

Conclusion: The Determination of PWO's Ontological Nature

The attempt to describe an entity of any kind as the entity it is, in its being qua being and not in its being a subject to more special sciences or particular ideologies, is the attempt to determine this entity's ontological nature. This Aristotelian approach of what was later called 'ontology' (or 'general metaphysics') would be very limited, however, if it were to understand Being only as something static, present and consistently thinkable that is subject to universal laws of logic. One of the more implicit aims of this project was to show that ontological determinations of an entity as the entity it is can also, as several 'process ontologies' have shown before, range over dynamic, latent and consistently experienceable yet logically often paradoxical or at least not fully determinable entities. Therefore, I agree with Merleau-Ponty [1964: 95–6], who writes that “[m]etaphysics is not a construction of concepts by which we try to make our paradoxes less noticeable but is the experience we have of these paradoxes in all situations of personal and collective history and the actions which, by assuming them, transform them into reason.”

In applying this conviction to ontological matters, I demonstrated in a number of argumentative steps and by taking into consideration different disciplines with different methods (formal ontology, cognitive linguistics, Gestalt research) that it is indeed worthwhile to start out with classical and familiar ontological concepts, such as *part* and *whole* in this case. Instead of limiting the research question to 'what is a part (in general or in context x)?' or 'what is a whole (in general or in context x)?', however, I found it equally, if not more, interesting and promising to ask about the specific and hard to grasp 'in-between' of parts and whole (in general or in context x). This necessitates disclosing ways in which both sides are interdependent and even interpenetrating in a process of ongoing backgrounding and foregrounding: a back-and-forth movement that I have called from the very beginning 'part-whole oscillation' (PWO). I introduced it by means of a fictional scenario in which the protagonist of Arnheim's novel *A Topsy-Turvy World* undergoes an ontological transition from a mechanical world of part-whole independence to an organic world of part-whole interdependence. Let me now recapitulate the most significant argumentative steps and insights of this ontological determination, thereby beginning with a list of the eight partial characterizations of PWO and continuing by deriving the steps that led to these characterizations. In the end, I conclude by merging them into one whole determination of the ontological nature of PWO for the domains on which I decided to concentrate in the present project.

The following are the eight partial characterizations of PWO's ontological nature:

PWO_{ded} A part-whole oscillation (PWO) is the dynamic interplay of moments and whole within the same entity. It occurs when during the fusion (continuation) of moments and whole both moments and whole become distinguishable (discontinuous) as well.

During their continuation, moments and whole stand out alternately and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole.

PWO_{ind_lang_1}: A part-whole oscillation (PWO) occurs in natural language, because due to our body/environment interactions, we develop a PART-WHOLE image schema which makes for perceptually and situationally meaningful experiences of part-whole structures. In so doing, this image schema contributes to shape our abstract thinking (our concepts) and is therefore linguistically expressible. Furthermore, the PART-WHOLE image schema has the capacity of being structured like a mosaic in general and like a fractal in particular, which means that the whole can be regarded as iterated and occurring in (one or more of) its parts.

PWO_{ind_lang_2}: A part-whole oscillation (PWO) occurs in natural language as conceptual metonymy. Unlike a conceptual metaphor, a conceptual metonymy relates to one homogenous experiential domain and allows for a whole in / the whole of this domain to be either *backgrounded* (domain reduction: WHOLE TO PART) or *foregrounded* (domain expansion: PART TO WHOLE) such that one or more of its parts are either *foregrounded* or *backgrounded* in return. The part-whole structure of a conceptual metonymy is thus not only interdependent, but also co-active and bidirectional, i.e. both the parts and the whole are conceptually present and thus retrievable at any time. This means that they can 'oscillate' by continually switching into each other.

PWO_{ind_lang_3}: A part-whole oscillation (PWO) as conceptual metonymy is directed towards external objects and events. It is thus a linguistic and conceptual yet body-based device or a 'mental shortcut' which helps us to conceptualize and express aspects of reality itself as against taxonomic categories of the mind. With conceptual metonymy, we think of and linguistically express aspects of the experienced world around us in dynamical and meaningful part-whole mappings without, as in conceptual metaphor, changing the experiential domain in the transition from source (whole/part) to target (part/whole).

PWO_{ind_emp_1}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful through mutual interaction that appears as a happening to the whole via its parts. This dynamic interdependency prevents both absolute whole homogeneity as well as whole primacy and absolute part heterogeneity as well as part primacy.

PWO_{ind_emp_2}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful through mutual interaction that is instantiated by the acts of splitting a whole into parts and merging parts into a whole.

PWO_{ind_emp_3}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole become perceptually meaningful during the more general processes of ontological emergence and ontological demergence.

PWO_{ind_emp_4}: A part-whole oscillation (PWO) is a perceptible process of two-sided part-whole dependency in which both parts and whole can alternately stand out as being foregrounded and/or backgrounded, which makes the part-whole entity in question ambiguous and multistable. This precludes the assumptions both of an unchanging ontological hierarchy of parts on a lower and the whole on a higher level and of a flat ontology in which there are no vertical levels at all. Like the process of PWO itself, the hierarchy in which its different aspects are ordered is fundamentally reversible and perceptible in its reversions.

These are the eight partial determinations, and before I combine them into one embracing determination to conclude the present project, let us review the line of argumentation from which these partial determinations have resulted. As a first attempt to approach the research topic and to derive it from the fictional scenario in which it was introduced, I embedded it within the fourfold grid of the parameters *experience*, *reality*, *part-whole* and *meaning*. In their function as parameters, they were, on the one hand, variable enough to determine the notion of PWO within different contexts studied by different disciplines, while on the other hand, they constituted a guideline, initially formulated as a roadmap, for the concrete ontological research that was to be carried out. Sometimes explicitly, most of the time, however, implicitly in order to avoid a too schematic and rigid development of the argument, I interconnected these parameters in the course of the project within different contexts and thereby gave them values in a flexible way. For example, in the second chapter the parameter *part-whole* was bound in the context of Husserl's formal ontology with the values of being universal, a priorily determinable and subject to part-independence ('objective pieces'). However, from the third chapter on, the same parameter (*part-whole*) was paired with the parameter *experience* (bound as 'empirical perception') and thus received a character of contingency, experienceability, particularity and part dependence ('perceptible moments'). The choice of these parameters naturally pushed the project into a certain direction, and another set of parameters or other ways of binding and/or pairing them would have led to different results. Instead of just defining a number of axioms at random, however, the four parameters have the advantage that they are derived from a concrete, albeit fictional situation in which the research object occurs. They also provide a flexible adaptability in receiving values, and instead of being ends in themselves, they are the 'bendable backbones' on which the determination of PWO was able to rely from the outset.

After the illustration of the research object with the help of a fictional scenario and after deriving the relevant parameters for its investigation, I devoted the first chapter to deciding upon appropriate methods with which the until then only vague idea of PWO could be determined at all. Although the first chapter was thus meta-ontological in nature, the methodological reflections therein were already based on a pairing of the bounded parameters, viz. the study of *reality*, i.e. ontology, and the adequacy of *experience* for gaining ontological insights. This means that in addition to the more conventional ontological method of a priori or 'armchair' reasoning, I found it fundamental to include the a posteriori, empirical *experience* of part-whole structures for an ontological purpose. For the development of this duplex method, I first interpreted the necessity of its double-sidedness with the primarily Kantian distinction between *quaestio facti* and *quaestio iuris*.¹ The *quaestio facti*, here understood as a meta-ontological

¹Cf. section 1.1.

question concerning the method of ontological research, relates to the factual givenness of a certain concept or entity, to its modes and reasons of existence as well as its relations to similar concepts and entities. In contrast, but also in consequence, the meta-ontological *quaestio iuris* inquires about the justification or the evidence of what had been postulated as this concept's or entity's modes and reasons of existence. I argued that these two approaches complement each other, because the first one establishes, analyzes and delimits the research object, while the second one ideally prevents unjustifiable speculations and identifies the research object in the world outside our minds. Furthermore, by drawing on Hessen's 1955 study on ontological / metaphysical methodology, I identified the approach of the *quaestio facti* as being 'deductive'² and the approach of the *quaestio iuris* as being 'inductive'³. In contemporary terms, we could say that whereas the deductive method concerns matters of formal ontology and acts in a top-down fashion $\begin{matrix} \text{Concept} \\ \downarrow \\ \text{Reality} \end{matrix}$, the inductive one is rather bottom-up $\begin{matrix} \text{Concept} \\ \uparrow \\ \text{Reality} \end{matrix}$. It connects to the novel field of 'experimental philosophy' and stands closer to other, more empirical disciplines. Of course, other methods could also have been implemented for ontological purposes, for example what Hessen calls the 'intuitive' method that draws on profound ontological experiences (*Seinserfahrung*), but also more phenomenological (including Heideggerian) and/or speculative methods. But with the combination of the deductive and the inductive method, I was hoping to overcome the unidirectional nature of each method in order to comprehensively determine the research object: $\begin{matrix} \text{Concept} \\ \downarrow \uparrow \\ \text{Reality} \end{matrix}$. As with the parameters, a different choice of methods would probably have resulted in different research results. Then I subdivided the inductive method into two cohesive branches: research on ordinary, empirical language⁴ and on empirical perception.⁵ Instead of conducting such research in the form of experiments or questionnaires myself, however, due to a lack of resources I decided merely to elaborate on the research of philosophers and scientists who had carried it out. Finally, the project was ready to apply these two methods, with the second one forked into two aspects: to the issue of part-whole relations, with a special emphasis on their mutual interplay, and to deriving the partial characterizations of PWO one by one.

Considering the first method, the first question to ask was: Is the dynamic interplay between parts and whole conceivable in a purely formal sense, i.e. just by means of conceptual analysis? Is it 'deducible' from the notions of parts and whole without considering any kind of experience? Only to a certain degree, but not beyond, could this question be answered in the affirmative and the first characterization of PWO's ontological nature (PWO_{ded}) derived in the second chapter. First of all, I had to select an appropriate formal ontology that deals with part-whole structures.⁶ Due to its 'open-source' quality of being adaptable and applicable and therefore also somehow unfinished,⁷ and due to the fact that it not only considers part-whole relations in a formal sense but, parallel to that, also in a 'material', i.e. experience-based sense,⁸ Husserl's part-whole ontology of his 3rd *Logical Investigation* seemed to be a promising starting point. The

²Cf. section 1.2.

³Cf. section 1.3.

⁴Cf. subsection 1.3.1.

⁵Cf. subsection 1.3.2.

⁶Cf. section 2.1.

⁷Cf. section 2.2.

⁸Cf. subsection 2.2.1.

second advantage was all the more important, since it pointed in the direction of the second (inductive) method, without, however, influencing the elaboration of the formal domain.

To put it simply, I demonstrated how Husserl provides a fourfold pattern in which complex part-whole structures, i.e. structures in which the whole consists of more than one part, can be embedded.⁹ On the one hand, such structures either describe a universal species and range over all kinds of objects according to eternal laws of necessity (the study of which is called 'formal ontology'), or they are contingent, particular instantiations of these necessary laws and as such are localizable in the empirical world (the study of which is called 'material ontology') as contents of perception. It is important to note that 'material' does not necessarily mean 'made up of physical matter' in this context, but can also refer to secondary or even tertiary qualities. On the other hand, Husserl works with a distinction between dependence and independence. Parts and whole, both in a formal and in a material sense, either stand in relations of independence or dependence.¹⁰ If a whole is dependent on one or more of its parts, then the existence of the former relies on the existence of the latter. The same is true for parts in relation to a whole. Also, independent wholes or parts can relate to each other, but then they exist prior to the relation. Moreover, if parts compose a whole on which they do not depend, then they are called 'pieces', form an 'aggregation', relate to each other discontinuously, and fit into a 'horizontal' ontology, because this kind of whole does not possess qualities that are supra-summative in relation to the parts' qualities.¹¹ Only in the case of dependent parts, which are called 'moments' and which relate to each other continuously, do we enter a scale of higher and lower. In this scale, the whole, in which the dependent parts find completion and on which they are founded, is richer than the parts, because it also contains what the parts lack in order to exist independently.¹²

With this pattern and some refinements of it, I showed that the determination of PWO's ontological nature can only take place in the intersection of 'material ontology' and 'part-whole dependence'. It firstly presupposes a dependence relation between parts and whole, but secondly leads to inconsistencies in the formal domain.¹³ This is because it would lead to an infinite proliferation of entities (if p_1 and p_2 stand in a mutual dependence relation with w_1 , then $p_1 w_1$ would need a w_2 to exist etc.). Also, if a whole depends on its parts, it can find completion only in something it already contains, which is inconsistent with the formal principle, postulated by Husserl himself, that the completion of an entity has to lie in something more embracing than itself. Thus a whole would have to contain a whole, consisting of itself and its parts, or the parts of a whole would have to contain the whole itself. While, in formal-ontological terms, this does not make much sense, Husserl mentions that it can be the case in empirical perception. He himself, however, only points to this direction without going there. Since the particular movement or process of PWO indeed seemed to occur in the domain of a material ontology, however, it had to be somehow formally possible, although it is more than difficult to see how exactly. I therefore declared PWO as absent (but not impossible) in a formal ontology and present in a material ontology, into which the Husserl of this *Logical Investigation*, however,

⁹Cf. subsection 2.2.2.

¹⁰Cf. subsection 2.2.3.

¹¹Cf. subsection 2.2.5.

¹²Cf. subsection 2.2.6.

¹³Cf. subsection 2.2.7.

does not delve.¹⁴ For this project's line of argumentation, this meant taking from the 3rd LI what it could provide for a first characterization of PWO's ontological nature, formulated in PWO_{ded}, but then leaving the deductive method behind and initiating the second, inductive method in the hope of more positive research results.

Nevertheless, I wanted to show in the third chapter, which I will not summarize here because it did not lead to further positive characterizations but mainly paved the way *ex negativo*, for how and why two other realizations of this fourfold pattern are not to the purpose. Firstly, contemporary mereology and, in general, approaches that argue in favor of a part composition as being identical with what they compose mostly presuppose the notion of 'pieces' rather than 'moments' in concentrating on the material (here: physical) world.¹⁵ The better part of these approaches are thus, broadly speaking, classifiable with the intersection of Husserlian 'material ontology' and 'independent pieces', related to wholes that are mere aggregations of their pieces. Then, since for methodological reasons I was about to investigate aspects dealing with part-whole relations in ordinary language, it was obvious that we should take a look at the subsequent 4th of Husserl's *Logical Investigations*, in which he applies his part-whole ontology to matters of language and thus of linguistic *meaning*.¹⁶ Although he not only discovers independent parts as 'categorematic' components of meaningful language, but also dependent parts as 'syncategorematic' components, his linguistic theory is explicitly non-empirical. Rather, it is a top-down extension of his formal ontology and thus not a 'bottom-up' development of a 'material ontology' of language. I therefore had to rule out the 4th LI for the further positive determination of PWO's ontological nature, but could still manage to identify traces in it that led to the discipline of cognitive linguistics.¹⁷ To be sure, it would have been worthwhile, if my choice of methods had not precluded it, to stay with Husserl and focus on his later works, in particular *Ideas* and *Experience and Judgement*. In so doing, I could have analyzed the ways in which he uses his own part-whole framework in order to phenomenologically describe how an object is constituted in consciousness. This interesting question can be the subject of further research on this topic.

In order to investigate whether there are interdependent, dynamic part-whole relations in the way they had been a priorily characterized by PWO_{ded}, I turned to the contemporary field of cognitive linguistics in the fourth and fifth chapters. Since this field is relatively broad and covers many different topics, a choice had to be made concerning the main scholar and subjects on which to concentrate. At least for the first approach to cognitive linguistics, I argued that M. Johnson, including his collaborative works with G. Lakoff, would be a sound starting point, given that Johnson's research establishes a bridge between empirical science and philosophical reflection. It was possible to demonstrate the benefit of such a bridge, even before turning to linguistic phenomena themselves, in the delineation of the general epistemological framework in which Johnson embeds his more particular research findings concerning the conceptual yet body-based nature of metaphors and of what he calls 'image schemata'. First of all, I showed that Johnson operates with three layers of *meaning*, which I termed 'propositional meaning',

¹⁴Cf. section 2.3.

¹⁵Cf. section 3.1.

¹⁶Cf. section 3.2.

¹⁷Cf. subsection 3.2.2.

'perceptual meaning' and 'situational meaning'.¹⁸ In a nutshell, he argues that a comprehensive understanding of meaning is irreducible to true propositions and language expressing true propositions alone, because this type of meaning cannot do justice to the fact that we experience something as meaningful. Propositional meaning rather relies on the way we perceive our bodies and the world around us with our bodies. It thus relies on perceptual meaning, which in turn relies on the more general ways in which we experience being in or belonging to the world, i.e. the fundamental inseparability and only gradual difference of mind, body and world: situational meaning. Although I argued that with empirical methods alone, as they are advocated by Johnson, we cannot really approach the profundity of situational meaning but only of perceptual meaning, it is consequential to embed even perceptual meaning into the postulation of a mind-body-world unity.¹⁹ Only with such a postulation can an answer be given to the question of how any structure of language and abstract thought might come into existence in the first place, namely because language and thought are embodied, and because our bodies are, in a certain sense, 'enworlded'. This means that the structures in which we make meaningful propositions and in which we perceive the world as meaningful, i.e. the most basic structures 'inside' our minds and sense organs, are ontologically isomorphic with the most basic structures we can find in the world 'outside' us. I agree with this postulation, because it makes plausible the occurrence of PWO in ordinary, empirical language. Moreover, it convincingly suggests that the body and the body-world connection should be taken more into consideration in the philosophical discipline of contemporary ontology. In which sense are the ontological categories we postulate, scrutinize and formalize based on our embodied being-in-the-world? A rich pool of research hypotheses and argumentative evidence is waiting to be explored in this regard, a pool into which the research of Johnson and Lakoff, albeit or because it is mostly empirical and language-focused, could serve as a stepping stone.

Nonetheless, for the question of whether, and if so, in which way, the notion I was seeking to determine could be located in the cognitive structure of ordinary language, the phenomenon in relation to which Johnson and Lakoff have become famous – namely conceptual metaphor – proved to be unfounded. Primary conceptual metaphors are body-based concepts derived from our everyday experience of and our bodies' physical interaction with the world. For example, the physical and perceptible dimension of 'up' and 'down' gives rise to the primary conceptual metaphors MORE IS UP and LESS IS DOWN, with which we conceptualize quantity with the more basic and concise experience of physical verticality. Primary conceptual metaphors are thus one of the results of the bidirectional relation between what can be called the 'experiential domain', consisting of Gestalt perception and sociocultural background, and an even more basic 'sensorimotor domain', consisting of body/environment interactions and image schemata. Whereas the latter domain determines how we actually experience (something in) the former, the former domain gives value to ('evaluates') or makes sense of the latter. This bidirectional relation establishes itself mostly unconsciously.²⁰ If one or more primary metaphors are applied to an experiential domain for which there is no physical and perceptible counterpart in our bodies and in the world, for example to the experience of emotions or of abstract thoughts, then we speak of 'complex conceptual metaphors' (e.g. LOVE IS A JOURNEY, whereby 'journey' is a combi-

¹⁸Cf. subsection 4.1.1.

¹⁹Cf. subsection 4.1.2.

²⁰Cf. subsection 4.2.1.

nation of several primary metaphors).²¹ This application of one (set of) primary metaphors to an experiential domain for which there is no sensorimotor grounding is called 'mapping'. One of the main ideas behind complex conceptual metaphor is that we map unidirectionally *across* experiential domains: We take one or more body-based concepts from a source domain and map it to an experientially different target domain in order to give meaning to and linguistically express it.²² Metaphorical mapping is thus comparable to an unconscious copy-and-paste process, at the end of which the source domain itself often plays no significant role anymore and all the credit goes to the now conceptualizable and expressible target domain. This is the main reason why PWO cannot be a complex conceptual metaphor, because in PWO, both sides (whole and parts) are always present and retrievable, no matter which side stands out at any given time. Furthermore, I showed that PWO is also not identifiable as a primary conceptual metaphor, not even of the most basic 'ontological' kind, because it is neither derivable from physical objects (that consist of pieces rather than moments), nor from physical containers with an in/out structure.²³ At the end of chapter 4, I thus came to the conclusion that there has to be another type of cognitive-linguistic structure based on the bidirectional relation between sensorimotor and experiential domain besides conceptual metaphor. I expected that with this structure, PWO could indeed be identified and that it would ideally lead to further positive characterizations of its ontological nature.

This expectation was then fulfilled in chapter 5 with a closer inspection of what the idea behind 'conceptual metonymy' entails. Before PWO could be identified within the field of ordinary language as it is studied and regarded in a non-dualistic epistemological framework by cognitive linguistics, however, it was necessary to analyze the relevant image schema that gives rise to part-whole structures as cognitive linguistic phenomena. To do so, I firstly delineated the idea of image schemata in general.²⁴ Image schemata are, in short, preconceptual and simple, yet conceptualizable and flexible spatial patterns that come into existence by our bodies' ongoing interactions with its physical environment. They are hypothesized as being cognitively real and are said to enable both our understanding of the world around us and higher forms of abstract thinking. They are interculturally shared due to the common nature of our bodies, but are, at the same time, interpretable in different ways, since they are given value or meaning by the internally heterogeneous experiential domain. Although their exact number remains unclear, there are only a few very basic image schemata, such as VERTICALITY-HORIZONTALITY, CENTER-PERIPHERY, PATH-GOAL, CONTAINER, and – the most significant one for the purpose of this project – PART-WHOLE. Moreover, it is heuristically helpful to visualize image schemata, which is possible due to their basic and spatial-geometrical nature. All of these aspects hold true for the PART-WHOLE image schema, the existence of which is ascribable to the experience of our bodies as being wholes with parts and our perception of basic-level objects.²⁵ Apart from 'parts' and 'whole', this image schema also includes the 'configuration' of parts and whole as a main parameter. Complementary to Lakoff's original characterization of the PART-WHOLE image schema, I argued that in the case of perceptible moments and perceptible, dependent

²¹Cf. subsection 4.2.2.

²²Cf. subsection 4.2.3.

²³Cf. subsection 4.2.4.

²⁴Cf. subsection 5.1.1.

²⁵Cf. subsection 5.1.2.

wholes, the mereological notions of irreflexivity and asymmetry are weakened. This is because a dependent whole is, in a certain sense, part of its parts, i.e. 'in' its parts, in order to find completion and thus to exist. I illustrated this in the context of sports, in which the whole of our body is ideally and, of course, non-physically 'in' some of its parts in order to function properly. To me it seems undeniable that sport-related body-environment interactions are one of the main reasons for the development of image schemata, among others for the PART-WHOLE image schema. In addition, I suggested two ways to visualize the PART-WHOLE image schema: a *mosaic* structure for this image schema in general, and a *fractal* (e.g. the Sierpinski triangle) for the PART WHOLE image schema in the case of PWO in particular. In a fractal, which is omnipresent in nature and is thus anything but an artificial visual model, we can see exactly that and how it is possible for a whole to be (on a different scale) and simultaneously not be (on the same scale) part of or 'in' its parts, relative to the scale and the perspective in which we regard the particular part-whole structure. Finally, I argued that whereas the more general mosaic-like PART-WHOLE image schema can lead to conceptual metaphor if its parts are interpreted as independent from their whole, the fractal-like PART-WHOLE image schema for PWO only leads to conceptual metonymy, the introduction of which could then take place. But already this development of the general and particular PART-WHOLE image schema resulted in a first positive characterization of PWO's ontological nature for the inductively studied realm of empirical, ordinary language: PWO_{ind_lang_1}.

The other two characterizations, PWO_{ind_lang_2} and PWO_{ind_lang_3}, followed from a closer look at what conceptual metonymy entails.²⁶ As a figure of language, metonymy has always stood next to metaphor as one of the main poetical tropes. Unlike conceptual metaphor, which has commonly been regarded as a cross-domain *is-like* relation (entity x from domain A is like entity y from domain B , therefore the word for x can be mapped into B to describe y), the idea behind conceptual metonymy is the establishment of a domain-internal *stand-for* relation (entity x from domain A stands for entity y from domain A , therefore the word for x can stand for y). Thus whereas conceptual metaphor resembles a cognitive copy-and-paste process from one experiential domain into another, conceptual metaphor resembles a shortcut within the same experiential domain.²⁷ However, I argued that an understanding of conceptual metonymy as a stand-for relation is misleading if this presupposes that the entity x that stands for y supersedes y such that y is not cognitively present anymore.²⁸ The remarkable aspect of conceptual metonymy is exactly the co-activation of x and y , in particular because x and y are identifiable with 'part(s)' and 'whole' within one and the same experiential domain.²⁹ This co-activation of part(s) and whole implies that when we make use of a metonymy in ordinary language, we both have in mind what we say *and* what we mean, whereby what we say (part/whole of an entity, e.g. 'potato soup'/'Washington') is cognitively *backgrounded* and what we mean (whole/part of an entity, e.g. 'customer'/'president') is cognitively *foregrounded*. In contrast to the unidirectional

²⁶Cf. section 5.2.

²⁷For example, in 'the potato soup wants to pay', the soup refers to the customer within one and the same restaurant setting.

²⁸Cf. subsection 5.2.1.

²⁹For example, in the experiential domain 'restaurant', the 'potato soup' is part of the customer, which is why this part can stand for the whole (without superseding it). The same is the case the other way round: A whole can stand for the part (e.g. in 'Washington declares war on China', Washington as a whole stands for the US-American government / president).

process of conceptual metaphor, in conceptual metonymy we thus establish a bidirectional, i.e. alternating process of *backgrounding* and *foregrounding* of interdependent parts and whole, which is made possible by the existence of the PART-WHOLE image schema. Source (part/whole) and target (whole/part) are co-activated, hence PWO_{ind_lang_2}. Conceptual metonymy thus identifies exactly, applied to embodied language and in the framework of cognitive linguistics, the notion of PWO as it was formally derived in PWO_{ded}. Furthermore, as I was able to show by comparing metonymy with the traditionally close notion of synecdoche, with metonymies we refer to objects in reality and are therefore using paronomies to gain mental access to real-world part-whole structures. Synecdoche on the other hand refers to mental classifications into genus and species (taxonomies). The identification of PWO with conceptual metonymy is thus an indication of its reality-directedness. This aspect at least points to the assumption that dynamic, bi-directional part-whole relations are not merely subjective constructions, but could indeed be a basic and – via our bodies – internalizable aspect of reality itself, hence PWO_{ind_lang_3}. One of the questions that arose from these determinations within the realm of ordinary language and that led to the second part of the ‘inductive’ method was how do we perceive such structures, i.e. how does PWO empirically appear in the experiential domain in order to be linguistically expressed as metonymy?³⁰

In the sixth and seventh chapters I then approached this question by giving the most famous empirical research on part-whole perception, viz. Gestalt theory, an ontological reading.³¹ In so doing, I focused on the issue of what in Husserlian terms could be called a ‘material ontology of dependent part-whole structures’, because it was in this direction that Husserl’s formal ontology was sending us for the further determination of PWO’s ontological nature. Prior to any deeper analysis, there appeared to be three possible constellations for dependent part-whole structures: firstly, a perceptible whole that is dependent on its parts but not vice versa; secondly, perceptible parts that are dependent on their whole but not vice versa; and thirdly, an interdependence of perceptible parts and whole.³² My aim was to identify these three basic possibilities in the literature on empirical Gestalts. Of course, the literature on Gestalts is more than extensive, which on the one hand necessitated focusing on certain key thinkers and concepts in order to give my ontological reading a historically original basis. On the other hand, I did not want to ignore contemporary research on this matter to include more unconventionally original findings on part-whole perception. As a solution, I related the first and the second possibility to rather traditional approaches in the sixth chapter, while I postponed the consideration of theories on part-whole interdependence to the seventh chapter.

The first traditional approach on part-whole perception under the label of ‘Gestalt’ was that of C. von Ehrenfels. Drawing on his famous essay ‘On Gestalt Qualities’, I demonstrated how his thoughts and experiments on this matter presuppose a one-sided part-whole dependency in which the whole depends on its parts.³³ What he calls a ‘Gestalt quality’ is just a perceptual part (with an unclear ontological status) that is added to more basic stimulus parts. The resulting whole, although it is transposable when the parts (but not their interrelations) undergo change, is reducible to these parts and therefore hinges on their existence. Remarkably and not far away

³⁰Cf. section 5.3.

³¹Cf. section 6.1.

³²Cf. section 6.2.

³³Cf. subsection 6.2.1.

from Husserl's reflections on these subject matters, Ehrenfels extended the validity of his theory on Gestalt qualities far beyond the realm of perception up to metaphysical and theological heights.³⁴ He also embedded Gestalt-like part-whole relations in a vertical hierarchy of emerging wholes,³⁵ addressed the problem of infinite proliferation,³⁶ and included the dimension of time into the emergence of wholes with Gestalt qualities. Ehrenfels thus anticipated significant ontological aspects of part-whole structures, aspects on which I built in chapter 7. For the further ontological determination of PWO, however, the primacy he ascribed to parts but not to the whole proved to be insufficient to do justice to PWO's bidirectional nature as it had been identified in and determined with the notion of conceptual metonymy. The reversed insufficiency also arose, to cut a long story short, after a consideration of the Berlin school's accentuation of the whole's primacy over its parts,³⁷ whereby now the whole itself is the 'Gestalt' and not just one of the whole's parts or a part's quality.³⁸ I showed how this one-sided primacy is postulated with the laws of grouping,³⁹ in particular with the 'meta-principle' of *Prägnanz*,⁴⁰ according to which the parts of a perceptual whole tend towards order and stability such that this tendency is determined by the whole itself. Whereas, in line with the Berlin school, I criticized the Ehrenfelsian 'parts first' point of view, I also raised doubts about the reversal of this view into a 'whole first' approach. Nonetheless, in these two perspectives I was able not only to discover certain caveats, but also essential building blocks for the further determination of PWO's ontological nature.⁴¹ I concluded that it was only in a combination and enhancement of these two stances' one-sided take on part-whole dependency that the understanding of a 'Gestalt' could entail the bidirectional dynamics of conceptual metonymy's ongoing process of *foregrounding* and *backgrounding*.

The seventh chapter then circled around the question of how we can think of a 'Gestalt' as a structure in which both parts and whole are equally important, dependent on each other, and necessary for the singularity of their own *and* the other's existence. To embark upon this question, I focused both on recent research and on this project's parameter *meaning*, here understood, in accordance with the applied 'inductive' method, as perceptual meaning. Therefore, it seemed to be promising to begin with B. Pinna's recent research on how Gestalt structures are perceived as meaningful.⁴² Pinna basically shows that perceptual meaning emerges not when the whole is as perfect and orderly as possible, but rather when something is 'happening' to it: when (at least one of) its parts are deforming, (dis-)appearing or reassembling. This has an immediate effect on the character of the whole itself, in the same way as the character of the whole has an immediate effect on its parts. In order to perceive and recognize a meaningful Gestalt, we thus have to turn from the concise whole to its parts and from them to a higher meaning-whole that now comprises both parts, whole and their reciprocal generation of meaning through happenings.⁴³ Pinna argues that a whole is complete on an amodal and

³⁴Cf. subsection 6.2.2.

³⁵Cf. subsection 6.2.3.

³⁶Cf. subsection 6.2.4.

³⁷Cf. section 6.3.

³⁸Cf. subsection 6.3.1.

³⁹Cf. subsection 6.3.2.

⁴⁰Cf. subsection 6.3.3.

⁴¹Cf. section 6.4.

⁴²Cf. section 7.1.

⁴³Cf. subsection 7.1.1.

homogeneous level, whereas it is, at the same time, incomplete on the modal level in which it shows itself via the heterogeneity of and influence exerted by its parts. Although these research findings allowed me to derive the first characterization of PWO's ontological nature for the realm of empirical perception ($PWO_{ind_emp_1}$), I found Pinna's final preference for a meaningful whole in which both a grouped whole and its parts are combined unsatisfactory. In lieu thereof, I sought a conception of parts and whole in which both sides preserve their partial nature, thus, in which their difference is not transformed into an ultimate, again regulatory *unity* of perceptual meaning.⁴⁴ As in the Gestalt tradition, the postulation of such a unity would presuppose an ontological hierarchy in which the whole ultimately ranks higher than the parts. Although such a vertical hierarchy is typical for moments, as we saw in the discussion of Husserl's formal ontology, I found it insufficient for the development of a part-whole structure in which one side ranks only relatively and temporarily, but not absolutely higher than the other. An alternative to this vertical hierarchy had to be found, without, however, falling back into the atomism of a flat part-whole ontology of independent parts. Furthermore, more precise accounts were needed both of the threshold on which the co-creation of meaning between an homogeneous whole and its heterogeneous parts takes place and on what the concept of emergence entails when it comes to meaningful part-whole structures.

These three desiderata were approached in sections 7.2, 7.3 and 7.4, in each of which I developed one further characterization for the final determination of PWO's ontological nature. In section 7.2., I elaborated on the co-creation of perceptual meaning in part-whole interactions by looking at J. Koenderink's notions of 'splitting' and 'merging' and their function in what this author describes as 'visual awareness'.⁴⁵ One of the major aspects of visual awareness is our ability to let a perceived object develop over time in front of our eyes, i.e. to discover its ambiguities and 'multiple worlds' of appearing. The fact that we are able to, by way of analyzing, 'split' a Gestalt and focus on its parts, but also 'merge' the parts and, by way of synthesizing, shift towards its wholeness, is one of the possibilities we have in our visual awareness to explore the multiple worlds in which a Gestalt can appear. Consciously and unconsciously, these acts of splitting and merging, the possibility of which is given by the percept itself and its inexhaustible richness of meanings, are acts through which perceptual meanings emerge.

After having formulated $PWO_{ind_emp_2}$ by means of splitting and merging and to find out more about emergence, in section 7.3 I turned to contemporary reflections on this concept. I wanted to explore the possibility of an appropriate ontological model for the emergence of meaning through (the perception of) part-whole interactions. With this ontological model of emergence, I also tried to avoid Koenderink's radical constructivist interpretation of visual awareness as a 'user interface'.⁴⁶ In contrast to being reducible to subjective cognition, models of emergence are usually based on a variety of ontological domains, in and beyond the organic world, and therefore have a very comprehensive 'setting in reality' or at least 'ontological neutrality'.⁴⁷ To find an adequate model of emergence for PWO, I firstly distinguished ontological emergence from epistemological emergence, whereby only the former denotes the coming into existence of novel

⁴⁴Cf. subsection 7.1.2.

⁴⁵Cf. section 7.2.1.

⁴⁶Cf. subsection 7.2.2.

⁴⁷Cf. section 7.3.

properties and entities. Then I showed how emergentist theories usually rely on a hierarchical model in which what is novel ranks higher than that from which the novel property or entity emerges. In addition, I delineated the concept of 'downward causation', according to which the emergent property or entity exerts an influence on the basis (i.e. the parts) from which it has emerged.⁴⁸ To suggest an adequate model of emergence for PWO, I introduced the recent model of R. Anjum and S. Mumford, which implements both ontological emergence (in contrast to epistemological 'as-if' emergence) and describes downward causation as 'demergence'.⁴⁹ Theirs is a model in which both the emerging whole and the parts from which it emerges stand in a 'causal-transformative' relationship with each other and undergo changes already in the simultaneously active processes of emerging and demerging. In so doing, novelty is created both in the whole *and* in the parts, which, if integrated into the determination of PWO, would equip the latter with a potential of meaning-generating creativity that is guaranteed by the constancy of the oscillation between parts and whole. Although I therefore embraced the causal-transformative model of emergence / demergence (PWO_{ind_emp_3}), the hierarchy of unification (upwards) and differentiation (downwards) it presupposes was still insufficient.

In the final argumentative step, I thus found it necessary to suggest a re-thinking of the hierarchy in which part-whole structures are generally conceptualized. To suggest a dynamic and adapting rather than a static and pre-established hierarchical form, I came back to Gestaltist research on figure and ground. Figure and ground can be understood as a stable relation between foreground and background, but also – and here the more interesting side of this phenomenon resides – as an ambiguous relation the alternation of which allows us to regard a percept (a Gestalt) as 'multistable'.⁵⁰ What I wanted to do in section 7.4 was to investigate whether figure-ground ambiguity and its internal movements of foregrounding and backgrounding could be applied to part-whole structures in order to show that the latter are often equally ambiguous. In this ambiguity, it can be the whole, but also (one or more of) its parts that rank higher; in other words, upwards and downwards are applicable both to unification and to differentiation, because the hierarchy in which meaningful part-whole structures are unfolding is itself reversible, like the ambiguous phenomena it models. Although I could not introduce a concrete hierarchical model for this idea, I demonstrated the general possibility and justification via a rethinking of the figure-ground phenomenon within the framework of an Interactive Realism. Due to its universal nature, this framework would also include ambiguous part-whole structures and the ways we experientially interact with them, hence PWO_{ind_emp_4}. To conclude chapter 7, I finally suggested using the term 'Gestalt quality' in the spirit of Ehrenfels to refer to novel (perceptible) parts, 'Gestalt' in the spirit of the Berlin school to refer to novel (perceptible) wholes, and 'Gestaltung' in the spirit of the theories introduced in chapter 7 to refer to the co-creative interaction of (perceptible) parts and whole.

Now, to conclude this project as a whole, let me combine the seven partial characterizations and suggest one – of course only preliminary and developable – determination of PWO's ontological nature. Subsequent to the previous interdisciplinary argumentation and terminology, such a determination might be formulated as follows:

PWO_{ont_nat}: A part-whole oscillation (PWO) is the dynamic interplay of dependent parts (mo-

⁴⁸Cf. subsection 7.3.1.

⁴⁹Cf. subsection 7.3.2.

⁵⁰Cf. subsection 7.4.1.

ments) and their whole, which is dependent on these parts, within or rather *as* the same entity. It happens when both sides are regarded as being continuous and discontinuous at the same time. During their fusion, both moments and whole are inseparable yet distinguishable. They stand out alternately, and the entity in question displays both the qualities of the moments and the potentially different or even contradictory qualities of the whole. This interplay occurs in at least two domains that are covered by a 'material ontology' and approachable inductively: in *ordinary language* as (conceptual) metonymy, understood as whole-to-part and part-to-whole mapping, and in *empirical perception* as an interdependent part-whole structure with emergent and demergent meanings ('Gestaltung'). In both cases, the experience of PWO relies on our embodied being-in-the-world, i.e. on the PART-WHOLE image schema, which is structured like a mosaic and can display the more specific form of a fractal, and the ways we internalize it by way of perceiving reality. This precludes any ontological separation of mind, body and world. Also in both cases, parts and whole alternate in a bidirectional process of *foregrounding* and *backgrounding*. This precludes any postulation of static hierarchical models in which wholes would invariably rank higher than parts. In perception, PWO manifests itself as a happening of the parts to a whole, which involves the perceptual acts of splitting and merging and enables access to perceptual meaning(s) as meanings *of* the percept *for* the perceiver. In all cases, PWO denotes the internal ambiguity and multistability of interdependent, dynamic, and meaning-generating part-whole structures.

Taken as a whole, this determination of course depends on the parts from which it had been derived in the previous chapters. Whereas, in being a determination, it determines these parts such that they fit into it as their whole, it can hardly be understood and would not exist without them. However, this determination can also be regarded as an indeterminate part that is dependent on a more embracing whole in which it might fulfill a certain function. This is what I mentioned in the introduction to this project: the development of PWO_{ont_nat} is less an end in itself, but rather the suggestion of a flexible building block for more embracing theories, in particular theories that are, by the same token, parametrized with *meaning, reality, part-whole, and/or experience* in any possible pairing and binding. In so doing, PWO_{ont_nat} itself could, of course, be adapted and re-determined, in the same fashion as it would influence the theoretical framework in which it finds completion without losing its intrinsic character. The research result of the present project is thus classifiable as a philosophical open-source structure. As such, it is not only due to other equally 'open' and developable theories on which I have drawn, but it is also ready to be picked up for critical improvements, both of itself and of the frameworks into which it might be integrated.

There are several possibilities for integration, all of which could be the subject for follow-up research. For example, in relation to the parameter reality, one urgent question concerns the *ontological status* of PWO: Where does this dynamic 'in-between' of parts and whole exist and where does it not, or is its existence reducible to one or another of the following exemplary domains: the physical world; our nervous system; our imagination; sociocultural conventions; language; an ideal realm of ideas to which we have access? One theory of the Gestalt tradition in which we could find answers to this question would be W. Metzger's 'Levels of Reality',

which is a critical realism according to which we do not have epistemological access to the physical world (first level of reality, the Kantian 'an sich'). Nonetheless, meaningful wholes (Gestalts) would be real (second level of reality), because they are encountered as immediately intuitive, and are therefore not reducible to our imagination.⁵¹ Would the same be the case for PWO, or is this phenomenon rather pure appearance (*Schein*), devoid of any serious grounding (fifth level of reality)? Alternatively, a theory that pairs reality and experience and that also concentrates on the ontological status of Gestalts is Arne Næss' so-called 'Gestalt Ontology'. He provides an almost panpsychic picture of reality, in which it is secondary and tertiary qualities that really exist, whereas primary qualities are only a product of our mind. The existence of the former is irreducible to empirical perception and phenomenological experience; it is rather a network of 'relational fields' of which an experiencing subject can be a dependent part.⁵² How is such a relational field to be conceived, and how could the notion of PWO contribute to its clarification? Furthermore, we could now pair *experience* and *part-whole* by turning to H. Rombach's *Strukturontologie*, in which he firstly develops on phenomenological grounds a formal ontological framework of interdependent part-whole structures, before he applies this framework to – among others – the meaningfulness of anthropological situations.⁵³ In particular, Rombach's reflections on the presence of a whole within its parts could shed further light on this conceptually difficult to grasp aspect of PWO. Also, his notion of 'con-creativity' seems to be suitable to further determine the creative dimension in which parts and whole generate novelty via interaction. Lastly, we could connect *experience*, as the experience we have in 'productive' or 'creative' thinking, with *part-whole* in order to relate PWO to M. Wertheimer's and K. Duncker's concept of 'restructuring' of a given part-whole structure.⁵⁴ Would it be possible, for example, to improve our capacity of problem solving by actively switching back-and-forth between parts and whole, such that – as argued in section 7.3 – via the processes of emergence and demergence, novel sides of an object become visible with which we can solve a given problem? These are thus some of the ways in which what I determined under the label of 'PWO' could be further processed, integrated and enhanced.

The core message of this project, however, is not exhausted by its connectivity to other theories and research topics. Whereas further research entails a 'continuation' of the notion that has been determined as PWO, i.e. a co-creative 'fusion' of it with more comprehensive frameworks, we should also keep in mind the idea that even dependent parts are able to stand out in their own right and thus be 'discontinuous'. At least in the domain of experience, which includes empirical perception but also other forms of experience about which I did not write, discontinuity is as important and omnipresent as continuity. One constantly leads to the other. If we now, at the very end, single out PWO_{ont_nat} both from its moments (the seven partial characterizations) and the future wholes in which it could be embedded, then what is the core message that appears in the foreground? It appears that even when we deal with a notion that is as general and seemingly fixed – and thus as ontological – as part-whole relations, it is beneficial to become aware of the hoard of meanings that lie within the possibilities and instantiations of such a category. To gain access to some of these meanings

⁵¹Cf. on Metzger's theory Brandt et al. [1969], [Metzger [1974; 2001] and Ash [1995: 373–5].

⁵²Cf. Næss [2005d; 2005a; 2005f; 2005b; 2005c; 2005e], Rothenberg [2000], Diehm [2006] and Stadler [2016].

⁵³Cf. Rombach [(1987; 1988; 1994; 2003; 2010), Blaschek-Hahn et al. [2010] and Stadler [2014; 2015].

⁵⁴Cf. Wertheimer [1925; 1959] and Duncker [1926; 1945].

and thus to recognize the internal richness of every interdependent part-whole structure, it is not only necessary to rethink the category's fixations, and with these the definition of what 'ontology' as a discipline is and could be in matters of content and methods. It is also beneficial to keep in mind that, on closer examination, what is given to us by reality in terms of part-whole structures is only experienceable when we ourselves take part in it. In so doing, we incorporate the whole in question and ideally find completion through it. No completion has ever been absolute, however, which is why the quest for holism entails all the advantages and disadvantages an illusion brings with it. Instead of an ongoing continuity with a whole, it is actually the experienced discontinuity as a part that makes us feel free to switch the wholes or to create new wholes with different potentials of temporary completion. We can always go in the direction of these wholes with a readiness to fuse, but only until the tension to be self-reliant makes us oscillate back to the state of (dis-)continuing as a part. The notion of PWO determined here can make us aware of the fact that there is an open world of – more or less satisfying – existence conditions and – more or less determining – wholes for us to explore.