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# LEIBNIZ, HUSSERL, AND THE BRAIN

Norman Sieroka



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*For those who matter most:  
Mudders, Vadders, Pia, Monski, Tale*



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# List of Abbreviations and Conventions

- A Gottfried Wilhelm Leibniz (1923–). *Sämtliche Schriften und Briefe*. Preußische (later: Berlin-Brandenburgische and Göttinger) Akademie der Wissenschaften (ed.) (Berlin: Akademie Verlag). Cited by series, volume, and page.
- Ar Gottfried Wilhelm Leibniz (2001). *The Labyrinth of the Continuum*. R. T. W. Arthur (ed. and tr.) (New Haven: Yale University Press). Cited by page.
- B Edmund Husserl (1991). *On the Phenomenology of the Consciousness of Internal Time: 1893–1917*. J. B. Brough (tr.) (Dordrecht: Kluwer). Cited by page.
- C Gottfried Wilhelm Leibniz (1903). *Opusculæ et fragments inédits de Leibniz*. L. Couturat (ed.) (Paris: Alcan). Cited by page.
- CA Edmund Husserl (1973). *Experience and Judgement*. S. Churchill and K. Ameriks (trs) (Evanston: Northwestern University Press). Cited by page.
- Ch Gottfried Wilhelm Leibniz (1920). *Early Mathematical Manuscripts of Leibniz*. J. M. Child (ed.) (Chicago: Open Court). Cited by page.
- DM Gottfried Wilhelm Leibniz. *Discourse on Metaphysics*. Cited by section, as in GP IV.
- Du Gottfried Wilhelm Leibniz (1768). *Opera omnia*. L. Dutens (ed.) (Geneva: Apud Fratres de Tournes). Cited by volume, part, and page.
- Essay John Locke (1979). *An Essay Concerning Human Understanding*. P. H. Niddich (ed.) (Oxford: Clarendon Press). Cited by book, chapter, and section.
- Ethics Benedictus Spinoza (1925). *Ethica*. Volume 2 of C. Gebhardt (ed.), *Opera* (Heidelberg: Winter). Cited as follows: the first numeral refers to the part; ‘p’ means ‘proposition’; it is followed by the number of the proposition; and ‘s’ and ‘d’ refer to ‘scholium’ and ‘demonstration’, respectively.
- EU Edmund Husserl (1939). *Erfahrung und Urteil* (Prag: Academia). Cited by page.
- F Edmund Husserl (2001). *Logical Investigations*. J. N. Findlay (tr.) (London: Routledge). Cited by volume and page.

- GLW Gottfried Wilhelm Leibniz (1860). *Briefwechsel zwischen Leibniz und Christian Wolff*. C. I. Gerhardt (ed.) (Halle: Schmidt). Cited by page.
- GM Gottfried Wilhelm Leibniz (1849–63). *Leibnizens Mathematische Schriften*. C. I. Gerhardt (ed.) (Berlin: Asher, and Halle: Schmidt). Cited by volume and page.
- GP Gottfried Wilhelm Leibniz (1875–90). *Die Philosophischen Schriften von Gottfried Wilhelm Leibniz*. C. I. Gerhardt (ed.) (Berlin: Weidmann). Cited by volume and page.
- H Gottfried Wilhelm Leibniz (1951). *Theodicy*. E. M. Huggard (tr.) (London: Routledge & Kegan Paul). Cited by page.
- Hi Edmund Husserl (2008). *Introduction to Logic and Theory of Knowledge: Lectures 1906/07*. C. O. Hill (tr.) (Dordrecht: Springer). Cited by page.
- Hua Edmund Husserl (1950–). *Gesammelte Werke (=Husserliana)*. Husserl-Archives Leuven (ed.) (The Hague: Nijhoff). Cited by volume and page.
- L Gottfried Wilhelm Leibniz (1969). *Philosophical Papers and Letters*. L. E. Loemker (tr. and ed.) (Dordrecht: Reidel). Cited by page.
- LC Gottfried Wilhelm Leibniz. *Streitschriften zwischen Leibniz und Clarke*. Cited by number of the letter and section, as in GP VII.
- M Gottfried Wilhelm Leibniz. *Monadologie*. Cited by section, as in GP VI.
- MP Gottfried Wilhelm Leibniz (1973). *Philosophical Writings*. M. Morris and G. H. R. Parkinson (trs and eds) (London: Dent). Cited by page.
- NE Gottfried Wilhelm Leibniz. *Nouveaux essais sur l'entendement humain*. Cited by book, chapter, and section, as in GP V.
- PNG Gottfried Wilhelm Leibniz. *Principes de la Nature et de la Grâce, Fondés en Raison*. Cited by section, as in GP VI.
- Principles* René Descartes (1973). *Principia Philosophiae*. Volume 8.1 of C. Adam and P. Tannery (eds), *Oeuvres de Descartes* (Paris: Vrin). 1964–74. Cited by part and article.
- RB Gottfried Wilhelm Leibniz (1996). *New Essays on Human Understanding*. P. Remnant and J. Bennett (trs and eds) (Cambridge: Cambridge University Press). Cited by page.
- S Edmund Husserl (1977). *Phenomenological Psychology: Lectures, Summer Semester, 1925*. J. Scanlon (tr.) (The Hague: Nijhoff). Cited by page.

- T Gottfried Wilhelm Leibniz. *Essais de Theodicée*. Cited by section number, as in GP VI.
- WF Gottfried Wilhelm Leibniz (1997). *Leibniz's 'New System' and Associated Contemporary Texts*. R. S. Woolhouse and R. Francks (trs and eds) (Oxford: Clarendon Press). Cited by page.

Wherever possible, references to Leibniz and Husserl are to the editions by Gerhardt (GP, GM, and GLW) and to the *Husserliana* (Hua). The other primary sources are A, C, Ch, Du, and EU. For longer quotations from established English translations (such as B, F, L, and RB), even if slightly altered, a page reference to the translation has been added. All further abbreviated references (such as M, NE, and DM) are additive. They have been given for only the convenience of the reader to allow for comparisons with customary translations. Moreover, conventions are such that all numbers which occur after a colon (and indeed only such numbers) are page references.



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# Part I

## Introduction





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# 1

## Summary and Scope

### Chapter Highlights

- Summary of content
- Aims and scope of relating phenomenological and neurophysiological aspects of perception, consciousness, and time
- Relevance for contemporary philosophy, especially Leibniz research, phenomenology, philosophy of mind, and philosophy of time

The initial motivation for the present study, which in turn led me to the work of Leibniz and Husserl, is the simultaneous appreciation of neurophysiology and philosophy – that is, the acknowledgment that philosophy and neurophysiology are important and sensible enterprises which help with understanding the world around us and how we act in it. They both describe different, but not necessarily incompatible, aspects of the world. For example, while the neurophysiologist maps sounds to activations of inner ear hair cells, neural firing rates and the like, the phenomenologist maps them to pitch, timbre, and so on. The fact that these mappings are not identical will be the root for a certain skepticism about reductions to the physical or the mental or, as I will rather call it, *the perceptual*. To use a naive but illustrative example, a table can be both round and white, and it does not seem that any attempt to reduce the table as a whole to its color or geometrical shape – even if it were possible to do so – would be very revealing. On the other hand, perceptual states and physical states are not simply completely divergent in their respective structural features. To me, this seems to be something that is worthwhile to consider and examine in more detail.

## 1.1 Summary of content

This book is about the systematic, structural relations between phenomenological and (neuro)physiological aspects of perception, consciousness, and time, with a specific focus on hearing. To use a visual metaphor – which will be discussed in more detail later – one may say that the aim of the book is to provide a ‘stereoscopic vision’. That is, the simultaneous presentation of these different but structurally similar perspectives of phenomenology and neuroscience is meant to increase the ‘depth of focus’ with respect to some present concerns and issues in our understanding of perception and time.

Accordingly, my reference to Leibniz is not for philological reasons but, rather, to work toward philosophical orientation in a conceptual maze. The work of Leibniz has shaped much of the later discussions in this ‘border area’ of theoretical and empirical research, and it still seems to be a sensible compass in many respects. Several of his claims about the relations between the physical and the perceptual and between conscious and unconscious states are still plausible to a considerable extent. At times, those claims allow for a fresh (or rather refreshed) view on issues in contemporary philosophy of mind and also in psychophysics. For similar reasons, I will also resort to some concepts and findings from Husserlian phenomenology, especially in the context of time consciousness.

It follows from the adaptation of such a Leibniz-Husserlian stance that various issues which have been prominent subjects of discussion in recent philosophical debates will be left untouched here. However, I would like to suggest that this need not necessarily, or always, mean a neglect or conceptual insufficiency on the side of the present approach. Sometimes, such ‘neglects’ may also indicate the possibility for a re-orientation in the sense of an escape from what has been a ‘blind alley’ all along.

The methodological questions which are raised by an approach which aims to follow Leibniz and Husserl will be discussed in Chapter 2, which is the closing chapter of this first, introductory part of the book. There, the general non-exegetic re-thinking of a philosopher (or rather of his philosophical framework and concepts) will be explicated along the lines of Sellars’s, Mackie’s, and Strawson’s approaches to Kant and Locke. Other issues to be addressed in the same chapter pertain to the relationship between the physical and the perceptual and, with respect to the latter, between conscious and unconscious states. This will also be the first opportunity to make central use of an important Leibnizian concept: ‘expression’ as denoting a specific kind of structural resemblance.

The aim of Part II (Chapters 3–5) is to introduce and to argue in favor of a Leibnizian concept of perception. This concept is rather broad: It is not restricted to conscious states, as it arguably would be for a phenomenologist. Nor does it view consciousness as a direct result, or a by-product, of neural processing (as a physicalist would do). Here, Leibniz's concept of unnoticeable perceptions, and of how they relate to physical states, will be explicated. This explanation will immediately suggest that empirical research should be taken into account, as well. Leibniz thought very carefully about what a physical analog of a mental (perceptual) state could be. Further, his anti-reductionistic reflection can be applied directly to recent findings in psychophysics and neurophysiology. To that effect, further important concepts from Leibniz's metaphysics and physics will be introduced and addressed. In particular, the principle of continuity, final causation, and the 'pre-established harmony' will be discussed. This discussion will lead to an interpretational framework in which certain brain responses are understood as physical analogs of unnoticeable perceptions.<sup>1</sup> For instance, the interpretation of the infamous experiment by Libet and his colleagues turns out to be about (the mental accessibility of) perception and not – or at least not directly – about free will. The next Leibnizian claim to explicate, then, is that consciousness can be understood as being a direct result of perception. More precisely, the claim is that consciousness is a direct result of the accumulation of unnoticeable perceptions and of their distinctness.

The rather short third part of this book, consisting of only Chapter 6, discusses findings from auditory perception and shows their close relation and relevance to issues in the philosophy of time and time consciousness. This third part functions as a link to the philosophy of time (to be discussed intensively in Part IV) and also as an opportunity to apply the aforementioned Leibnizian concepts to the description and interpretation of auditory phenomena. Accordingly, this part of the book is also an implicit argument against a certain hegemony of vision and visual phenomena in recent, both analytic and continental, philosophy of perception.<sup>2</sup> By the same token, it is also an implicit critique against a general bias among philosophers of cognitive science toward particular imaging techniques. Whereas other authors have mostly discussed data from functional magnetic resonance imaging (fMRI) and from positron emission tomography (PET), my focus will be on electrophysiological data as gathered by electro- and magnetoencephalography (EEG and MEG). The reason for this focus is twofold: first, in contrast to fMRI and PET, EEG and MEG measure neural activity directly; second, EEG and MEG exhibit

a much higher temporal resolution (which is obviously desirable in the present context of studying time).

The final, fourth part of this book (Chapters 7–9) is a further development of the Leibnizian account which moves in the phenomenologist's direction. By the same token, it heads toward an integrated account of time and time consciousness. Here again, Leibniz's account of the appetitive structure of perception will become important, because it introduces an elementary form of intentionality into perception and, hence, invites recourse to Husserlian phenomenology.<sup>3</sup> More specifically, Husserl's analysis of time consciousness (in terms of the inner dynamics of protentions and retentions), which he takes to be fundamental for all acts of conscious perception, will be used to sharpen and deepen Leibniz's concepts of appetite and reflection. In turn, Leibniz's framework will be used to extend the Husserlian approach toward unconscious (subliminal) perception in a systematic fashion. Both will be done, and illustrated, by reverting to some of the auditory examples introduced in Part III. In particular, it will be argued that all perceptual states have an intrinsic temporal structure and that this structure is a tensed one – meaning that it is in some sense essential for a perceptual state whether it is past, present, or future. This tensed ordering of subjective, or perceptual, time will be contrasted with the tenseless ordering of physical time. The underlying assumption involved in this contrast is that the fundamental, temporal order between physical states, as such, is in terms of one being earlier or later than the other, whereas it is not fundamentally characteristic of a physical state whether it is past, present, or future.

The picture which emerges in Part IV is one in which the two types of temporal ordering (namely, tensed and tenseless) underlie the difference between the realms of perception and of physics (including neurophysiology). However, these two different orderings, together with certain related orderings to be derived from them, exhibit some important structural similarities, which will allow for an interpretation according to which the parallelism between perceptual states and bodily (physiological) states is due to expressive relationships (in Leibniz's sense of the term) holding between these different temporal orderings.

I take this expressive relation to be an irreducible one. As a result, unlike Leibniz, I do not take this parallelism to be due to God (which is not a viable option in philosophy today). I will also dismiss passages from Leibniz's later writings in which physics is presented as nothing but a well-founded phenomenon – that is, as a kind of epiphenomenon derivative of or parasitic on the primitive level of the monads. Hence, the aim of the following chapters is to flesh out and to corroborate a

'non-reductive' reading of Leibniz according to which the philosophy of perception (mind) and the philosophy of nature (physics, physiology) are, in some sense at least, on an equal footing. Such an interpretation can be justified both for historical and for systematic reasons. It can be justified historically because, during his 'middle years' (the 1680s and 1690s), Leibniz wrote many texts which are in line with the present interpretation. It can be justified systematically because, apparently, it is the most congenial and fruitful reading – if one intends to take phenomenological, psychological, and neurophysiological findings seriously.

Notwithstanding this general focus on Leibniz's middle years, I will also make use of a few particular concepts of Leibniz's later writings (and once or twice even of his earlier writings as when referring to 'instantaneous minds' in Chapter 8). This historically rather impure procedure is due to the general frame of the present study. A close reading of Leibniz (as well as of Husserl) must come to a practical end when the overall aim is to advance something like a contemporary 'neurophenomenology' of hearing and time consciousness. In particular, the framework must be such that comparisons with modern neurophysiology and psychophysics are allowed for and sensible, whereas exegetical issues leading to a disproportional inflation of the text are arguably to be avoided. To give a concrete example, during his middle years Leibniz did not use the term 'monad', his cognate term during that period being 'substantial form'. However, using the latter expression would turn out to be awkward in some of the present contexts, and it would lead to unnecessary complications when bringing together Leibniz and Husserl. Husserl, when talking about Leibniz (either the middle or the later), always speaks of 'monads' and – given that it is a cognate term – I too will stay with that expression. Hopefully this kind of procedure will not appear as simply riding roughshod over Leibniz and Husserl but, given the present aim and context, as a comprehensible and justifiable approach. (As already mentioned, more on the historiographical methodology is to follow in Chapter 2).

At first glance, two different readings of the present study are possible: a strong metaphysical reading and a weak descriptive reading. For the first type of reading, the aim of the present work would be to establish a revival of a Leibnizian psychophysical parallelism as a framework for 'ontologizing' phenomenology. As will become obvious during the course of this book, I indeed have certain sympathies for a non-reductive approach along the lines of Leibniz's psychophysical parallelism. However, metaphysical or ontological claims are not my predominant concern. Instead, I mostly aim to provide a careful description (a propaedeutic) of the relations between the phenomenology and neurophysiology of perception

and, in particular, of hearing. I think there are many insights and a lot of material which must first be gathered and looked at in some detail in order for their possible structural differences and similarities to be found. In turn, this will reveal prospects, limits, and problems which philosophers interested in metaphysical ‘-isms’ have to deal with in their respective frameworks. Thus, from time to time, I will explicitly suggest that certain insights and consequences might not be capable of an easy or straightforward integration into, say, a physicalist framework. This, however, is not to say that they cannot be integrated in principle. Accordingly, my own understanding of the following is in terms of a descriptive reading – in terms of a ‘phenomenological attenuation of Leibniz’, as one might put it.

Two additional, rather formal notes before sketching the general relevance of the present study. First, each chapter starts off with a short list of ‘Chapter Highlights’ – that is, bullet points which provide the reader with a quick overview of the general line of argument and of the core findings and topics touched upon in the respective chapter. The highlights are given ‘in order of appearance’ in the subsequent text and are meant to provide general signposting in addition to the section and subsection headings. Second, due to the various authors and topics which are addressed, a certain amount of technical terminology and jargon will come up. Of course, these terms are carefully introduced in the main text. In addition, however, a glossary is provided at the very end of the book. It contains short and comprehensive entries on the most relevant terms as they derive in particular from the discussion of Leibniz, phenomenology, and auditory research.

## **1.2 Relevance and contribution to contemporary philosophy**

Although this is no philological project, at some points the present work may contribute hermeneutically to Leibniz scholarship. In particular, it may contribute with respect to the concept of unnoticeable perception, which (as compared to many other concepts in Leibniz) has gained rather little attention. Even though his broad concept of perception is surely not unproblematic (see, for instance, Kulstad 1982, 1990: 146), Leibniz provides a noteworthy and thought-provoking philosophical perspective on unconscious phenomena which, arguably, was lost in later philosophical theories of subjectivity.

The interpretation presented in this book of the parallelism between the perceptual and the physical in terms of tensed and tenseless time

orders might be of interest to the historical contextualization of Leibniz. This is because those aspects of perception which are closely related to the (tensed) becoming of subjectivity and self-consciousness formed the core business of later transcendental philosophy, whereas the physical aspects – that is, the side of tenseless physical events in space-time – can be understood as a follow-up of Spinozian field metaphysics (see Rohs 1996, 2008 and Sieroka 2010a).<sup>4</sup>

Regarding phenomenology, the present project can be considered relevant for, at least, the following five reasons. First, it may help clarify the status and possible integration of unconsciousness into phenomenology, which is an often desired but notoriously difficult task to accomplish.

Second, the following discussion of time consciousness will concentrate on Husserl's 'Bernau manuscripts' (Hua XXXIII).<sup>5</sup> Given that these manuscripts have only recently been published, their systematic investigation is currently of high interest in phenomenology.

Third, several eminent phenomenologists such as Eduard Marbach and Dan Zahavi have recently engaged in the interpretation of neuroscience. Further, this engagement might well be motivated by the assumptions that (1) there is a certain continuity between non-scientific (phenomenological) and scientific thinking about consciousness and that (2) it is necessary for philosophical thinking about subjectivity (which entails the first-person stance) to relate to more objectivist approaches, especially those found in experimental psychology and neuroscience (see Hampe 2003, 2009). The present study might help to gain a more serious and differentiated terminology for describing perceptual experience in a neuroscientific context, which, in turn, might improve empirical research (as suggested, for instance, by Gallagher 1997, Marbach 2007, and Schmicking 2010).

Fourth, a systematic investigation of the relation between phenomenological and neurophysiological states might also be helpful for gaining a better understanding of certain therapeutic and clinical methods. I will come back to this briefly in the next chapter. For now I note that I take the success of cognitive therapy and neurofeedback to be an important empirical indicator of the reasonableness and relevance of doing phenomenology.

Fifth, although most people who try to relate phenomenology to neuroscience focus on vision and on rather 'high' mental processing, the present study focuses on hearing and restricts itself to a more 'basic' level. Thus, instead of discussing neural processes related to episodic memories or visual illusions, and instead of discussing the activations of mirror neurons, and so on, I will treat brain responses mainly from



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