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Philosophy of Science and Scientific Whaling: Lost in Translation

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Abstract. Through discussing scientific whaling, the paper brings the necessity of retrieving natural philosophy. The paper's arguments favor an expanded vision of human encounter with nature, through the lens of natural philosophy, with a priority focus of expanding our imaginations to embrace the vast natural world.
There is no doubt that both the philosophy and science, two of the three significant areas of cultural and intellectual engagement (the other one is religion), have gone through changes over time. It is also conspicuous that the modern natural science marginalized and suppressed specific concerns which were previously an indefeasible part of natural philosophy.
Bringing both historical and critical discussion of natural philosophy, the paper explores prospective retrieval of natural philosophy in contemporary modern science. Emphasizing the significance of natural philosophy's imperatives both in the intellectual and field application of modern science, the paper reiterates commentary of Nicholas Maxwell, who advocates to correct three loopholes (Maxwell 2017): change the nature of social inquiry; opt aim-oriented rationality methods; and generalize the progress achieving methods of science.

Keywords: Natural Philosophy · Whaling · Scientific research · Aim oriented empiricism · Philosophy of Science · Human engagement with nature.

1 Introduction

1.1 Science and Natural Philosophy at Crossroads

Modern science began as natural philosophy (Maxwell 2017; McGrath 2023). In the time of Sir Isaac Newton, science was conceived as a development of philosophy by bringing together physics, chemistry and other branches of natural science (McGrath 2023). That time, science and philosophy formed together an integrated enterprise of natural philosophy.

Philosophy is not only a vital part of the history of science, but also philosophy has always been regarded as the mother of all science (Pernu 2008, 29). From that perspective every science has philosophical origins (Pernu 2008, 30). Nevertheless, philosophical conceptual analysis is explicitly absent in the front line of modern science (Salmon 1998).

The paper, through the case of scientific whaling, raises concerns about modern science's approach. The paper shows that the pedestal of science turns it into an exclusive property of modern world (McLeish 2019), stripping off the trace of any engagement of nature that might contribute a spectrum of human knowledge and cultural engagement (McGrath 2023, 161, 162; McLeish 2019).

The paper's arguments favor an expanded vision of human encounter with nature, through the lens of natural philosophy, with a priority focus of expanding our imaginations to embrace the vast natural world. The paper considers that if natural philosophy is to be subservient to the standard empiricism (Maxwell 2017) of modern science, natural philosophy cannot provide any insightful contribution to natural science (Weinberg 1994). Because philosophy itself is an autonomous areas of scholarship (Pigliucci 2008, 8).

The paper argues against viewing or considering dissecting the natural world in order to simply control and exploit it. To check such endeavor, the paper argues the disciplinary imaginary wisdom of natural philosophy is a fail-safe mechanism to contribute a role preventing such exploitation of natural through scientific endeavor (Maxwell 2017; McGrath 2023; Blair 2006).

From the 18^{th} century onwards, we, the philosophers of science, have been observing how an uncomfortable gap has been widening between the facts and the values (McGrath 2023, 181; Pigden 2010). This paper makes an endeavor to drag sincere attention to the dichotomy between facts and values. In doing so, I bring both historical and critical discussion of natural philosophy, exploring the retrieval of natural philosophy in contemporary modern science.

Through discussing scientific whaling, the paper brings the necessity of retrieving natural philosophy. In the literature of philosophy of science, there exists detailed philosophical discussion on the retrieval of natural philosophy (McGrath 2023; Maxwell 2017). However, the literature lacks specific case studies, specifically regarding marine living resources, boldly emphasizing on natural philosophy. The paper addresses the mistakes of natural sciences, specifically on marine living resources, as to its engagement with natural world. Natural philosophy's romance with marine and aquatic affairs is not something new. In fact, quest of natural philosophy begins around the mid of 340 BCE when Aristotle outset his observations of natural world on the coastal region of one of the Aegean Islands namely Lesbos (McGrath 2023, 182). To contribute in the literature of philosophy of science, the paper makes an endeavor, through bringing scientific whaling and urging to expand philosophy and science nexus through natural philosophy.

1.2 Methodology and Significance in Philosophy of Science

Regarding methodology, the paper opts for content analysis mainly from the literature of philosophy of science, standard empiricism, aim-oriented empiricism, legal academic papers on whaling . The paper also draws from the reports of the World Wildlife Fund and article drafted by officials of the US Department of Commerce

It would be an overstatement to advocate that my paper would create a subfield of philosophy of science with focus on marine living resources. Nevertheless,

the paper aims to churn out a comprehensive understanding on ground reality prospective retrieval of natural philosophy and its prospective contribution on marine and aquatic living resources.

1.3 Overview of Contents

Other than the introductory chapter, the paper proceeds in five parts. Chapter two outsets with detailed overview of the concepts science and natural philosophy and their split in the seventeenth century. Chapter three enumerates gradual displacement of natural philosophy from modern science. The chapter four provides some background discussion on scientific whaling and its appraisal from philosophy of science perspective. Chapter five emphasizes the retrieval of natural philosophy through aim-oriented empiricism. In the concluding chapter, the paper reiterates prospective future research on retrieval of natural philosophy with concentration in marine living resources.

2 Science and Natural Philosophy Borderlands: *Historia de la Separacion*

2.1 Natural Philosophy: The Beginning and the Summit

The quest of natural philosophy begins around the mid of 340 BCE when Aristotle outset his observations of natural world on the coastal region of one of the Aegean Islands namely Lesbos (McGrath 2023, 182). McGrath opines the seventeenth century as natural philosophy's best timeline (McGrath 2023, 2, 182; Henry 1997).

Alister McGrath notes that natural philosophy emerged as a significant intellectual domain in the western Europe during the time of late modern period (McGrath 2023, 3). Ann Blair refers natural philosophy as a term commonly used in the early modern period and defined, broadly, as the study of natural bodies (Blair 2006). Alister McGrath prefers to view natural philosophy as a historical actuality (McGrath 2023, 5). In present day, natural philosophy is viewed as an historical anomaly (McGrath 2023, 2) and also as interdisciplinary field (McGrath 2023, 3). Ann Blair notes that natural philosophy is often used as an umbrella term to designate the nature's study, which was earlier identified with 'science' (Blair 2006). Natural philosophy is now displaced as an outmoded form of discourse, in McGrath's view, on the natural world by the natural sciences (McGrath 2023, 5).

The word natural philosophy has diversified connotations in different languages (Blair 2006). The French word *'philosophie naturelle'* does not have similar synonym with that of the English equivalent word. In French, it refers to studies relating with hermetic or *alchemical*interests (Blair 2006; McGrath 2023, 42, 43). However, in the German language, the word *'naturphilosophie'* refers to study unifying organic forces in nature (Blair 2006).

2.2 Saga of 'Science' and Silent Departure of Natural Philosophy

The term 'scientist' started to be used in the mid-nineteenth century (McGrath 2023, 1; Ross 1962). The word is considered as a title of honor (Ross 1962, 65) and widely considered as classical for centuries by engineers, economists, physicians, psychologists and others. From the twentieth century onwards, a debate brewed to establish the word itself against a number of competitors (Ross 1962, 65, 66). Ross remarks that the brewing prestige of physical science in the 19th century illustrates why physical science could arrogate (through true knowledge of material world) itself the word previously used for all knowledge (Ross 19622, 70).

Alister McGrath brings this word into attention while discussing about Newton and his recognition as natural philosopher (McGrath 2023, 1). Sydney Ross remarks that to the historian of science the debate on the word of scientist is significant because it marks in a dramatic way the transition of the cultivation of science from the hands of the amateur to those of the professional (Ross 1962, 65).

Regarding the evolution of the word 'science', Sydney Ross notes that the vocabulary 'science' entered into the English language in the Middle Ages as French synonym with 'knowledge' (Ross 1962, 66). The concept 'science' also changes over time (McGrath 2023; 5; Brown 1992).

The adjective scientific means 'pertaining to science' (Ross 1962, 67). However, etymologically, the word refers to 'productive of science' (Ross 1962, 67). Keeping aside the linguistic investigation of the words 'science', scientific and scientists- an investigation on the purpose of using these words would reveal that the words purpose was to create a distinction between common knowledge and scientific knowledge (Ross 1962, 67, 68). Science stands for a particular type of knowledge.

The sciences that are understood by scholastic philosophers in the Aristotelian sense (I.e., traditional natural philosophy), were specialized branches of philosophy (Ross 1962, 68; Blair 2006). Their process of exploration was catalyzed through the sense of wonder, by expanding intellectual and imaginative horizons (McGrath 2023, 18). Sydney Ross notes that such sciences included seven sciences of the medieval learning: grammar, logic, rhetoric, arithmetic, music, geometry and astronomy (Ross 1962, 68). Such variety of Aristotelian philosophy dominated almost five hundred years (1200-1700). It was the time when the natural philosophers wove together intellectual insights deriving from multiple sources to create their own distinct visions (McGrath 2023, 4). It also set the foundation for the developments of the following centuries. Such traditional natural philosophy continued in teaching and enlightening till the seventeenth century (Blair 2006). After that it confronted challenges in the Renaissance age (Blair 2006). A growing unease over the adequacy of empirical observation paved the way of its decline (McGrath 2023, 38). However, when the number of science increased, they were put under the rubric of three headings: natural science, moral science and first philosophy science (Ross 1962, 68). Here, the first philosophy science refers to metaphysics.

Regarding science and philosophy, Syndey Ross notes that from 1620 to 1830, a shift of philosophical point of view regarding the source of scientific knowledge had been noticed (Ross 1962, 67, 68). The elements of the seventeenth century thoughts spearheaded the beginning of new physcial science (Medawar 1977). Peter Medawar shares two elements of the seventeenth century: tempo of invention; and the concept of futurity (Medawar 1997).

3 Natural Philosophy: *The Lost World* in Modern Science

Enumerating the present status of natural philosophy in modern science, Alister McGrath shares that natural philosophy is now displaced as an outmoded form of discourse by natural sciences (McGrath 2023, 5). In other words, natural sciences have muzzled certain concerns which were indefeasible part of natural philosophy (McGrath 2023, 5). Two of such muzzled aspects of natural philosophy are: close observation of nature; and induction of experimental methods (McGrath 2023, 5; Gaukroger 2010).

There is no doubt that both the philosophy and science, two of the three significant areas of cultural and intellectual engagement (the other one is religion), have gone through changes over time (Taylor 1996; McGrath 2023, 5, 6). It is also conspicuous that the modern natural science marginalized and suppressed specific concerns which were previously an indefeasible part of natural philosophy (McGrath 2023, 5). Alister McGrath points out two of them: behaving properly towards and within the natural order; and cultivating habits of attentiveness towards its beauty (McGrath 2023, 5).

4 Scientific Whaling: Appraisal through Philosophy of Science Periscope

The issue of scientific whaling is mostly discussed in the literature of law and international affairs (Coady, Gogarty and McGee 2021; Suter 1981; Scott 2012). Scientific whaling is actually a sober façade of the act of killing whales. Contrary to whale hunting, there also exist non-lethal methods to collect data from Whales. These include: biopsy sampling, genetic research, hormone analysis (Steuer 2005). Karen Steuer notes that non-lethal method in scientific whaling is ignored due to profit and politics (Steuer 2005, 19). Hence, the methods of studying whale still remains in its novice but brutal stage.

It is also conspicuous to mention that whale hunting countries defend their scientific whaling by propounding whales as competitors against humans. For example, Japan, to justify its scientific whaling program near the Antarctic (e.g., JARPA program and JARPN II program), argues that that Japan's scientific whaling program targets four whale species that compete heavily with humans for fishery resources (Steuer 2005, 15). These four species are: Minke, Bryde, Sperm and Sei Whales. It is relevant to mention here that through Scientific

Whaling program, Japan only collects data on diets and stock structure of whale through killing them and dissecting their stomach (Steuer 2005, 13, 15). This casts doubt about the actual scientific goals of scientific whaling (Steuer 2005, 15, 16). It is also not clear whether such annually repeated scientific whaling (by killing them and dissecting their stomach) can make any prospective contribution in management as well as conservation of endangered or non-endangered marine living resources.

In a report of the US Department of Commerce (Clapham *et al.* 2003), it is noted that Japan's scientific whaling program is actually feasibility study (Clapham *et al.* 2003, 210). It is further noted that in the scientific whaling Japan does not include any performance measure to appraise the success and failure of the program (Clapham *et al.* 2003). The Government of Japan is used to describe such scientific whaling as 'long term research program of undetermined during' and regarding objective of such program, the Government of Japan prefers to mention ambiguous phrases such as 'feeding ecology', 'investigating environmental pollutants. The US Department of Commerce notes that such scientific whaling program of Japna even does not have any testable hypothesis, nor any cap on lethal sampling (Clapham *et al.* 2003).

A scrutiny of Japan's scientific whaling would reveal that Japan opts a textbook style of Karl Popper's falsification theory, i.e., making attempts to falsify a hypothesis (Coady, Gogarty and McGee 2021, 84, 85). However, yearly replication of Popper's falsification theory in scientific whaling only reveals a cutthroat attempt of science towards natura and marine biodiversity. It is still not clear how garnering knowledge through such inhumane scientific would benefit human civilization and nature.

A decade back, an international dispute was filed by Australia in the *International Court of Justice* against Japan to determine what amounts to *scientific* research on whales under international law (Hurd 2012, 103; Coady, Gogarty and McGee 2021, 77, 78).

As mentioned earlier, academic discussion on scientific whaling is mostly contributed by legal scholars and international affairs researchers. However, keeping in mind as to the issue of *scientific research,* the issue of whaling can also be brought under the contemporary philosophy of science (Coady, Gogarty and McGee 2021, 79). Unfortunately, neither the critics of Japan's scientific whaling, nor the *International Court of Justice* makes any endeavor to appraise the disputed issues of scientific whaling through the lens of philosophical science.

5 Absence of Respectfulness to Nature: The Problem in Modern Science

The case of scientific whaling shows us a pattern of continuous clustering of knowledge through standard empiricism, a contemporary method of acquiring knowledge (Gomez and Lazar 2019; Maxwell 2017, 45). It is conspicuously ambiguous to observe how does the cluster of activities on scientific whaling con-

tribute in marine biodiversity or towards human commonwealth (Giesler 2008, 49).

It is apparent through scientific whaling that contemporary scientific research on marine living resources has been occurring in a whimsical manner, without control and regulations. Scientific whaling is also an illustration that starkly manifests a range of vices and collective failings, committed by both sovereign whale hunting states, scientific institutions and scientists, that are ubiquitous and entrenched in our practices of science (DeGrazia 2002; Kidd 2018). This situation cautions us about limitation of clustering of knowledge and also, about standard empiricism. Scientific research on marine living resources shows us practically the existence of a fathomless abyss without moral dimension of intellectual endeavor towards nature (Diamond 2008; McGrath 2023).

Here, discussion on natural philosophy is very relevant. Literature of natural philosophy suggests that natural philosophy appraises human being as a part of natural order who is intellectually privileged (McGrath 2023, 180; Midgley 1998). However, biological research advancement of the 19th century, together with the separation of science from natural philosophy, paved the opportunity to forget that human beings are indefeasible part of nature and, for human beings' own future survival interests, sustainable management towards nature is prerequisite (McGrath 2023; Midgley 1998). In other words, the significance of prioritizing moral values towards natural words started to decline from the 19th century onwards (Midgley 1998; Cooper 2018). Modern science (without natural philosophy) has been orienting us its grim aspects towards nature, devoid of respect.

The knowledge architecture on marine living resources, developing through cutthroat scientific whaling, hurls us a puzzle about justification of such knowledge acquisition and its usefulness for humanity. To the philosophers of science, such knowledge architecture development through whale hunting also gives us impetus to comprehend a crevice in standard empiricism. Since standard empiricism puts all its emphasis on empirical success, while the non-empirical considerations such as simplicity, unity, intelligibility all are left in ambiguity (Maxwell 2017).

Such limitation of standard empiricism motivates philosophers of science to emphasize inducting aim-oriented empiricism in modern scientific research (Maxwell 2017, 96). This would also help modern science to make a transition towards respecting the natural world (McGrath 2023, 180). In other words, this would provide an impetus to orient intellectual reflection of ethical considerations towards nature, specifically the marine nature (McGrath 2023, 180, 181; Kidd 2018).

5.1 Natural Philosophy: Shaping Science's 'Humane Engagement' with Nature

Scientific whaling presents insights that modern science has been bringing together varieties of perspectives on nature, without comprehending any sincere intellectual justification for doing so (McGrath 2023, 175, 176; Smith 2003). In

contemporary spectrum of knowledge disciplines (i.e., marine biology, maritime ecology; law of the sea; marine environment; oceanography; marine and aquatic science etc.), modern science has failed to arrange sustainable and intellectually justified human engagement with nature. Unlike modern science, the natural philosophy has a salient feature to respond to any perceived research need (McGrath 2023, 176). It can conceive spectrum of disconnected parts of study for close inspection (McGrath 2023, 176). Thus, natural philosophy can help us see the whole nature in transcending manner. Such features of natural philosophy motivates us, the philosophers of science, to retrieve the visions of natural philosophy and to synchronize it with modern science (McGrath 2023, 169-172).

6 Concluding Remarks

The paper does not advocate for any landslide transition of modern science. Rather, through the case studies of marine living resources, the paper emphasizes the significance of natural philosophy's imperatives both in the intellectual and field application of modern science (McGrath 2023; Maxwell 2017).

In other words, through the retrieval of natural philosophy, the paper advocates that the scientific learning can be thrived for a world enlightened with wisdom (Maxwell 2017). To do so, the paper reiterates commentary of Nicholas Maxwell, who advocates to correct three loopholes (Maxwell 2017): change the nature of social inquiry; opt aim-oriented rationality methods; and generalize the progress achieving methods of science (Maxwell 2017).

Alister McGrath views natural philosophy as a grander version of nature affirming the value of all of its disciplinary components of nature (McGrath 2023, 177). Keeping this in focus, the paper advocates for cultivating attentiveness towards nature.

The paper, on the other hand, also does not deny natural philosophy's struggle with the problem of induction into modern science (Maxwell 2017). Instead, the paper emphasizes that the academia, both STEM and non-STEM disciplines, need to delve into interaction among each others to develop, systematize and unify progress achieving methods for natural philosophy. Keeping this prospective challenge in mind, the paper in several sections of this paper propounds the prospective induction of aim oriented empiricism (Maxwell 2017).

Contemporary philosophers of science and academics belonging to the STEM disciplines may contribute on this issue by highlighting two relevant puzzles: how would the 'aim oriented empiricism' would solve the problem; and how the academic from the STEM disciplines would contribute in inducting 'aim oriented empiricism' into scientific research.

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