

HAVE YOUR CAKE AND EAT IT TOO:
THE OLD PRINCIPAL PRINCIPLE
RECONCILED WITH THE NEW

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OLD AND NEW PRINCIPLE: THE PUTATIVE CONFLICT

Starting point: *Minimal Principle.*

(MP) $Cr(A|\langle Ch(A)=x \rangle)=x.$

Generalization of MP: *Principal Principle.*

(PP) If E is admissible with respect to $\langle Ch(A)=x \rangle$, then: $Cr(A|E\langle Ch(A)=x \rangle)=x.$

Consequence of PP: *Old Principle. $T=\langle Ch=f \rangle.$*

(OP) If HT is admissible with respect to $\langle Ch(A)=f(A) \rangle$, then: $Cr(A|HT)=f(A).$

Modification of OP: *New Principle.*

(NP) $Cr(A|HT)=f(A|HT).$

GENERAL PRINCIPLE: THE RECONCILIATION

Thesis 1. There is a simple inverse form of NP, namely the Conditional Principle:

(CP) $Cr(A|B \langle Ch(A|B)=x \rangle)=x$. (Entails NP.)

Thesis 2. PP and NP are special cases of the

General Principle: (GP) **If E is admissible with respect to $B \langle Ch(A|B)=x \rangle$, then:**

$Cr(A|EB \langle Ch(A|B)=x \rangle)=x$. (Entails PP&CP.)

Thesis 3. Lewis's objections to PP fail. Even if PP does not apply to cases of undermining, to ordinary cases PP applies *exactly*.

OVERVIEW

Part 1

A VINDICATION OF NP:
IT FOLLOWS FROM CP

Part 2

A RECONCILIATION OF NP AND PP:
THEY FOLLOW FROM GP

Part 3

A VINDICATION OF PP:
IT APPLIES TO ORDINARY CASES

A VINDICATION OF THE NEW PRINCIPLE

How to derive NP from CP

(CP) $Cr(A|B \langle Ch(A|B) = x \rangle) = x$.

Replace B with HT and x with $f(A|HT)$:

$Cr(A|HT \langle Ch(A|HT) = f(A|HT) \rangle) = f(A|HT)$.

But T entails $\langle Ch(A|HT) = f(A|HT) \rangle$. So:

(NP) $Cr(A|HT) = f(A|HT)$.

How the derivation vindicates NP

The derivation addresses two worries about NP:

(1) An inverse form of NP “gets quite messy”.

(2) NP is “user-hostile”.

PART 2

Part 1

A VINDICATION OF NP:
IT FOLLOWS FROM CP

Part 2

A RECONCILIATION OF NP AND PP:
THEY FOLLOW FROM GP

Part 3

A VINDICATION OF PP:
IT APPLIES TO ORDINARY CASES

GP ENTAILS BOTH CP (AND THUS NP) AND PP

(GP) ... $Cr(A|EB\langle Ch(A|B)=x\rangle)=x$.

Let $I=\langle$ either 971 is prime or it is not \rangle .

Why GP entails CP (and thus NP)

Replace in GP E with I :

$Cr(A|IB\langle Ch(A|B)=x\rangle)=x$. So:

(CP) $Cr(A|B\langle Ch(A|B)=x\rangle)=x$.

Why GP entails PP

Replace in GP B with I :

$Cr(A|EI\langle Ch(A|I)=x\rangle)=x$. So:

(PP) ... $Cr(A|E\langle Ch(A)=x\rangle)=x$.

PART 3

Part 1

A VINDICATION OF NP:
IT FOLLOWS FROM CP

Part 2

A RECONCILIATION OF NP AND PP:
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A VINDICATION OF PP:
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LEWIS'S OBJECTION TO THE PRINCIPAL PRINCIPLE

(OP) If HT admissible wrt $\langle Ch(A)=f(A) \rangle$, then:
 $Cr(A|HT)=f(A)$.

(NP) $Cr(A|HT)=f(A|HT)$.

If F undermining, $f(F|HT)=0 \neq f(F)>0$. So OP & NP conflict if HT admissible wrt $\langle Ch(F)=f(F) \rangle$.

Lewis: HT never admissible, so OP vacuous.

F undermines HT only if FH entails T' incompatible with T , so FHT impossible. So HT reveals information about the future (F won't occur) and is thus inadmissible wrt $\langle Ch(F)=f(F) \rangle$.

REPLY TO LEWIS'S OBJECTION

- Why is information about the future *never* admissible? Let $A = \langle \text{Heads at next toss} \rangle$. $Cr(A|A \langle Ch(A) = .5 \rangle) = 1$, not .5. OK, but:
 $Cr(A|\langle \text{Heads at 2nd toss} \rangle \langle Ch(A) = .5 \rangle) = .5$.
- What information does $\langle Ch(A) = .5 \rangle$ provide? No F will occur if FH entails $\langle Ch(A) \neq .5 \rangle$. If such an F has 50% heads, does it follow that the frequency of heads won't be 50%? No: maybe F' will occur, with *also* 50% heads. So $Cr(A|H \langle Ch(A) = .5 \rangle \& \sim F) = .5$.

CONCLUSION

Open questions remain

- Which propositions are admissible?
- How to *justify* chance-credence principles?

Still, we made progress

- Reconciliation of PP and NP: they both follow from GP.
- Proponents of PP need not reject NP: NP follows from the simple and intuitive CP.
- Proponents of NP need not reject PP: PP applies to ordinary cases.