

An Introduction to Karl Mittermaier and His Philosophy of Economics

By Michael Stettler*

Abstract

Karl Mittermaier lectured in the Department of Economics at the University of the Witwatersrand, Johannesburg, South Africa, specialising in the history and the philosophy of economics, with some of his work being published posthumously, such as “The Invisible Hand and some Thoughts on the Non-Existent in What We Study” published in this journal. He analysed economic thought and methodology from the perspective of the *nominalism* and *realism* divide, identifying the nominalist attitude in economic theory as having a pernicious effect on the clarity of our understanding of economics and economic questions.

JEL Codes: B0, B3, B4, B5

It is odd to think that there is a word for something which,
strictly speaking, does not exist, namely “rest.”
Max Born, “The Restless Universe” (1935)

1. Introduction

Karl Mittermaier’s work speaks for itself; the prose, the insights, the analysis, the quality. “The pages of Mittermaier [...] radiate a mind and a spirit to like and admire” is how Dan Klein (2019, 3) expresses it. I was a student of Mittermaier and I feel awkwardly presumptuous writing an introduction to his work, as if I were able to add something of value to what he has already said. Nevertheless, readers may welcome an introduction to his thinking, teaching and person, providing some context to the article published in this volume: “The Invisible Hand and Some Thoughts on the Non-Existent in What We Study.”

* School of Economics and Finance, University of Witwatersrand, Johannesburg, 1 Jan Smuts Avenue, Braamfontein 2000, Johannesburg, South Africa. The author can be reached at michael.stettler@wits.ac.za.

Karl Mittermaier (1938–2016) was a descendent of the respected German jurist Karl Joseph Anton Mittermaier (1787–1867). In 1949, escaping the post-war hardships in East Berlin, he emigrated – with his mother and brothers – to South Africa. He attended Grey High School in Port Elizabeth on a scholarship.¹ Mittermaier graduated from the University of Cape Town in 1963 with a BA(Honours), and was awarded a PhD from the University of the Witwatersrand, Johannesburg (Wits) in 1988, where he taught in the Department of Economics from 1967 until his retirement in 2002.

Highly respected by his colleagues and setting himself the highest intellectual standards, his academic path was nonetheless not conventional by current norms, caring little for publishing, but still writing for his own satisfaction, and so some of his work is being put to print posthumously.² In 1977 he completed a long dissertation (Mittermaier 1977), which however was never submitted for examination. When in 1986 he produced a long occasional paper, the Head of Department submitted it to the higher degrees committee, with Boland and Leijonhufvud acting as external examiners. He was awarded a PhD for it, and the book was under contract for publication, but Mittermaier shelved it, thinking that the additions recommended by the publisher would date the book and detract from its merits. It is now in press with Bristol University Press, titled *The Hand behind the Invisible Hand: Dogmatic and Pragmatic Views of Free Markets and the State of Economic Theory* (Mittermaier 2020).

For many years Mittermaier lectured post-graduate students on the history and the philosophy of economics. The Wits economics department was a place conducive to explore philosophical perspectives on economics. When he joined the department in 1967 it was headed by Ludwig Lachmann who played an important role in the revitalisation of Austrian economics and encouraged philosophical approaches to economics.³ Mittermaier met with Lachmann at least once a week until the very end of the latter's life.

2. Austrian Economics

Despite his deep understanding of Austrian economics, he did not call himself an Austrian. He had great respect for the work of Carl Menger (Mittermaier 2018), but he thought that the later “subjectivism was not that of the original Austrians, or at least of Menger and von Mises” (Mittermaier 1992, 14). He believed that some forms of subjectivism held out little hope for better theory: “There is a drawback thus embracing the subjectivism of the Kaleidic society – one incidentally Menger was aware of back in 1871 ... namely [that] ‘Anything could happen’” (*ibid.*, 18).

¹ Mittermaier's widow, Isabella, instituted after his death the “Karl Mittermaier Scholarship” at said school.

² See Mittermaier (2018) and Mittermaier (2020).

³ See Boettke (1994) on Lachmann's role in the revitalisation of Austrian economics.

Mittermaier was too steeped in Aristotelian philosophy, with its essentialist outlook, so that if things and events had a *nature* it seemed contrary by nature that “anything can happen,” even if it was possible by accident. For Mittermaier, subjectivism is of interest as a “logic of subjectivism,” not in its ontological status.⁴ On the other hand he considered Lachmann’s (1963) *ORDO* paper one of his finest, because there he worked out a type of logic of institutions, distinguishing between internal and external institutions, and their permanence, coherence and flexibility (Mittermaier 1992, 19).

3. Heuristic Fictions

The title of the article in this volume “The Invisible Hand and the Non-Existent in What We Study” gives us some insight into Mittermaier’s (realist, essentialist) approach. Adam Smith’s *invisible hand* metaphor is the subject of investigation, but the purpose of investigation is not solely to understand what Smith was saying about the invisible hand, but to illustrate a philosophical point Mittermaier wished to make. It was an invited paper presented at the Second International Workshop on the Methodology of Economics at Selwyn College, Cambridge University, 1994 and hosted by the Cambridge Realist Workshop.

There are different types of *realism*, too many to discuss here, suffice it to say that his philosophical point differed from that of critical realists. What Mittermaier and critical realists shared was a suspicion of – erstwhile prestigious – equilibrium model-building. As Mittermaier saw the matter, critical realists are concerned with abstract things – such as social structure – that nonetheless exist as individual things. Mittermaier’s realism is of the classical type associated with Aristotle’s moderate realism, which occupies itself with the relationship between the general or universal on the one hand and the particular or individual on the other, with the universal existing in all particulars. He referred to critical realism as the *new* realism, wanting to highlight its distance – not only in time but in content – from the classical (i. e. the old) realism.

Mittermaier (1986a) develops more fully the idea of ‘the non-existent in what we study’ applying it also to Walras’ general equilibrium theory, depicted as “a counterfactual inference used [...] as a heuristic fiction” (Mittermaier 1987, 6).⁵ He seeks to clear up some confusion relating to general equilibrium theory there; Walras regarded the theory as a guiding conception for an *idéale social*,⁶ and the system of equations is therefore a form of idealisation. But Pareto turned it into a hypothesis for predicting actual economic events, and sometimes portrayed it as an actual description. The point

⁴ See Mittermaier (1986b).

⁵ Mittermaier (1987) was the research proposal for Mittermaier (1986a) “to support an application for conversion of an MA registration into a PhD registration and a submitted MA dissertation into a PhD thesis.” From 1971 until this application, he was still registered for an MA.

⁶ See also Jaffe (1977).

about idealisation is that it provides mathematical precision but disregards empirical context. And if such idealisation is mutated into either a hypothesis or a description, then we are left with a description without its proper context. Mittermaier called this a denormalised dogmatism, which removes from the original equilibrium theory of Walras the prescriptive element (*viz.*, *denormalised*), instead presenting it as existing givens (*viz.*, *dogmatism*).

At around the time when McCloskey (1985) demonstrated that we really only pay lip service to positivism in economics, Mittermaier was saying much the same. In an unpublished paper “The Problem of Similarity: a Potted History of the Theory of Knowledge in Western Philosophy” (Mittermaier 1982), which Mittermaier handed out to his postgraduate students, he points out the incoherencies in Friedman’s Essay on “Positive Economics.” Hardly inconsistent with the positivist position, Friedman writes that an important hypothesis “must be descriptively false in its assumptions,” but when he turns to theory-testing facts are thought to be readily identifiable by their nature and sufficiently resembling one another with discernible essences to be grouped as a meaningful set of statistics. “Positivism seems to be reserved for drawing up hypotheses, and essences for testing them” (*ibid.*, 13).

Mittermaier’s “Problem of Similarity” paper leads to the conclusion that “positivism in economics is therefore a blend of nominalism and realism” (*ibid.*, 14). To understand this more fully, we must turn to the distinction between nominalism and realism,⁷ which is at the heart of Mittermaier’s thinking, and proves to be a very efficacious schema for understanding economic theory from a bird’s eye view.

4. Nominalism and Positivism

When teaching his post-graduate classes, Mittermaier would begin by introducing students to the meaning of and distinction between nominalism and realism. That was not just a matter of one or two lectures specifically on that topic; rather Mittermaier would continue chiseling away at that distinction, explaining how Menger⁸ and Wicksell exemplify realists, whereas Pareto, Samuelson, and Friedman exemplify nominalists. J. O. Clerc (1942) seems to have been the first to look at Walras and Pareto in terms of realism and nominalism.⁹ His assessment, however, was the op-

⁷ For the review of the history of the nominalist and realist debate and the question of the universal, from Medieval times to early positivism, see Etienne Gilson’s (1952) classic work.

⁸ See Mittermaier (2018).

⁹ As regards Walras, various scholars consider him either a rationalist or an idealist, and so it might be wrong to refer to him as a realist. The deductive method we associate with rationalism must in no way be misunderstood as realist in the sense of the moderate or classical realism of Aristotle. Descartes thought that he would replace Aristotle, as did Hobbes. Both considered essences at the heart of Aristotle’s realism to be an obstacle for scientific advancement.

posite of Mittermaier's, with Clerc suggesting "that the Realism of Walras is absolutely sterile, whereas the Nominalism of Pareto gets closer to practical reality" (*ibid.*, 594).

One of Mittermaier's favourite quotes was Pareto calling himself "the most nominalist of nominalists." For Pareto, all good science has to follow the nominalist path, purging itself of any metaphysics. And so Mittermaier has chosen as the epigraph for one of his unpublished manuscripts the following from Pareto's *Mind and Society*:

Literary economists ... are to this day dilly-dallying with speculations such as "What is value?" They cannot get it into their heads that things are everything and words are nothing, and that they may apply the terms "value" and "capital" to any blessed things they please, if only they be kind enough – they never are – to tell one precisely what those things are (cited in Mittermaier 1981, front page).

This idea that "things are everything and words are nothing" may be as old as mankind itself, but eventually it was recorded by the classical Greek philosophers. Empedocles (c. 494 – c. 434BC), for instance, sees no difference between life and death other than a readjustment of atoms, and if he nonetheless keeps on using the words "life" and "death," he does so by convention, much like we do today when we talk about the rising sun, knowing well that this is not the actual case.¹⁰ In like manner we wash over the distinction between rational and irrational in economics, reducing the difference to bad calculations (see Becker 1962). Paraphrasing Pareto, we'd say "the choices" are everything, the adjectives you describe them with are nothing. That "words are nothing" is akin to a slogan for nominalism. Mittermaier was at pains not only to teach his students about the importance of recognising a nominalist position, but also to have a similar effect on his colleagues at Wits (Mittermaier 1989).

William of Ockham (1285–1347), famous for *Ockham's razor*, gave an early modern version of the nominalist position, stating that "There is no *universal* outside the mind. [...] [E]verything that is [...] is necessarily one thing in number and consequently a *singular* thing."¹¹ The world is comprised of *individuals* only; things or events. Nonetheless, when we make theories we use general terms or universals. This leads one to wonder "what are these general terms?" The nominalist says they are just labels, though Roscelin (1050–1125) suggested they are not even that, they are mere *flatus vocis*. "Nominalists [...] are committed to the view that the words which make up theories or hypotheses are mere names and are of no significance unless they are tied, rather like labels, to objects and events in the world, or, as it became in positivism, unless hypotheses are tested" (Mittermaier 1986a, 51). The mind, not the

¹⁰ Empedocles (1907) says thus: "More will I tell thee too: there is no birth of all things mortal, nor end in ruinous death; But mingling only and interchange of mixed There is, and birth is but its name with men... and though Not this the Law, I too assent to use."

¹¹ One recent commentator argues that "because of this one Medieval Franciscan, empirical inquiry took a turn toward the Scientific Method as well as a cultural turn to Scientism" (Shank 2013, 132–133).

world, is the origin of the generality of the concepts we use.¹² For Mittermaier, all of this is important because “from the point of view represented by [nominalism], there is, therefore, strictly speaking, no connection between the general and particular, or between theory and facts” (Mittermaier 1989, 3).

And so Ockham’s razor combined with nominalism suggests the path enthusiastically followed by Pareto, and so many others, namely to discard metaphysical entities. One way Ockham expressed the razor idea was that “[i]t is futile to do with more what can be done with fewer” (cited in Keele 2010, 95). Since everything is a singular thing, then that which is to be cut from analyses are as far as possible the universal terms, later referred to as metaphysical. For Pareto (1909) it meant getting rid of *utility* as a concept so that “economic science thus acquires the rigour of rational mechanics; it deduces its results from experience, without bringing in any metaphysical entity such as “utility.”

Mittermaier explained to his students why hypothesis-testing has acquired such an important role in economics. It all has to do with the nominalist view of universals and general terms. If the words we are using are just arbitrary labels, then their meaning is not related to the nature of the thing labelled, and so the connection between reality and language is broken. The same applies not only to words, but, being based on words, also to assumptions and hypotheses. In order, then, to establish a connection again with the real world, we rely on data to determine which one of the hypotheses best fits with the evidence. “The nominalist position is that hypothesis (general propositions) may be made up at will. But as hot air they are of no significance unless they are tested against facts (particular propositions)” (Mittermaier 1989, 4).

The idea of the “paradigm” takes the nominalist view to a further level, addressing some of the problems associated with hypothesis-testing. Facts are theory-laden; this was illustrated by Mittermaier’s comments on Friedman. Facts, in this view, are readily identifiable by their nature and resemble one another sufficiently with discernible essences to be grouped as meaningful statistics. But in the “paradigm” view of things, the theory-laden nature of facts is generated not by the meaning of words (as in Aristotelean essences), but is generated by the web of belief (Quine) or the paradigm (Kuhn). “Complexes of general propositions are held to affect particular propositions, or in other words, theories colour facts” (*ibid.*). So Quine, who is a nominalist in the sense of rejecting an Aristotelian understanding of universals, can give up one of positivism’s cornerstones, without reverting to a realist position, *viz.* he jettisons the dogma of the synthetic and analytic distinction, but without therefore accepting Aristotle’s realism. In Aristotle’s realism the meaning of a word and the meaning of truth is found in the relationship between words and things. For Quine, however, meaning is generated by the web of belief (Quine and Ullian 1975). It is important to note that Aristotle is often thought of as an empiricist, but his empiricism is not at all the same as the empiricism of the nominalist kind.

¹² Gilson (1952) remarks that this is true *except it does not cover the whole case.*

5. Nominalist *Weltanschauung*

Mittermaier was of the view that much clarity can be gained if one keeps an eye on the question of universals and the realism/nominalism divide. Charles Peirce (1839–1914), the founder of American Pragmatism and a very outspoken critic of nominalism, was of the same view.¹³ In fact he saw the “defeat of nominalism” to be the most important consequence of pragmatism. It “and all its ways are devices of the Devil, if devil there be” (quoted in Forster 2011, 2). For Peirce nominalism was a *Weltanschauung*:

It is not modern philosophers only who are nominalists. The nominalistic *Weltanschauung* has become incorporated into what I will venture to call the very flesh and blood of the average modern mind (cited in Forster 2012, 2).

How much of a *Weltanschauung* it is, can be shown by a few examples from Peirce’s time and from our time, in economics and other fields of study. For Darwin, for instance, “‘species’ was merely a term arbitrarily given for the sake of convenience to a set of individuals closely resembling each other” (1859, 55). For millennia before Darwin, species and genera had always been the principle tool to comprehend the world. It was a matter of, in Plato’s memorable turn of phrase, cutting up the world at its joints. And here is Darwin saying that there really are no *species*, even in the animal and plant kingdom. Mittermaier would probably identify the flaw in Darwin’s argument, namely that *resemblance* is made to carry the weight previously carried by *species*, but resemblance itself presupposes *something in common*, just as *species* is based on commonality.

How strongly nominalist our *Weltanschauung* is may be discerned in some expressions in the English language. If we consider something as “nonsense,” we refer to it as, well, nonsense; not perceptible by our senses. It is our senses that perceive the *individual*, and if it is non- perceptible it is at best a mere nothing or at worst, just *nonsense*. A further example we may find in a statement such as “it does not matter,” as in “if it is not material, it is unimportant.”

While Pareto was self-consciously a nominalist and proclaiming himself as one, today, one hundred years later, there is little awareness of the central role of a nominalist attitude in our thinking. Notwithstanding this blindness to the issue, our *Weltanschauung* is perhaps even more nominalist than it was in Pareto’s time. An example from the more recent literature illustrates the point. In a paper titled “The Case for Mindless Economics” we read that in standard economics “the term utility maximization and choice are synonymous” (Gul and Pesendorfer 2005, 6). Maybe they are synonymous in standard economics and in the authors’ private use, however they are not synonymous in public use. But we can see the strategy in place; utility is an ephemeral concept, with connotations of “mind” and not easily pinned down to singular things. Gul and Pesendorfer want to translate utility into choice, because

¹³ Sometimes he is referred to as the greatest mind of the 19th century!

choices can be expressed in quantities (e. g. price and quantity), and as singular events. This has been the nominalist strategy of Pareto, and also of Samuelson's revealed preference theorem.

I could supply many more examples from economics that illustrate how "nominalism is the flesh and blood of the modern mind," but the question is, what did Mittermaier offer in the place of nominalism.

6. Institutions and Realism

Given his interest in method generally, Mittermaier gave some significance to the *Methodenstreit* (dispute of methods) and to *institutions* in particular. In the *Methodenstreit* (and some of it played itself out in the pages of this journal) "at issue was, and continuing now, how to combine a logic of economic relations with empirical accounts of an institutional framework" (Mittermaier 1977, i). Perhaps it was optional for Schmoller to battle with Menger, but the Historical School's necessary foe was *Manchestertum*, viz., classical political economy. In any case "there remained to the present day 'what Eucken called the great antinomy between the individual-historical and general-theoretical approaches'" (*ibid.*, iv).

When adopting Mittermaier's schema, both the individual-historical and the general-theoretical approaches to economics were variants of nominalism.¹⁴ In the case of the Historical School this meant the eschewal of theory, aiming instead "at a Darwinistic account of the origin, growth, persistence, and variation of institutions" (Veblen 1902, 81).

In the case of the general-theoretical approaches, the nominalist attitude is expressed, for instance, by John Stuart Mill (the paragon not only of British empiricism but also of classical political economy before the marginalist revolution; he was also a friend of Comte and imported Comte's positivism to England). For Mill, "definitions are definitions of words only," and as a contemporary of Mill explained it "no definition is meant to explain and unfold the nature of a thing; it is simply a proposition declaratory of the meaning of a term. It is always nominal" (Ueberweg 1871, 575). This is how we proceed, for instance, when we give a declaratory definition of *perfect competition* to first year economics students, and this is what Gul and Pesendorfer do, declaring utility as synonymous to choice, making *utility* amenable to a "mindless economics."

I mention this by way of introduction to Mittermaier's idea of how to do economics and the role of institutions in his schema. His goal was to move beyond this antinomy between the individual-historical and general-theoretical approaches. In a chapter on "the empirical content of institutions," Mittermaier (1977) boldly asserts as his pri-

¹⁴ This excludes Menger (see Mittermaier 2018), but not those who were directly aligned on Menger's side of the dispute, such as Wieser and Bohm-Bawerk (see Cubeddu 1993).

mary purpose “the development of an alternative conceptual framework which could ultimately enable the economic theorist to use institutions as a means of *empirical orientation*” (*ibid.*, 13).

What was this alternative framework? First, it had to be *realist*, though not the realism of what Mittermaier called new realism, *e. g.* critical or transcendental realism, which considers as being real abstract entities, such as structures, social classes, etc. Mittermaier’s realism is the immanent or classical realism of Aristotle, dealing with the relationship between the general and particular.¹⁵ He characterised realists to “hold that both particular and general terms refer to something that is real (hence Realism), [that] significant scientific conclusions may be drawn from the analysis of general terms” (Mittermaier 1989, 4).

But that realism is not a type of rationalism. It is instructive to remember that the rationalist Descartes wanted to replace Aristotle altogether, expecting that by using only terms that are “clear and distinct,” he would have no occasion to doubt them. Mittermaier’s preferred approach to economic questions can perhaps best be put in terms used by Aristotle at the very beginning of *Physics*: “So we must follow this method and advance from what is more obscure by nature, but clearer to us, towards what is more clear and more knowable by nature.” Aristotle proceeded in this way, gaining an understanding, say, of the “obscure” *motion* (though so known to us) and then developing a clearer understanding of and eventually giving a definition of *motion*, with distinct parts of that definition.¹⁶

Likewise, Mittermaier in *The Hand behind the Invisible Hand* (Mittermaier 1986a) looks at *market order*, highlighting the confusion that surrounds the expression. We seem to recognise market order, but find it difficult to say more distinctly what we mean by it. Smith and Walras sought to work out the ideal of a market order. We get a more distinct understanding of market order when we consider, as Mittermaier does, whether the conditions under which the invisible hand may be expected to operate have to be created deliberately, or not. The conditions required for a market order are institutions that bring “about a situation marked by the absence of rent-seeking or predatory activities” (Mittermaier 1994, 15).

In Mittermaier’s understanding of classical liberalism, at least in its political economy aspect, the heart of the matter was the working out of a system that rewards productive activities while scuppering predatory activities. “Where people specialize, the rule is to live by production and exchange and it is in the institutional set-up of an exchange economy that opportunities arise for some people, let us call them predators, to live and prosper at the expense of others” (Mittermaier 1986a).

¹⁵ See Maki (1997).

¹⁶ Descartes had the same problem with *motion*, assuming that since we are certain that motion exists, we also know distinctly what it is, and so there is no need to define it – that Aristotle was simply wasting his time trying to do so.

If the pressing issue of predatory activities was such an important concern at the time of the emergence of modern economics, why is it that in modern economics hardly a trace of it is found? The answer, of course, is given by Pareto's attitude that "things are everything, words are nothing." From a nominalist perspective, predation is just a metaphysical term without which we are better off. And so in equilibrium theory *predation* becomes *production*, because the rewards obtained by an individual reflect the market values of those activities; they are, by definition, the marginal *products*. As long as you earn money even from predatory activities, they will be seen as productive.

7. Conclusion

Mittermaier provides a critique of economic theory and also offers an alternative way for economic analysis, where the critique and the alternative are not independent of one another. They are bound together by the philosophical schema that he takes to underlie all theoretical enterprises, *viz.*, the relationship between the particular and the general. The nominalist view of the relationship assumes that there is no *real* relationship; only the singular or individual thing or event exists, and the general term is the mind's shorthand way of referring to a collection of individual things or events. The realist view assumes that there is something intrinsically common to the individual things or events that are called by the same general term.

Mittermaier critiques economic theory where it adopts a nominalist character. His alternative approach, on the other hand, is based on a realist understanding of theory, which is however not a rationalist or logico-deductive reduction to self-interested decision making, but aims at obtaining a more distinct understanding of the market order, distinguishing between production and predation, between guiding conception and description, etc. Mittermaier's realist concern is with differences in kind, whereas nominalist equilibrium theory concerns itself with differences in quantity to operationalise the equimarginal principle. The *The Hand behind the Invisible Hand* (Mittermaier 2020) and other hitherto unpublished Mittermaier texts will provide further opportunity to explore the value of his critique and of his alternative approach.

References

- Aristotle. 1930. *Physics*. Translated by R. P. Hardie and R. K. Gaye. Oxford: Clarendon Press.
- Becker, G. 1962. "Irrational Behavior and Economic Theory." *Journal of Political Economy* 70 (1): 1–13.
- Boettke, P. J. 1994. "Ludwig Lachmann and his Contributions to Economic Science." *Advances in Austrian Economics* 1: 229–32.
- Born, M. 1935. *The Restless Universe*. London: Blackie & Son.

- Clerc, J. O. 1942. "Walras and Pareto: Their Approach to Applied Economics and Social Economics." *The Canadian Journal of Economics and Political Science / Revue canadienne d'Economique et de Science politique* 8 (4): 584–94.
- Cubeddu, R. 1993. *The Philosophy of the Austrian School*. London: Routledge.
- Darwin, C. 1859. *On the Origin of Species*. London: John Murray.
- Empedocles. 1907. "The Fragments Of Empedocles." *The Monist* 17 (3): 451–74.
- Forster, P. 2011. *Peirce and the Threat of Nominalism*. Cambridge: Cambridge University Press.
- Gilson, E. 1950. *The Unity of Philosophical Experience*. New York: Charles Scribner's Sons.
- Gul, F. and W. Pesendorfer. 2005. "The Case for Mindless Economics." Accessed April 1, 2020. <http://www.princeton.edu/~fgul/mindless.pdf>.
- Jaffe, W. 1977. "The Normative Bias of the Walrasian Model: Walras versus Gossen." *Quarterly Journal of Economics* 91 (3): 371–87.
- Keele, R. 2010. *Ockham Explained: From Rebellion to Razor*. Chicago and La Salle: Open Court.
- Klein, D. 2019. "Karl Mittermaier's Pursuit of Classical Liberal Coherence." (August 21, 2019). *GMU Working Paper in Economics* No. 19–25. Accessed April 1, 2020. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3440643.
- Lachmann, L. 1963. "Wirtschaftsordnung und Wirtschaftliche Institutionen." *ORDO Jahrbuch für die Ordnung von Wirtschaft und Gesellschaft* 14: 63–77.
- Maki, U. 1997. "Universals and the Methodenstreit: A Re-examination of Carl Menger's Conception of Economics as an Exact Science." *Studies in the History and Philosophy of Science* 28 (3): 475–95.
- McCloskey D. N. 1985. *The Rhetoric of Economics*. Madison: University of Wisconsin Press.
- Mittermaier, K. H. M. 1977. Untitled. Unpublished Monograph.
- Mittermaier, K. H. M. 1981. *On Judgements of Facts and the Proportions of Micro-economic Theory*. Unpublished Monograph.
- Mittermaier, K. H. M. 1982. "The Problem of Similarity: A potted History of Western Philosophy." Unpublished Manuscript.
- Mittermaier, K. H. M. 1986a. *The Hand behind the Invisible Hand: Dogmatic and Pragmatic Views of Free Markets and the State of Economic Theory*. PhD Thesis at the University of the Witwatersrand, Johannesburg, South Africa.
- Mittermaier, K. H. M. 1986b. "Mechanomorphism." In *Subjectivism, Intelligibility and Economic Understanding*, edited by Israel Kirzner. New York: New York University Press.
- Mittermaier, K. H. M. 1987. "Research Proposal." Unpublished Manuscript.
- Mittermaier, K. H. M. 1989. "Philosophy and Economics." Paper Presented at a seminar for Economics and Business Economics at the University of the Witwatersrand.
- Mittermaier, K. H. M. 1992. "Ludwig Lachmann (1906–1990): A Biographical Sketch." *South African Journal of Economics* 60 (4): 7–23.

- Mittermaier, K. H. M. 1994. "The Invisible Hand and Some Thoughts on the Non-Existent in What We Study." Paper Presented at the 2nd International Workshop on Methodology of Economics, Cambridge University.
- Mittermaier, K. H. M. 2000. "On the Delicate Nature of Markets: Lachmann Memorial Lecture." *South African Journal of Economics* 68 (3) 537–59.
- Mittermaier, K. H. M. 2018. "Menger's Aristotelianism." *Cambridge Journal of Economics* 42 (2): 577–94.
- Mittermaier, K. H. M. 2020. *The Hand Behind the Invisible Hand: Dogmatic and Pragmatic Views on Free Markets and the State of Economic Theory*. Bristol: University of Bristol Press.
- Quine, W. V. and J. S. Ullian. 1975. *The Web of Belief*. New York: McGraw Hill Education.
- Shank, G. 2013. *Ockham's Mug: The Spirit of Qualitative Research*. Amazon Kindle edition.
- Ueberweg, F. 1871. *System of Logic and History of Logic Doctrines*. London: Longmans, Green & Co.
- Veblen, T. 1901. "Gustav Schmoller's Economics." *The Quarterly Journal of Economics* 16 (1): 69–93.