Butterfield, *The Origins of Modern Science: 1300-1800* Intro & Ch. V Handout

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I. **Some Methodological Notes on the History of Science**

A. Butterfield's stresses the following mistakes in doing history of science: Periodization, Great Figures approach, Whiggish history

i. Rather, he emphasizes lines of strategic change, taking note of context, trying to understand programs that did not survive, and interconnectedness

B. Interestingly, Butterfield, although he gives "Suggestions for further reading" at the end of the book, does not give any citations and, even when talking about a figures' work, does not name treatises in which are the ideas he's discussing

i. He mentions that this series of lectures consists in "reflections on some reading of secondary works and some examination of classical treatises"

II. **Two Arguments in Ch V**

A. Arguably, the goal of Ch V is to argue for the thesis that the "scientific revolution" is not appropriately characterized as mainly consisting in the development of the experimental method

i. There are several premises used to argue for this thesis:

a. The experimental method was not a new development, nor was it not found in Aristotelian science

b. Galileo, one of the supposed leaders of the scientific revolution, was not as purely focused on experiment as might be thought

c. A significant part of the revolution involved mathematization, notably geometrization in mechanics, and it is crucial to understand experiment as now being guided by mathematization

d. Developments in technology, in industry and engineering, provided material and aims for the scientific revolution

B. Arguably, a secondary thesis, which plays a role in the argument for the first thesis, is that the development of mathematics was a necessary condition for the scientific revolution

i. Butterfield in part gestures that various crucial developments in the revolution in mechanics needed concomitant developments in the mathematics, both by pointing to examples of development and stunted development

ii. He also points to drastic development in mathematics, as well as in calculation, primarily leading up to Galileo's time, but also subsequent developments

iii. He points to great figures' (Descartes, Kepler, Galileo) emphasis on quantity and view of the world as mathematical; however, these are claims that date back the the Greeks, namely Pythagoras

III. **Discussion**

A. It's interesting to note the kind of claims that Butterfield is making, for example that the scientific revolution required various developments in mathematics to occur, sound like necessity claims, which seem to reach further than the evidence he is citing suggests (especially given the lack of sourcing)

   i. The evidence proffered in the case of the revolution requiring mathematical developments were cases of the math that was in fact used, as well as reference to major mathematical developments and early "hints" of mathematical physics that had to await development of the relevant mathematics

   ii. Another example is the claim that "[i]t would have taken many hundreds of years more if the middle ages had had... to find the same things out for themselves" regarding the rediscovery of ancient science

   iii. Or consider "they were infinitely more the slaves of that intellectual system than if they had actually it themselves"

B. When talking about the transmission of ancient texts, Butterfield remarks that "when this or that scientific treatise became available through an Arabian translation, and–better still–when western Europe was able to acquire the authentic text in the original Greek"; why better?