

the mean time the law of the inverse square appeared to be at fault. Clairault tried to remedy the defect by supposing that the force of the earth's gravity consisted of a large force varying as the square of the distance, and a very small force varying as the fourth power (the square of the square.) By such a supposition, observation and theory could be reconciled; but on the suggestion of it, Buffon came forward with the assertion that the force *could* not vary according to any other law than the inverse square. His arguments are rather metaphysical than physical or mathematical. Gravity, he urges, is a quality, an emanation; and all emanations are inversely as the square of the distance, as light, odours. To this Clairault replies by asking, how we know that light and odours have their intensity inversely as the square of the distance from their origin: not, he observes, by measuring the intensity, but by *supposing* these effects to be material emanations. But who, he asks, supposes gravity to be a material emanation *from* the attracting body.

Buffon again pleads that so many facts prove the law of the inverse square, that a single one, which occurs to interfere with this agreement, must be in some manner capable of being explained away. Clairault replies, that the facts do *not* prove this law to obtain exactly; that small effects, of the same order as the one under discussion, have been neglected; and that therefore the law is only known to be true, *as far* as such an approximation goes, and no farther.

Buffon then argues, that there can be no such additional fraction of the force, following a different law, as Clairault supposes: for what, he asks, is there to determine the magnitude of the fraction to one amount rather than another? why should nature select for it any particular magnitude? To this it is replied, that, whether we can explain the fact or not, nature does select certain magnitudes in preference to others: that where we ascertain she does this, we are not to deny the fact because we cannot assign the