NEITHER IMPLIES NOR DENIES		
<u>causatives:</u>		
5	m	X is a complete cause of Y
6	n	X is a necessary cause of Y
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
6		
n		
X is a necessary cause of Y		
DENIES (is contrary to)		
<u>causatives:</u>		
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
<u>preventives:</u>		
5	m	X is a complete cause of notY
6	n	X is a necessary cause of notY
7a	p abs	X is a partial cause of notY
7b	p rel to Z	X (complemented by Z) is a partial cause of notY
7c	p rel to notZ	X (complemented by notZ) is a partial cause of notY
8a	q abs	X is a contingent cause of notY
8b	q rel to Z	X (complemented by Z) is a contingent cause of notY
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of notY
NEITHER IMPLIES NOR DENIES		
<u>causatives:</u>		
5	m	X is a complete cause of Y
6	n	X is a necessary cause of Y
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
7b		
p rel to Z		
X (complemented by Z) is a partial cause of Y		
IMPLIES (subalternates)		
<u>causatives:</u>		
7a	p abs	X is a partial cause of Y
DENIES (is contrary to)		
<u>causatives:</u>		
5	m	X is a complete cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
<u>preventives:</u>		
5	m	X is a complete cause of notY
7b	p rel to Z	X (complemented by Z) is a partial cause of notY
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of notY
NEITHER IMPLIES NOR DENIES		
<u>causatives:</u>		
6	n	X is a necessary cause of Y
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
<u>preventives:</u>		
6	n	X is a necessary cause of notY
7a	p abs	X is a partial cause of notY
7c	p rel to notZ	X (complemented by notZ) is a partial cause of notY
8a	q abs	X is a contingent cause of notY
8b	q rel to Z	X (complemented by Z) is a contingent cause of notY
8b		
q rel to Z		
X (complemented by Z) is a contingent cause of Y		
IMPLIES (subalternates)		
<u>causatives:</u>		
8a	q abs	X is a contingent cause of Y
DENIES (is contrary to)		
<u>causatives:</u>		
6	n	X is a necessary cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
<u>preventives:</u>		
6	n	X is a necessary cause of notY
7c	p rel to notZ	X (complemented by notZ) is a partial cause of notY
8b	q rel to Z	X (complemented by Z) is a contingent cause of notY
NEITHER IMPLIES NOR DENIES		
<u>causatives:</u>		
5	m	X is a complete cause of Y
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
<u>preventives:</u>		
5	m	X is a complete cause of notY
7a	p abs	X is a partial cause of notY
7b	p rel to Z	X (complemented by Z) is a partial cause of notY
8a	q abs	X is a contingent cause of notY
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of notY

SIMILARLY FOR THE IMPLICATIONS OF THE PREVENTIVE, INVERSE CAUSATIVE AND INVERSE PREVENTIVE FORMS, MUTADIS MUTANDIS

> Also note: although separately there are no implications between the causative and preventive forms of p abs and q abs, the compounds pq abs causative and pq abs preventive are identical.

> On the other hand, nothing can be inferred from denying m, n, p or q – except that denying p or q abs implies denial of, respectively, p or q rel to S or notS forms with the same items (i.e. PR or PnotR).

MAIN EDUCIONS OF THE CAUSATIVE FORMS		
INVERSIONS (XY to notXnotY)		
5	m	X is a complete cause of Y
6	n	X is a necessary cause of Y
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
ARE RESPECTIVELY EQUIVALENT TO:		
6	n	notX is a necessary cause of notY
5	m	notX is a complete cause of notY
8a	q abs	notX is a contingent cause of notY
8c	q rel to notZ	notX (complemented by notZ) is a contingent cause of notY
8b	q rel to Z	notX (complemented by Z) is a contingent cause of notY
7a	p abs	notX is a partial cause of notY
7c	p rel to notZ	notX (complemented by notZ) is a partial cause of notY
7b	p rel to Z	notX (complemented by Z) is a partial cause of notY
CONVERSIONS (XY to YX)		
5	m	X is a complete cause of Y
6	n	X is a necessary cause of Y
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
ARE RESPECTIVELY EQUIVALENT TO:		
6	n	Y is a necessary cause of X
5	m	Y is a complete cause of X
8a	q abs	Y is a contingent cause of X
8c	q rel to notZ	Y (complemented by notZ) is a contingent cause of X
8b	q rel to Z	Y (complemented by Z) is a contingent cause of X
7a	p abs	Y is a partial cause of X
7c	p rel to notZ	Y (complemented by notZ) is a partial cause of X
7b	p rel to Z	Y (complemented by Z) is a partial cause of X
CONTRAPOSITIONS (XY to notYnotX)		
5	m	X is a complete cause of Y
6	n	X is a necessary cause of Y
7a	p abs	X is a partial cause of Y
7b	p rel to Z	X (complemented by Z) is a partial cause of Y
7c	p rel to notZ	X (complemented by notZ) is a partial cause of Y
8a	q abs	X is a contingent cause of Y
8b	q rel to Z	X (complemented by Z) is a contingent cause of Y
8c	q rel to notZ	X (complemented by notZ) is a contingent cause of Y
ARE RESPECTIVELY EQUIVALENT TO:		
5	m	notY is a complete cause of notX
6	n	notY is a necessary cause of notX
7a	p abs	notY is a partial cause of notX
7b	p rel to Z	notY (complemented by Z) is a partial cause of notX
7c	p rel to notZ	notY (complemented by notZ) is a partial cause of notX
8a	q abs	notY is a contingent cause of notX
8b	q rel to Z	notY (complemented by Z) is a contingent cause of notX
8c	q rel to notZ	notY (complemented by notZ) is a contingent cause of notX
<p>> Concerning OBVERSION (XY to XnotY), OBVERTED INVERSION (XY to notXY) and OBVERTED CONVERSION (XY to YnotX), it is clear from the oppositions between causatives and preventives that these can only yield negatives.</p> <p>> All the above educions are made on purely formal grounds, ignoring eventual issues of direction of causation, which depend on additional temporal, spatial and other criteria.</p>		