



Leibniz's "Tentamen Anagogicum"

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Background

- The Most Determined Path Principle (MDPP) was first presented in *Acta Eruditorum*, around 1682.
- This essay was written, according to Loemker, around 1692, because of Leibniz's mention of the brachistochrone problem (i.e., finding the fastest point of descent on a curve).

Some Preliminary Definitions

- MDPP: “a ray is directed in the most determined or unique path,” where ease of determination is distance of path times resistance of medium (L 479).
- Law of Continuity: Roughly, the idea that there are no jumps or gaps in nature.
- PSR: For every event, there is a cause or reason.
- Principle of Perfection: Choosing the simplest law/rule with richest effects—This is God, an architect, or geometer acting perfectly.
- Variational Principle: An empirical principle that maximizes or minimizes quantities that depend on functions to find certain functions (eg., what shape does a chain suspended from both ends have in zero gravity?).
- Efficient Cause and Final Cause: A final cause in an explanation is in terms of a creature’s or entity’s final purpose. An efficient cause in an explanation is in terms of *how* a creature or an entity achieve that purpose.

Themes

- The revival and necessity of final causes in mechanistic explanations.
- The principle of perfection and the “middle term” principles (eg, MDPP and Law of Continuity).
- MDPP explains why the angle of incidence and the angle of refraction/reflection are equal. Law of continuity explains the phenomena of rebound and elasticity in cases of motion. So, they are metaphysical-(ish) principles that justify or explain the physical principles.
- What does all this have to do with Leibniz on space?: His method of analysis and synthesis is in background of all this (according to Loemker at least), and both methods depend on 3 rational principles: (1) Law of Identity, (2) Principle of Contradiction, and (3) Principle of Sufficient Reason—The relation of this principle, which is *the* topic of debate in the Leibniz-Clarke correspondence on the status and nature of space, to the “middle term” principles may shed light not only on Leibniz’s thought, but also on his argument for a relationist view of space (eg, could Leibniz better defend his position if he used these middle term principles rather than the PSR?).

Points of Discussion

- Are the middle term principles proto-variational principles? What's their relation to differential equations? (McDonough 2009, p. 35) thinks MDPP grounded the discussion of a principle of least action, which eventually resulted in today's variational principles.
- Is Leibniz introducing a “thin notion” natural teleology? (ibid thinks so).
- How do principles similar to MDPP and Law of Continuity relate to more general principles, such as PSR and Principle of Perfection?
- Leibniz refers to MDPP as a “principle of discovery” (p. 484) and refers to the principle as a “hypothesis” (p. 479, so they are only morally certain, for their converse implies no contradiction). Does Leibniz think that laws such as the law of reflection/refraction are discovered with the help of these principles or that they may be properly justified with these “middle term” principles, or both?

Works Cited

- Leibniz, Gottfried Wilhelm, “Tentamen Anagogicum: An Analogical Essay in the Investigation of Causes,” in Loemker, Leroy [ed.]: *Leibniz, G.W.: Philosophical Papers and Letters*, Springer 1989, pp. 477-485.
- McDonough, Jeffrey. 2009. “Leibniz on natural teleology and the laws of optics.” *Philosophy and Phenomenological Research* 78 (3): 505-544.