

Relativities

Physical Meaning of Geometrical Proportions

Let's say we start with the idea of something, the thought of a thing that has never happened before and does not exist. Let's start small, with a likely invention. Let's say, for instance, that the weather app is lying today. This in itself would not be unusual. It says it is raining outside and yet the sky is as dry as a bone, though the sky is stormy, dark, tenebrous and tinted with the grey of bad omens, of horror movies, of English-class symbolism. The clouds, too, are disfigured with a specific kind of veiled tension like lines on a worried face. I can hardly breathe; I'm running, running, trying to get there in time. Get *where* and *when*, I don't know exactly, but I can tell it will happen *close* and *soon*. Something's got to give, something needs to break. When I get to the spot on the embankment I know it, not by any landmark but a heart-feeling, and stop and bend over to catch my breath. Then we wait. And wait. And wait until a lightning bolt strikes onto the scene, crying its jagged white streak across the grey backdrop. A second crack appears simultaneously, two bolts tearing open the paper-thin sky in perfect harmony. And there am I, standing unprotected, right in the dead middle of them.

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I'm bent over panting, and only just catch the thrum of light by craning my neck upwards at the last moment. A charge in motion, the force of something giving way. My hairline is slightly damp with sweat and stun. I didn't think two strikes could happen simultaneously, always thought that electricity must be stored in the sky as rain in clouds; didn't think there could be enough reserved to produce a second identical bolt, as surprised as if it had begun raining literal bucketfuls.

Let's say that you pass me then on a train. Witness me out your window, a lone wanderer risking exposure to the elements. Damp with sweat, though you can't see this from your window. What you see is a near-mirage of a girl, her neck craned upwards to catch the thrum of light. What you see is the force of something giving way.

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But let's rewind again. Let's say, for the purposes of this thought experiment, that you are not looking at me when the lightning strikes, but out at the augured grey sky, your gaze fixed loosely on the expanding horizon. You're on your way to a new destination. You like to gaze out the window, you like to know how you get to where you arrive. This is crucial information, the kind you'll store away for future retellings when people ask how you came here and what you recall of this great or small journey. You anticipate telling this story many times, perhaps, and you might as well make it a good one. Now you pay attention to how you record this memory. The tension. The waiting. Now you're looking out the window to collect the information you need, and you need to pee, and you're just about to rise out of your seat and withdraw to the train bathroom when you see the sky light up in two separate, equidistant places. A face of frozen fear stuck in the dead middle.

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What exactly do you see out your window when these flashes occur? What I'm asking is whether the flashes occurred in the same moment, the same way for you that they did for me. This is the question of truth, and the question of truth is a question of proof, of proven experience. Truth, we often think, is anything that can be backed by irrefutable evidence; it is true that the weather app

is lying because it posits rain, but the sky is irrefutably clear. Yet this assumes the evidence itself, the frame of reference and the interpretation, to be true as well, which requires a kind of evidence itself, which must be true as well, and so on and so on, *ad infinitum*. *The question of the "truth" of the individual geometrical propositions is thus reduced to one of the "truth" of its axioms...We cannot ask whether it is true that only one straight line goes through two points.*

In other words: I'm asking you for a thing that doesn't exist. That can't be proven. What I'm wondering is if you saw what I saw then. What I'm wondering is, when the light struck, did we share it?

Space and Time in Classical Mechanics

Let's say that you pass me then on a train. Let's say that before the lightning strikes, you throw an object out the window of your car, tossing it lightly upwards as though making an offering to the sky. The object could be anything: a stone, a watch, a paperback, a coin, winking and flipping, golden in the sunlight. What it is doesn't matter; we're concerned here with *trajectory*. *With the aid of this example it is clearly seen that there is no such thing as an independently existing trajectory (lit, "path-curve"), but only a trajectory relative to a particular body of reference.* From my place on the ground I watch the object in question rain down in a swooping parabola, certain of this truth. But you, ducking down to watch the descent out your window, see the stone-book-coin perform this leap in a straight line downwards. This is the difficulty of reconciling two different realities, two viewpoints that are both true and yet somehow false as well. What I'm investigating here has something to do with both the object and the trajectory, the timing and the space and the overall scene that we were both privy to. I want to understand the kind of distortions that accompany distance, the spaces between the intimacy of sameness and the threat of variance. Could watching the same object fall on a different path suffice as a joint experience? If we watched the same trajectory but saw, one of us, a clock, and the other a coin, how much would it matter to the overall picture? When the clock or coin fell, would we share that?

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The Relativity of Simultaneity

Let's say the weather app is lying. The sky is as dry as a bone. Get to the spot on the embankment and I know it with a heart-feeling. Wait until a lightning bolt cries white streaks across the grey. Now two bolts tearing open the paper-thin sky. Simultaneously. And there am I, standing in the dead middle of them. Then you pass me, on a train, on the Q. Witness me, standing at the edge of the city, the edge of the world, out of breath, panting. I'm a near-mirage of a girl, waiting, waiting, neck craned upwards to catch the light. What you're seeing is the force of something giving way.

Let's rewind for a moment. Let's say, for the purposes of this thought experiment, that you are looking out at the sky. About to rise out of your seat, M' , and concede defeat to the train bathroom when you see the sky light up in two separate, equidistant places, A and B . A face of frozen fear stuck in the dead middle: M .

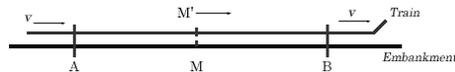


FIG. 1.

What exactly do you see out the window when these flashes occur? It may or may not surprise the reader to learn that these two apparently simultaneous phenomena do not occur simultaneously to you. It may or may not be new information that you'll see B , which you are moving towards, before A , which you are moving away from; that simultaneity is relative, is changeable, is not a fact; that two people moving at different speeds might perceive the same scene entirely differently, might even see the same thing entirely differently. The same scene might not actually be the same scene. There's no such thing as the real scene.

And now we must make space to allow what seems impossible to allow: two truths coexisting in a space where we formerly only had room for one, two lodgers unhappily sharing a room, two contradictory truths, two not-incorrect truths, two truths not entirely true, two people to whom the truth is both real and different, essential and arbitrary. Both simultaneous and nonsimultaneous. That two things of this nature could come to coexist seems unnatural, but this rule is encoded into the fabric of our natural world, is nothing if not entirely natural.

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Every reference-body (co-ordinate system) has its own particular time; unless we are told the reference-body to which the statement of time refers, there is no meaning in a statement of the time of an event. The reassuring part of this is that there's no "right" perception. The alarming part is that every perception is equally subject, is equally dubious; perhaps none of it really happened as we thought it did, and seeing is not actually believing. There's something behind the scene that our eyes can't penetrate, We don't know what's really hiding, what's concealed, inaccessible. Anything could be back there, anything at all.

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