FROM THE NATURAL TRANSFORMATION TO THE LORENTZ TRANSFORMATION

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1. The Application of the Lorentz Transformation to the Case of Arago's Experiment.

Milnes & Phipps [1] have collaborated in an interesting work which shows the futility of the application of the Lorentz transformation. § They have said the transformation *fails on the experimental side, leading to a conclusion that is experimentally countered. It is false and discordant with Nature.* We have denounced the Lorentz transformation ourself in various ways for more than 30 years.

In support of this thesis counter to the Lorentz transformation, we shall examine the problem propounded by Arago from a new viewpoint.

2. A Review of Arago's Experiment.

In Fig. 1, S represents a fixed star and the circle the Earth's orbit. Our planet occupies each half of the year the positions A and B. When the Earth is at A, this point moves against the ray C. Hence, in obedience to the conventional addition of velocities, light would arrive at A with velocity C + V. On the other hand, when the Earth is at B, it moves away in the direction of the ray; therefore, light would have there the velocity, C - V.

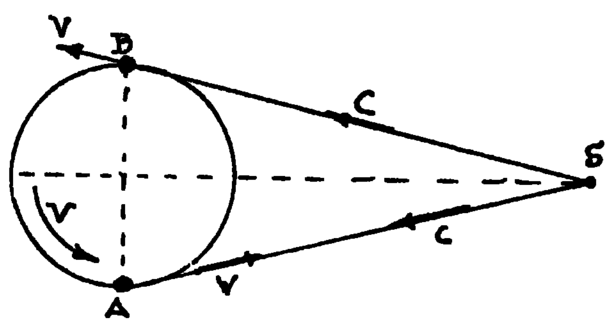

Figure 1.

Arago intended to test such an occurrence by the following experiment. The refractive index of glass changes with the velocity of a ray traversing it. Thus, if the star were observed by a telescope at the points A and B, the focus of the apparatus would have to change from one position to another. Arago, however, did not observe the slightest change. Apparently, the velocity was C at both opposite points.

§. Comment by Milnes: The observations of Milnes-Phipps are not the same as Arago's experiment. In the former, moving light sources, binary stars, are involved; in the latter, moving light [illegible]

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Milnes & Phipps condemn trying to explain this by the application of the Lorentz transformation. These scientists are indeed right for two fundamental reasons:

1) The Lorentz transformation has nothing to do with cases directly related to the Doppler effect, as is the difficulty in Fig. 1.
2) The Lorentz transformation, in final analysis, is nothing else but simply a mathematical botch. It represents the biggest scientific scandal of history. ¶

3. The Natural Transformation Was First.

Observe carefully the fact that the main purpose of the Lorentz transformation was the elimination of the annoying velocities C - V and C + V, to obtain just one velocity, C. This assures the predominance of the relativity principle and the confirmation of the universal constancy of the velocity of light. But we think that Lorentz and Einstein have come a little late - thousands of millions of years late, in fact. Since the origin of creation, Nature herself set forward her own transformation, precisely eliminating the two annoying velocities C - V and C + V, in order to produce the validity of the relativity principle for the velocity of light, C. This transformationhas passed unnoticed for centuries.

Lorentz and Einstein intended to solve the problem (assumed unsolved) starting from their own propositions. They, as everybody, have ignored the precedence of the natural solution.

The question was that really there was not any physical indication of this precedent. Only Doppler left some trails but unfortunately his theory was insufficiently and ineffectively studied and applied. There exists a magnificent mechanism created to assure the validity of the relativity principle and the exactness of Einstein's postulates. As a matter of fact, Einstein's postulates were the product of great inspiration and genius. What is wrong is the Lorentz transformation. He cannot count any longer on Lorentz's protection but in place of it he has another, more important: the natural transformation.

4. Some Generalities of the Theory.

Our new theory is based in part on the Doppler effect, with the introduction of some new points of view. We shall summarize the theory as follows:

1) In a moving transparent medium light waves undergo changes in periodical structure, that is, in wavelength and frequency, in such a way that always the velocity of the rays remain unchanged, equal to C. § In this operation, Nature eliminates the relative velocities C - V and C + V.

This would mean that in the case of Michelson's interferometer, the velocities C - V and C + V used in the analysis of the phenomena, did not exist. The solution was, therefore, wrong. For the same reasons, the Lorentz transformation is in error.

2) The behaviour of light in the moving systems is explained by the principle which states:

Light of a local source of a system in motion is propagated in all directions of this system with the same frequency, the same wavelength and thus with the same velocity as if the system were absolutely at rest in space. ¶

¶. Editorial Comment: Not the biggest! The worst of all is Coulomb's law.

§. Ed. Com.: The author fails to define what is the referent from which the velocity is measured. If it be the transmitting medium, the principle has already been considerably developed.

¶. Ed. Com.: Here again, the author fails to define the word 'system' adequately. Is it a frame of reference in a perfect vacuum; or the transmitting medium; the aether; or what?

This means that on our Earth, the light of any source is propagated in all directions with the same frequency, the same wavelength and the same velocity, that this light could have if the source were placed at rest in outer space.

5. Recalling Some Generalities of the Doppler Principle.

Remember now that if λ_0 is the wavelength and ν_0 the frequency of the given radiation, the velocity of the ray is given by

$$\lambda_0 \nu_0 = C \qquad (1)$$

The period is the time required by a source to produce one wavelength, or, what is the same thing, the time required by a front to traverse a wavelength. Δ If we call t_0 the period of the waves represented by (1), we deduce

$$t_0 = \frac{\lambda_0}{C} \qquad (2)$$

The frequency is the number of waves emitted per second from the source and it is given by: #

$$\nu_0 = \frac{1}{t_0} \qquad (3)$$

6. The Solution of Arago's Experiment.

Let us now return to the case of Fig. 1, and consider the situation under this theory.

Point A. Consider Fig. 2. We shall examine what happens with each wave arriving at point A. We assume, for the sake of simplicity and clarity, that there is only one simple radiation of length λ_0 and frequency ν_0. To any other wavelength and frequency moving together along the ray, occurs a similar transformation.

When a front f_3 of a wave of length λ_0 moves towards A, A at the same time moves towards the front. Calling t_3 the meeting time, the encounter takes place at a point such as A', with $AA' = Vt_3$ and $f_3A' = \lambda_3 = Ct_3$. From the figure we can deduce:

$$\lambda_0 = t_3(C + V) \qquad (4)$$

Observe that the front only travels in space the path $Ct_3 = \lambda_3$ to meet A in A'. All other fronts arriving at A would be subject to the same sort of condition. Therefore,

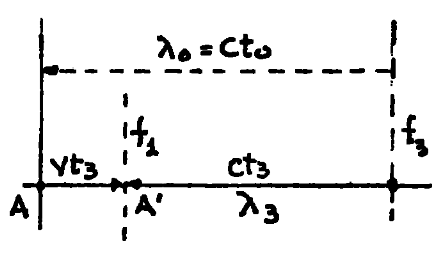

Figure 2.

Δ. Ed. Com.: The two things are well known not to be the same. The front of a wave train usually travels at a considerably different velocity to the wave itself and it is given the term 'leading edge' velocity, while the velocity of the wave is usually referred to as 'wave velocity'.

#. Ed. Com.: Again the author leaves definitions nebulous. Is the observer to be assumed at rest relative to the source and the medium, too?

we can assume that the true wavelength of the waves which impinge on A' is λ_3. Actually in our theory we consider the phenomenon of the re-emission of light by the receiving body. That is, at A' would appear a re-emitted front f_1 in phase with f_3. But to simplify, we shall consider only the kinematic efect, which in this case is enough.

Since $t_3 = \lambda_3/C$, from (4) we may write:

$$\lambda_0 = \lambda_3(1 + \frac{V}{C}) \tag{5}$$

If now we call ν_3 the frequency corresponding to λ_3 and observe the definitions made above:

$$t_0 = \lambda_0/C = 1/\nu_0 \tag{6}$$

$$t_3 = \lambda_3/C = 1/\nu_3$$

We insert the values (6) into (5), to obtain:

$$\nu_3 = \nu_0(1 + \frac{V}{C}) \tag{7}$$

By (5, 7, 1):

$$\lambda_0\nu_0 = \lambda_3\nu_3 = C \tag{8}$$

That is: the ray from the star arrives at A in spite of its motion, with velocity C, changing only the wavelength and frequency.

An important remark:- Observe how in (4) Nature has taken into consideration the velocity C + V, and how, by means of the extraordinary mechanism of the changes in wavelength and frequency, this relative velocity disappears, to leave only the constant velocity C at the point A, (8).

Point B. Consider Fig. 3. As in the preceding case, consider only a wave of length λ_0 and frequency ν_0, arriving at this point. During the time the front f_2 moves towards B, B moves away with velocity V. Calling t_2 the time of meeting, it takes place at a point such as B', when $BB' = Vt_2$ and $f_2B' = Ct_2$. All waves arriving at B would have the same characteristic. For similar reasons to the above, we can say that λ_2 is the true wavelength and t_2 is the period.

From the figure we can deduce:

$$\lambda_0 = t_2(C - V) \tag{9}$$

Inserting in (9) the value $t_2 = \lambda_2/C$,

$$\lambda_0 = \lambda_2(1 - \frac{V}{C}) \tag{10}$$

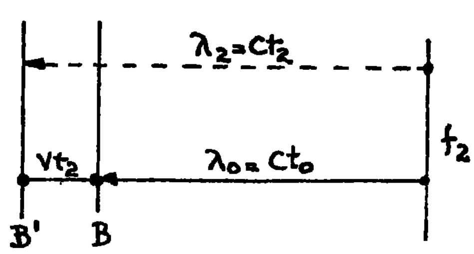

Figure 3.

With regard to the frequencies:

$$t_0 = \lambda_0/C = 1/\nu_0 \qquad (11)$$

$$t_2 = \lambda_2/C = 1/\nu_2$$

From the above

$$\nu_2 = \nu_0(1 - \frac{V}{C}) \qquad (12)$$

and from (9, 12),

$$\lambda_0\nu_0 = \lambda_2\nu_2 = C \qquad (13)$$

Again we may observe in (9) the presence of the relative velocity C - V and how it disappears in (13), to preserve the constancy of C.

7. The Case of the Couple Source and Observer Moving Together in the Same System in Translation.

Consider Fig. 4. S is a source and O an observer. As in the preceding cases, let us consider only a typical wave of wavelenght λ_0 and frequency ν_0. When the front f_1 travels the paths λ_0 in a period t_0, as on the left-hand side of the figure, S has moved on to S', where SS' = Vt_0. At that instant the source emits the second front in phase with f_1, as denoted by f_2 in the figure. Between f_1 and f_2 there is, therefore, a new wavelength λ_1. Each period, t_0, this process is repeated, so that the moving source does produce successive waves of length λ_1 which move onward and to which corresponds a new frequency, namely ν_1 From the left-hand side of the figure we obtain:

$$\lambda_1 = \lambda_0 - Vt_0 \qquad (14)$$

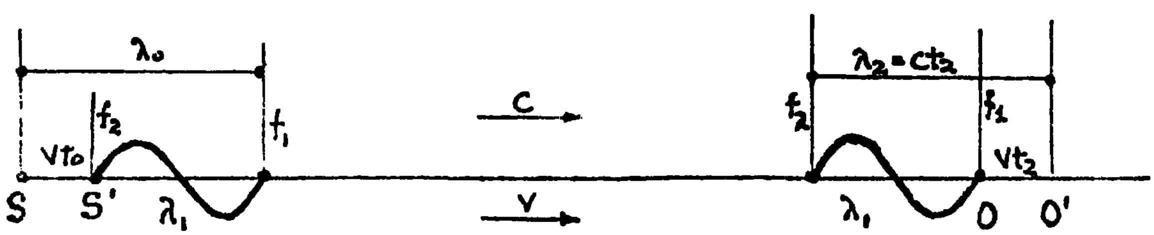

Figure 4.

Since $\lambda_0 = Ct_0$

$$\lambda_1 = t_0(C - V) = \lambda_0(1 - \frac{V}{C}) \qquad (15)$$

Following the same steps as in the preceding case, we get:

$$\nu_0 = \nu_1(1 - \frac{V}{C}) \qquad (16)$$

From (15, 16) we obtain: $\lambda_1\nu_1 = \lambda_0\nu_0 = C$; that is, the motion of the source does not change the velocity C. This is one of Einstein's postulates the truth of which is therby confirmed for the first time. ¶

¶. Ed. Com.: This is hardly Einstein's postulate. What the author has considered is the invariance of the apparent product λν, which is something quite different from the Maxwell-Poincaré-Einstein hypothesis, which is actually stated in quite other terms not involving either wavelength or frequency.

Let us now view the right-hand side from the point of view of the observer. It is seen that all waves arriving at O have the length λ_1. A front such as f_2 when the head of the wave, f_1 is at P, meets O in O', when the front f_2 has travelled the path $\lambda_2 = Ct_2$ where O is the distance Vt_2. Since $t_2 = \lambda_2/C$, from the figure we see:

$$\lambda_1 = \lambda_2 - Vt_2 \qquad (17)$$

$$\lambda_1 = \lambda_2(1 - \frac{V}{C}) \qquad (18)$$

Now, from (15, 18) we get immediately: $\lambda_2 = \lambda_0$. Thus from (17)

$$\lambda_1 = \lambda_0 - Vt_2 \qquad (19)$$

and from (14, 19)

$$Vt_0 = Vt_2 \qquad (20)$$

8) Motion of Waves in a Transparent Medium in Translation.

We consider in this case the existence of a phenomenon never before § taken into consideration in this matter: the re-emission of the waves by the particles of the matter in translation.

Huygens considered for the reflection of the waves that the front is the envelope of elemental waves. It was only a geometric interpretation. But to us, the particles of the transmitting medium are the focus of true elemental waves, which in fact are capable of absorbing the radiation and retransmitting it.

Figure 5 shows the behaviour of the waves in a transparent medium in translation. A front of light was absorbed by the molecules of the medium in (1) while moving to (2) where the absorption finished and the re-emission of the front starts. After one period, the front moves from (2) to (3) which is the envelope of the elemental waves of the particles placed in (2). In (3) starts the absorption and the particles re-emit in (4) a new wave (4, 5); and so on.

Thus we see that in each period a front moves a distance (1) to (3); that is:

$$Vt_0 + \lambda_0 = t_0(c + v) \qquad (21)$$

The front moves from (1) to (3) with velocity (c + V) relative to space. But for an observer moving with the waves into this medium, light moves with velocity c with respect to the medium. In fact, an observer O in (1) would see that from this point are emitted waves of length λ_0, one after another. ¶

Observe that the case of a crystalline medium in translation is different from the case of bodies moving with respect to empty space.

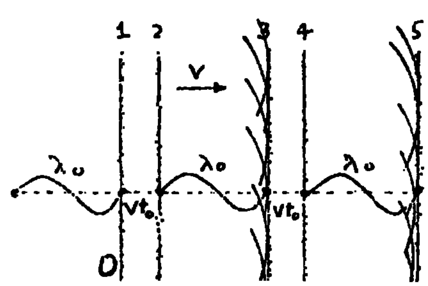

Figure 5.

Reference

[1] Milnes, H. W. & Phipps, T. E. Jr.: **Astronomical Counterevidence to Relativity,** Toth-Maatian Review, V. 3, pp. 982-9 (1984).

§. Ed. Com.: The author is apparently unfamiliar with the transmission theory of light developed by Milnes to a considerable degree which is based on just the principle which he has rediscovered. He is also, apparently, unfamiliar with the 'hitch-hiker' model of light transmission due to S. Marinov; as well as the (unpublished) theories of J. Chappell.

¶. Ed. Com.: The author needs to consider the Zeeman experiment with moving glass and quartz solid blocks and the classic experiment of Fizeau with flowing water redone by Michelson & Morley which seem to contradict experimentally what he has hypothesized. Both these experiments have been discussed in considerable detail in earlier issues of this **Journal.**