out to be true. Campbell and Vinci claim if e is observed to be true, then h** will receive no confirmation. It seems to me that everything depends on what we take Dr Copycat’s attitude to be to possible alternatives to h**. If Dr Copycat refuses to entertain alternatives to h** that fail to explain e, can we conclude that Dr Copycat has no degree of belief in such alternatives? The importance of distinguishing between ‘entertaining’ and ‘believing’ lies in the fact that the personalist Bayesian analysis on which my [1978] was based is really an account of rational dynamics of degrees of belief in the light of evidence. If Dr Copycat believes in the possible truth of, but does not entertain, alternatives to h** which fail to explain e, then (2) may be satisfied and I think confirmation should accrue to h** if e is observed to be the case.

Confirmation would only not accrue if Dr Copycat equated his beliefs with his other disingenuous psychological attitudes towards hypotheses. With the example as given there seems no reason to do this.

In either event it is clear that no counterexample is provided to the applicability of the Redhead condition in the form (2).

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REFERENCES

THE QUEST FOR THE ONE WAY VELOCITY OF LIGHT
Nissim-Sabat’s [1984] analysis of the thought experiment through which he believes the one way velocity of light could be measured, contains a simple error, which renders his argument invalid. The expression for τ₂ (p. 64) will only be correct if ε = 1/2. For other values of ε, the correct expression is τ₂ = -ΔT + (2d/c)e. Elimination of ΔT from the two correct expressions for τ₁ and τ₂ does not yield an expression containing ε.

Since he does not indicate the origin of the expression for τ₂, I can only conjecture the error made in obtaining it. From the expression for τ₁ (p. 63), we can infer that ΔT is the ‘ε-desynchronisation’ of clock B with respect to clock A, that is the difference in reading of clock B from that of a clock at the same point in space as B but ε-synchronised with clock A. If one assumes that, after the described interchange of positions of clock A and B, the ε-desynchronisation of A with respect to B is −ΔT, then one would obtain
Nissim-Sabat's expression for \( r_a \) up to the sign. But this assumption is only correct if \( \varepsilon = 1/2 \). That it cannot be correct for all \( \varepsilon \) follows once it is recognized that if it is true for \( \varepsilon = 1/2 \), then it cannot be true for other values of \( \varepsilon \).

The quest for the one way velocity of light is beginning to look like the quest for a perpetual motion machine, for in both cases the fruitlessness of the quest can be demonstrated by quite elementary means. If the problem is set up in the manner of Winnie [1970] and Nissim-Sabat, then it reduces to the simple question of whether special relativity can be formulated in certain '\( \varepsilon \)-Lorentz coordinate systems' rather than just the 'Lorentz coordinate systems' used in the familiar standard formulation of the theory.\(^1\) That this is possible has been known in principle since as early as 1913, when Einstein introduced techniques which would enable special relativity to be formulated in arbitrary spacetime coordinate systems. The quest for the 'true' value of \( \varepsilon \) and the (coordinate dependent) one way velocity of light which it determines, is as fruitless as the quest for the subset of 'true' coordinate systems in which special relativity can be formulated. For this task, all coordinate systems are equally viable.

When one formulates special relativity in coordinate dependent terms, it is necessary to stipulate which coordinate systems are being used. In this sense, it is trivially true that any coordinate dependent formulation of special relativity must contain conventions. If we call events 'simultaneous' if their time coordinates have the same value, then the part of these coordinate specifying conventions which determine the time coordinate can be regarded as a synchrony convention. Clearly then, any standard or \( \varepsilon \)-formulation of special relativity must at some point introduce this type of synchrony convention.

However this coordinate dependent notion of simultaneity is not especially interesting. The real question is whether there is any other sense in which there is a conventionality in the intrinsic spacetime structures of special relativity, associated with simultaneity. That there is not is suggested by a celebrated result of Malament [1977]. In Minkowski spacetime, standard synchrony is the only non-trivial equivalence relation suitable for the simultaneity relation definable between events by the relation of causal connectibility. Critics of the conventionality of simultaneity will find more comfort in pursuing this result, rather than in the vain quest for the one way velocity of light, and are referred for ammunition to recent discussions in Torretti's [1983] and Friedman's [1983] books, both of which are under review for this journal.

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\(^1\) If \((t, x, y, z)\) is such a Lorentz system, in which the Minkowski metric has the form \( \text{diag}(c^2, -1, -1, -1) \), then a typical \( \varepsilon \)-Lorentz system is \((t', x, y, z)\) where \( t' = t + (z \varepsilon - 1)x/c \) and \( 0 < \varepsilon < 1 \).
REFERENCES
WINNIE, J. A. [1970]: 'Special Relativity without One Way Velocity Assumptions', Philosophy of Science, 37, pp. 81--9, 223-38.

NISSIM-SABAT ON THE ONE-WAY VELOCITY OF LIGHT

In a recent paper Charles Nissim-Sabat [1984] has described a Gedankenexperiment to measure the one-way velocity of light. He considers two identical isochronous clocks A and B located at the points α and β on the x-axis, with \( d = x_β - x_α \) and he assumes an interval time to be located at α. When each of the two clocks reads a specific timer, say 10.00 am, light signals will be emitted. The interval timer measures the time difference, \( t \), between the two pulses. Immediately after these emissions the clocks will be moved. A is moved with the constant round trip velocity, \( v \), (i.e. measured with standard synchronisation) to the point γ on the x-axis \( (x_γ > x_β > x_α) \).

From γ A is moved with the round trip velocity \(-v\) to β where it is stopped. Similarly, B is moved with the round trip velocities \(-v\) and \(v\) from β via γ to α, where it is stopped. (All times of acceleration and deceleration are supposed to be negligible.) When A and B arrive at β and α light signals are emitted from the two points to the interval timer, which measures the time \( τ_1 \), between the two pulses. Immediately after these emissions the clocks will be moved. A is moved with the constant round trip velocity, \( v \), (i.e. measured with standard synchronisation) to the point γ on the x-axis \( (x_γ > x_β > x_α) \).

From γ A is moved with the round trip velocity \(-v\) to β where it is stopped. Similarly, B is moved with the round trip velocities \(-v\) and \(v\) from β via γ to α, where it is stopped. (All times of acceleration and deceleration are supposed to be negligible.) When A and B arrive at β and α light signals are emitted from the two points to the interval timer, which measures the time \( τ_1 \). Nissim-Sabat claims that the one-way velocity of light can be calculated from the measurements of \( τ_1 \) and \( τ_2 \). I intend to argue that this is a mistake.

The one-way velocity of light along the positive x direction is supposed to be \( c_+ = c/(1 + a) \) and along the negative x direction it is \( c_- = c/(1 - a) \), where \( a \) is a number between \(-1\) and \(1\). (These formulae correspond to Reichenbach's expressions for \( e = \frac{1}{2} (1 + a) \).) According to Winnie [1970] the velocities along the positive and negative x directions are

\[ v_+ = vc/(c+va) \quad \text{and} \quad v_- = vc/(c-va) \]

where \( v \) is the round-trip velocity.

Assume that a time-coordinate, \( t_1 \), is introduced corresponding to the above constant of anisotropy, \( a \), and that A reads the \( t \)-time \( t_1 \) at the beginning of the experiment. According to the assumption B also reads \( t_1 \) when the first light signal is emitted from it, but since the two clocks are not necessarily synchronised, it must be assumed that the \( t \)-time for the emission for B is \( t_2 = t_1 + ΔT \), where \( ΔT \) is some constant. The first measurement of the interval timer becomes

\[ τ_1 = t_2 + d/c_- - t_1 = ΔT + d(1 - a)/c. \]