

Allowed, or enabled, that is the question

5 July, 16th DEON Conference @ Université du Québec à Trois-Rivières, Canada

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There is jam. You're **allowed** to take the jam.



There is jam. You're **allowed** to take the jam.

If I want it, I go and take it!



There is jam. You're **allowed** to take the jam.

If I want it, I go and take it!

(I am **allowed**, and **enabled**)



There is jam. You're **prohibited** to take the jam.



There is jam. You're **prohibited** to take the jam.

*I shouldn't, but if I want it,
I could still go and take it!*



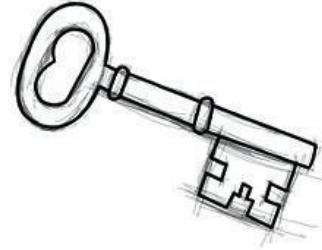
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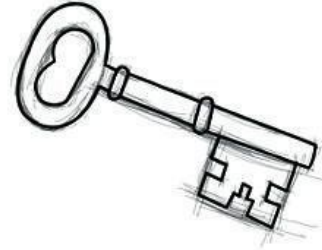
(I am not **allowed**, but still **enabled**)



There is jam. You're **prohibited** to take the jam.
Mother put it in the larder, closed by key.



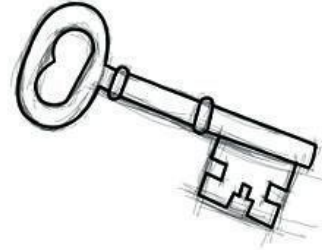
There is jam. You're **prohibited** to take the jam.
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*I shouldn't, but even if I want it, I
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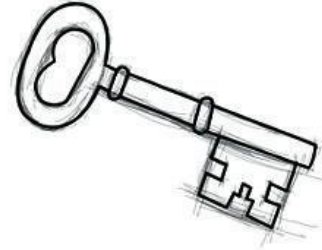


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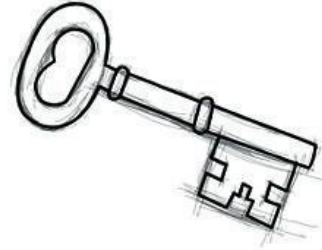
(I am **disallowed** and **disabled**)



There is jam. You're **allowed** to take the jam.
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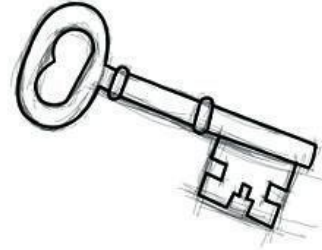
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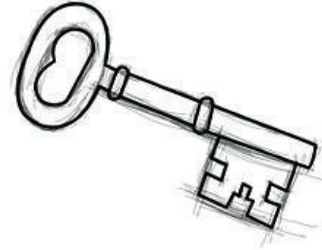


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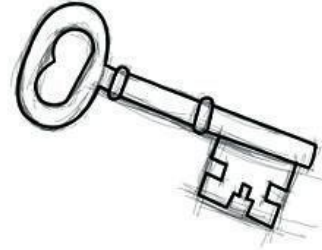
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“Misalignment” between normative directives and their operationalization

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generally due to frictions between distinct regulation efforts

“Misalignment” between normative directives and their operationalization

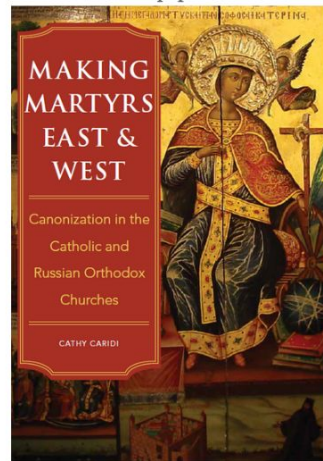
Institutional examples in formal works

For example, with regard to the sacrament of anointing of the sick, [canon 1003.1](#) tells us explicitly that every priest validly administers it. And as for saying Mass and consecrating the Eucharist, we saw in “[Can a Bishop Forbid a Priest to Say Mass?](#)” that once a man has been validly ordained a Catholic priest, he always retains the power to celebrate a valid Mass, and nobody on earth can ever take that power away from him. Thus if an excommunicated priest were to celebrate Mass and administer Holy Communion, or anoint a dying Catholic, it would indeed be valid (assuming he celebrated it properly, of course!), but would be illicit because as per the abovementioned canon 1331.1 n. 1, he’s not supposed to be doing these things.

And as we’ve seen many times in this space, anybody with the requisite intention can validly baptize (see “[Laypeople Can Always Baptize—But When Should They?](#)” among others). “Anybody” would logically include excommunicated clergy. Thus a Catholic priest who has incurred the sanction of excommunication after falling into schism would nonetheless baptize validly.

It is necessary even to mention this:

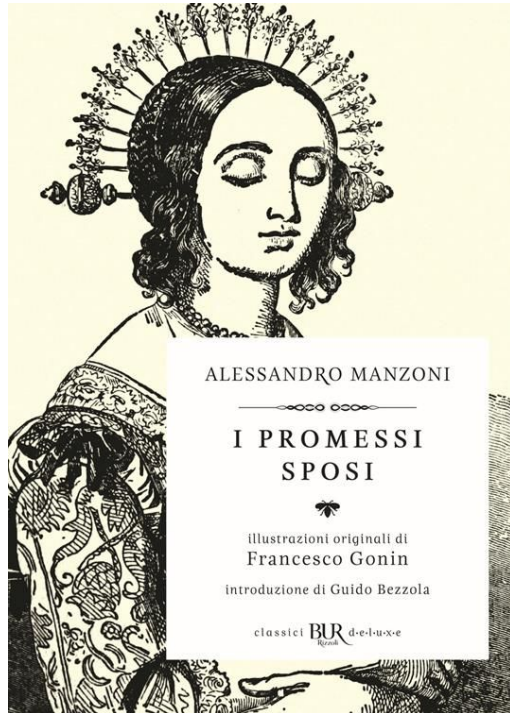
Now available in paperback!



source: <https://canonlawmadeeasy.com/2022/05/12/does-an-excommunicated-priest-administer-valid-sacraments-part-ii/>

eg. [Makinson, 1986], [Jones and Sergot, 1996]

Permission and power: literary cases



Renzo and Lucia
even if allowed to marry,
they are disabled to!

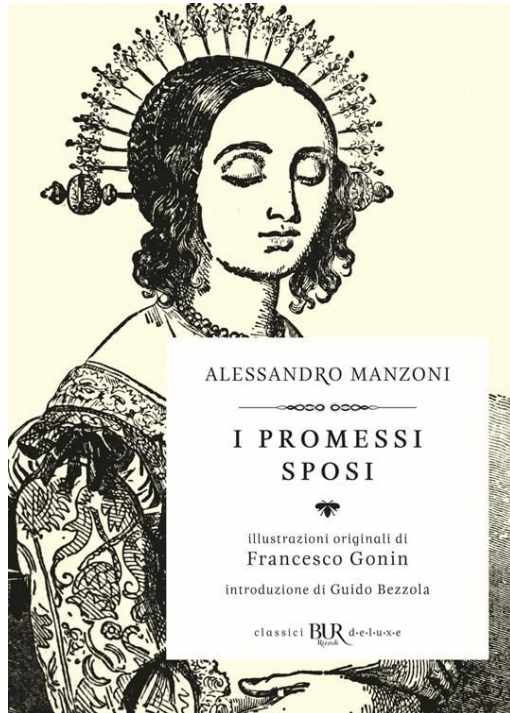


“The Betrothed”

Alessandro Manzoni, 1828

Permission and power: literary cases

(from Wikipedia): Manzoni hatched the basis for his novel in 1821 when he read a 1627 Italian edict that specified penalties for any priest who refused to perform a marriage when requested to do so.



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even if allowed to marry,
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Permission and power: literary cases



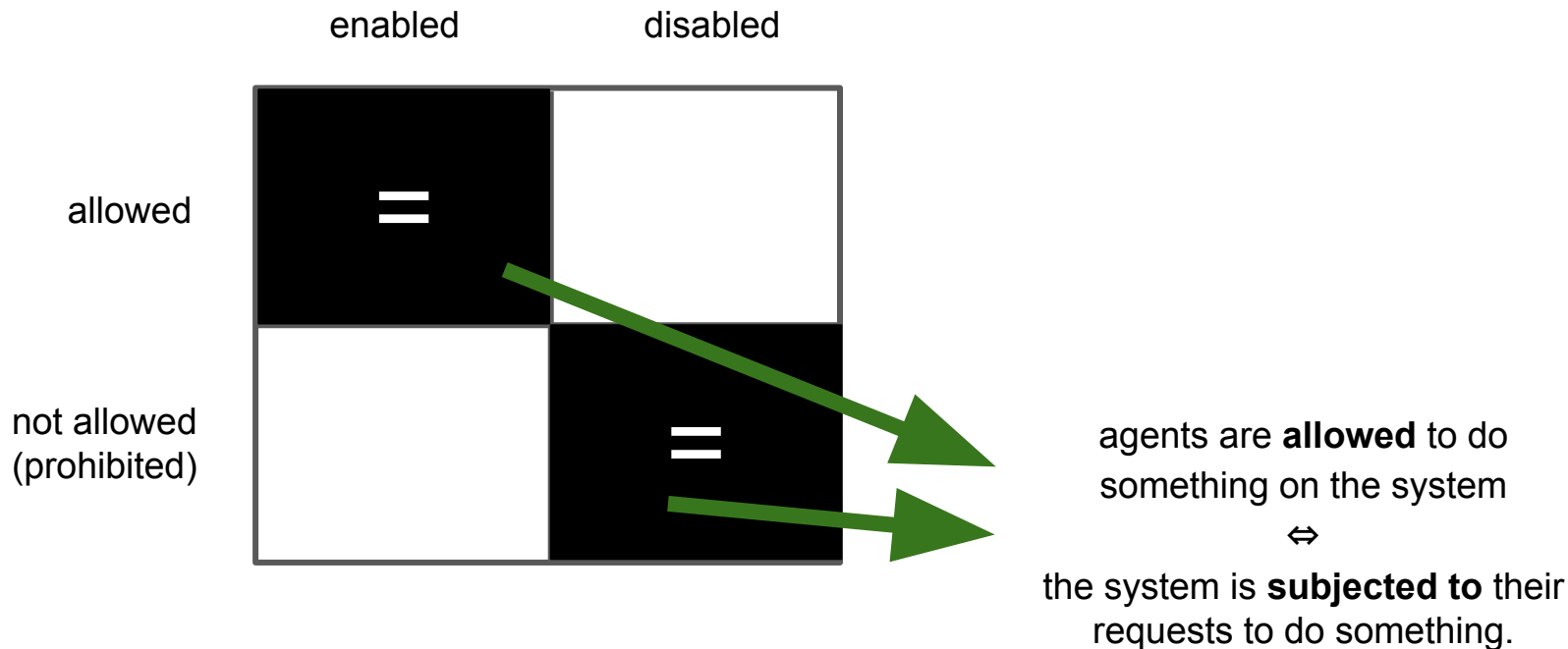
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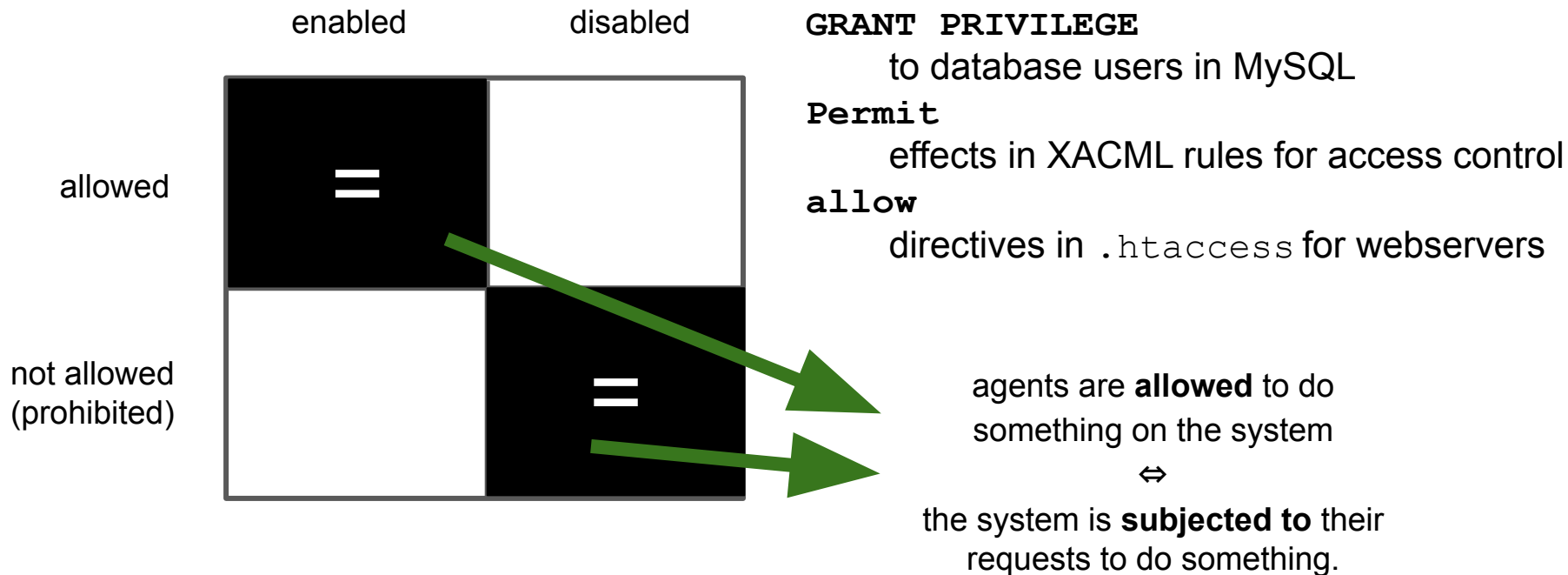
the Nun of Monza
even if allowed not to take
the vows, she is forced to
(disabled to avoid to)



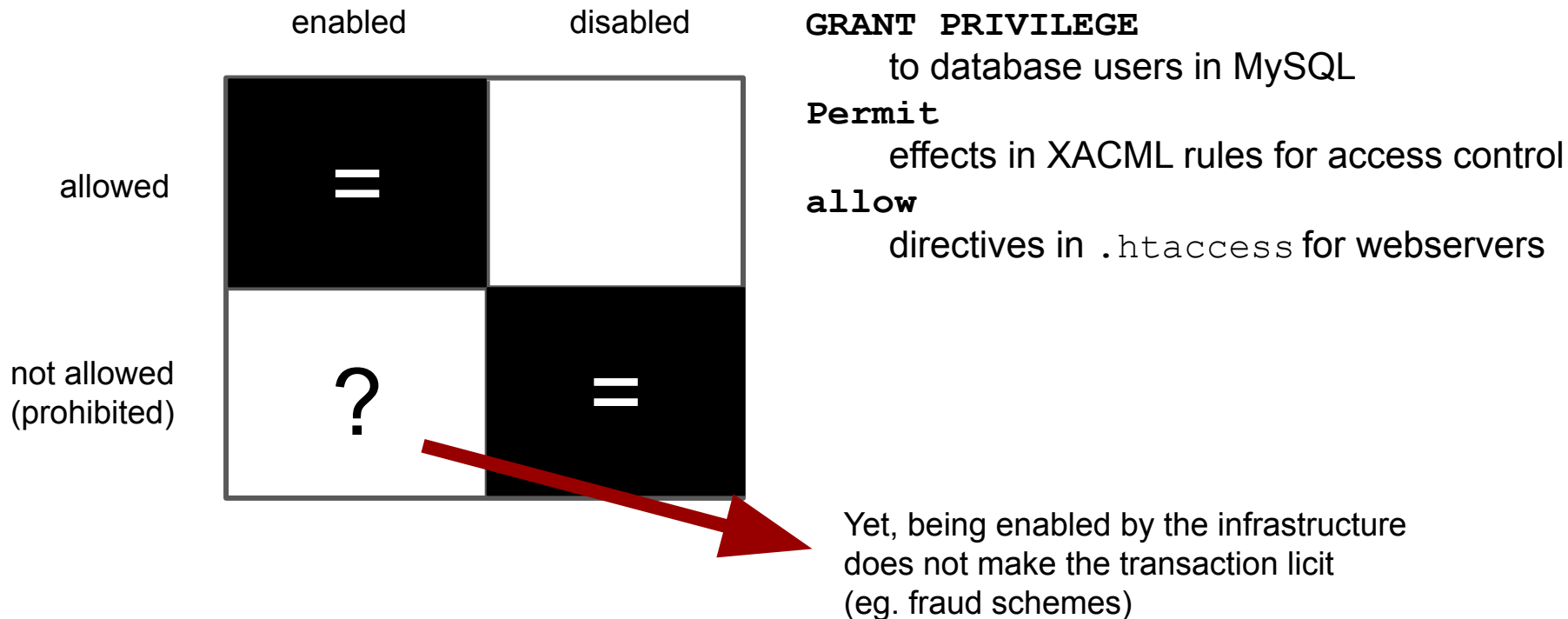
Technical solutions typically conflate permission and power



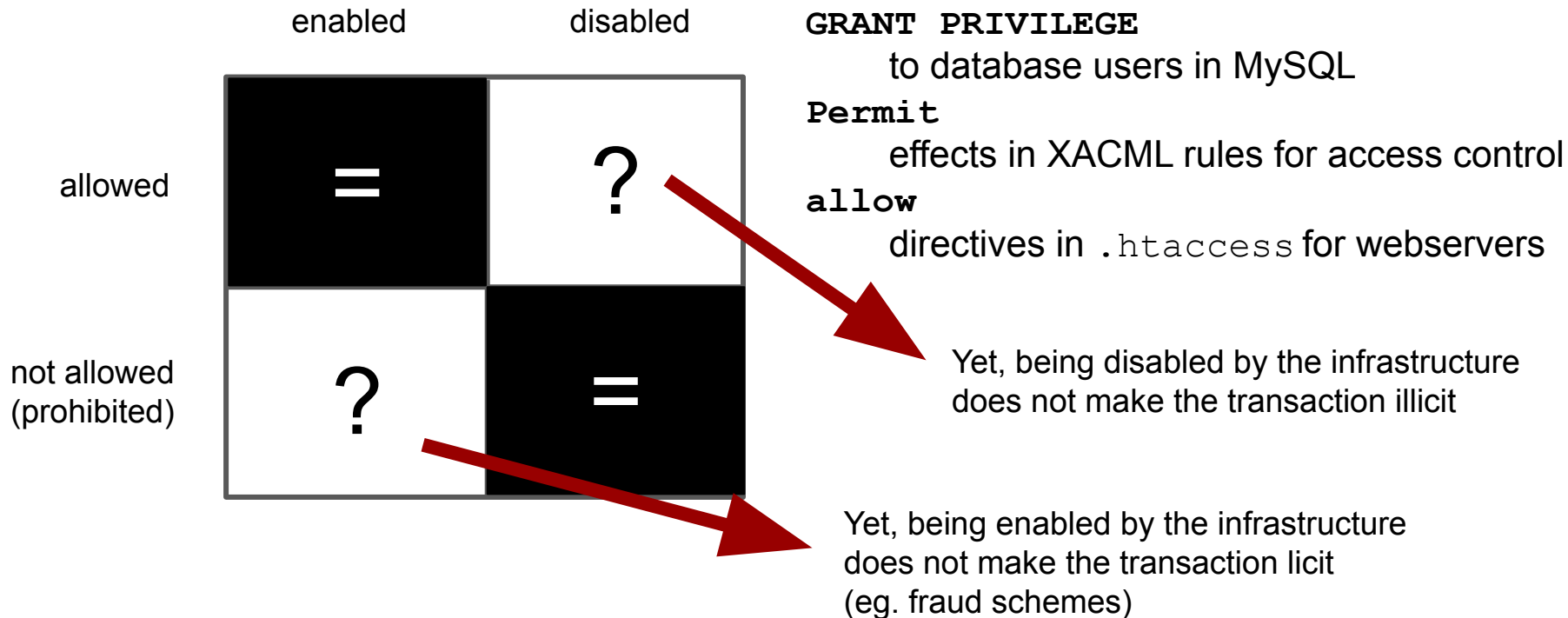
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And in formal approaches?

- most analyses in deontic logic/normative systems also tend to overlook the potestative dimension
- (some not even willing to accept its *raison d'être*...)
- notable exception: tradition of the theory of normative positions (from Hohfeld)

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permission and power **do co-exist in most of the times**
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no one has investigated yet:

WHY

Approach

- We want to capture the relation holding between (institutional) powers and deontic directives: theoretically, powers should be assigned instrumentally to promote, in a certain context, the fulfillment of deontic directives.



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In order to facilitate working with rationality principles (namely means-end reasoning), we look at the institution as a single collective agent!

NOTA BENE: here we are not positing a perfect correspondence between intentional and normative concepts, this step is just meant to facilitate our elaboration via instrumental reasoning.

Approach (2)

- Normative system as collective agent
- Deontic directives map to desires
- Institutional powers to abilities



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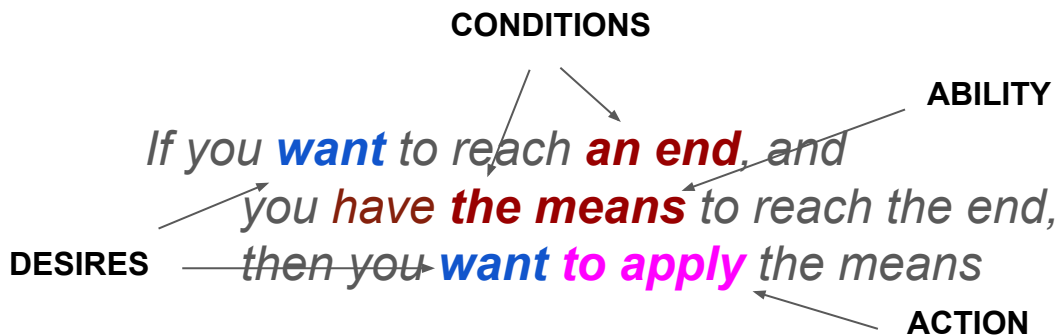


- As we expect institutional powers to be introduced instrumentally to the satisfaction of certain normative goals, we can rely on means-end reasoning

*If you want to reach an end, and
you have the means to reach the end,
then you want to apply the means*

Approach (2)

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- Deontic directives map to desires
- Institutional powers to abilities



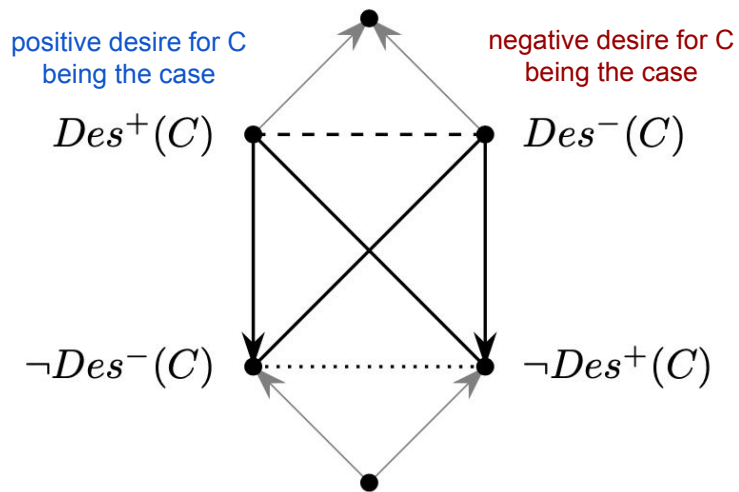
Formal framework

- We introduce a formal language L whose vocabulary and formulas are based on the syntax of the expressions used in ASP.
- The advantage of this choice is that the framework can be directly encoded into a program.
- From the deductive viewpoint, our approach is extremely simple and focuses on conditional rules of a specified kind.

EXAMPLE: $Des^+(C) \wedge \neg Holds(C) \wedge Holds(causes^+(A, C)) \rightarrow Des^+(A)$

Conceptual framework

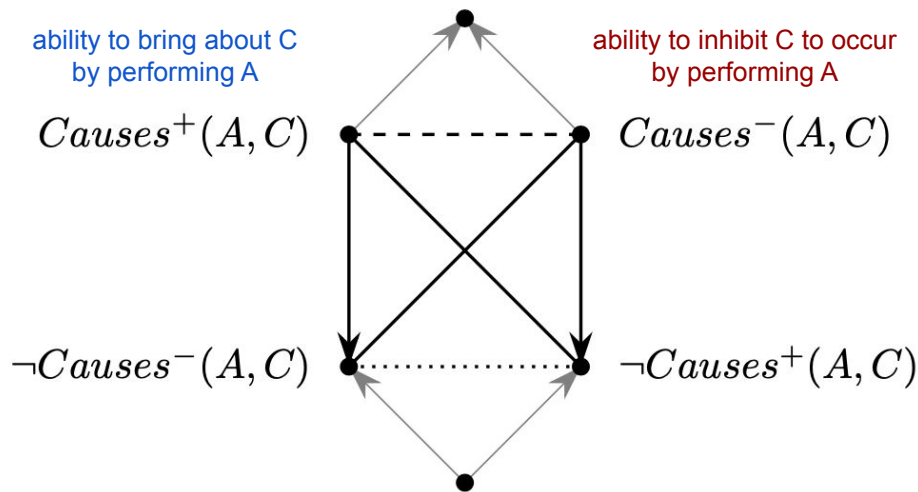
$$Des^{\pm}(C) =_{def} Des^{+}(C) \vee Des^{-}(C)$$



$$\neg Des^{\pm}(C) =_{def} \neg Des^{+}(C) \wedge \neg Des^{-}(C)$$

absence of desire for C
being the case or not being the case

$$Causes^{\pm}(A, C) =_{def} Causes^{+}(A, C) \vee Causes^{-}(A, C)$$



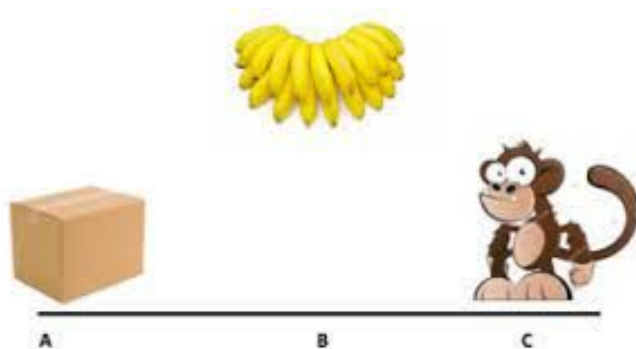
$$\neg Causes^{\pm}(A, C) =_{def} \neg Causes^{+}(A, C) \wedge \neg Causes^{-}(A, C)$$

absence of abilities to impact the occurrence of C by performing A

Relevant patterns

- In the paper we identify 40 patterns of instrumental derivation considering: **means-end derivations**, ...

$$Des^+(C) \wedge \neg Holds(C) \wedge Holds(causes^+(A, C)) \rightarrow Des^+(A)$$



Relevant patterns

- In the paper we identify 40 patterns of instrumental derivation considering: **means-end derivations, creation of instruments, ...**

$$Des^+(C) \wedge \neg Holds(C) \wedge \text{not } \exists A : Holds(causes^+(A, C)) \wedge \\ Holds(causes^+(B, causes^+(A, C))) \rightarrow Des^+(B)$$



Relevant patterns

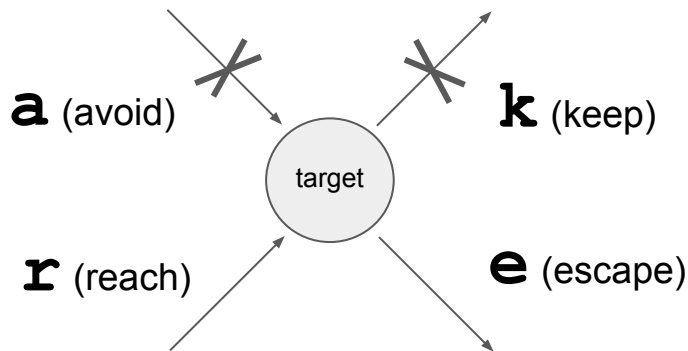
- In the paper we identify 40 patterns of instrumental derivation considering: **means-end derivations, creation of instruments, protection of instruments.**

$$Des^+(C) \wedge \neg Holds(C) \wedge Holds(causes^+(A, C)) \\ \wedge Holds(causes^+(B, neg(causes^+(A, C)))) \rightarrow Des^-(B)$$



Relevant patterns

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first-order abilities

		Absence of target: $\neg Holds(C)$		Presence of target: $Holds(C)$	
Available ability		$Des^+(C)$ or $\neg Des^-(C)$	$Des^-(C)$ or $\neg Des^+(C)$	$Des^+(C)$ or $\neg Des^-(C)$	$Des^-(C)$ or $\neg Des^+(C)$
k.	$causes^-(A, neg(C))$			$Des^+(A)$	$Des^-(A)$
r.	$causes^+(A, C)$	$Des^+(A)$	$Des^-(A)$		
e.	$causes^+(A, neg(C))$			$Des^-(A)$	$Des^+(A)$
a.	$causes^-(A, C)$	$Des^-(A)$	$Des^+(A)$		
kk.	$causes^-(B, neg(causes^-(A, neg(C))))$			$Des^+(B)$	$Des^-(B)$
kr.	$causes^-(B, neg(causes^+(A, C)))$	$Des^+(B)$	$Des^-(B)$		
ke.	$causes^-(B, neg(causes^+(A, neg(C))))$			$Des^-(B)$	$Des^+(B)$
ka.	$causes^-(B, neg(causes^-(A, C)))$	$Des^-(B)$	$Des^+(B)$		
rk.	$causes^+(B, causes^-(A, neg(C)))$			$Des^+(B)$	$Des^-(B)$
rr.	$causes^+(B, causes^+(A, C))$	$Des^+(B)$	$Des^-(B)$		
re.	$causes^+(B, causes^+(A, neg(C)))$			$Des^-(B)$	$Des^+(B)$
ra.	$causes^+(B, causes^-(A, C))$	$Des^-(B)$	$Des^+(B)$		
ek.	$causes^+(B, neg(causes^-(A, neg(C))))$			$Des^-(B)$	$Des^+(B)$
er.	$causes^+(B, neg(causes^+(A, C)))$	$Des^-(B)$	$Des^+(B)$		
ee.	$causes^+(B, neg(causes^+(A, neg(C))))$			$Des^+(B)$	$Des^-(B)$
ea.	$causes^+(B, neg(causes^-(A, C)))$	$Des^+(B)$	$Des^-(B)$		
ak.	$causes^-(B, causes^-(A, neg(C)))$			$Des^-(B)$	$Des^+(B)$
ar.	$causes^-(B, causes^+(A, C))$	$Des^-(B)$	$Des^+(B)$		
ae.	$causes^-(B, causes^+(A, neg(C)))$			$Des^+(B)$	$Des^-(B)$
aa.	$causes^-(B, causes^-(A, C))$	$Des^+(B)$	$Des^-(B)$		

Relevant patterns

- In the paper we identify 40 patterns of instrumental derivation considering: **means-end derivations, creation of instruments, protection of instruments.**
- We also discuss extensions to consider *anticipations*.

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Relevant patterns, encoded

- In the paper we identify 40 patterns of instrumental derivation considering: **means-end derivations, creation of instruments, protection of instruments.**
- We also discuss extensions to consider *anticipations*.
- We encode all in an answer set programming (ASP) program:

github.com/gsileno/abilities-desires-asp

Available ability		Absence of target: $\neg Holds(C)$		Presence of target: $Holds(C)$	
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Preliminary evaluation

- We apply the framework on a permissive norm (concerning the **liberty to marry**), confirming diverse mechanisms discussed in the normative systems' literature:
 - **practical protection** (against interference)
 - **institutional protection**
 - **institutional instrument** (for institutional actions like marrying)

Preliminary evaluation

- We apply the framework on a permissive norm (concerning the **liberty to marry**), confirming diverse mechanisms discussed in the normative systems' literature:
 - **practical protection** (against interference)
 - **institutional protection**
 - **institutional instrument** (for institutional actions like marrying)
- We also unveil some overlooked ones: *if (marriages may be combined and) individuals have no ability to abstain from marrying, institutional instruments needs to be created to empower individuals to stop marriages to occur*

Conclusions

- The paper introduces a (first version of a) framework making explicit a rational basis for aligning institutional powers with permissions, obligations and prohibitions
- Promising results!
- In future work, use of the framework for assistive technologies: ***given a certain normative system, how could this be improved?***

Allowed, or enabled, that is the question

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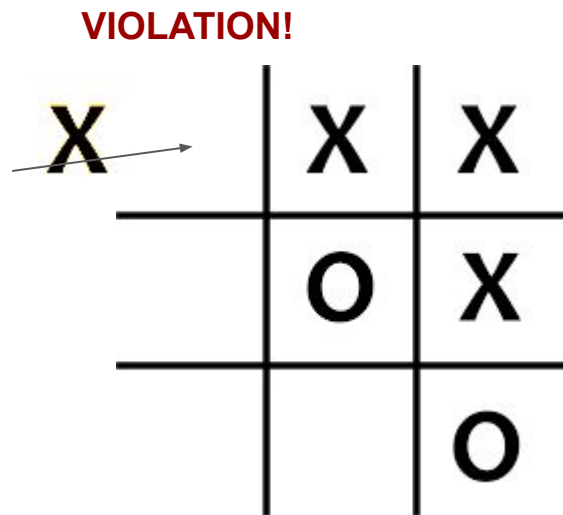
Separating prohibition from disablement

- In the current version of FLINT/eFLINT, disablement matches to prohibition. It produces a violation!

	X	X
	O	X
		O

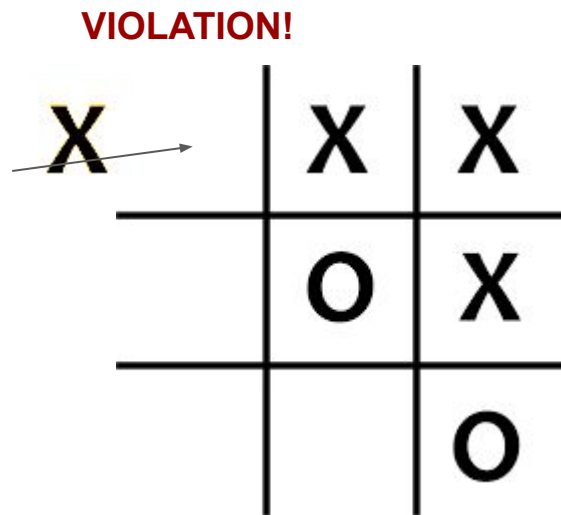
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Separating prohibition from disablement

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- So, if, as a player, I try to put one move after the other, this is both not executed, and will trigger a violation.
- There is also a confusion of institutional and extra-institutional concerns. Prohibitions can be about non-institutional actions too (eg. talking loud while playing).



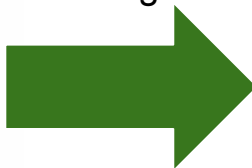
Separating prohibition from disablement

non-institutional domain

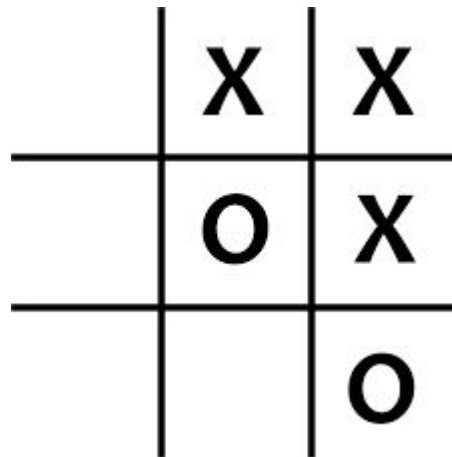


where people write, talk, etc.

counting-as



institutional domain

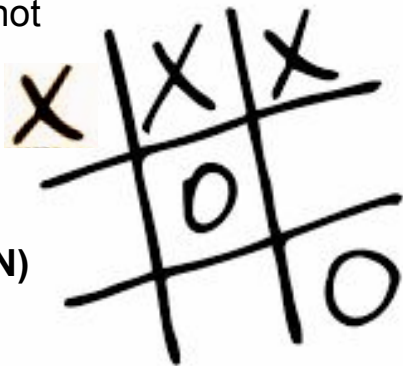


where the state of the game is recorded

Separating prohibition from disablement

non-institutional domain

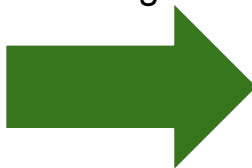
this may be not
a violation,
simply a
**not valid
move.**



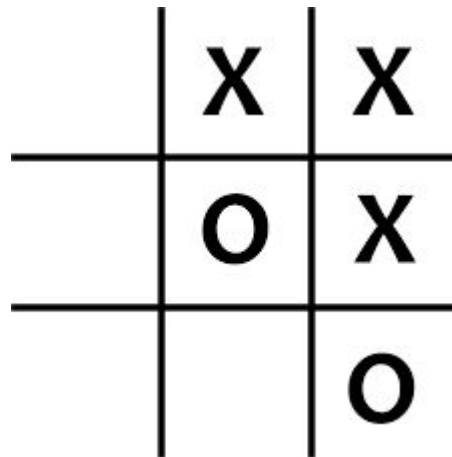
(NO VIOLATION)

where people write, talk, etc.

counting-as



institutional domain



where the state of the game is recorded

Separating prohibition from disablement

non-institutional domain

this may be not

a violation,

simply a

not valid

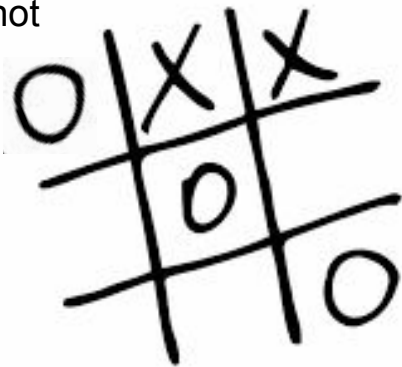
move.

⇒

it can be

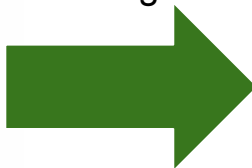
superseded

with no issue

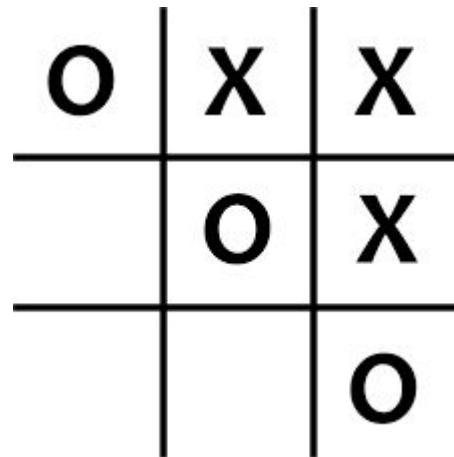


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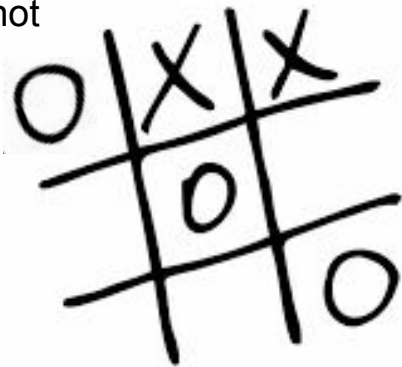
move.

⇒

it can be

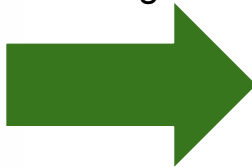
superseded

with no issue

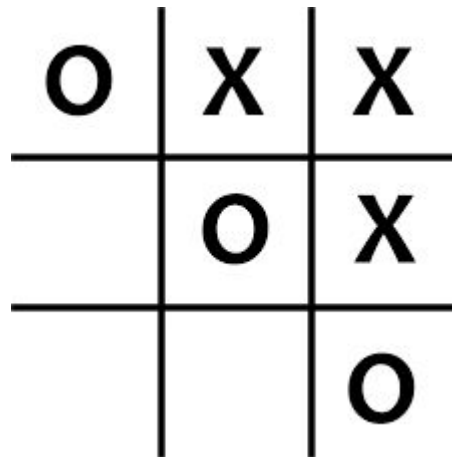


where people write, talk, etc.

counting-as



institutional domain



where the state of the game is recorded

instead, for instance, **people talking loud** may be

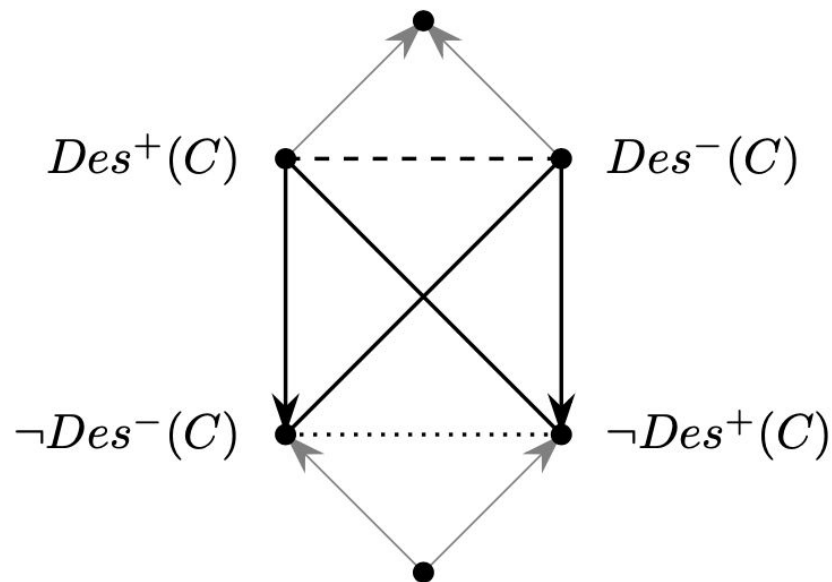
VIOLATION!

BACKUP

Relaxation

- Permission means that the collective agent does not take a direct position towards a target, but that accept that it may be desirable at some point.

$$Des^{\pm}(C) =_{def} Des^{+}(C) \vee Des^{-}(C)$$



$$\neg Des^{\pm}(C) =_{def} \neg Des^{+}(C) \wedge \neg Des^{-}(C)$$

Relaxation: preparing relevant abilities

$$Des^+(C) \wedge \neg Holds(C) \wedge \text{not } \exists A : Holds(causes^+(A, C)) \wedge \\ Holds(causes^+(B, causes^+(A, C))) \rightarrow Des^+(B)$$



$$\neg Des^-(C) \wedge \neg Holds(C) \wedge \text{not } \exists A : Holds(causes^+(A, C)) \wedge \\ Holds(causes^+(B, causes^+(A, C))) \rightarrow Des^+(B)$$

[So, if C is be desired, we are already able to bring about it...]

Relaxation: direct interventions

$$\neg Des^+(C) \wedge \neg Holds(C) \wedge Holds(causes^+(A, C)) \rightarrow Des^-(A)$$

may be undesired avoid to bring it about

OK!

Relaxation: direct interventions

may be desired

$$\neg Des^-(C) \wedge \neg Holds(C) \wedge Holds(causes^+(A, C)) \rightarrow Des^+(A)$$

bring it about

NOK?

$$\neg Des^+(C) \wedge \neg Holds(C) \wedge Holds(causes^+(A, C)) \rightarrow Des^-(A)$$

may be undesired

avoid to bring it about

Relaxation: direct interventions

may be desired there is only one mean bring it about
 $\neg Des^-(C) \wedge \neg Holds(C) \wedge Holds(onecauses^+(A, C)) \rightarrow Des^+(A)$
 $\neg Des^+(C) \wedge \neg Holds(C) \wedge Holds(manycauses^+(A, C)) \rightarrow Des^-(A)$
may be undesired there are several means avoid to bring it about

$Holds(onecauses^+(A, C)) =_{def} Holds(causes^+(A, C)) \wedge$
 $\text{not } \exists B : Holds(causes^+(B, C)) \wedge A \neq B$
 $Holds(manycauses^+(A, C)) =_{def} Holds(causes^+(A, C)) \wedge$
 $\exists B : Holds(causes^+(B, C)) \wedge A \neq B$