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Abstract: "Modeling embodied experience in the Peripatetic *Mechanica*"

The Peripatetic text typically called *Mechanica* or *Mechanical Problems* was long attributed to Aristotle, though confidence in his authorship later dwindled and it is usually now more cautiously attributed to a later member of the Peripatetic school. The *Mechanica* is framed for the most part as a series of questions about mechanical principles and devices, ranging from the fundamental and abstract (as when the author asks why the lever allows small forces to move large weights) to the particular and applied (as when he asks why beds are typically built with a certain form factor). These are answered with reference to geometrical analogues, diagrams, real-world observables and thought-experiments, often composites of results about simpler systems explored elsewhere in the work.

Because so many of the scenarios described in the *Mechanica* are located in a "real world" context of lived experience rather than an abstract world of idealized objects, the author is often compelled to confront the gulf between experience and ideal. Rather than reducing mechanical systems down to parameters that can be reproducibly measured only on exquisitely specialized laboratory equipment, the author asks questions prompted by everyday observations about the world he and his notional reader actually live in. This world is populated by sailors, laborers, and merchants; it is filled with a host of interesting objects ranging from ships at sea to the frame of the human body. These objects are radically more complex than the classical mechanic's pendulum just by virtue of existing in a mundane context rather than a laboratory, so that the author must develop a whole range of strategies for representing them in the text and explaining their behavior.

The explanatory models used in the *Mechanica* are framed as narratives that enable the reader to participate in mental-model construction in several different ways. The use of lettered diagrams throughout enables a conceptual shift into geometry's domain of rigorous proofs even on complex systems. Many of the text's acts of mental modeling are guided by deliberately including vivid real-world details alongside their geometrical "skeletons," even invoking the tacit knowledge of embodied experience. Problems in this vein ask the reader to imagine quotidian activities like standing up from a sitting position as well as (mercifully) less common experiences like having a tooth yanked out with a forceps. Bodily scenarios like this offer the reader a kinesthetically vivid understanding of leverage, invoking his intuitive, experientially-derived memory of the power a given force can exert. The combination of abstraction and universality on the one hand, and the vivid memory of lived bodily experience on the other, make these passages compelling thought-experiments. The author balances the complexity of embodied experience with a model of the body reduced down to the elements most essential for understanding the rich variety of phenomena he investigates.