Problems with An Objective Counterfactual Theory of Information

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Let $A \sqsupset B$ stand for A carries the information that B and $A > B$ stand for the counterfactual with antecedent A and consequent B.

Take the principle that if A carries the information that B then A carries the information that B or C: $A \sqsupset B \vdash A \sqsupset B \vee C$. According to C&M's definition we have:

- $A \sqsupset B =_{df} A \wedge B \wedge (\neg B > \neg A)$
- $A \sqsupset (B \vee C) =_{df} A \wedge (B \vee C) \wedge (\neg(B \vee C) > \neg A)$

But since the monotonic inference $\neg B > \neg A \vdash (\neg B \wedge \neg C) > \neg A$ is not counterfactually valid, neither is the inference from $A \sqsupset B$ to $A \sqsupset (B \vee C)$.

Also, Demir [1] recently pointed a problematic consequence of the counterfactual theory of information that arguably makes it untenable. He shows that given the standard possible worlds account of counterfactuals, according to C&M's definition "'A carries information that B' necessarily implies 'A carries information that B and C' for any C such that the closest not-C world is more remote than the closest not-B world". So given that 'Joe is in France' (A) carries the information that 'Joe is in Europe' (B), it follows that 'Joe is in France' carries the information that 'Joe is in Europe and Paris is the capital city of France' ($B \wedge C$). The reasoning is as follows:

- $\neg B > \neg A$ (A carries the information that B. The closest $\neg B$ world is a $\neg A$ world)
- $\neg B \vee \neg C > \neg A$ (since $\neg C$ [Paris not being France's capital] is much more unlikely than Joe not being in Europe, the closest $\neg B$ world is a $\neg B \vee \neg C$ world)
- $\neg(B \wedge C) > \neg A$ (A carries the information that $B \wedge C$)

These are indeed peculiar and problematic results.

References

[1] Hilmi Demir. The counterfactual theory of information revisited. *Australasian Journal of Philosophy*, pages 1–3, 2011. Online First.