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PROJEKTBERICHT | RESEARCH REPORT

RESEARCH GROUP (D-II-2) PLACE, SPACE AND MOTION

PLACE, SPACE AND MOTION IN ARISTOTLE

Research results of the period from
01.04.2008 – 01.04.2012

Members of the research project

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Description of research question, approach and results

Research question

How does Aristotle use spatial concepts in his natural philosophy?

Research methodology and approach

We approached the research questions through *close reading* of relevant texts, reconsideration of their *philological basis* in the manuscript tradition (when called for), *systematic reconstruction and assessment* of the arguments guided always by sensitivity to their place in the ancient *history of science*.

The work on this project was firmly anchored in the Junior Research Group, „Place, Space and Motion.“ We especially benefited from the late antique commentaries on Aristotle that we read together with the other members of the group, especially Simplicius and Philoponus on Aristotle’s treatments of place and void in the *Physics* (not all of which has been translated into a modern language). We also benefited greatly from the post-Aristotelian perspective that other group members provided. There was also extensive, fruitful interaction with D-II-1 “The Metaphysics of Space.”

Since Ben Morison’s recent book, *On Location*, seemed to us to have pretty much settled the interpretation of Aristotle’s views about his single most important spatial concept—the concept of *topos*—we sought other, innovative approaches to our research question. Morison himself wrote a substantial paper on the *reception* of Aristotle’s theory of *topos* by his student Theophrastus. Beere approached the issues in two ways, partly by addressing their metaphysical foundations in the concepts of *energeia* and capacity, partly by exploring Aristotle’s theory of void. Odzuck focused on one of Aristotle’s doctrines about place, namely the view that motion with respect to place is the primary kind

of motion. Finally, Rosen dealt with the use of spatial concepts in arguments that dealt with continua, including literal places, but also including times, changes and bodies.

Results

Beere focused in his book, *Doing & Being*, on the conceptual and metaphysical foundations of Aristotelian physics and metaphysics, namely the concepts of *energeia* and *dunamis*. He argued that the traditional understanding of these concepts has to be revised. *Energeia* has to be conceived in such a way as to cover, without ambiguity, both activities and states. *Dunamis* is to be understood as a capacity. These concepts play an integral role in Aristotle's thought about space: e.g., some places exist in capacity; some bodies have parts in capacity; some geometrical objects are divided in capacity; the void may or may not have being in capacity (Aristotle seems to contradict himself on this). Beere has also done extensive (unpublished) work on Aristotle's views about void. In his discussion of the void in *Physics* IV.6-9, Aristotle firmly denies the existence of the void. But he registers an odd qualification, saying "unless one should call the cause of motion void." Beere argues that a proper interpretation of this remark makes Aristotle's view much closer to an admission of void than has been thought.

Rosen argued for an alternative to the standard understanding of Aristotle's foundational distinction between two varieties of change, *kinesis* and *metabole*, in his article "Motion and Change in Aristotle's *Physics* 5. 1". The distinction is based on the nature of opposition displayed between the change's endpoints, not on the category (substance, quality, etc.) to which the endpoints belong. Perhaps most importantly, Rosen's article demonstrates the broader relevance of Aristotle's theses about the topology of change and other continua (in *Physics* V-VI) by showing how those theses help answer basic metaphysical questions about the individuation and identity conditions of changes. In further work, cooperating with Marko Malink, Rosen produced a comprehensive and authoritative treatment of a complex, much-vexed procedure in Aristotle for arguing about possibility ("A Method of Modal Proof in Aristotle"; "Proof by Assumption of the Possible in *Prior Analytics* 1. 15"). This work contributed to his project on *Physics* V-VI (since the procedure is employed there) and also connects with Beere's research on *energeia* and *dunamis*.

Sebastian Odzuck, in his dissertation (written in English, awarded *summa cum laude*) has worked out in detail both what Aristotle means when he claims (in *Physics* VIII.7) that locomotion has priority over the other types of change and what reasons Aristotle gives for this claim. His achievements include: (1) showing how very important this neglected argument is, viz. how it plays an essential role in the developing argument of *Physics* VIII for the claim that there is a first unmoved mover; (2) explaining the relationship among and the details of the arguments that Aristotle gives for the claim that locomotion has priority; and (3) showing how, despite the general impression of the commenta-

tors (including ancient commentators), all of the arguments for the priority of locomotion are given by Aristotle in his own name and rest on premises Aristotle himself accepts. All in all, the dissertation is a significant contribution to our understanding of Aristotle's *Physics*.

Discussion of the results in the light of current research

Beere's work on *energeia* and capacity has rejected wide-spread conceptions of these concepts (especially the understanding of *energeia* as actuality). The ramifications of this for Aristotle's other views have yet to be worked out. (Christian Pfeiffer, in D-II-1, has done some of this in his dissertation.) His (unpublished) work on Aristotle's views on the void constitute a serious qualification to the reigning view, on which Aristotle simply fully and without qualification rejects the void.

Rosen's work shows that the distinction between change (*kinesis*) and generation (*genesis*) has to be defined in terms of certain primitive concepts of opposition, not (as is pretty much universally thought) in terms of the distinction between substance and other categories. This work also contributes to long-standing debates on Aristotle's understanding of identity and accidental unity. His work with Malink on a procedure of modal proof allows for the reconstruction and reappraisal of several controversial arguments in Aristotle's physics, metaphysics, cosmology, and logic.

Odzuck's work fills a major lacuna in the literature on Aristotle's *Physics* (and demonstrated how important this lacuna is). It will have important ramifications for the link between Aristotle's physics and metaphysics, e.g., for the question why the first unmoved mover should cause circular motion.