

Polo's Challenge to Biologists in his "Introduction to Philosophy"

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What does one expect when opening a book titled “Introduction to Philosophy”? An “Introduction to Biology” might contain some history of the discipline, an overview of the key discoveries and current areas of research, as well as some future perspectives. But an “Introduction to Philosophy”, especially when given by an original thinker, includes both the identification of ‘key’ discoveries in philosophy and also the philosophical work of approaching philosophy itself. In this way, an ‘Introduction to Philosophy’ gives a synthetic view of philosophy and its relation with the world in which we live. Polo’s introduction provides just such a synthetic perspective, opening horizons without elaborating on them in too much detail, and in this way whetting the appetite for his thought. One of his special focusses is the relationship of philosophy to the natural sciences, which is a key question that arises in our day. While his view on philosophy is relevant for many, for biologists like me Polo’s philosophy compels us to look beyond the borders of our own discipline.

1. KEY NOTIONS

Polo starts by noting that philosophy starts from wonder, and that this wonder leads to the discovery of the timeless: that which is stable, unchangeable, and outside of time. For instance, the Greeks thought that the “firmament” does not change essentially, even though it moves. He goes on to describe how subsequent philosophers have elaborated on this notion, and especially insists on the two Aristotelian notions of ‘Act’: *enérgeia*, which is the solution of the problem of the relation of the mind with ideas, and *entelécheia*, which is the actuality of extra-mental reality.

He then describes how thinking in terms of ‘acts’ has given rise in Aristotelian thought to a range of different academic disciplines, the ‘sciences’ in the classical sense of the word. These include the foundational discipline of metaphysics, but also physics, biology, mathematics, logic, and the human sciences like anthropology, ethics, politics, and rhetoric. In all his descriptions, Polo describes how the relationships of these disciplines to one another have changed over time, also in reaction to changing philosophical foundations.

In the final part of the book, Polo describes some of the key discoveries philosophy has made after Aristotle, among which he men-

tions non-linear, and thus qualitative, mathematics, the importance of history, and the Christian concepts of Providence and that of the person.

2. PHILOSOPHY AND THE NATURAL SCIENCES

As mentioned before, Polo pays ample attention to the relationship between philosophy and the natural sciences. He attributes the historical growth in importance of the natural sciences to a stronger link between natural philosophy and mathematics, which has also allowed the study of the natural world to become more closely connected to technology. The increased focus on technology led many natural scientists to have a pragmatic attitude towards nature, where utility becomes more important than the search for metaphysical truth. The effect of this attitude, however, is a more 'narrow' application of human reason, which leaves out everything that cannot be known through the methods of the natural sciences. This narrowing of reason has not stopped there though, and has later turned against science itself in the postmodernist movement where mistrust has reached scientific rationality itself. In order to counter this tendency Polo invites us to rediscover philosophy in order to be more open to the fullness of reality. In order to rediscover this fullness it is necessary to re-consider and re-discover the 'actual', and in this way look for the true, not just the useful.

An important area of reflection which influences science in its very fundamentals, is that of causality. For many natural scientists, the most-used concept of cause can be summarized as 'post hoc, ergo propter hoc' (Since event Y followed event X, Y must have been caused by event X); this view of causation is widely recognized as a fallacy. Still, to come back to a more correct view of causation, Polo thinks we need to rediscover the extra-temporal, the fundamental discovery of philosophy mentioned above. If not, science's deepest bases are, as Polo writes, 'mythical', because also in the myths things are explained as a sequence of events in time. Rather, we need to establish causality in the intemporal, and re-think what great minds like Aristotle have discovered in this area.

The mention of Aristotle may cause some surprise among natural scientists, because his biological theories are widely recognized to be surpassed by more recent insights. Why should we go back to what

he thought? While Polo recognizes the progress of the natural sciences and wants to take this progress into account, he still thinks that Aristotle's analysis has much to contribute at the philosophical level. Evolutionary theory is a case in point. Polo criticizes it for only offering an in-time causal explanation of how organisms developed, but not paying much attention to explaining life as it *actually* is. The explanation of how an organism relates precisely to its genetic information, a task biology is now only starting to undertake, is closely related to the formal aspect of causality that Aristotle distinguished. In order to think about formal causality in relation to a mathematical description, Polo considers that nonlinear mathematics, which Aristotle didn't know, is essential because it includes qualitative aspects in the description of its dynamics. The relationship between an organism and its genes has been incorporated into evolutionary theory in only a very rudimentary fashion. Polo acknowledges that life is very complex, but challenges natural scientists not to shy away from complexity, but rather to attempt reaching a more comprehensive theory.

3. RE-DISCOVERING THE HUMAN PERSON

Another important aspect of Polo's philosophy is his insight into the human person. This insight, among other things, make painfully clear where the 'evolutionist' philosophy, or the materialist worldview that some have associated with evolutionary theory, falls short. A deterministic worldview cannot explain the intimacy of the person, which shows forth in its co-existence, freedom, personal knowledge and personal love. In this introductory book, Polo deals with this issue only briefly, but some of the points he brings up point towards his original contribution in the field of philosophical anthropology.

4. CONCLUSION

Polo's "Introduction to Philosophy" is more than a first introduction to a new subject. As a biologist, I have read it as a challenge to re-think the philosophical bases of my discipline. This call is very timely for a number of reasons, one among them the emerging discipline of "systems biology" which is attempting to grow towards the comprehensive theory Polo calls for. Still, Polo puts his hands on some of the sore spots at the very heart of this movement, and brings the discussion about fundamental philosophical issues regarding causality to a

much higher level; this is a discussion of which biologists like Noble (2008) have pointed out the relevance. Even though some attempts at a thorough theoretical and mathematical basis for biology have been undertaken by theoretical biologists like Kooijman (2010), Polo is spot on in pointing out that much work remains to be done in this field, which is rather under-valued by many biologists in our day. So while Polo's 'Introduction to Philosophy' may be a good introduction to fundamental philosophical issues for many, for biologists it is a wake-up-call that deserves to be widely read.

5. BIBLIOGRAPHY

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