

Common Sense and "Relevance"

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"The heretics of logic are to be hissed away."
Saint Anselm

Introduction The "relevance" logicians of North America and the "relevant" logicians of the Antipodes have long claimed that their logical systems are in better agreement with common sense than is classical logic. The present paper is a critical examination of such claims. Though it is part of an on-going debate between classical and relevantistic logicians, I have tried to keep my discussion of the issues self-contained.

1 The appeal to common sense All relevantists agree in rejecting *disjunctive syllogism* (DS):

$$(DS) \quad \frac{p \vee q \quad \sim p}{q}$$

They by no means agree on the justification and motivation for rejecting this schema. The champion of classical logic faces in relevantism not a dragon but a hydra. The original rationale for relevantism advanced by the founders of the movement, N. D. Belnap, Jr., and the late A. R. Anderson, has been joined by alternatives advanced *post hoc* by J. M. Dunn, R. K. Meyer, R. Routley, and others. I will review two unrelated rationales for relevantism to show how both involve an appeal to common sense.

1.1 The old-fashioned relevantism of Anderson and (early) Belnap The best source for the views of Anderson and (early) Belnap is their joint book [1].

*I am indebted to David Lewis for much relevant information.

As Copeland [5] has pointed out, Anderson and Belnap make no serious, sustained attempt to show *directly* that DS is fallacious. The case against DS in [1] is *indirect*, being based on the previous rejection of *ex absurdo quodlibet*:

$$(EAQ) \quad \frac{p}{\frac{\sim p}{q}}$$

An argument of medieval vintage shows that EAQ follows from DS plus harmless-looking auxiliary principles. While there are some small schools that reject one or another of these auxiliaries (cf. [1], Sections 20.1, 29.6, 29.8), Anderson and Belnap accept them all, and argue that DS must be rejected *since* EAQ must be rejected.

The case against EAQ is based on an analysis of entailment reflected in the title and subtitle of [1], according to which the validity of a schema:

$$\frac{A_1}{\vdots} \frac{A_n}{B}$$

depends on two factors: (1) There must be no instance in which the premises are all true and yet the conclusion false; (2) The premises must be “relevant” to the conclusion. The authors of [1] do *not* charge that EAQ violates the truth-preservation requirement (1), for that would involve claiming that there can be true contradictions, whereas they concede that “only a consistent theory . . . can correspond to precisely how the world is” (p. 402); rather, they charge EAQ with violating the “relevance” requirement (2). Copeland [5] points out an equivocation in the use of the term “relevance” by Anderson and Belnap, but I suppose that EAQ is “irrelevant” in just about *any* sense.

The case against DS in [1] thus rests on the rejection of “*never leading from truth to falsehood*” (p. 5) or any such “safety” (p. 14) requirement as sufficient for validity. The imposition of an additional “relevance” requirement is supported by appeals to: (1) the Natural Light of Reason (p. 41), (2) the logical tradition since Aristotle (p. xxi), and (3) the common sense of “naive freshmen” (p. 13) and others who have not been “numbed” (p. 166) by indoctrination in classical logic. The appeal to Reason in (1) is pointless, since what seems to one side the *lumen naturalis* seems to the other side an *ignis fatuus*. The appeal to tradition (2) will not bear examination: Traditional logic manuals may list a fallacy of “irrelevant conclusion”, but they list it as an *informal* fallacy, pertaining not to formal logic, but rather to rhetoric (cf. [8]). The schemata Anderson and Belnap brand “fallacies of relevance” were not traditionally so regarded, but rather include ancient and time-honored forms of argument—even three of the five Stoic indemonstrables!

Thus the only prop for the Anderson-Belnap case against DS is the appeal to common sense, and here we must distinguish two questions: (1) What *theory* about the nature of entailment strikes untrained undergraduates as most plausible at a first hearing? (2) What sort of logical system best agrees with the *practice* of nonspecialists in constructing and evaluating purported proofs?

(Cf. the questions: (1') What theory of linguistics strikes lay people as most plausible at a first hearing? (2') What sort of grammar best agrees with the speech practices of unselfconscious native speakers?) Question 1 might be investigated by holding a rally of the freshman class, shouting out the rival slogans “Preserve the Truth!” and “Make Logic Relevant!”, and recording reaction on an applause-meter. What the outcome of such an *ad populum* appeal would be I neither know nor care. Question 2 might be investigated by looking over the graded examination papers from a large underclass course in mathematics, physics, or economics. The outcome, I submit, vindicates the classical position that EAQ expresses a fact about deducibility.

Everyone who has graded such an exam has encountered the hapless student who writes down at line 27 an equation contradicting one he has written down earlier at line 11. Everyone who has graded such an exam knows that *once a single such contradiction has insinuated itself, there's no limit to what a determined reasoner can deduce*. This observation underlies Hilbert's oft-quoted advice on how to “prove” Fermat's Theorem: Keep on calculating until you miscalculate. The same observation has been made by Poincaré [12]:

The candidate often takes an immense amount of trouble to find the first false equation; but as soon as he has obtained it, it is no more than child's play for him to accumulate the most surprising results, some of which may actually be true.

Though our unfortunate student's conclusions in mechanics or microeconomics may be absurd, the steps by which he passes from his contradictory equations (p at line 11, $\sim p$ at line 27) to some absurdity (call it q) about the moon's gravity or the price of eggs are often such as nonspecialists would judge valid. E.g., the teacher, in trying to spot just where the student first went wrong, may say to herself: “Well, the steps from line 28 on are OK. In fact, they're just like the proof of Theorem XIII in the text. So the error must be at line 27 or earlier.”

Such considerations are hardly conclusive, but they are suggestive. What they suggest is that anyone who wishes to deny that q genuinely follows from p and $\sim p$ will find himself obliged to reject forms of argument that nonspecialists have “always accepted and used without question” ([1], p. 166), forms of argument used in proofs in textbooks. This, I believe, is what has happened to the relevantists in the case of DS.

1.2 The new-fangled relevantism (static dialectics, ultralogic) of Routley

The most up-to-date source for Routley's views available in print at this writing is a text titled “Ultralogic as Universal?” Originally semi-published some years ago in the *Relevance Logic Newsletter*, it has just been republished as an appendix to Routley's latest book [15]. I will be concerned with the case made in this text for relevantistic logic as a foundation for science. (The case for relevantism as a logic of belief and other propositional attitudes has been treated by Lewis [9], and I have nothing to add.)

The most naive approach to set theory is to assume with Frege that every predicate determines a class. The most naive approach to calculus is to assume with the disciples of Leibnitz that there are infinitesimal quantities that can be

treated as nonzero when it suits, and ignored as zero when it doesn't. These naive approaches lead to contradictions, and have been abandoned by mathematicians in favor of the iterative conception of set of Zermelo and the ϵ, δ approach to calculus of Weierstrass. Routley suggests an alternative: Accept the contradictions as true, and adopt a *paraconsistent* logic, one that is capable, as classical logic is not, of quarantining contradictions. Specifically, he recommends a *relevantistic* logic (though he seems to have in mind systems weaker than the best-known relevantistic system, **E** and its immediate neighbors).

Now the suggestion that a nonclassical logic might help with the mathematical paradoxes is of course not new. To use a phrase from [11], it can be "encountered dotted around the literature and not infrequently in the oral pronouncements of philosophers". What is novel in Routley's suggestion is his claim that accepting certain contradictions as true *is simply common sense*. He devotes a whole chapter of [15] to arguing that his is a common sense philosophy.

If the naive Fregean and Leibnizian approaches are really as attractive as Routley claims, and if common sense raises no objections to the resultant contradictions, why then have mathematicians abandoned those naive approaches for the more sophisticated ones of Zermelo and Weierstrass? Routley's answer is that they have either given in to the "pushing" or been taken in by the "ploys" of establishment logicians. This recurrent theme in Routley's writings is sounded in fairly muted tones in [15]:

The ploys introduced [in "works of Quine, Goodman, and others"], classical reshaping and formalising of mathematics, and amending or closing off areas of discourse to fit its theses, are typical stratagems of an entrenched theory. So far these stratagems are succeeding remarkably well with the plebs, especially in mathematics, one has to concede. (p. 899)

The bulk of intuitive mathematics . . . is not classical, except insofar as recent classical logical reconstructions have pushed it in that direction. (p. 903)

A more clangorous variation is heard in [14], where classical logicians are accused of resorting to "political means", "force", "repression", and "thug-gery".

I will not dignify Routley's preposterous calumnies with a reply. All those mathematicians cowed or duped by the likes of Quine! The suggestion is patently absurd to anyone who knows anything about the history or sociology of science.

However natural it may seem to politicians, the acceptance of contradictions as true *is not* common sense. As Copeland [6] has pointed out, it disrupts the very linguistic conventions that have given such words as "not", "false", and "impossible" their senses. To accept that a contradiction may be true is to create a need for new conventions to settle how such words are to be used from now on. E.g., are we to say that the self-contradictory is in some cases possible, or that the impossible is in some cases actual? Not even the relevantists themselves can agree on such issues. Some would have us recognize two new truth values, *gap* and *glut*; others would preserve bivalence at the cost of distinguishing the falsehood of p from the truth of $\sim p$. Some would have us recognize two

negations, *DeMorgan* and *Boolean*; others would recognize only one. Is *this* common sense?

Stripped of its untenable claims to be a common sense philosophy, Routley’s brand of relevantism may be described, to use a phrase from [11], as an “appeal to pragmatic criteria such as overall simplicity of the foundations of mathematics or science as grounds for a *reconstruction* of natural logic along relevant[istic] lines”. Routley’s pragmatic appeal claims: (1) That going relevantist will be of enormous *benefit* to mathematics and physics—and even to linguistics and psychology. (To find a previous case of so many large claims being made for a new logic, one would have to go back to the days of Count Korzybski.) (2) That going relevantist will impose only negligible *costs*, that relevantistic logic “can work without serious . . . loss” ([15], p. 894).

As to the benefits of relevantism, the main point has been made by van Benthem [16]: No such benefits have been demonstrated in the published literature of relevantism so far. E.g., in the realm of infinitesimal calculus, there is nothing from Routley or his disciples to compare to the contributions of *nonstandard analysis* as developed by such classical logicians as A. Robinson.

As to the costs of relevantism, classical logicians of course suspect that the unavailability of DS will indeed be a serious loss in some quite ordinary, normal situations. Inasmuch as he claims such suspicions to be ill-founded, *Routley remains committed to the claim that the relevantist rejection of DS does not lead to serious conflicts with common sense*, even in his purely pragmatic argument for relevantism. Here we have the sole point of contact with the original Anderson-Belnap rationale for relevantism. Otherwise, Routleyanism and Andersonianobelnapianism are so dissimilar that it is misleading to apply a single label “relevantism” to both. (And indeed, Routley sometimes adopts a different label, “(static) dialectical logic” in [14] and “ultramodal logic” in [15].)

2 Counterexamples It has been said that logic is invincible, since to refute logic it is necessary to use logic. It would be truer to say that logic is defenseless, since no logical argument can bring round one determined to flout logic’s precepts. Debate with the “heretics of logic” is generally a waste of breath better spent in the way the epigraph to this paper suggests. What logic could govern such a debate? The heterodox logician will simply argue in a vicious circle, and the champion of orthodoxy can do no better than argue in a virtuous one. If I have myself in [4] entered into debate with the heresiarchs Anderson and Belnap, it has not been over the *logical* issue whether DS is valid in an absolute sense, but only (as disclaimers in [4], and especially its closing paragraph should make clear) over the *empirical* issue of whether DS has been “accepted and used without question” in commonsense argumentation. I challenged the followers of Anderson and Belnap to explain away some apparent examples of commonsense instances of DS. Since [4] appeared I have come across further examples which I would like to share with the reader.

2.1 *Recalling an old example (Burgess [4], with acknowledgments to Lewis)*

But first, to keep the present paper independent of [4], let me recall the first example from the latter: It concerned a card game whose object was to guess two *mystery cards*. A character *Y* was given the hint that either the deuce of

hearts was out (i.e., not a mystery card) or the queen of clubs was. Later Y somehow—perhaps he cheated and peeked—found out that the deuce of hearts was *not* out. He concluded that the queen of clubs was out.

2.2 An example from academic life I mentioned in [4] “game-like situations in daily life”. Here’s an example from my own experience: A panel of referees is to evaluate the dossier of candidate Y . As it is desired on the one hand to allow Y the opportunity to comment on the suitability of the referees, but on the other hand to preserve the anonymity of the latter, Y is presented with what he is given to know is a *padded* list of names, containing those of the referees, plus an equal number of *decoys*. Later Y somehow finds out one by one that certain persons on the list are not referees—perhaps they ask him questions to which anyone who has seen his dossier will surely know the answer. Using a generalized form of DS (which reduces to DS in the limiting case of *one* referee and *one* decoy) Y determines the composition of the panel of referees.

2.3 A forgotten example of forgetfulness (Belnap [2]; cf. Curley [7])

I mentioned in [4] examples based on faulty memory. Such an example was actually discovered by Belnap. It appears in a semi-published work of his [2], but has not been reproduced in his more accessible works, so I reproduce it here:

Though I can’t remember which, I know I planted tulips either here or over there; but I’ve dug all around and they certainly aren’t *here*, so they must be over there.

2.4 A skeleton from the relevantist closet (Dunn, reported by Meyer [10])

The following morbid example has been known to relevantists for some years but has not yet been published at this writing:

Suppose that X has an insurance policy that pays off if X loses either an arm or a leg. And suppose moreover that one knows both that X is receiving payments and that he hasn’t lost an arm. “Well, then,” one concludes, “he must have lost a leg.”

2.5 Metatheory of relevantism (Kripke, adapted by Belnap and Dunn [3], Meyer [10])

A result of Dunn and Meyer on the so-called *admissibility of rule* (γ) tells us that for the system \mathbf{E} (and certain neighbors), for any pertinent formulas we have either that $A \vee B$ is not a theorem of the system, or $\sim A$ is not, or else B is. Suppose now that for some particular formulas we have found proofs in the system of $A \vee B$ and of $\sim A$. It would be accepted mathematical practice to conclude that there exists a proof of B , even though the Dunn-Meyer result is not constructive enough to provide a recipe for writing down such a proof. Relevantists working in metatheory seem to have accepted this conclusion, inasmuch as they have cited the Dunn-Meyer result as showing that the system \mathbf{E} has the same set of theorems as a system of \mathbf{W} . Ackermann in which the rule (γ) (licensing inference from $A \vee B$ and $\sim A$ to B) is taken as primitive. But the argument here is a generalized variant of DS:

$$\begin{array}{l} \sim p \vee \sim q \vee r \\ p \\ q \\ \hline r \end{array}$$

The problem of the seeming acceptance of classical logic in metatheoretic arguments about systems of relevantistic logic was forcefully pointed out by Kripke some years ago. Belnap and Dunn [3] and Meyer [10] acknowledge that there is a problem here, and even Routley ([15], p. 892, paragraph 2) half-acknowledges it.

3 Taxonomy of relevantism No relevantist, to my knowledge, has had the temerity to deny that the conclusions in examples like the foregoing are genuinely commonsensical. The kingdom of relevantism can be divided into two phyla: The *optimists* claim that those conclusions can be reached by a relevantistically acceptable deduction from the available information. The *pessimists* concede the point I was arguing in [4], that a refusal to make any deductive step not licensed by the system **E** or one of its neighbors will in certain situations make it impossible to reach conclusions dictated by common sense.

3.1 Optimistic relevantism The optimists maintain that commonsense arguments that *appear* to be instances of DS are *really* instances of some other, relevantistically acceptable schema. The phylum of optimists can be divided into two classes according to what other schema is claimed to be involved.

3.1.1 Fission relevantism (Anderson and (early) Belnap [1]) In [1] and other relevantist writings one reads of a distinction between two senses of “or”: The familiar classical, truth-functional, “extensional” disjunction, and a new “relevant”, non-truth-functional, “intensional” disjunction. The former is always symbolized \vee , and will here be called *alternation*; the latter will here be symbolized $+$, and has come to be called *fission*. Fission is stronger than alternation, in that the truth of $p + q$ requires not just the truth of $p \vee q$, but also “relevance” between p and q . Though I complained in [4] that too little has been explained about just what this “relevance” is supposed to be, I was able to cite passages from [1] indicating that it is something *objective* (e.g., semantical or causal) rather than *subjective* (e.g., psychological or epistemological). Since $+$ is stronger than \vee , the following schema is *weaker* than DS:

$$(DS^-) \quad \begin{array}{l} p + q \\ \sim p \\ \hline q \end{array}$$

And unlike DS itself, DS^- is relevantistically acceptable: Its leading principle appears as a theorem of those neighbors of **E** where $+$ is definable, e.g., the system **R**. In all their joint works down through [1], Anderson and Belnap used to maintain that what appear to be commonsense instances of DS are really instances of DS^- .

Examples 2.1-2.5 have been chosen to refute this claim. In no case is there any objective, “relevant” connection between the disjuncts of the crucial

disjunction. In 2.1, there is no connection between the red and black mystery cards, which in the game as I described it are chosen independently of each other; the character giving *Y* his hint bases her statement solely on her knowledge that the queen of clubs is out. In 2.2 the situation is similar. In 2.3, Belnap writes that he would “want to know the evidence upon which the statement was made”. Presumably he suspects there is an objective, “relevant” connection such as would justify the statement, “If I *hadn’t* planted them over there, I *would have* planted them here.” But the example could be constructed to depend solely on a subjective failure of memory, and indeed this is accomplished in the memory examples of Curley [7]. In 2.4 Meyer himself says, “There is not, one hopes, a relevant connection between losing arms and losing legs,” ungraciously adding, “Such off-hand examples don’t prove very much.” Finally, in 2.5, both Dunn [3] and Meyer [10] concede that their admissibility result must be formulated with *v* and not with *+*: They have a proof of the weaker result, but not of the stronger.

The untenability of the analysis of commonsense instances of DS as instances of DS^- is now widely acknowledged. E.g., we read in [11] that “Anderson and Belnap’s discussion of DS in [1] is inadequate . . . Questions about intensional disjunction cloud the issue here”. Even Belnap has been quoted ([10], footnote 61) as confessing privately some years ago that the attempt to analyze “or” as *+* just “didn’t work out”. A timely *published* statement to this effect from the surviving author of [1] would have made my previous article [4] and the present one unnecessary. I hope that such a statement will appear in the projected sequel to [1].

3.1.2 *Enthymematic relevantism* Another approach is to analyze commonsense instances of DS as enthymemes or arguments with tacit, unstated premises. The class of enthymematic relevantists can be divided into two orders according as a *different* “missing premise” is sought in each particular example or the *same* “missing premise” is claimed to work in all genuinely commonplace, everyday examples.

3.1.2.1. *Piecemeal enthymematic relevantism* In a forthcoming note [13], S. Read in effect suggests treating Example 2.1 enthymematically, taking as missing premise some assumption about the pairwise exclusive and jointly exhaustive character of the $26 \times 26 = 676$ possibilities for the identity of the mystery cards. I question whether such a premise is relevantistically available, and in any case this premise is without obvious parallel in the other examples. In fact, Read does not attempt to reconstruct enthymematically the arguments in Example 2 of [4], and the piecemeal, example-by-example approach to the search for missing premises seems to offer little promise. I hope to give a fuller response to Read’s suggestions elsewhere.

3.1.2.2 *Systematic enthymematic relevantism (Routley [15]?)* Another suggestion is that the very presumption that a situation is a commonplace, everyday, ordinary, normal one can *itself* be taken as an extra premise in an enthymematic analysis of instances of DS. Routley seems to be hinting at such an approach in such passages from [15] as the following:

For, in particular, classical logic can be recovered in those situations (consistent and complete ones) where it is valid. (p. 984)

(γ) becomes available when negation consistency is appropriately guaranteed. (p. 900)

What is correct in classical logic can be represented in [“ultralogic”] enthymematically. (p. 901)

To be sure, Routley does not explicitly exhibit any theorem of any recognized system of relevantistic logic having the form:

$$[\text{Consistency \& Completeness \& } (p \vee q) \& \sim p] \Rightarrow q.$$

Indeed, for all his glib assurances that “anything classical logic can do, relevant logic can do better”, Routley provides remarkably few concrete details about the “enthymematic recovery” of classical logic. There is an objection against Routley’s suggestion which seems, in the absence of such concrete details, to be formidable, if not decisive.

In their discussion of Example 2.5 ([3], Sec. 5.1), Belnap and Dunn note:

One might think as follows. The point of relevantism is taking seriously the threat of contradiction. But there is in this vicinity (that of fairly low level mathematics) no real such threat. So here it’s OK to use DS and conclude the theoremhood of B . That *sounds* OK, but is it? After all, we suppose that “Here there is no threat of contradiction” is to be construed as an added premise. But a little thought shows that *no* such added premise should permit the relevantist to use DS, for a very simple reason. As we said, avoidance of DS was bound up with the threat of contradiction, and one thing that is clear is that *adding* premises cannot possibly *reduce* that threat. If in fact the body of information from which one is inferring *is* contradictory, then it surely doesn’t help to add as an extra premise that it *is not*. That way lies madness.

Thus the enthymematic approach is subject to a serious *prima facie* objection, and has not been shown to work, while the fission approach has been shown not to work, so that there is little ground for optimism among relevantists.

3.2 Pessimistic relevantism Relevantists of the pessimistic phylum concede that there is a conflict between relevantism and common sense. They can be divided into two classes according as they conclude, “So much the worse for common sense!” or “So much the worse for relevantism!”

3.2.1 Hardheaded or “true” relevantism (Dunn and (later) Belnap [3]) The “true” relevantist insists that logical purity demands certain sacrifices. He will avoid DS at all costs, and even at the cost of conflict with common sense. Such is the hardheaded position towards which Belnap and Dunn [3] find themselves “increasingly drawn”. In Example 2.5 they conclude it’s better to give up the conclusion that B is a theorem of **E** than to have any truck with disjunctive syllogism.

Plainly such a position concedes the point for which I was arguing in [4], and thus constitutes an abandonment of claims made by all relevantists during the first two decades of the movement. Hardheaded “true” relevantism has for

this reason been denounced by Meyer in the kind of language he usually reserves for classical logicians (“philosophical malarky”, “glorification of counterintuition”).

3.2.2 Eclecticism or semi-relevantism (Meyer [10]?) Finally, some claim for relevantistic logic only that it is appropriate for certain extraordinary, abnormal situations, such as arise, e.g., in quantum physics, conceding that for commonplace, everyday situations like those of our examples, the appropriate logic is classical. On this view, *no* logic provides canons of validity that are necessary and sufficient for *all* situations: Classical canons may always be necessary, but they aren’t sufficient, e.g., in quantum physics. Relevantistic canons may always be sufficient, but they aren’t necessary in our examples, where it’s just common sense to use DS. One taking such an eclectic line can hardly be called a *relevantist*: He’s at most a *semi-relevantist*.

Meyer [10] seems drawn towards such an eclectic, semi-relevantist position, but he’s much more explicit in telling us what he does *not* believe than in telling us what he *does* believe. Belnap and Dunn ([3], Sec. 5.3) discuss, but do not advocate, such a position under the label “Leap of Faith”. Routley ([15], pp. 896 ff.) opposes the thesis that “logics have to be local, that different situations have different logics”, listing many objections.

I need list no objections against eclecticism myself, since it, too, concedes the point for which I was arguing in [4].

4 Rejoinder to a relevantist I here enter my rejoinder to C. Mortensen’s rebuttal [11] of my reply [4] to Anderson and Belnap’s critique [1] of classical logic.

4.1 Mortensen’s presentation of the issue Disregarding disclaimers in [4], Mortensen seriously misrepresents my position in several respects, most importantly as follows: Beginning with the first sentence of his paper, and indeed with its very title, he represents me as trying to “prove” the universal validity of DS. He chides me for failing to note that such a universal claim cannot be proved by citing a couple of examples, and for considering only humdrum examples at that, rather than “pre-Cauchy calculus, the Bohr theory of the atom” and the like.

Now I would no more try to “prove” the validity of DS to followers of Anderson or Routley than I would try to “prove” the validity of *double negation elimination* to followers of Brouwer. What logic would I be allowed to use in the proof? In [4] I was disputing *not* the relevantist claim that DS is in some absolute sense invalid, but rather the claim of Anderson and Belnap [1] that DS is not used in commonsense argumentation. A single solid counterexample would suffice to overthrow that universal claim, and this is what I was trying to provide. Of course, given the nature of the claim, the example could not involve derivatives and integrals, or shells of electrons, or other subjects likely to be beyond the ken of the “naive freshman” who is for Anderson and Belnap the *arbiter logicae*.

The classical logician has the right to deal with the relevantist hydra one head at a time, and it is this right that Mortensen is in effect denying me when he presents my critique of the old Anderson-Belnap position (not yet, as of this

writing, retracted by Belnap in print) as if it were directed against the (largely unpublished) views of, say, Meyer or Routley.

4.2 Mortensen’s hybrid relevantism In connection with Example 2.1 above (= Example 1 of [4]), Mortensen in effect makes two claims ([11], last paragraphs of Section 3 and first paragraphs of Section 4):

- (A) In the card game “the deductive situation as Burgess presents it . . . is *certainly consistent and prime*”.
- (B) When a deductive situation is consistent and prime, it is permissible to use DS.

Here a set X of sentences is called *prime* if whenever it contains an alternation $A \vee B$ it contains at least one of the disjuncts A, B .

As to (A), while I don’t wish to quibble, to avoid equivocations certain clarifications are called for. Primality is a property of sets of sentences, and it’s not entirely clear which set of sentences Mortensen is calling “the deductive situation” in the card game. There are (at least) two candidates:

- S = the set of all truths about the card game
- T = the set of all conclusions relevantistically deducible from the information available to the character Y .

Some of what Mortensen says about people being “often in the position of deducing sentences from other sentences” suggests he has in mind T . But it is only for S that primality is “so obvious as to be invisible”. It would not be “quite absurd” to suppose that the character Y might in some instance be in a position to deduce an alternation without being in a position to deduce either disjunct. It *would* be obviously absurd (at least to classical logicians like myself) to suppose that an alternation could be *true* without at least one disjunct being true.

So let me grant claim (A) with the understanding that the “deductive situation” referred to is S .

Now how is a relevantist to justify claim (B)?

The *enthymematic* strategy would be to search through some suitable system of relevantistic logic (perhaps **E** enriched with a truth predicate) for a theorem formalizing the principle:

$$[\text{Consistency \& Primality \& } (p \vee q) \& \sim p] \Rightarrow q.$$

Mortensen attempts nothing of the sort.

What he *does* do is appeal to a metatheorem to the following effect: If X is consistent and prime, and if $A \vee B \in X$ and $\sim A \in X$, then $B \in X$. For this he offers a proof along the following lines: Since $A \vee B \in X$ and X is prime, either $A \in X$ or $B \in X$; and since $\sim A \in X$ and X is consistent, not $A \in X$; therefore $B \in X$ as required. It has been pointed out to Mortensen that the last step here is an instance of DS. He replies as follows ([11], last paragraphs of Section 3):

. . . it is not being claimed that DS is never legitimate. On the contrary, in normal, well-behaved situations DS is to be expected to hold, and there does not seem to be anything untoward about the metalinguistic situation here. For example, we might formalise the metatheory and prove it consistent and prime.

In other words, since the metatheoretic situation is consistent and prime, it's all right to use DS. In other words, (B) at the metatheoretic level is being invoked to "prove" (B) at the object-theoretic level. In other words, Mortensen is begging the question (or taking the first step in an infinite regress).

Now an *eclectic* might simply propose to abandon relevantistic logic for classical logic (including DS) whenever he deems the situation consistent and prime, without pretending that this policy can be justified by principles embodied in systems like **E** and its neighbors. Mortensen seems drawn towards eclecticism. E.g., he concedes that "people . . . find moves like DS natural to make", and that to motivate relevantism it is necessary to consider situations where "common sense might be strained somewhat". But if Mortensen means to advocate eclecticism, let him do so plainly and openly. He will then be under no obligation to offer "proofs" for (B), nor to reply to my note [4], which was not directed against the eclectic position. As an eclectic, he ought rather to *thank* me for doing what no eclectic has so far gotten around to, viz. explaining in print, by reference to examples, just how relevantism, as embodied in systems like **E**, comes into conflict with common sense, and why it is to be rejected as a "universal" logic intended for *all* situations. And of course he ought to answer, if he can, the numerous objections against the eclectic or "local logic" position that are raised, not in any writings of mine, but in those of his colleague Routley.

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