

$I_a I_b p \rightarrow I_a p$ is a theorem of Floridi's Logic of Being Informed.¹ It simply represents multiagent information transmission; if agent a holds the information that agent b holds the information that p , then a also holds the information that p . A derivation of this axiom requires usage of only a few core agreeable principles: (1) the veridicality of information (2) that agents are informed of the veridical nature of information (3) the distributivity of being informed.

$$\begin{aligned} &\vdash I_b p \supset p & (1) \\ &\vdash I_a(I_b p \supset p) & (2) \\ &\vdash I_a(I_b p \supset p) \supset (I_a I_b p \supset I_a p) & (3) \\ &\vdash I_a I_b p \supset I_a p & (4) \end{aligned}$$

The original Logic of Being Informed is a normal modal logic (i.e. has the Rule of Necessitation: $\vdash p \Rightarrow I_a p$). This translates to agents being informed about all logical truths.

A weakening of the Rule of Necessitation could be in order though. In [1] revisions to Floridi's Logic of Being Informed result in a replacement of the rule with the Weak Rule of Necessitation:

If p is a theorem of Propositional Calculus then I_p

So in replacing the standard Rule of Necessitation with its weak counterpart, it would still be the case that agents are informed of all tautologies. What would change is that being informed about tautologies would no longer be iterative, it would not follow that agents are informed of the fact that they are informed of a tautology.² Given this change, the move made in line 2 in the above proof would no longer be available. Yet even without the Rule of Necessitation, $I_a I_b p \rightarrow I_a p$ is still a theorem. Here is a different proof for it:

$$\begin{aligned} &\vdash I_b p \supset p & (1) \\ &\vdash \top \supset (I_b p \supset p) & (2) \\ &\vdash I_a \top \supset I_a(I_b p \supset p) & (3) \\ &\vdash I_a \top & (4) \\ &\vdash I_a(I_b p \supset p) & (5) \\ &\vdash I_a(I_b p \supset p) \supset (I_a I_b p \supset I_a p) & (3) \\ &\vdash I_a I_b p \supset I_a p & (4) \end{aligned}$$

References

- [1] Allo, Patrick, "The Logic of 'Being Informed' Revisited and Revised", <http://homepages.vub.ac.be/~pallo/papers/LBIRR4.pdf>

¹see http://theinformationalturn.net/philosophy_information/review-of-the-logic-of-being-informed/ for more on this

²The weak rule of necessitation is associated with non-normal modal logics.