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Issac Newton's Correspondence Response

“Parallelograms in space” I said to my friend Nikki when I was telling her about the beginning of these letters as we were doing laps to wake ourselves up around the office building we work at. Even today, people without a heavy physics background have a hard time understanding everything that Newton proposed and all the implications of his theorems. Back when Newton introduced his ideas, it was a world changing concept, and many people had issues with them. The series of letters between Bentley and Newton shows that there were both scientific and religious objections to Newton's claims, which Newton answered with mathematical and logic based arguments and assumptions about the divine.

Before the series of letters between Newton and Bentley, there is a letter by Newton to John Locke where he claims three axioms and used them to prove two propositions. The first proposition describes the movement in a vacuum of a body being attractive towards some immovable center. The second proposition is that if a body is moving on an ellipsis and is attracted to an object at either focus of the ellipsis, the amount of attraction is reciprocal to the square of the distance between the body and the focus. To prove these propositions, he built upon the three axioms and used the geometric properties of ellipses. This makes his argument harder to dismiss, because if you accept the axioms at the beginning and there is no errors in the application of geometry and logic, then the proposition is correct regardless of personal opinion or religious objection.

In the letters between Bentley and Newton, Bentley had concerns from both logical and religious standpoints and Newton responded back to both types. Bentley brought up questions about the implications of falling of matter and the proportions of void to matter. For these logic based objections, Newton either agreed to the absurdity of a claim or pointed out a logical fallacy Bentley made. For example, he responded to a previous letter where Bentley argued that because all matter in an infinite space is surrounded by an infinite amount of matter and therefore has an infinite amount of attraction and so the entire system must rest in permanent equilibrium. Newton pointed out that the flaw of the argument is that all infinities are equal, which is not true and he explained why using an analogy comparing an infinite sum adding up to an inch and a separate infinite sum adding up to a foot. At the end of this particular letter, Newton also pointed out that Bentley talked about gravity being an inherent part of matter, but Newton had only proved the 'how' of gravity and made no claims about the 'why' or 'what'. In Newton's response to Bentley next letter, he agreed with Bentley that innate gravity was an absurdity and gravity is caused by an undetermined agent of some sort; he left this to the reader to decide.

From the religious standpoint, the fear for churchmen such as Bentley was that Newton's system would provide an explanation of the world that was completely divorced from God. This was also related to logical concerns, as there were some claims that it was thought could only be possible because of a divine agent. For example, one of the concerns Bentley had was the origins of the transverse motions by the planets around the Sun. He felt that if the planets were formed where they are now, they could never start to move in their current orbits, the aether did not have enough force to move them, and the ideas of gravity did not apply

either. The conclusion he came up with is that the planets were formed in some other region and released into our world where God gave them transverse motion. Newton fully agreed with and endorsed this idea, as he was a religious man even if he did not adhere to all standard dogma.

The people of Newton's day were concerned about the various implications of his theorems and what they meant for natural philosophy and theology. Newton responded back by using mathematics to prove his claims, clarifying that he was only claiming that gravity existed and not its origins, and assigning the origins of complex questions such as the origins of planetary movement to God. If Newton stood on the shoulders of giants, then everyone after has stood on his.