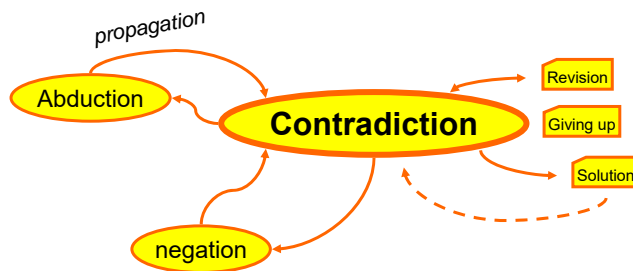


Contradiction Abduction Negation (CAN)



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1

Conflict Abduction Negation (CAN)

The C-A-N
procedure

Conflict:	If there is no current conflict, look for a new conflict (T, N) where T is a recently visited state of affairs. $v(T) > 0$ in a situation in which it is not realized, or $v(T) < 0$ in a situation in which it is realized
Solution:	If $N > 0$ and T is <i>possible</i> (i.e. $\neg T$ is not realized), decide that T is the case (if T is an action, do it or simulate it).
Abduction:	Look for a cause C of T or a reason C for T . If C is <i>mutable</i> with intensity N , make $v(C) = N$ and restart from the new conflict (C, N) .
Negation:	Restart the procedure with the conflict $(\neg T, -N)$.
Give up:	Make $v(T) = -N$.
Revision:	Reconsider the value of $v(T)$.

C is *mutable* with intensity N if $v(T)$ and N have opposite signs and if $|v(T)| < N$.

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2

Conflict Abduction Negation (CAN)

☀ Projector: unstable

- ◉ Because it is on the shelves
- ◉ → Put it on the desk

(Magnani 2001)

(Reiter 1987)

(Hobbs et al. 1993).

☀ Image on handle

- ◉ Because projector is on the desk
- ◉ Because projector is horizontal
- ◉ → tilt projector

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3

Conflict Abduction Negation (CAN)

Negative abduction (diagnostic)

[glass falls - no noise]

[delay]

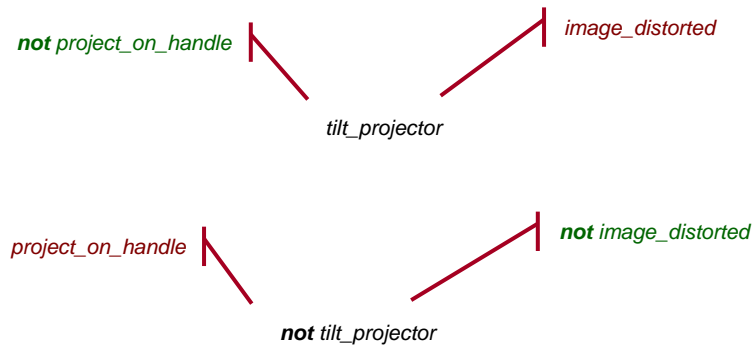
Positive abduction (repair)

R2– *Put books underneath. But can't you tilt it ?*

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4

Conflict Abduction Negation (CAN)



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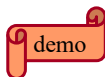
5

Conflict Abduction Negation (CAN)

Example: projector

Projector

Projector unstable	<i>Conflict detection</i>
Projector on shelves	<i>Diagnostic</i>
Remove the projector	<i>Negation – Creative abduction</i>
Image no longer on door	<i>Conflict detection</i>
« Can't you put the projector there ? »	<i>Negation – Creative abduction</i>
« I'll project on the handle »	<i>Conflict detection</i>
Projecteur is horizontal	<i>Diagnostic</i>
« Put books underneath »	<i>Negation – Creative abduction</i>
« But can't you tilt it ? »	<i>Negation – Creative abduction</i>
« It will distort the image »	<i>Conflict detection</i>



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Méthode:
reconstruction de
conversation

6

Conflict Abduction Negation (CAN)

Operation	Proposition	Tension
Conflict	-stable(projector)	-20
abducting from	-stable(projector)	-20
Abducting from	on(projector, shelves)	-20
Abducting from	-on(projector, shelves)	20
-----> Action:	remove(projector, shelves)	
Conflict	-on(image, door)	-30
Abducting from	-on(image, door)	-30
Abducting from	on(image, door)	30
Abducting from	-on(projector, desk)	30
Abducting from	on(projector, desk)	30
-----> Action:	move(projector, desk)	
Conflict	on(image, handle)	-20
Abducting from	on(image, handle)	-20
Abducting from	horizontal(projector)	-20
Abducting from	-horizontal(projector)	20
-----> Action:	underneath(books, projector)	
Conflict	distorted(image)	-10
Abducting from	distorted(image)	-10
Abducting from	-distorted(image)	10
Revision:	-distorted(image)	-10
Giving up		

demo

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