

**Karl Mittermaier, Adam Smith,  
and Economic Methodology:  
A Comment on “The Invisible Hand and Some Thoughts  
on the Non-Existent in What We Study”**

By Reinhard Schumacher\* and Melissa Vergara-Fernández\*\*

The South African economist Karl Mittermaier is hardly known nowadays. He was born in 1938 and spent most of his academic career at the University of Witwatersrand, Johannesburg. He joined its Department of Economics as a lecturer in 1967 but he was not awarded his PhD until 1988.<sup>1</sup> His thesis was titled *The Hand behind the Invisible Hand: Dogmatic and Pragmatic Views on Free Markets and the State of Economic Theory*.<sup>2</sup> Mittermaier was a founding member of the International Network for Economic Method (INEM). Apparently unable to secure a professorship, he left academia for “a successful career in the pharmaceutical business” (Garzarelli 2019, 6) in the late 1990s.

One of the reasons why Mittermaier is barely known in economics today is his lack of publications during his lifetime. However, he left behind several unpublished works. He would either not submit his manuscripts to journals or would not revise them after submission.<sup>3</sup> This idiosyncrasy might explain his lack of publications. As far as we can tell, he only published four articles during his lifetime. Three of them were published in the *South African Journal of Economics*: first, a short comment on Peter Lewin’s definition of inflation (Mittermaier 1978b); second, a biographical sketch of Ludwig Lachmann, his friend and colleague at the University of Witwa-

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\* Faculty of Economics and Social Sciences, University of Potsdam, August-Bebel-Str. 89, 14882 Potsdam, Germany. The author can be reached at [rschumac@uni-potsdam.de](mailto:rschumac@uni-potsdam.de).

\*\* Center for the History of Political Economy, Duke University, 419 Chapel Drive, Durham, NC, 27708, United States. The author can be reached at [info@mvergarafernandez.nl](mailto:info@mvergarafernandez.nl).

<sup>1</sup> Axel Leijonhufvud and Lawrence Boland were his external examiners. He had completed his undergraduate studies at the University of Cape Town, graduating with a Bachelor of Commerce (1959), a B.A. (1961), and a B.A. in Economics (1963).

<sup>2</sup> His dissertation was not published at the time. Mittermaier apparently intended to publish it, and he even had a book contract with Westview Press. The book is now forthcoming with the University of Bristol Press to be published 2020.

<sup>3</sup> The *Cambridge Journal of Economics* published an article by Mittermaier posthumously in 2018 on “Menger’s Aristotelianism,” which Mittermaier had submitted in 1992. However, he did not make the minor revisions the journal asked for and never resubmitted the article. As the editors note, only after Mittermaier’s death did some of his former colleagues see the article through to publication (Mittermaier 2018).

tersrand (Mittermaier 1992); and third, the transcript of a lecture titled *On the Delicate Nature of Markets* (Mittermaier 2000). The fourth article is an essay on mechanomorphism – the assumption that the universe, including social interactions, can be explained mechanistically – published in an edited volume honouring Lachmann on his eightieth birthday (Mittermaier 1986).<sup>4</sup>

There is an interest today in Mittermaier’s unpublished works. Some of them are in the process of being published. His posthumous publications might soon outnumber his publications during his lifetime. The current interest in his work is facilitated by the fact that he wrote about topics which have attracted increased attention by scholars, among them Adam Smith and classical liberalism, Austrian Economics, and economic methodology.

The article “The Invisible Hand and Some Thoughts on the Non-Existent in What We Study,” published here for the first time, is one example of a paper that Mittermaier did not see through to publication. The article arose from Mittermaier’s PhD research. Mittermaier prepared this article for the Second International Workshop on the Methodology of Economics, which was held at Selwyn College, Cambridge, UK, 1–3 September 1994.<sup>5</sup>

In this article, Mittermaier attempts to make two contributions. First, he provides a novel interpretation of Smith’s well-known expression of the *invisible hand*, thereby highlighting a rather neglected method in Smith’s works. He uses this interpretation to introduce a methodological argument that “fictions may play a vital, or even essential, role in economic analysis,” touching on Roy Bhaskar’s New Realism, or Critical Realism, as it would be described today, as well as on Austrian Economics. This is his second contribution. We will discuss them in turn.

## 1. Mittermaier on the Invisible Hand and Adam Smith’s Method

In economics and the broader public, Smith’s name is closely linked to the expression of *the invisible hand*. The questions of what Smith actually meant by it and how he used the term have led to an extensive debate among scholars, leading to a vast literature, which has grown tremendously since Mittermaier prepared his article. William D. Grampp (2000) has identified nine different interpretations and added his

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<sup>4</sup> There are two further short academic publications by Mittermaier we could identify: first, a short comment on the occasion of Herbert Simon receiving the Nobel Memorial Prize in Economic Sciences (Mittermaier 1978a), and second, a book review of Lawrence A. Boland’s *The Foundations of Economic Method* (Mittermaier 1982).

<sup>5</sup> A brief report of this workshop can be found in Runde (1995).

own.<sup>6</sup> This list has surely increased in the last two decades. In his extensive study, Warren J. Samuels (2011) shows the many ways the invisible hand has been (mis)used in economics (see also Aydinonat 2008). To readers of Smith's whole oeuvre, the prominence the invisible hand has gained might seem surprising. After all, Smith uses the term *invisible hand* only three times in his published works: once in his first book *The Theory of Moral Sentiments (TMS)* (1759), once in his second book *The Wealth of Nations (WN)* (1776), and once in the posthumously-published *The Principles Which Lead and Direct Philosophical Enquiries; Illustrated by the History of Astronomy (HA)*, which Smith wrote, by all indications, before 1758 (Wightman 1980).

Mittermaier himself does not seem convinced by Smith's choice of the expression *invisible hand*, deeming it not "particularly felicitous" and without "much literary merit." However, Mittermaier may not have been aware that the expression was rather common during Smith's lifetime, as recent research has shown (Harrison 2011, 30; Kennedy 2009; Rothschild 2001; Samuels 2011). At the time, the expression was mostly used to refer to "outcomes that are not directly intended by the relevant agents" (Harrison 2011, 39). These outcomes were often attributed to a divine intervention, but the expression was sometimes used "without any religious meaning" (Cremaschi 2017, 56). By referring to the invisible hand, Smith used an established expression to illustrate some part of his theory – he did not invent a new term. And, in contrast to many other concepts, he did not define the term or explain it in any detail. As Mittermaier rightly notices, "Smith did not [...] use the words aphoristically." It is not central to his theory and does not add anything to it (see also Kennedy 2009). By all indication, he did not ascribe any importance to the expression and used it rather casually – or, as Mittermaier puts it, "in the nature of throw-away expressions." For this reason, Smith's use of the *invisible hand* is prone to so many different (mis)interpretations.

Indeed, none of Smith's contemporaries or of the next generations of scholars adopted this rather unremarkable expression or deemed it necessary to comment on it (Kennedy 2009, 243; 2014, 206–208; Rothschild 2001, 118). Only in the late nineteenth and early twentieth century did some scholars occasionally refer to it (Samuels 2011, 16–20). Gavin Kennedy (2010, 2014) has traced the modern surge of the term to Paul A. Samuelson's use in his best-selling textbook *Economics*, first published in 1948. Shortly afterwards, the invisible hand became widely used in economics and Smith's name became closely linked to it. Discussions began about what Smith really meant by the term. Smith would probably be surprised by the attention his sparse uses of a common expression has gained. He would possibly even be a bit upset that this expression has diverted attention from other concepts of his work that are central to his theory and would arguably deserve more scrutiny, such as the

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<sup>6</sup> These nine interpretation understand the invisible hand as "(1) the force that makes the interest of one the interest of others, (2) the price mechanism, (3) a figure for the idea of unintended consequences, (4) competition, (5) the mutual advantage in exchange, (6) a joke, (7) an evolutionary process, (8) providence, and (9) the force that restrains the export of capital" (Grampp 2000, 450).

*natural progress of opulence* and the *impartial spectator*, to name just two. And he would probably be amused by some of the oddities the obsession with the invisible hand has led to, such as the attempt to prove the centrality of the term in Smith's thought by counting the number of leaves before and after its use in both the *Theory of Moral Sentiments* and the *Wealth of Nations*, noting that the term is located close to the middle of each book (Klein and Lucas 2011).

Mittermaier provides “a fairly novel interpretation” of Adam Smith's use of the expression, understanding it as a fiction “to investigate the effects certain institutions have on society.” But he engages only with one of Smith's three uses. Mittermaier mentions Smith's use of the invisible hand in the *History of Astronomy* only fleetingly. He also does not dwell on Smith's use in the *Theory of Moral Sentiments*, because it supposedly has a “theistic and somewhat mystical” meaning, unlike Smith's use of it in the *Wealth of Nations*, which is Mittermaier's primary focus.<sup>7</sup> Mittermaier even links this perceived difference in the use of the *invisible hand* to the famous Adam Smith Problem – the alleged inconsistency of Smith's two books and thus of his moral theory based on sympathy and his economic theory based on selfishness.<sup>8</sup> Recent Smith scholarship has rejected this claim of inconsistency and has highlighted the consistency of Smith's two books (e.g., Herzog 2013, 20–24; Paganelli 2008; and Wilson and Dixon 2006). It has even been shown that in the *Wealth of Nations* “Smith took up the argument from where he had left off” (Bee 2015, 10) in the *Theory of Moral Sentiments* – a fact that became less obvious due to Smith's additions to the last edition of the *Theory of Moral Sentiments*.

In the *Wealth of Nations*, Smith uses the invisible hand expression when arguing that in a situation without any trade restriction or promotions, capital owners will mostly employ their capital domestically, because of their profit and security motives (see also Schumacher 2018; 2020). Such employment of capital coincides with the most beneficial employment from a societal point of view, although a capital owner “neither intends to promote the public interest, nor knows how much he is promoting it” – “he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention” (*WN* IV.ii.9). By contrast, political restriction and

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<sup>7</sup> There has been some discussion in the literature on the similarity of all of Smith's three invisible hands. Most scholars argue that “the invisible hand of Jupiter” (*HA* III.2) in the *History of Astronomy* differs from the other two uses by Smith (e.g., Aydinonat 2008; Grampp 2000; Kennedy 2014). There is more disagreement regarding the question whether the invisible hand is a Christian, deistic, or providential reference or not. An overview of this discussion can be found in Peach (2014). Those arguing that Smith's invisible hand refers to some sort of divine intervention include Denis (2005), Harrison (2011), Hill (2001, 2020), and Oslington (2012), while others champion a secular reading of Smith's invisible hand, e.g., Cremaschi (2017) and Fleischacker (2004). In fact, the question of Smith's religious view has led to some debates among Smith scholars, which Dennis Rasmussen aptly summarises: “The conjectures range from sincere Christian belief to closet atheism, though the majority of scholars come down somewhere in the middle, reading Smith as a deist of some kind” (Rasmussen 2017, 15).

<sup>8</sup> Historical accounts of the Adam Smith Problem can be found in Montes (2004) and Tribe (2008).

promotion of foreign trade diverts capital towards less beneficial employments – Smith’s main criticism of Mercantilist policies. In line with Smith use of the expression, current invisible-hand arguments usually refer to individual behaviour that leads to unintended beneficial social outcomes.

Mittermaier argues that Smith uses the invisible hand as a fiction with the intention of revealing the effects of certain policies and institutions. His reasoning is based on three claims. We will discuss each of them in turn.

First, Mittermaier claims that Smith distinguishes between an “actual state of affairs” and an “ideal state of affairs” or between the “existent world” and the “non-existent world.” Indeed, in his *Wealth of Nations*, Smith describes a *system of natural liberty*, in which all kinds “either of preference or of restraint [are] being [...] completely taken away” and “[e]very man [...] is left perfectly free to pursue his own interest his own way, and to bring both his industry and capital into competition with those of any other man, or order of men” (*WN* IV.ix.51). In this system, the state has three duties: to provide defence, justice, and “certain publick works and certain publick institutions,” but it refrains from “superintending the industry of private people” (*WN* IV.ix.51). It is a system in which individual behaviour and public interests mostly coincide.<sup>9</sup> Smith’s system of natural liberty is a fictional system. Smith himself describes it as utopian (*WN* IV.ii.43). In the real world, “private interests of many individuals” oppose it, above all the self-interest of merchants and manufacturers with their “mean rapacity [and] monopolizing spirit” (*WN* IV.iii.c.9). Smith describes how they try to increase their profits often at the expense of the rest of the society and, for this aim, intimidate politicians and even instigate wars (Paganelli and Schumacher 2019). Mittermaier rightly notices that Smith often compares the real world to his system of natural liberty.

However, even though Smith favours the system of natural liberty for its many advantages, he describes several instances in which he advocates “violations” of the system of natural liberty and endorses respective political regulations, such as “the obligation of building party walls, in order to prevent the communication of fire.” Smith sees such an obligation as “a violation of natural liberty,” but endorses it, because without it the “exertions of the natural liberty of a few individuals [...] might endanger the security of the whole society” (*WN* II.ii.94). For the same reason, Smith endorses, for example, some banking regulations (*WN* II.ii.). Smith’s highest ideal of a society thus seems to be a slightly modified system of natural liberty.

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<sup>9</sup> Antagonism would still exist in such a system. Sellers would still like to sell as dearly as possible and buyers to buy as cheaply as possible. Employers would still prefer lower wages, while workers would prefer higher wages. Such interests are irreconcilable: “The interest of the dealers, however, in any particular branch of trade or manufactures, is *always* in some respects different from, and even opposite to, that of the publick” (*WN* I.xi.p.10, emphasis added). However, a system of natural liberty would ensure that neither side can exploit the other side and that private interests will not prevail to the detriment of the society at large.

Second, Mittermaier argues convincingly that the invisible hand is not “about an agency that brings about equilibrium,” as it is often suggested today, but about the absence of rent-seeking and predatory behaviour. This behaviour, according to Mittermaier, is absent only in the ideal world of a system of natural liberty. Mittermaier then claims that “[t]he invisible hand operates in an invisible world that ‘exists in the mind only.’” Only in this idealised state would self-interested behaviour lead to beneficial outcomes, while in the actual world, this would not be the case due to rent-seeking and predatory behaviour, according to Mittermaier. Indeed, Smith shows that self-interested, individual behaviour can and does also have malign social consequences in the real world (see also Kennedy 2008, 162–165; 2009, 255–256; Fleischacker 2004, 139). Mittermaier’s claim is in line with many scholars who have pointed out that the invisible hand “requires both good institutions and good norms, whereby individuals pursue their interests within the rules of well-defined games, and not by seeking to influence institutions and rules” (Rothschild 2001, 127; see also Fiori 2012, 428–432; Fleischacker 2004, 138–142; Hanley 2013, 220–221). Few would doubt that in a *system of natural liberty* the invisible hand would operate smoothly in many instances.

However, Mittermaier’s claim that the invisible hand operates only in such an ideal system goes too far. Smith does not make such an assertion and he never links the invisible hand mechanism to his system of natural liberty. Smith instead argues that the invisible hand is effective in “many other cases.” Some of these cases do exist in the real world and might even be brought forth by behaviour that Smith disapproves of. Indeed, it is in such a case that Smith uses the invisible hand expression in his *Theory of Moral Sentiments*. Smith disapproves of the “natural selfishness and rapacity” and “their own vain and insatiable desires” of the rich, yet their behaviour has the beneficial effect that “they divide with the poor the produce of all their improvements,” securing “the necessaries of life” for the poor. Thereby, “[t]hey are led by an invisible hand” (*TMS* IV.1.10). Another example, and one which Smith discusses at some length in Book III of the *Wealth of Nations*, is the decline of feudalism and the emergence of a commercial society with “order and good government, and with them, the liberty and security of individuals” (*WN* III.iii.12). This was not intended by the feudal lords and Smith disapproves of their behaviour, but Smith acknowledges this behaviour has had beneficial consequences. Thus, contrary to Mittermaier’s claim that in Smith’s theory “[t]he invisible hand operates in an invisible world that ‘exists in the mind only,’” Smith does list cases in which invisible hand mechanisms operate in the real, imperfect world.

Furthermore, Mittermaier’s claim that the invisible hand refers only to an invisible world is less convincing when Smith’s methodological writings are considered. Smith argues that one task of philosophers is to “look for a chain of invisible objects to join together two events that occur in an order familiar to all the world.” “[B]y representing the invisible chains which bind together all these disjointed objects,” they make an

“intermediate chain” and “concealed connections” (*HA* II.12, III.5) visible.<sup>10</sup> Such invisible chains do not exist in the fictional world only, but also in the real world. The invisible hand mechanism can be understood as such an invisible chain. By describing the invisible hand mechanisms, Smith makes them visible.

Third, Mittermaier claims that Smith uses an ideal world as a fiction in order to understand and assess the existing world and change it, with the aim of bringing the existent world closer to the ideal, fictional world. By comparing the economic system of his day to the fictional system of natural liberty, Smith demonstrates the deficiencies of the existent world. Mittermaier rightly points out that one of Smith’s aims was “to persuade others of the merits of my non-existent and the follies of the existent world.” Smith described the *Wealth of Nations* as a “very violent attack [...] upon the whole commercial system of Great Britain” (Smith 1977 [1780], 251). In fact, Smith was aware of the practical influence of economic theory. In his introduction to the *Wealth of Nations* he writes that mercantilist and physiocratic “theories have had a considerable influence, not only upon the opinions of men of learning, but upon the public conduct of princes and sovereign states.” It is therefore reasonable to assume that he hoped his own theory would have a similar influence.

What should we make of Mittermaier’s interpretation of the invisible hand as a fiction operating only in an ideal world? As we already pointed out, we are not convinced by Mittermaier’s second claim that the invisible hand metaphor applies only to the ideal world. But Mittermaier’s broader claim that Smith used fiction as a way to evaluate and change the existing world has more merit. Smith’s system of natural liberty as a fiction is a good example of this “method of using fiction.” Mittermaier discusses, though briefly, two further instances: Smith’s notion of *natural price* and his account of the history of European states after the decline of the Roman Empire.

Smith distinguishes between the natural and the market price (*WN* I.vii). The market price is the price consumers have to pay in the real world. The natural price is a hypothetical, fictional price. It prevails in a situation of free competition and no regulations on labour and capital – everyone can freely choose and change how to employ their labour and capital – and in which “the quantity brought to market is just sufficient to supply the effectual demand” (*WN* I.vii.11). It is “the price of free competition” (*WN* I.vii.27). Its component parts are “the natural rates of wages, profit, and rent,” which depend on “the general circumstances of the society” (*WN* I.vii.1). The natural price is thus not fixed, but might change over time (*WN* I.vii.33). Smith lists four causes which lead to “deviations, whether occasional or permanent, of the market price of commodities from the natural price” (*WN* I.vii.32). First, short-term changes in demand or supply, for example occasioned by bad or good harvests (*WN* I.

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<sup>10</sup> Kwangsu Kim (2012) offers a more detailed account of Smith’s approach to “uncover underlying or hidden causal mechanisms” and his philosophy of science and methodology more generally (see also Berry 2006; Fiori 2012; Hanley 2017; Kim 2017; Schliesser 2017, ch. 11).

vii.17–19). Second, “secrets in manufactures” and “secrets in trade” leading to temporary advantages for some (*WN* I.vii.21–22). Third, “a singularity of soil and situation,” which permanently limits supply, as is the case for “some vineyards in France” (*WN* I.vii.23–25). And fourth, monopolies and other regulations which “restrain, in particular employments, the competition to a smaller number than might otherwise go into them” (*WN* I.vii.26–31). The first two are “particular accidents,” the third consists of “natural causes,” and the fourth is due to “regulations of police” (*WN* I.vii.20). While the first two persist only temporarily, the third and fourth causes “may endure for many centuries” (*WN* I.vii.31).

By comparing the fictional natural price to real market prices, Smith tries to uncover the effects of all four of these causes. He thus applies it as a useful fiction in the sense Mittermaier claims. Smith is above all interested in the fourth cause, which is the result of certain policies and institutions. They are directly responsible for some of the most serious deviations of the market price from the natural price, according to Smith. In a system of natural liberty, this kind of deviation would not take place, while the three other causes would still lead to some and mostly temporary deviations of the market price from the natural price. As Mittermaier argues, Smith uses the fiction of the natural price to expose the effects certain policies and institutions on the market price and thus on the society more broadly.

The second instance Mittermaier provides is Smith’s historical account of Europe after the decline of the Roman Empire in Book III of the *Wealth of Nations*, which Mittermaier mentions only briefly. Smith develops a *natural order of opulence*, which is his ideal of economic development (Schumacher 2016). This natural order of opulence is used as a fiction by Smith, or as *conjectural history*. He contrasts European history since the decline of the Roman Empire with this ideal and notices that European countries actually experienced an “unnatural and retrograde order” (*WN* III. i.9), to their detriment in Smith’s view.

Thus, Mittermaier’s claim that Smith uses fiction as one of his methods is conclusive. Smith actually states that all scientific systems are “mere inventions of the imagination” (*HA* IV.76). For him, “scientists conjecture, through the imagination, as to the intervening mechanism” (Kim 2012, 803). They do so in all different ways, which is why Kim has argued that Smith championed “scientific (methodological) pluralism in the process of discovery and justification” (2017, 108). The method of using fiction is just another approach, which can be helpful in some kinds of scientific inquiry. Mittermaier’s claim that Smith uses a fiction in order to try to identify certain effects and shortcomings of the existent world is thus convincing. What Smith tries to uncover by this method are tendencies, as Mittermaier states: “The tendencies are taken to be in the realm of the existent but they are discovered and identified by means of fictions, the non-existent.” Mittermaier thereby links Smith’s approach to what he called New Realism, which is known today as Critical Realism. Indeed, more recently Kim (2012) has also argued that Smith’s view on science is close to critical realism. Mittermaier would probably agree with him.



It should, however, be added that while Mittermaier's interpretation of Smith was novel at the time he drafted and presented his article, a very similar interpretation has been developed since by Eric Schliesser (2005).<sup>11</sup> Schliesser's description of Smith's work might sound familiar to a reader of Mittermaier's text:

I reinterpret Smith's distinction between natural and market prices, by focusing on Smith's account of the causes of the discrepancies of market prices from natural prices. I argue that Smith postulates a 'natural course' of events in order to stimulate research into institutions that cause actual events to deviate from it. Smith's employment of the fiction of a natural price should, thus, not be seen merely as an instance of general or partial equilibrium analysis, but, instead, as part of a theoretical framework that will enable observed deviations from expected regularities to improve his theory (*ibid.*, 33).

Echoing Mittermaier, Schliesser argues that "[t]he theoretical fiction of a 'natural price' not only calls attention to the distorting influences of human institutions, but it also points to an approach that can make evident the causes of the wealth of nations" (*ibid.*, 45). And again echoing Mittermaier, Schliesser shows that "the natural price is not only the most efficient, but also the fairest price" and, like Mittermaier, he draws a parallel to the just price in the scholastic tradition (*ibid.*, 41). In addition to Smith's distinction of the natural and market price, Schliesser (*ibid.*, 45–59) also discusses Smith's explanation of the historical development of Europe in much more detail than Mittermaier does. Schliesser, however, does not apply his interpretation to the invisible hand, and we would argue rightly so, since Mittermaier's interpretation of the invisible hand as a fiction operating only in the ideal world has its shortcomings. Nevertheless, at the time, Mittermaier provided a new and intriguing interpretation of a method used by Smith, which had not been present in the literature.

## 2. Mittermaier on the Use of Fiction in Economics and Economic Methodology

As mentioned at the outset, Mittermaier uses his interpretation of Smith's invisible hand argument to address important philosophical questions – a rather uncharacteristic circumstance at this time. In such a short piece, Mittermaier explores many ideas, necessarily leaving some loose ends. We will not address all the ideas expressed by Mittermaier, which would itself require a much longer piece. Instead, we will focus on just two of the issues broached by Mittermaier: the role of the non-existent in what we study and the purpose of theorising. These, it seems to us, are the most relevant and the ones he developed most thoroughly. In this way, we get to have a better understanding of the methodological concerns of the South African economist by dint of his interpretation of Smith's famous invisible hand argument.

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<sup>11</sup> See also Schliesser (2017, chapter 12).

Let us first address Mittermaier's main concern, namely the role of "the non-existent in what we study." His suggestion is that the non-existent, or the fictitious, can play a beneficial role in our practice as economists or, more generally, as "groping creatures" trying to get to grips with "things out there whose ways of acting may be obscure to us." Simply put, Mittermaier suggests, fictions can help us discover how the world works. This claim is not foreign, at least to philosophers of science. Nancy Cartwright argued already back in 1983, in her "How the Laws of Physics Lie," that scientific laws – in the way in which they figure in scientific practice – are not explanatory. They are too abstract to be applicable to the concrete cases we are usually interested in. Strictly speaking, laws "lie" because they do not describe the concrete phenomena we are searching explanations for. Instead, it is models, which to Cartwright are "a specially prepared, usually fictional description of the system under study" (1983, 183), that are used to apply theory to reality and allow model-users to explain phenomena.

Since then, philosophers have been interested in theoretical models in particular because they allow model users to learn about the world, despite the many idealisations with which they are built. Models are thus considered to be vehicles of scientific knowledge despite their falsities. And the philosophers' project in the last decades has been to find out how they do this (Vergara Fernández 2018, chapter 1). Three branches have been developed in the literature (Frigg and Nguyen 2017). First, the ontology of models, which attempts to explain models' success by means of their nature – there is something in the models' ontology which allows model-users to learn about the world. Second, the semantics of modelling, which attempts to explain models' success by means of the kind of representational relation the model has with its target – the object of enquiry. Third, the epistemology of modelling, which attempts to elucidate the kind of epistemic import they have. This branch of the literature answers questions such as: Are models explanatory? Do they yield understanding? Do they serve as evidence for causal claims? Despite the different perspectives, the underlying question philosophers have been concerned with is: How can an unrealistic – and therefore fictional – object such as a model be helpful in understanding how the world works?

Mittermaier attempts to answer such question as follows. He suggests that Smith used the notion of "natural prices" to portray how, in a world in which there is "perfect liberty," factor mobility and competition bring about natural prices. What is crucial here is that, according to Mittermaier, Smith is not *describing* the world he has before him, as he suggests Smith is usually read. Instead, Mittermaier interprets Smith as invoking a fictitious world, a system of perfect liberty: "the common law of the land, or possibly some other institutions of society, made all manner of predatory practices so hazardous and harassing, so unpleasant, perilous and even painful that the irksomeness of work would seem the lesser evil, then all the people in the land would be forced, as a last resort, to produce things themselves and exchange them for the things they want." This is a fictitious world because, in Smith's world, there are indeed apprenticeships and monopolies, institutions whose existence hampers the possibility

of perfect liberty.<sup>12</sup> Thus, only in the fictitious world in which there is perfect liberty, natural prices prevail as equilibrium prices.

By invoking this fictitious world, Mittermaier suggests one is reasoning counterfactually. In a world of perfect liberty, natural prices would prevail. Mittermaier then suggests that, by engaging in this exercise, we learn about the dispositions or tendencies of institutions such as apprenticeships and monopolies. We learn to identify the effects that these institutions may have in the real world. But Mittermaier only says that much. One is therefore inclined to ask: How precisely do we learn about the effect of each of these factors? What is the contribution of the individual tendencies of the monopoly and the apprenticeship to the presumed deviation from the natural price? Mittermaier does not tell us.

Causal factors as tendencies are a subject John Stuart Mill had already addressed in his essay *On the Definition of Political Economy and the Method of Investigation Proper to It* (1967 [1844], 309–339). Mill thought that causal claims do not express universal regularities – such that if we say that *C* causes *E*, it is seldom the case that it is universally true that *C* causes *E*. If we were to take causal claims as actual descriptions of what happens in the world, these would be generally false. Instead, Mill thought that causes are better described in terms of tendencies. Tendencies are kinds of causes, i. e. tendencies are factors that make things happen. They are a power that acts with certain intensity. When there are no other disturbing factors, tendencies will produce a characteristic effect. However, since there are generally many other factors present, we will seldom observe this characteristic effect as the outcome. Still, tendencies continue to contribute to outcomes even when disturbing factors are present. The observed outcome will thus be the conjunction of all causal factors.

When it comes to the conjunction of all causal factors, an aspect about which Mittermaier remains silent, Mill thought that they operate in the same way in political economy as they do in mechanics. Causal factors each behave according to a specific law and, when it comes to the combination of their effects, they follow the principle of the composition of causes: their effects are added in the same way two forces are added, resulting in the vector addition of the two forces. In the case that Mittermaier discusses, this would thus amount to adding the effect of apprenticeships and monopolies on natural prices.

Mill also considered another way in which the effects of causal factors can be combined, namely, as they do in chemistry. In this case the result cannot be predicted by simply adding the effects of each of the factors. The result of two molecules of hydrogen and one molecule of oxygen does not simply produce another gas. It is water. Mill, however, discarded this approach for political economy. He thought social

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<sup>12</sup> It is worth noting that Mittermaier uses “the fictional” in two senses. One, as Aristotelian and/or Galilean idealisations, and the other as a normative statement, suggesting that the system of perfect liberty would be desirable.

phenomena are nothing else than the result of the combination of the laws that individual humans obey (*ibid.*, 309–339).

Even if Mill were right about the composition of causes in political economy, we know that knowledge of all the acting causal factors and their individual effects is hard to come by. So, to go back to our case, Smith knew of apprenticeships and monopolies – but, were these *all* the acting causal factors? And, did he know how each of these contributed to the overall effect? Mittermaier does not tell us. More specifically, Mittermaier claims that the counterfactual reasoning allows us to learn about the effects of these institutions, but he does not tell us what precisely it is that we have learnt.

In order to learn about social phenomena, many philosophers of science now agree that, at least in some cases, it is sufficient to identify the causal mechanism that brings about a phenomenon.<sup>13</sup> That is, to be able to give an account of the causal *process* that brings about a phenomenon is a way to learn about the world. Naturally, how reliable an explanation of a phenomenon that identifies a mechanism is depends on the evidence we have for it. A theoretical, “fictional” model which reveals a particular mechanism as an explanation for a phenomenon can give us, at most, knowledge of possibilities. This is an account of how a phenomenon *could* have come about, without committing the mechanism in question to be the actual one at work (see Ylikoski and Aydinonat 2014). It is a start. By contrast, true, reliable explanations of a phenomenon require “stringent theoretical practice and imagination in the design of empirical research” (Hedström and Ylikoski 2010, 64) which can provide the adequate evidence for the presence of the mechanism. Fiction alone will not do.

In this light, following Mittermaier, what Smith could be said to be doing is identifying two potential causal factors, namely, apprenticeships and monopolies. But since Mittermaier does not provide an account of the process through which apprenticeships and monopolies cause equilibrium prices to deviate from natural prices, it is unclear how we could have confidence in these two causal factors having the effect they allegedly have. In fact, there is little reason to think that we can identify “the effects that these institutions may on occasion have on the whole of society,” as Mittermaier claims.

Mittermaier’s attempt to elucidate the important role of fiction to understand the world is valid. In fact, his attempt at the time of his writing to elucidate these ideas are remarkable for an economist. But fiction alone is insufficient to warrant the reliability of explanations one would expect from any social science. Evidence matters – and Mittermaier seems to ignore that fact.

The second issue we want to discuss is Mittermaier’s account of the purpose of theorising. He starts off by criticising economists, for “it appears to be almost a universal presumption among economists that the purpose of theories or of theoretical constructs in general, is to describe.” Besides description, he suggests, there is also “a

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<sup>13</sup> See Craver and Tabery (2019) for a discussion.

heuristic and a guiding function” of theories which, presumably, economists do not take advantage of. Mittermaier then associates these purposes with what he calls “the relationship between models and what they model,” which seem to refer to modelling strategies employed in the sciences to represent a phenomenon of interest. Here Mittermaier suggests there are several “versions” of these relationships: an instrumentalist that favours predictive success, Platonic idealisation, Aristotelian abstraction, and a new-realist Lawsonian.

But this is all rather muddled. To begin with, it is unclear why Mittermaier deems economists to be solely in the business of using theories to describe the world. Milton Friedman’s “Methodology of Positive Economics” (1953), perhaps the most influential methodological essay in economics in the second half of the 20<sup>th</sup> century, argues that the unrealisticness of assumptions in models is something economists should not be concerned with. Arguably, economists have taken this as a licence to disregard the realisticness of the assumptions they use in their models. And there has been a recurring criticism of economics that economists fail to represent the phenomena they study accurately; they model agents as utility maximisers and markets as institutions where there is perfect flow of information. If anything, economists do not describe (accurately) enough.

In addition, Mittermaier seems to confuse modelling strategies with their appraisal. In discussing the relationship of models and what they model he suggests that “for positivists or instrumentalists the relation [between models and what they model] is predictive success.” But is predictive success on par with abstraction or idealisation? Milton Friedman (1953), the instrumentalist *par excellence* to whom Mittermaier seems to be referring, argued that theories ought to be judged by their predictive success, irrespective of the unrealisticness of the assumptions made. The unrealisticness of assumptions – or the extent to which one decides to abstract or idealise – is thus a modelling choice. Something else is how one appraises that modelling choice. Mittermaier conflates the two. One need not be an instrumentalist to consider predictive success a valid way to assess a theory. And yet Mittermaier is correct that, in the quest to understand the world, theories can play more modest roles – such as “a heuristic and a guiding function.” In turn, predictive success is neither the only nor the best means, simpliciter, to assess a theory.

It is therefore surprising that Mittermaier rejects abstraction as a viable modelling strategy. For his pluralism about the purposes of theories should also involve pluralism about modelling strategies. He defines abstraction as the removal of certain elements in the modelling strategy that are deemed inessential. The inverse approach would be to add elements to the representation such that the model successively approximates the real object. Thus the essential features of a phenomenon are kept in the model, whereas the inessential are not – they may be successively added. But Mittermaier presupposes (or rather takes from Ernst Cassirer) that the world itself determines how essential an aspect of the world is by some “hierarchy of genera and species.” Here he is mistaken. This is not an ontological question. What is deemed essential or in-

essential corresponds not to some hierarchy set by nature but by the epistemic purposes of the modeller. If my glass of water standing next to a bottle is a good model for representing the spatial location of my friends Rob and Andy, it is because the glass and the bottle satisfy my purpose to represent spatial location. Not because glasses and bottles belong to a particular hierarchy that grants them the possibility to represent spatial location.

It is regrettable that Mittermaier does not articulate some of his thoughts on these and other philosophical issues in greater detail. Nevertheless, it is remarkable that he entertained these questions and wrote about them in the 1980s and early 1990s. The role of theory, its means of appraisal, and the modelling strategies employed in science are all important considerations to conduct reliable social science. Mittermaier was aware of that. Particularly in a moment in which economics programmes in Europe and the United States have shunned training in the history and philosophy of the discipline, Mittermaier reminds us with his piece that these are not trivial considerations, and that articulate and sound arguments are not easy to come by. This is probably the reason why he was a founding member of INEM. He acknowledged there was a need to engage in a division of labour and to have an appropriate institutional setup that would allow other scholars to dedicate themselves to the history and philosophy of economics.

All in all, the article by Mittermaier reveals that he was an innovative and rather undogmatic and eclectic thinker, touching upon topics which would only become more popular among scholars at a later point. Since Mittermaier has written this article, there has been an increased interest in both the work of Adam Smith and in economic methodology by economists, philosophers, historians, and political scientists; its timeliness has indeed been acknowledged. Mittermaier anticipated this development.

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