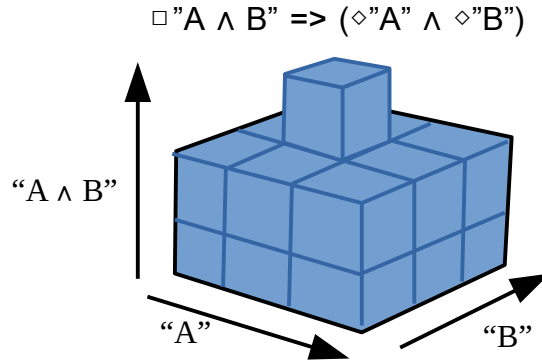


# Implication House

by Sven Nilsen, 2020

*This paper I visualize a semantic model of Answered Modal Logic called an “implication house”.*

An implication house can be visualized as the following:



This semantic model is derived from the following expression:

$$\Box "A \wedge B" \Rightarrow (\Diamond "A" \wedge \Diamond "B")$$

Proof:

$$\begin{aligned} \therefore & \Box "A \wedge B" \Rightarrow \Diamond "A" \wedge \Diamond "B" \\ \therefore & \neg \Box "A \wedge B" \vee (\Diamond "A" \wedge \Diamond "B") \\ \therefore & \{\neg \Diamond, \Diamond\} "A \wedge B" \vee (\Diamond "A" \wedge \Diamond "B") \\ \therefore & (\neg \Diamond "A \wedge B" \vee \Diamond "A \wedge B") \vee (\Diamond "A" \wedge \Diamond "B") \\ \therefore & \neg \Diamond "A \wedge B" \vee \Diamond "A \wedge B" \vee (\Diamond "A" \wedge \Diamond "B") \end{aligned}$$

Extracting tables:

$\neg \Diamond "A \wedge B"$	$\neg \Diamond "A" \Diamond "A"$	$\Box "A"$
$\neg \Diamond "B"$	1	1
$\Diamond "B"$	1	1
$\Box "B"$	1	1

Since “A” and “B” are not mentioned, fill all

$\Diamond "A \wedge B"$	$\neg \Diamond "A" \Diamond "A"$	$\Box "A"$
$\neg \Diamond "B"$	1	1
$\Diamond "B"$	1	1
$\Box "B"$	1	1

Since “A” and “B” are not mentioned, fill all

$\Box "A \wedge B"$	$\neg \Diamond "A" \Diamond "A"$	$\Box "A"$
$\neg \Diamond "B"$	0	0
$\Diamond "B"$	0	1
$\Box "B"$	0	0

Since "A ∧ B" is not mentioned, fill down