

6 Gestalt Theory I: Part-Whole Dependency

6.1 Why and How to Approach Gestalt Theory

Since conceptual metonymy is based on the perception of Gestalts in the experiential domain,¹ it is incumbent on us to acquire a better understanding of the notion of ‘Gestalt’. In a first attempt to characterize it, we could say that a Gestalt is a complex yet uniform entity which can be a content of perceptual experience, in other words, it is a perceptible *unity in diversity* and/or a perceptible *diversity in unity*. Its complexity or diversity consists in its internal organization of parts, which can be understood as individual stimuli for our sensory nervous system. Its uniformity or unity consists in its being directly perceived as a unity, the quality or qualities of which is/are emergent and therefore different from the individual as well as in any way summarized qualities of the parts. The evidence and inductive generalizability of what is undeniably there in perception goes beyond the logically ostensible contradiction of a simultaneous complexity/diversity and uniformity/unity. If we were to compile an ontological inventory of a whole’s parts and their qualities, then the whole itself – understood as a Gestalt – would neither be *on* this list (the Gestalt is different from and thus not any of its parts), nor *be* this list (the Gestalt is not the sum of its parts). What instead the entity of a Gestalt comprises in an ontological sense is the object of investigation that the present chapter undertakes. But already this broad and preliminary characterization, which is nota bene not a definition,² allows for a plenitude of examples. One of them would be that the single words of the present text do not appear as arbitrary sums of letters but as meaningful unities, which is not the case for the individual letters and words. This example illustrates one of the underlying insights of Gestalt theory: there are principles of part-organization, such as the parts’ mutual proximity and good continuation, not only in the example of letters and words just given, which make us perceive a whole as more complete and uniform, even as more meaningful, orderly and concise (*prägnant*)

¹Radden et al. [1999: 47–8], for example, accentuate this point: “A powerful organizing principle for our perception is the tendency to see whole gestalts rather than the sum of their parts. The gestalt-perceptual principle also applies to the selection of a preferred vehicle in metonymy and accounts for the wide-spread use of humans and whole objects for their active-zone parts. Metonymy [...] WHOLE THING FOR A PART OF THE THING as in *The car needs washing* is thus well-motivated.”

²Simons [1988: 163] states that ‘Gestalt’ is almost impossible to define, because this concept is too general and differently understood by different thinkers. The only thing we can do is to get a (approximately) clear idea of it and provide examples and characteristics, although these alone – as he argues in Simons [1986: 116–7] – are insufficient for developing a definition. Perhaps the most logically stringent attempt at defining Gestalts can be found in Rescher et al. [1955], Grelling et al. [1988] and Rausch [1967]. These definitions, however, rely on advanced terminological frameworks and particular preconceptions of ‘Gestalt’, which is why it would be counterproductive to present them here in the context of an intuitively accessible outline.

³which is not the case for this dependent clause

than a less well-organized constellation of parts would do.

A less well-organized constellation of parts would not yield distinguished and distinguishable groups. It would rather accentuate the parts' individual qualities instead of contributing to the uniformity, meaning and thus perceptual primacy of the whole. What is more, each individual letter stands in a function to the word it is part of and receives from this whole, including the part's neighboring parts and the whole's neighboring wholes, certain qualities (e.g. a corresponding pronunciation, an ordering into syllables, a change due to contractions) it would not possess in isolation. For these qualities, or, in more ontological terms, for these functional modes of existence, the part thus depends on its being organized in a certain way within a more embracing whole. The same is the case in other areas of perception, for example in the organization of single musical tones within/to create⁴ melodies or in the transformation of individual visual stimuli such as dots and lines into/for the emergence of⁵ more comprehensive perceptual wholes. These are examples and areas of perception that I will be concerned with in this chapter. They are genuinely empirical in nature, and, as such, either discovered in laboratory experiments or at least made evident by direct examples, in particular of visual images. This is why Gestalts that are researched in these empirical ways correspond to the inductive method of ontology, i.e. to the meta-ontological *quaestio iuris* of how to justify the existence of an a priori postulated entity.⁶

Since the beginning of the 20th century, an enormous amount of literature has been published on Gestalts in general and on their empirical perceptibility in particular.⁷ Historically, the notion of a Gestalt as a complex yet uniform and experienceable entity can be explicitly traced back to Goethe's studies on the metamorphosis of plants⁸ and implicitly to Kant's forms of intuition.⁹ Of major importance are also the philosophical and early psychological works of E. Mach¹⁰, W. Wundt¹¹, C. Stumpf¹², and F. Brentano¹³ - to mention just a few influential figures.¹⁴ Most scholars, however, identify the birth of systematic empirical research on Gestalts either with C. von Ehrenfels' influential 1890 article 'On "Gestalt" Qualities',¹⁵ in

⁴In these preliminary remarks on the Gestalt problem, I will leave open the question of whether the whole is ontologically prior to its parts or not. It is only in the next sections (6.2–6.4) and in chapter 7 that I discuss different positions concerning this issue.

⁵Cf. the previous footnote.

⁶Cf. section 1.3, especially subsection 1.3.2.

⁷Cf. Smith [1988b] for an extensive and annotated overview until the year 1988. For a survey of recent research on this topic, particularly in psychology and vision science, cf. Wagemans et al. [2012a; 2012b]. On the etymology and terminological history of 'Gestalt' cf. Zimmer [2001] and Bonacchi [2015].

⁸Cf. Goethe [2009]. In a recent article, S. Poggi [2016: 147] remarks in this regard that "we must remember the widely acknowledged thesis that we are indebted to Goethe for the introduction of the *Gestalt* notion (or concept) in order to designate what we now mean by *Gestalt*."

⁹Cf. Metzger [2006: xvii, 41] and Wade [2012: 330].

¹⁰Cf. Mulligan et al. [1988] and Ash [1995: 62–4, 87–8].

¹¹Cf. Ash [1995: 22–27, 61–2] and Metzger [2001: 55–6].

¹²Cf. Stumpf [1873], Smith [1994: 255–6, 269], chapter 2 in Ash [1995], Allesch [2014] and Kaiser-el-Safti [2014].

¹³Cf. Ash [1985: 305], Smith [1994] and Boudewijnse [1999: 7].

¹⁴Cf. Herrmann [1976], Ash [1995] and Harrington [1996, esp. 103–139] for three of the most detailed studies on the history of Gestalt theory. Also cf. Grossmann [1977] for a critical philosophical discussion of Gestalt theorems in the light of Gestalt theory's history; Metzger [1976] for an overview of how Gestalt theory developed in the American exile; Fitzek [1995] for a reflection on the proper historiographic method to approach Gestalt theory; Plaum [1996] on its political (mis-)understandings, and Toccafondi [2002] on its reception, for example by J. Piaget, M. Merleau-Ponty and K. Popper.

¹⁵Cf. for the original German text Ehrenfels [1988c] and for the English translation by B. Smith, which I will

which Ehrenfels demonstrates mainly via the example of musical tones and melodies that on the foundations of parts, a whole can have qualities that are independent of the parts and is therefore transposable (e.g. the same melody can be played in different octaves or with a different instrument). Other scholars attribute the origin of Gestalt theory, or more precisely the origin of ‘Gestalt psychology’ that is often associated with the Berlin school of Gestalt theory,¹⁶ to M. Wertheimer’s study on apparent motion, i.e. the so-called ‘phi phenomenon’, in which two alternately flashing lights at a certain sequence produce the impression of pure movement that, in turn, is irreducible to the static light signals.¹⁷ Although Ehrenfels is closely associated with the Graz school of Gestalt theory, of which – among others – A. Meinong, V. Benussi and S. Witasek were notable members, whereas Wertheimer and his colleagues M. Köhler, K. Koffka and K. Lewin were – among others – members of the Berlin school that had a different theoretical stance towards the ontological status of Gestalts,¹⁸ both Ehrenfels and Wertheimer have in common a critique of atomism and associationism. These were epistemological as well as psychological stances according to which an overall sensory impression is the sum of punctual sensations and can therefore be analyzed into its atomic constituents, which are unified not according to underlying, unifying principles, but associated according to their accidental contiguity in space, time and memory.¹⁹

One major difference between Ehrenfels and Wertheimer, however, concerns the way they relate the notion of Gestalt to the hierarchical relation between parts and whole. This difference is a philosophical one, because it touches upon the ontological question of grounding: Is it the whole that grounds the parts or rather the parts that ground the whole? In other words, does the whole or do its parts enjoy ontological primacy, both within the domain of perception and beyond? This is a fundamental question that the earliest proponents of Gestalt theory such as Ehrenfels and the Graz school as well as Wertheimer and the Berlin school were concerned with in order to provide a groundwork for their discussion of part-whole perception. It even determines the definability of Gestalts themselves and can, of course, only arise if parts are

draw on in the present project, Ehrenfels [1988a]. Smith himself, for example, allows Gestalt theory to begin with Ehrenfels’ article: “The essay initiated a current of thought which enjoyed a powerful position in the philosophy and psychology of the first half of this century and has more recently enjoyed a minor resurgence of interest in the area of cognitive science [...]” [Smith 1988a: 11]. Fabian [1986] provides a comprehensive depiction of Ehrenfels’ life and academic as well as artistic work in a broader historical context.

¹⁶Klix [2001], however, uses the term ‘Gestalt theory’ to describe W. Köhler’s (Berlin school) hypotheses on *physical* Gestalten. More often than not, however, these two terms are used interchangeably, which I will also do in the present project, for which the history of Gestalt thinking and its schools is of minor importance.

¹⁷Cf. Wertheimer [1912] and for a detailed discussion Sekuler [1996]. Wagemans et al. [2012a: 1–4], for example, allow Gestalt theory to begin with Wertheimer’s study, but also refer back to Ehrenfels as the person who introduced the Gestalt concept into psychological research.

¹⁸Cf. on these schools and on the whole institutional background of Gestalt theory in the beginning of the 20th century Ash [1985; 1995], Boudewijnse [1999] and Cat [2007].

¹⁹Hochberg [1998: 254] provides a compact summary of this stance: “Through repeated simultaneous and successive associations, a frequently-encountered *proximal* pattern of stimulation provides a set of local sensations, and their memory images are bound together as a learned unit which in turn becomes associated with *distal* properties of layout, reflectance and distance. All shape and pattern perception starts therefore with such fundamental local visual sensations, each spatially tagged by its local sign [...]. The content of any perceived or imagined object is the set of sensations and images mutually associated by the object that provided them. Those associations comprise a structured mental representation.” Cf. also Koffka [1925: 510–525], Katz [1969: 9–14] and Metzger [2001: 48–54] on Gestalt theory’s concerns with atomism and associationism.

understood as dependent moments that stand in a vertical relation to a whole.²⁰ We will see that even in some current empirical research on Gestalt phenomena, this question of part-whole-primacy as one of the ontological dimensions the identity and existence of perceptible Gestalts entails still resonates in the background and is closely connected to perceptual meaning, i.e. to what I specified as MEANING_{PERC} towards the end of subsection 4.1.1.

At the same time, many purely descriptive and quantitative approaches to Gestalt perception do not reflect on the presence or absence of perceptible Gestalts in reality itself. In this regard, at the end of her study on the conception of Gestalt in the cultural and literary history of Germany between the 18th and the 20th century, Simonis [2001: 385] concludes how surprising it is that despite the contemporary dominance of scientific research on Gestalts, this concept could never really dissociate itself from its ontological and metaphysical heritage. “Only in the domain of metaphysics, the Gestalt conception actually comes to itself and probably finds its greatest power of expression and persuasiveness.”²¹ In addition, Smith [1988a: 69] provides a similar conclusion concerning the ontological dimension of the idea of Gestalts and its need for further clarification: “[...] a truly adequate mastering of the philosophical difficulties which surround this idea has never really taken place. [...] Such philosophical, and above all ontological, clarification is needed, for, without an awareness of the nature and interrelations of the objects with which it deals, an empirical science is in a certain sense performing experiences in the dark.”²² Already in 1922, Wertheimer, who was well aware of Husserl’s 3rd *Logical Investigation*,²³ pointed out the ‘significant philosophical consequences’ of Gestalt theory.²⁴ Thus, even a tentative elucidation of the ontological dimension of Gestalts, in particular regarding the hierarchical relation between parts and their organization as being either prior to (i.e. inde-

²⁰Cf. sections 2.2.5 and 2.2.6 above.

²¹Own translation. The original passage reads: “Das sich in den genannten neueren naturwissenschaftlichen Beispielen abzeichnende Vordringen gestalthafter Wahrnehmungstheorien in die sogenannten *hard sciences* muß den Laien wie den Spezialisten um so mehr überraschen, als die Logik der Gestalt sich von ihrem metaphysischen Erbe nie hat völlig lossagen können und – selbst da wo sie einer funktionalen Perspektive unterzogen wird, insgeheim einen Hang zu ontologischen und substanzialistischen Modellen verrät. Auf dem Gebiet der Metaphysik kommt die Gestaltkonzeption erst eigentlich zu sich selbst und findet hier ihre wohl größte Ausdrucksstärke und Überzeugungskraft.” [Simonis 2001: 385]

²²Silva-Tarouca [1960: 344] makes an even stronger claim, here in relation to the concept of Gestalt as developed by von Ehrenfels: “Von einer primär *philosophischen* Fruchtbarkeit zu reden, ist ja schon deshalb gestattet, weil *Ehrenfels* selbst sein Konzept als eine philosophische Neuerung vertreten hat. Inzwischen ist freilich die methodologische Klärung durch Wissenschaftstheorie und Grundlagenforschung über ihren damaligen Stand weit hinaus gediehen. Das Konzept Christian von *Ehrenfels*’ mag darum heute als eher der wissenschaftlichen Psychologie als der spekulativen Philosophie und Metaphysik zugehörig erscheinen. Unbestritten aber bleibt, daß es eine *systematologische* Herausforderung gerade an das philosophische Denken ideell und tatsächlich war und ist. Diese Herausforderung hat sich derart vielfältig und intensiv ausgewirkt, daß man kühn die Unentbehrlichkeit des Gestalt Denkens für die Philosophie der Gegenwart behaupten darf. Vorsichtig möchten wir sie so formulieren: Ohne jedes Mitdenken der Gestaltetheit gibt es kein den Menschen voll erfassendes Philosophieren.” Cf. on the need for philosophical/ontological clarification of the Gestalt idea also Smith [1994: 282].

²³“Evidently Wertheimer had begun to investigate the problem of form. During this period [1905-1910, M.S.], or perhaps still earlier, he read Husserl’s *Logical Investigations* on the problem of whole and part [...] and noted on a scrap of paper that Husserl had not sufficiently considered ‘the ontological aspect’ of the problem.” [Ash 1995: 108] Cf. also Luchins et al. [2015: 95] on Husserl’s influence on Wertheimer and cf. Toccafondi [2011], who states that despite this influence, there has practically never been a detailed discussion of Husserl’s phenomenology by Gestalt theorists, with the exception of K. Duncker.

²⁴Cf. Wertheimer [1922: 54]. On the relation between philosophy and Gestalt theory in a more historical perspective, cf. Leahey [2003], Cat [2007] and Toccafondi [2011].

pendent of) or secondary to (i.e. dependent on) the whole they form or are formed by, should be of theoretical interest. From such an elucidation, other ontologically interesting aspects of Gestalt theory, in particular concerning perceptual meaning, the presupposed emergence of new qualities and the notions of ambiguity and multistability, as well as the critical realism underlying the theories of major Gestalt theorists, will follow. However, whereas the latter might shed light on the ontological *status* of Gestalts (where do they exist, if at all?), it is the questions of primacy, meaning, emergence and ambiguity/multistability which mirror the hitherto discovered ontological *nature* of PWO in conceptual metonymy. Therefore, I will begin with the question of primacy (sections 6.2 – 6.3) and see how it leads us to the other ones (6.4 and chapter 7), while the issue of the ontological *status* has to be postponed to a follow-up research.

Such an ontological approach to Gestalts would, however, be pointless without a focus on concrete questions and without a convincing reason why empirical Gestalt research is not just supposed to concern mere ontic or even mental phenomena instead of fundamental ontological structures of reality. The reason why Gestalt research matters ontologically and not just ontically is that such research is ultimately concerned with the possible relations between parts and the whole. These relations are ubiquitous and fundamental, they are not just to be found in some entities and not in others,²⁵ which is also why reflections on part-whole-relations, including Gestalts, is ideally interdisciplinary. Experimental research on how and why we perceive perceptible manifestations of part-whole-relations is therefore a significant method, i.e. a way to understand these kinds of relations in general. Such a method is especially useful with respect to the ontological determination of the dynamic ‘in-between’ of parts and wholes: their shifting or switching, their oscillation. We saw in the second chapter’s discussion of Husserl’s formal and material ontology that this determination is impossible to conduct in a purely conceptual, a priori way, because it leads to internal inconsistencies. In other words, empirical research is not only inevitable for the ontological determination of PWO, but it can also be highly fruitful, as became evident in the previous chapters’ perspective taken by cognitive linguistics. This perspective allowed for the identification of PWO as the underlying structural dynamics of conceptual metonymy, and it has been fruitful, because in doing so, it has established the focus with which concrete questions on Gestalt theoretical research can be asked.

Firstly, conceptual metonymy, understood as embodied PART-TO-WHOLE and WHOLE-TO-PART intra-domain mapping, takes place in an experiential domain in which we perceive the world around us in a meaningful, organized way. We think and communicate in metonymies because we constantly perceive part-whole relations within or as one coherent impression, and we constantly perceive such relations because we have embodied them as the PART-WHOLE image schema. This is what the first characterization of PWO in ordinary language (PWO_{ind_lang_1})

²⁵On this point, I agree with Meirav [2003: 1], who states that “[o]n the face of it, almost anything we care to think about may be considered as a whole and as having parts, or as being itself a part of some greater whole. In attempting to understand ourselves and our environment, we divide or analyze (a whole into parts), we collect or synthesize (parts into a whole), we discern many parts composing one whole, and one whole composed of many parts. When, aspiring to understand, we reflect on the things we see, hear, imagine or conceive, on everyday objects, on sentences or melodies, on historical events, on our own actions, on mathematical structures, on the products of art, on space and on time, on reality considered metaphysically or theologically – we are almost irresistibly led to consider them in the light of the notions of whole and part.”

amounts to. The question I would like to address to Gestalt theoretical approaches towards part-whole relations concerns this experiential domain and the appearance of interdependent part-whole relations therein. What is it that appears as being more fundamental: the parts, the whole, or their relation of interdependence? In other words, how do we – equipped with our sensory nervous system – perceive possible founding relations between parts and a whole, such that the idea of a Gestalt can be defined and perhaps even the ontological nature of PWO further developed? Let us call this the question of ‘perceptual part-whole primacy’. From an elucidation of this basic question, the other questions will follow.

The second concrete question is predicated on the act of foregrounding and backgrounding that appears to be constitutive of conceptual metonymy (PWO_{ind_lang_2}). If we assume that conceptual metonymy is one area in which such an act can take place and if we further assume – in the framework of cognitive linguistics as depicted in chapters 4 and 5 – that conceptual metonymy relies on Gestalt perceptions within an experiential domain, then it is plausible that theories on Gestalt perception can tell us more about this momentum of foregrounding and backgrounding. What are the perceptual characteristics of figure-ground reversals and how are they applicable to the postulated primacy or the back-and-forth shifting of parts and whole in perception? Let us call this the question of ‘perceptual part-whole reversal’.

Thirdly, in section 5.2.4’s distinction between synecdoche and metonymy, it appeared that contemporary cognitive research attributes to the latter a strong reality-directed tendency (PWO_{ind_lang_3}). The pursuance of such a tendency, according to which the metonymic backgrounding and foregrounding of parts and whole is a more universal and reality based phenomenon than the prima facie purely linguistic and conceptual connotations of metonymy might make us believe, is not only promising for general ontological research. It raises in particular the question of how and into which ontological framework Gestalt theorists embed their own findings. Thus, next to the primacy of parts or whole and next to the momentum of figure-ground reversal, it is worthwhile to ask Gestalt theory for an elaborated model of reality that puts in place the kind of entity a Gestalt is, including its momenta of becoming, reversing and elapsing. Let us call this the question of ‘perceptual part-whole reality’. Unlike the previous two questions, however, this question will not be answered in the present project, because it involves research on the ontological status of Gestalts and/as PWO, not just on its ontological nature. However, the significance of this question consists in its addressing a complete framework, model or system of reality as a whole into which PWO *could* be embedded as one constitutive aspect. Nonetheless, instead of *answering* this third question, we can at least *formulate* it. Let me do this together with more precise formulations of the other two questions to find a way through the maze of research on Gestalt perception.

The question of perceptual part-whole primacy relates to the subject of dependency and founding. This subject is currently being discussed in ontological debates on grounding, i.e. on the general issue of ‘what grounds what’.²⁶ In the context of the relations between perceptible parts and whole, there are, in principle, four possibilities of part-whole-dependence. Firstly, perceptible parts and whole can be identical such that there is no part-whole-dependence at all. This means that it is neither the parts that found the whole nor the whole that founds the parts, but that the whole is nothing other than the arbitrary aggregation of parts. Arbitrary

²⁶Cf. for example the seminal article by Schaffer [2009] and the contributions in Correia et al. [2012].

here means that there is no special organization of parts, no ‘reciprocal determination’.²⁷ In the discussion of the Husserlian notion of pieces and their mutual founding relations²⁸ as well as in the reflection on material composition and mereology,²⁹ we saw that this is mainly the case for material pieces. As the analysis of such pieces requires a mathematical-logical and/or physicalist approach, Gestalt theorists have often called the resulting aggregates ‘summative’ wholes or ‘and-conjunctions’ (*Und-Verbindungen*) and distanced themselves from this option of classifying all types of part-whole relations.³⁰

There are, however, three other possibilities left, and it is here, in the realm of ‘suprasummativity’, that we can find significant differences among Gestalt theoretical approaches in terms of founding relations. Although these three remaining possibilities all state that there is a difference between parts and whole, they disagree in the attribution of dependence. Unlike the flat ontology involved in the first possibility, the second and the third one presuppose a vertical hierarchy in which either the parts found the whole or the whole founds the parts. In the first case, the factor that makes the whole different from the parts is just an additional quality, a Gestalt quality, which is added to the already existing qualities of the parts. The most influential and philosophically profound Gestalt theorist who argued in favor of this position is Ehrenfels, which is why I would like to delineate his position first (section 6.2). Then, with the rise of the Berlin school of Gestalt theory in the first decades of the 20th century and its demarcation from the Graz school, to which Ehrenfels was closely connected, a third possibility of part-whole dependence has come into play and still prevails in contemporary Gestalt research: the perceptual primacy of the whole, i.e. the being determined of the parts by the whole (section 6.3). It is then the whole and its supra-summative qualities alone that usually defines the nature of a Gestalt and determines how stimuli, as preperceptual parts, are perceived.³¹

Whereas both part-primacy and whole-primacy imply a unidirectional foundation and therefore a hierarchy of either ‘bottom-up’ (the parts found the whole) or ‘top-down’ (the whole founds the parts), the fourth possibility offers an alternative by suggesting a two-sided dependency of parts and whole. This alternative view of conceiving part-whole primacy is not implausible, as the discussion of conceptual metonymy’s underlying bidirectional part-whole structure has demonstrated.³² By considering several arguments from contemporary Gestalt-theoretical research, I will fathom how likely this fourth possibility may be and how suitable it is for defining the idea of a Gestalt and identifying PWO as a Gestalt understood in this

²⁷“We have a ‘pure’ aggregate when the reciprocal determination between all parts is absolutely or practically zero.” [Grelling et al. 1988: 200]

²⁸Cf. subsection 2.2.5.

²⁹Cf. section 3.1.

³⁰“In the first place, viewed from the gestalt-theoretical standpoint, the essential feature of this stimulus situation is that *it is not simply an ‘additive’, ‘plus-summed’, ‘there’ and ‘there’ and ‘there’ of single lines which appears, not simply a ‘juxtaposition’ given in a ‘piecemeal’ way. We have here a paradigm of a specific ‘collocation’ into characteristic ‘unities’, a ‘collocation’ in which the single lines, the single constituent parts, appear no longer as unrelated ‘elements’, but rather as ‘participants’ in something ‘whole’ - as belonging, for the time being, to the white area of the patch with which they appear, for the time being, to be coalesced in pairs.*” [Petermann 1932: 141-2]

³¹“In general, it is useful to distinguish Gestalt parts (in a person’s perception) from stimulus parts (in the environment). Gestalt parts evolve from an interaction among the representations of stimulus parts, even if the stimulus parts themselves do not change, so that the whole determines how a stimulus part is perceived and whether it becomes a Gestalt part.” [Wagemans et al. 2012b: 4]

³²Cf. sections 5.2 and 5.3.

way. For the present project, the plausibilization of a two-sided part-whole-dependence is important, because the hypothesis of an ongoing oscillation between parts and whole would certainly benefit from an elucidation of a bidirectional founding relation of parts and whole in the experiential domain of Gestalt perception. Usually and apart from studies on figure-ground perception, Gestalt perception is researched via empirical examples of ‘perceptual grouping’, in which Gestalt principles such as proximity, good continuation or similarity are taken as special cases³³ of the more general tendency towards a ‘good’ and ‘simple’ (*prägnant*) Gestalt,³⁴ where the whole appears not only as a ‘larger’,³⁵ but also as a more complete and ordered object than its parts. To present clear examples, it is thereby helpful to highlight within the experiential domain items such as drawings of dots, lines and geometrical shapes or tones and melodies, which should always be understood as representing a more embracing and realistic real-world environment.³⁶

All in all, the aim of this chapter is to explore different positions of Gestalt theory to further determine the ontological nature of PWO. As in the previous chapter, the method with and therefore the domain in which this determination takes place is empirical. Empirical here simply means two things. Firstly, it means that the research results of the discussed theories can, in principle, be generalized inductively although they are derived from a limited amount of perceptual and experimental data, and secondly, that there would be no access to the reality of the phenomena in question without the active role of our senses. Since the equally empirical approach to ordinary language in the context of cognitive linguistics has resulted in three crucial research findings concerning firstly, the unity of the experiential domain, secondly, the act of foregrounding/backgrounding and thirdly, the reality-directedness involved in conceptual metonymy, it is now required to follow these cues and thus to focus on the prelinguistic and preconceptual level. This level has to be preconceptual, because the notion of PWO goes against a clear demarcation of whole and parts as stable, i.e. unambiguous concepts that alone suffice for a formal ontology: It both excludes itself from the conceptual problem of infinite proliferation that a part-whole difference entails and it necessitates the idea that a whole must be somehow contracted in its parts while still serving as a whole.

These impasses that are involved in a purely conceptual analysis of PWO, however, are not the reasons for also going beyond ordinary language. On the contrary, the fact of linguistic usage of metonymy and the reason why metonymic structures are meaningful to us has proven to be an indication of the existence of a dynamic and reciprocally founding interaction between parts and whole. But while the cognitive linguistic framework in which this process has been identified

³³Cf. Metzger [2006: 21]. But cf. Pinna [2011a: 224–6], who shows how the principle of similarity by reversed luminance contrast can conflict with *Prägnanz* (and other principles).

³⁴“According to the *Prägnanz* principles, the visual system determines the formation of objects on the basis of the simplest, the most regular, ordered, stable, balanced, rather than the most likely, organization of components consistent with the sensory input.” [Pinna 2011a: 222]

³⁵Cf. Goldstein [2010: 106].

³⁶This is in line with Guberman’s [2015: 26] recent statement that “[...] Gestalt psychology is based on analysis of human-made linear and dotted drawings [...]. These images are tools for human communication. The second feature of these drawings is their discrete nature: each image could be described as a set of strokes – lines that could be drawn with no stops and no interruptions. These strokes are the elements, the building material, for constructing the Gestalt.” Such simple drawings, but also simple examples from the musical sphere, thus allow for an intelligible and reproducible illustration of part-whole perception, even specified to questions of part-whole primacy.

points to the domains of direct empirical perception, image schemata and sensorimotor body-environment interactions, it is itself mostly concerned with the level of language in a semantic and pragmatic sense. To overcome the contingencies involved in language usage and to flesh out the experiential as well as experienceable levels prior to ordinary language and conceptual thinking, however, more systematic research on the embodied perception of part-whole relations is needed. This is why the inductive *quaestio iuris* of meta-ontology can be divided into ordinary language³⁷ and experimental research:³⁸ to apply the latter as an extension to and perhaps a corrective of the former. Only in so doing is it possible to provide a satisfactory account of the meaning of part-whole interactions in embodied language *in consequence of* sensory perception.

6.2 One-Sided Dependency I: Parts Found the Whole

In a simple manner which is not intended to exclude intermediary stages, the concatenation of foundation and part-whole relations yields four possibilities:

- (1) There is no founding relation between parts and whole.
- (2) Parts found the whole but are not founded by the whole.
- (3) The whole founds the parts but is not founded by the parts.
- (4) The whole founds the parts and the parts found the whole.

Foundation means that if b is a necessary condition for a 's existence, then a is founded by b . If a is founded by b , then a is dependent on b ; and consequently: If a is not founded by b , then a is independent of b .³⁹ We are familiar with these notions of part-whole foundation from the prior discussion of Husserl's part-whole ontology.⁴⁰ When we now investigate the possible foundation relations of parts and whole in the realm of empirical perception, i.e. in what a 'material ontology' is about according to Husserl, and thereby enter into the discourse of Gestalt theory, it is essential to add another set of correlative parameters: external stimuli and internal percepts. External stimuli descend from the mind-independent environment and are therefore physical in nature and mathematically approachable. For example, the typical two-dimensional surface of a laptop is a rounded rectangle, i.e. a rectangle with rounded edges. In order to calculate the surface area, it is therefore insufficient to just multiply the length with the width. Instead, a more complex equation that involves π is needed to approximate each of the four rounded edges.⁴¹ As an internal percept, however, we usually perceive the surface of a laptop as a regular rectangle with quadrilateral edges (edges with an angle of 90° each). It is only on closer examination that the actual roundness of the edges is recognized. The whole external stimulus in question is thus a rounded rectangle, while the whole internal percept is a regular rectangle; the four rounded edges as stimulus parts are omitted in the perceived shape. In the overall impression, they turn into inconsiderable quadrilateral edges as perceptual parts.

The stimulus whole with its stimulus parts and the perceptual whole with its perceptual parts

³⁷Cf. subsection 1.3.1.

³⁸Cf. subsection 1.3.2.

³⁹Cf. Smith [1986: 118-9] and cf. Tahko et al. [2016] for an elaborated discussion of ontological dependence with useful distinctions which I cannot take into consideration here.

⁴⁰Cf. chapter 2, especially subsections 2.2.5 and 2.2.6.

⁴¹The correct formula to compute the area A would be $A = ab + 2r(a+b) + \pi r^2$.

Cf. <http://mathworld.wolfram.com/RoundedRectangle.html> (last visited on 7 December 2019).

(or ‘Gestalt parts’ for that matter⁴²) are thus to be distinguished, albeit only functionally and heuristically. But is it correct to say that there is a qualitative difference between stimuli and percepts? Is it not just a quantitative difference such that an arbitrary number of stimuli are merely added together into one percept, so that the percept, as an *association* of stimuli, can, in return, be fragmented into its *atomic* constituents? And does qualitative difference between the perceived whole and its parts and the external stimuli not just indicate the wrongness of a perception and could it therefore explain perceptual illusions? This stance that corresponds with possibility (1) would delimit the application of a foundation relation to the stimulus parts, “without external assistance” [Husserl 2001: 34] by a qualitatively different whole. What is given in perception would thus be only a continuation of congenial and, as such, independent stimuli, and an arbitrary number of the latter would point like a vector to the content of the former. Then a stimulus whole *should* not be different from a perceptual whole for the latter to be adequate, which is safeguarded by hypothesizing a constant one-to-one excitation of our sensory nervous system by single, independent stimulus parts that can, but do not have to, aggregate in order to exist. The nature of external stimuli would thus be analogous to the nature of material pieces. It is on the historical stage of the late 19th century on which such a positivist ‘mechanization of perception’ or “atomistic orthodoxy” [Smith 1994: 244] enjoyed dominance, and against which even the argumentation in favor of possibility (2) must have been quite unorthodox.⁴³

6.2.1 Ehrenfels and Gestalt Qualities

Presumably it had only been in the field of aesthetics in which a deviation from this positivist paradigm was in some degree conceivable. It is therefore with reflections on aesthetic phenomena that Ehrenfels’ 1890 paper ‘On Gestalt qualities’ starts out,⁴⁴ demonstrating how, with the distinction between external stimuli and internal percepts, there can be a one-sided foundation relation where a diversity of stimulus parts found a perceptual unity. This demonstration begins – probably Ehrenfels’ most famous example – with a melody. A melody is presented to us via individual tones, which are simply the external stimulus parts. The sum of these individual tones is a complex of elements, is “a sum of presentations of successive single tones with distinct and mutually exclusive temporal determinations.” [Ehrenfels 1988a: 85] In other words: the stimulus whole is the sum or the complex of the stimulus parts. So far this is in line with the

⁴²“In general, it is useful to distinguish Gestalt parts (in a person’s perception) from stimulus parts (in the environment). Gestalt parts evolve from an interaction among the representations of stimulus parts, even if the stimulus parts themselves do not change, so that the whole determines how a stimulus part is perceived and whether it becomes a Gestalt part.” [Wagemans et al. 2012b: 4]. Nota bene, this statement presupposes the point of view that tends to postulate the perceptual primacy of the whole over its parts, cf. section 6.3.

⁴³“The point that is relevant in this context is that the Gestalt theorists did not oppose the views of any single individual, but rather the elementistic and mechanistic assumptions about consciousness shared explicitly or implicitly by all attempts to present psychology as a natural science in the nineteenth century. The breadth and vehemence of their attack lend credence to the suggestion that theirs was a part of a widespread revolt against positivism in European thought at the turn of the century.” [Ash 1995: 60]

⁴⁴“Die ästhetischen Phänomene haben jedenfalls einer aggregathaft-atomistischen Interpretation stets am kräftigsten widerstanden. Es ist daher auch kein Zufall, daß Christ. v. Ehrenfels durch Beobachtungen an ästhetischen Objekten (Melodien) auf seine grundlegend neuen, die reine Summenhaftigkeit und den reinen Aggregatcharakter des seelischen Geschehens verneinenden Einsichten geführt wurde.” [Ehrenstein 1960: 122]

atomistic view (1) sketched in the previous paragraph. Ehrenfels even agrees that it would be incongruous if one assumes, with a certain reading of Mach, that the stimulus whole differs from the stimulus parts and that the former can be immediately sensed without any intervention on the side of the perceiving consciousness, merely with what Mach calls ‘muscular sensations’ (*‘Muskelempfindungen’*).⁴⁵ At the same time, Ehrenfels observes that in a perceived melody, what is present is not a succession of individual tones such that our consciousness of the melody could be divided into single percepts that are supposed to correspond with the single stimuli. Instead, what is required for a melody to be a melody “is an impression of the whole series of tones.” [id.: 84] This overall impression, as the perceptual whole, thus differs from the stimulus whole, because it would be an “unjustified analogy” [id.: 86] to equate the physical and the psychological sphere. It is an incontrovertible fact that one single consciousness is physiologically able to transform a multiplicity of stimulus parts into the unity of a perceptual whole (e.g. a melody) instead of perceiving the unity of a stimulus whole (e.g. a set of successive tones) that can also offer the explanatory ground for the fact that this perceptual whole differs from the stimulus whole.⁴⁶ Hence the well-known slogan that a whole is – not necessarily *more*, but possibly – *different* from the sum of its parts. The proof for this claim in the example of the melody is the following: while a predefined series *A* of the finite tones $a_1 \dots a_n$ and a predefined series *B* of the finite tones $b_1 \dots b_n$ can result in the same melody *M* (for example by being played in another octave, interval or tonality), an arbitrary reassembly of $a_1 \dots a_n$ or $b_1 \dots b_n$ into another sequence would yield the same sum of tones,⁴⁷ but not the same melody.⁴⁸

The thus proven difference between stimulus whole and perceptual whole consists in an additional quality that is neither possessed by any of the stimulus parts nor by the stimulus whole; a quality that makes the perceptual whole therefore *suprasummative* compared to the stimulus whole. Ehrenfels calls this a ‘Gestalt quality’ and defines it as follows: “By a *Gestalt quality* we understand a positive content of presentation bound up in consciousness with the presence of complexes of mutually separable (i.e. independently presentable) elements. That complex of presentations which is necessary for the existence of a given Gestalt quality we call the *foundation [Grundlage]* of that quality.” [id.: 93] In other words, a perceptual whole is a unity of consciousness that consists both of a Gestalt quality, which is a perceptual part⁴⁹ of this whole that is not physiologically given, *and* of the stimulus whole as a sum of the stimulus parts, which is physiologically given and by which the perceptual whole is founded.⁵⁰ The perceptual

⁴⁵Cf. Ehrenfels [1988a: 84] and Mulligan et al. [1988: 125–9].

⁴⁶“That component part of the physiological precondition of a manifold of presentations which determines that the presentations occur *in a single consciousness* can also serve as the precondition for the appearance of a new element as it were hovering over the given complex of presentations.” [Ehrenfels 1988a: 88]

⁴⁷“Charakteristisch für eine Summe ist, daß sie dann existiert, wenn ihre Teile existieren, unabhängig davon, in welchen Beziehungen sie zueinander stehen – der Begriff der Summe läßt sich rein mereologisch definieren.” [Simons 1986: 119]

⁴⁸Cf. Ehrenfels [1988a: 90] and also Bühler [1913: 11].

⁴⁹Indeed, what Ehrenfels calls a ‘quality’ has to be interpreted as being a ‘part’ and less as an ‘attribute’. This is confirmed by Rausch [1966: 890]: “Der Begriff ‘Qualität’, der bekanntlich eine große Rolle gespielt hat [...], hat bei seiner Verwendung im Terminus ‘Gestaltqualität’ zwei verschiedene Bedeutungen angenommen: ‘Gestaltqualität’ ist entweder im Sinne eines Attributs verstanden worden oder im Sinne eines quasi substantiell existierenden, neuen Elements. [...] Die Ehrenfelssche Konzeption von ‘Gestaltqualität’ scheint mehr der zuletzt genannten Bedeutung zu entsprechen.”

⁵⁰Mulligan et al. [1988: 130] put it similarly: “Ehrenfels recognizes not only *complexes* [stimulus wholes, M.S.] of elementary perceptual data [stimulus parts, M.S.] but also special *qualities* [perceptual parts, M.S.] of

whole then displays a certain degree of invariance to changes in the stimulus parts, which is why it can be *transposed* in the sense of remaining identical when the stimulus parts (but not their mutual relations) vary. *Suprasummativity* and *transposability* have since been called by Köhler the two ‘Ehrenfels criteria’ for Gestalt qualities.⁵¹ The ontological foundation is thus still, in accordance with possibility (1), a complex of independent parts, which is what we have already come to know in the Husserlian context as a (material) ‘aggregation’ of (material) ‘pieces’. But it is not only in this sense that it is to the point when Smith [1994: 247] asserts that “almost all of the theoretical and conceptual issues which came subsequently to be associated with the Gestalt idea are treated at some point in the work [i.e. Ehrenfels’ paper, M.S.], at least in passing.”

6.2.2 Ontological Expansion of Gestalt Qualities

Besides the kind of one-sided dependency described above that results in perceptual wholes being founded by stimulus parts and their complexes, there are three other issues to be found in Ehrenfels’ article ‘On Gestalt qualities’ that are worth mentioning in the context of the present investigation. The first issue concerns the universalization of Gestalts and can – in the case of Ehrenfels – rightly be labeled an ‘ontological expansion’ of Gestalt qualities. This means that in the course of his paper, Ehrenfels allows for a considerably generous number of ontological domains the idea of Gestalt qualities can be applied to. Music, and thus the tonal or acoustic sphere in general, is only one domain in which Ehrenfels discovers this perceptual addendum that is not yet present in the physiologically received stimuli. The acoustic domain falls under the category of ‘temporal Gestalt qualities’, because it requires a certain time period to grasp a succession of tones. Temporal Gestalt qualities are created whenever a presentation of stimuli involves a change over time, such as in the change of tones that creates a melody, in spatial movement,⁵² color changes,⁵³ and even in the domain of inner perception that we could also denote as comprising tertiary qualities.⁵⁴ Non-temporal Gestalt qualities, on the other hand, are perceived in one single glance: harmony and timbre in the tonal sphere, instantaneous visual sensations and most perceptions of touch, taste, smell and temperature.⁵⁵ We also often perceive Gestalt qualities cross-modally when the stimuli received by two or more sensory organs together contribute to one unity of consciousness.⁵⁶

such complexes, and the formations [perceptual wholes, M.S.] we perceive are such as to involve both.” Interestingly, Mulligan [id.: 133] also offers a visual diagram of these interrelations.

⁵¹Cf. Köhler [1920: 35–37]. For a detailed explanation of the transposability phenomenon in the acoustic and visual sphere cf. Rausch [1966: 880–885] and for a logical analysis of summativity vs. suprasummativity cf. Rausch [1960; 1967].

⁵²To give an example of my own: The whole impression of climbing a mountain can be liberating and recreational, particularly after having reached the top, while every single move to pull upwards was confining and exhaustive.

⁵³Ehrenfels gives the examples of “blushing, blanching, darkening, glowing, etc.” [Ehrenfels 1988a: 98]

⁵⁴“What is certainly true, however, is that changes such as the waxing and waning of a desire, a pain, an expectation, if they become the objects of an inner perception are peculiar temporal Gestalt qualities, intertwining themselves with the remaining data of perception and analogous to a crescendo or diminuendo in the tonal sphere.” [id.: 101]

⁵⁵Cf. id. [96].

⁵⁶Cf. id. [97]. Among others, cross-modal perception is taken to be a significant process for the development of image schemata (cf. section 5.1).

Furthermore, the inner and outer perception of temporal and non-temporal Gestalt qualities is not restricted to objects, but expandable to relations between objects as well. Via the temporal mental act of comparing objects, for example Gestalt qualities such as similarity, incompatibility, change or duration come into existence, which Ehrenfels does not take to be ideal objects in the Meinongian sense, but rather direct inner perceptions founded by external stimuli.⁵⁷ Such Gestalt qualities of relation lead to two other domains in which Gestalt qualities occur: language and its underlying concepts. Every specification of the relational Gestalt qualities of change and duration “and thus every *verb* in the strict sense [...] designates a Gestalt quality of some type or other, as does every noun and adjective having reference to more than a single perceptual element. Thus Gestalt qualities comprise the greater part of the concepts with which we operate.” [Ehrenfels 1988a: 108] In addition, due to the fact that stimuli parts are given to us as being mutually independent, we can imaginatively restructure their perceptual counterparts such that new Gestalt qualities arise. This is the “creative activity of imagination” [id.: 109] and it is applicable both in the creation and in the perception of artworks. In short, the ontological expansion of Gestalt qualities by Ehrenfels significantly exceeds the scope of sensory perception and strives towards universalism and unity. Everywhere where some kind of experience plays a role or has played a role (e.g. for the constitution of concepts and language), Gestalt qualities are involved.⁵⁸ As he himself concludes, his “theory makes possible the unification, within a single framework, of what are superficially the most disparate phenomena.” [id.: 114]

6.2.3 Vertical Ontology of Higher Order Gestalt Qualities

The high number of ontological domains in which Gestalt qualities are supposed to occur on the one hand, and the comparatively limited number of atomic building blocks aka physiological stimulus parts for perceptual wholes on the other, raises the question about the augmentation of Gestalt qualities. How is it possible that mutually independent elements that reach our sensory organs can serve as the foundation for Gestalt qualities in ontological domains that even go beyond direct inner and outer perception, such as language, creative imagination, abstract relations and concepts? On the stimulus level, there can be no such augmentation, not only for the trivial reason that Gestalt qualities do not yet exist on this level, but also because stimuli parts themselves do not augment, since they are both mutually and holistically independent. If we understand stimuli parts as pieces in the Husserlian sense, then we can classify their ontological domain as being ‘flat’ or ‘horizontal’.⁵⁹ The parts in question exist spatiotemporally next to each other and their complexes are just an arbitrary collection that does not stand in any dependence relation to the parts. It is only with the coming into existence of Gestalt qualities and their one-sided dependence on the stimulus level that a certain verticalization

⁵⁷Cf. Smith [1988a: 23] and Boudewijnse [1999: 144], who writes in this regard that Ehrenfels “defined similarity as an immediate perceptual phenomenon; not a conceptual one [as did Meinong, M.S.], because analysis fails to come up with the reasons of the resemblance. He explained recognition of the same tune in different performances through the notion of gestalt qualities. Then he applied this concept to explain how we hear similarities between different melodies and notice family resemblances.”

⁵⁸As Smith [1994: 247] puts it: “Indeed, once the nature of Gestalten has been coherently established, the notion is in principle applicable to objects of all kinds of sorts and categories, irrespective of whether or not they serve as objects of experience on the part of actual conscious subjects.”

⁵⁹Cf. subsection 2.2.5.

occurs in which the stimulus level serves as a foundation for the perceptual level.

At first sight, it might seem that for every act of stimulus perception there is only one possible yet unavoidable emergence of Gestalt qualities. The emergence of a Gestalt quality in consciousness is unavoidable, because, for the most part, even without the active contribution of our consciousness the perceived whole comprises this additional part. Significantly, Ehrenfels [id.: 111] formulates “the hypothesis with strict generality as a proposition to the effect that ‘wherever a complex which can serve as the foundation for a Gestalt quality is present in consciousness, this quality is itself *eo ipso* and without any contribution on our part also given in consciousness.’” It therefore seems that what we perceive – when we perceive a perceptual whole consisting of a stimulus whole plus a Gestalt quality – is restricted to two hierarchical yet unchangeable levels, which makes the perceptual whole in question not further applicable to other ontological domains. Thus the question persists: How is it possible that Gestalt qualities are inferred to other, possibly non-perceptual domains?

To sense the tones of a melody, the visual stimuli of a tree or the elements constitutive for the unity of seeing, smelling and tasting a meal, for instance, is indeed a sufficient condition for the coming into existence of the respective perceptual whole that comprises a particular Gestalt quality. Such directly perceived Gestalt qualities can be classified to be of the first order. They are not only necessarily, but also immediately connected to their foundation. This means that just as a stimulus part s_1 can be spatiotemporally immediate to s_2 and mediate to s_3 in $s_1s_2s_3$ (e.g. the circles $\underset{s_1s_2s_3}{\circ \circ \circ}$), Gestalt qualities can also be immediate or mediate, either to each other or to the stimulus parts, just not in the spatiotemporal order of contiguity and succession.⁶⁰ If the Gestalt quality g_1 is of the first order, then it can be said to be embedded in the following simplified structure, whereby W_p stands for ‘perceptual whole’, W_s for ‘stimulus whole’ and not more than three stimulus parts are assumed (e.g. a triad chord or the three lines of a triangle): $W_p\{g_1 + W_s\{s_1 + s_2 + s_3\}\}$. Now, Ehrenfels argues, one way of achieving a Gestalt quality of a higher order is by comparing two Gestalt qualities of a lower order. If we compare $W_{p1}\{g_1 + W_{s1}\{s_1 + s_2 + s_3\}\}$ with $W_{p2}\{g_2 + W_{s2}\{s_4 + s_5 + s_6\}\}$, the result of the comparison, for example the insight that g_1 and g_2 are similar to each other, yields g_3 , which is the similarity relation holding between g_1 and g_2 : $W_{p3}\{g_3\{g_1 + W_{s1}\{s_1 + s_2 + s_3\}\} + g_2 + W_{s2}\{s_4 + s_5 + s_6\}\}$. Then g_3 is not immediately founded by the stimulus parts anymore, but only mediately via g_1 and g_2 . For example, two triad chords that sound similar but are played at different moments in time or by different musicians (hence the different stimulus parts) can thus be compared with each other and the result of this comparison can again be compared with other Gestalt qualities, e.g. g_3 with g_2 to elicit g_4 , which would be of a third order.⁶¹

To compare, however, is just one way to create Gestalt qualities of a higher order. They are also created by combining “presentational contents of physical and psychical occurrences – contents of the most conceivably different kinds – into integral concepts.” [id.: 107] According to Ehrenfels such combinations include: *all* kinds of human actions (both voluntary and involuntary), “all designations of human individuals or groups of whatever kind [...], as well as most

⁶⁰Cf. the similar discussion of Husserlian pieces and moments in subsection 2.2.6.

⁶¹“However things may stand precisely here, it cannot be disputed that a wealth of similarities is to be encountered amongst Gestalt qualities, and that, in the making of comparisons between these qualities, Gestalt qualities of a higher order are generated in the presentations of the relations thereby arising.” [Ehrenfels 1988a: 107]

designations for human corporations and institutions, all names of places and territories, and equally all names of animal species [...]” [id.] The here obvious ontological expansion of Gestalt qualities, which makes Ehrenfels conclude that “probably indeed more than half of all the concepts employed in everyday life belong to the given category [of higher order Gestalt qualities, M.S.]” [id.: 108], is thus justified by the assumption that from the basis of stimulus parts and their complexes, more and more Gestalt qualities of an increasing vertical order can and in fact do arise. Almost consequently, the non-spatiotemporal distance of these qualities from their original physiological building blocks is, in the majority of cases, only hard to guess.⁶² In any case, it is this vertical, continuously expanding hierarchy of dependent parts that undermines a predefined determinism, because with every level and additional Gestalt quality, ontologically new wholes, perceptual as well as non-perceptual ones, are generated.⁶³ This assumption of a dynamic, vertical augmentation of Gestalt qualities entails a high degree of ontological and therefore perceptual, conceptual, imaginative and cultural freedom.

6.2.4 Good, Bad and No Infinity of Gestalt Qualities

The vertical ontology of Gestalt qualities not only accounts for their origination, but additionally results in a certain conception of infinity. On a closer reading of Ehrenfels’ ‘On Gestalt qualities’, it is even possible to distinguish two kinds of infinity and one kind of finiteness. The first kind of infinity is entailed by the just-described augmentation of Gestalt qualities, for example via acts of comparison and combination, but also perception and imagination. In this upwards direction of augmentation, there is basically no upper limit for the coming into and remaining in existence of Gestalt qualities. Every ‘psychic act’ is unique and therefore yields a new combination of parts and wholes. Due to the “difficulty of precisely specifying and classifying the almost boundless range of possible Gestalt qualities involved” [id.: 106], Ehrenfels states that every attempt at “exact conceptual formulation” [id.] falls short of describing this kind of infinity. However, since this augmentation is based on the ontological freedom of creation and since almost all of the contents of perception and products as well as the progress of culture and higher thinking rely on this upwards infinity, we can categorize it – not without allusion to Hegel – as a ‘good’ infinity. In a terminological view, it is also ‘good’ in the sense that it allows for the creative freedom entailed by the German verb *gestalten*, which means to design or to shape and which has a quite positive connotation. This ‘good’ infinity then contrasts both with a ‘bad’ infinity and the conception of finiteness.

The ‘bad’ infinity can be labeled as ‘bad’, because Ehrenfels discusses it as a possible counter-argument to his theory, in particular to the just described ‘good’ infinity of creative freedom. The argument goes as follows: If we assume two elements e_1 and e_2 , which can be a stimulus

⁶²Applied to language, it might not be too far-fetched to draw a parallel here to the cognitive linguistic theory concerning the unconscious origin of abstract thought and conceptual metaphor/conceptual metonymy in the sensorimotor domain.

⁶³“For whoever has truly become convinced that something new is created through the combination of psychic elements will award the latter an incomparably higher significance than he who sees in psychic life only the continual displacement of eternally recurring components. Psychic combinations never repeat themselves with complete exactness. Every temporal instant of every one of the numberless unities of consciousness therefore possesses its own peculiar quality, its individuality, which sinks, unrepeatable and irreplaceable, into the bosom of the past, while at the same time the new creations of the present step in to take place.” [id.: 116]

part, a perceptual part or a Gestalt quality, and these two elements result in a third element e_3 , for example by an act of comparison, then the further comparison of e_3 and e_1 must yield e_4 and so forth. Then there would be an infinite proliferation of entities that would simultaneously entail “an infinite complication of conscious life” [id.: 88]. We have encountered the same kind of argument already in Husserl’s formal part-whole ontology above.⁶⁴ Ehrenfels refuses it by stating that although there is indeed a *possible* proliferation of entities that is involved in our ability to connect parts and wholes, it would be an exaggerated understanding of his theory to assume that this possible, ‘good’ infinity would immediately result in all the actual, infinite and therefore ‘bad’ consequences of element-proliferation.

First of all, normally we acknowledge only a limited number of actual relations between elements. Not every arbitrary combination of stimulus parts or Gestalt qualities is usually given or yields additional entities.⁶⁵ For example, if I see a wall (perceptual part p_1) and a field of grass before it (p_2), I do not necessarily see something p_3 that combines p_1 and p_2 , unless I clearly see a garden or a park to which p_1 and p_2 belong. In general, “for a given complex of presentational contents given in consciousness only those Gestalt qualities are present whose foundations stand out noticeably from their surroundings.” [id.: 113] Furthermore, Ehrenfels argues that in the same way in which we could but mostly do not discriminate every infinitely possible spatial determination of a colored surface, we also could, but in fact do not, relate every element in perception with every other element, although in principle there is a latent infinity in every perception. “If however infinite complexities in a conscious content were impossible, then so too would be presentations of plane surfaces, and we do in fact possess such presentations.” [id.: 89] In addition, the counter-argument is ‘bad’, because it rests on a logical fallacy: It presupposes what it argues against. In arguing that it is false that relating e_1 and e_2 results in e_3 , the counter-argument presupposes e_3 . In Ehrenfels’ words, it “presupposes that the Gestalt quality is given already with its underlying complex of presentations, i.e. without any additional activity on our part.” [id.: 88]

Finally, Mulligan et al. point out that the objection of infinite proliferation of entities does not apply if one advances the view, like Ehrenfels does, that there is a one-sided dependency of (perceptual) wholes on (stimulus) parts. Since the latter do not need the former to exist, it is not the case that any possible relationship between stimulus parts automatically yields Gestalt qualities, or that every combination of stimulus parts and Gestalt qualities of a lower order yields perceptual wholes with Gestalt qualities of a higher order. If this were not the case, i.e. if every complex of sensations were to proliferate infinitely because it relied on the existence of its products, then “we would once more be in no position to explain that characteristic unity and integrity of perceptual complexes which is in fact experienced.” [Mulligan et al. 1988: 131] In other words, if every arbitrary collection of stimulus and perceptual parts and wholes were to result in an infinite multiplicity, then what is perceived as a Gestalt quality within a perceptual whole could neither be analyzed nor explained, because the explanatory ground itself would be

⁶⁴Cf. subsection 2.2.5.

⁶⁵“[...] he who accepts the existence of Gestalt qualities is by no means committed to the view that all distinguishable presentational elements provide a foundation for such qualities and he certainly does not affirm that the co-existence of the Gestalt qualities themselves with their elements must give rise to yet further qualities. Only under this presupposition however is there any threat of infinite complication, and since we have no intention of extending our thoughts in the given direction, we can therefore dismiss the objection out of hand.” [id.: 88]

indeterminate and ensnared in countless sub-relations and meta-relations. This would be the case, for example, when we hear pure noise instead of music, because it is symptomatic only for the latter that is analyzable into simpler founding parts.⁶⁶

This analyzability into simpler parts indicates the finiteness involved in Ehrenfels' framework of one-sided part-whole dependency. Whereas in an upwards direction, there is a possible infinity of Gestalt qualities and therefore of perceptual and non-perceptual wholes, in a downwards direction, when all added, i.e. emerged qualities and parts are removed and the stimulus parts are isolated,⁶⁷ we encounter a finite number of stimulus parts. Although Ehrenfels allows for a differentiation of the stimulus and the perceptual domain with a potentially infinite augmentation of the latter even into non-perceptual domains, he at the same time carries the heritage of atomism forward by postulating such atomic building blocks that are themselves both separable from perceptual parts and indecomposable into smaller parts. These building blocks are the most basic stimulus parts and can therefore be classified as 'proto-qualities'. More extremely, Ehrenfels even hypothesizes that in the end, all the way down, there might be only one single proto-quality out of which all the other kinds of parts and wholes emerge.⁶⁸ The vertical dimension of Ehrenfels' theory of one-sided dependency thus combines the tendency for metaphysical order and unity that is hypothesized to prevail in the most basic level of the stimulus realm, such that there is "the possibility of comprehending the whole of the known world under a single mathematical formula" [id.: 116], with "individualistic tendencies to which – though in an altogether different direction [upwards, M.S.] – the theory also indubitably lends support." [id.]

Ehrenfels is well aware of the fact that both extremes will never be fully reached: Because we cannot fully free ourselves from the perceptual realm, the recognition of a pure, proto-stimulus element has to remain what can be called with Kant a 'regulative idea', and because of the possible infinity of part combinations in an upwards direction, it will never be the case that all possibilities will ever be realized (which is why the counter-argument of the 'bad' infinity does not apply). But even the mere hypothesis that there is a finite number of building blocks that are independent of their interrelations, i.e. their mutual founding relations, and the qualities thereof in perception and beyond leads to the conclusion that nothing of the 'higher' can be found in the 'lower'. This means that no trace or quality of the ontologically subsequent perceptual whole is supposed to be included and detectable in its constituent (stimulus) parts.

⁶⁶"Musical tone combinations, both harmonious and discordant, are distinguished from unmusical noises in the fact that in the former case we are capable, at least to a certain degree, of analysing the impressions involved, i.e. of separating foundation and Gestalt quality from each other and of distinguishing various parts of the foundation, where in the latter case foundation and Gestalt quality are fused into a whole in relation to which our attention is inadequate to discriminate the parts." [id.: 115]

⁶⁷It is, however, questionable whether the removal of additional qualities and the isolation of more basic parts indeed results in distinguished stimulus parts with fewer qualities. Smith [1994: 280] convincingly argues that "[r]arely, however does isolation of parts lead to a mere loss of properties: neither whole-properties nor part-properties are simply added extras which spring into existence at the moment of unification and disappear on isolation. For isolated parts *qua* isolated have peculiar features of their own, which depend on the one hand upon the peculiar features of their new environment and on the other hand upon what they bring with them from the old."

⁶⁸"And no conclusive argument can be brought forward even against the possibility that we may not, penetrating ever more deeply in this manner, finally arrive at a single proto-quality, or at least at a single quality-continuum, from out of which distinct contents (colors, tones, ...) are generated by the fusion of distinct combinations with the Gestalt qualities bound up therewith." [id.: 115]

Therefore, a switch or oscillation from the perceptual whole to the kind of parts on which it depends does not hold the whole and its Gestalt quality in the background and thus retrievable, but makes them disappear entirely, like an entity that is too comprehensive for a cone, the apex of which only the most basic part(s) can fill. For a further investigation into the ontological nature of PWO, Ehrenfels's theory of Gestalt qualities is therefore only partly useful, which is why now, as a next step, we will turn to an alternative Gestalt framework in which the one-sidedness of part-whole dependency is inverted.

6.3 One-Sided Dependency II: The Whole Finds the Parts

6.3.1 From Additional Gestalt Qualities to Immediate Gestalt Wholes

A good introduction to the inversion of one-sided part-whole dependency is given by Ehrenfels himself. Shortly before his death in 1932, he dictated to his wife a concise outline of the position he had held concerning Gestalt qualities. In this outline, he also addresses the topic of dependency. Well aware of the developments that had taken place after the publication of his just-discussed 1890 paper 'On Gestalt qualities', in particular of the nascency of the Berlin and the Graz schools in the beginning of the 20th century⁶⁹ that continued his own reflections on different epistemological and experimental grounds, Ehrenfels reaffirms his conviction that

“What is essential to the relation between the founded content and its fundament is the one-sided determination [*Bedingtheit*] of the former by the latter. Every founded content necessarily requires a fundament. A given complex of fundamental presentations is able to support only a quite specific content. But not every fundament must as it were be crowned and held together by a founded content. At least that was my view when I formed the concept of Gestalt quality. Others held a different view, that the Gestalt quality is necessarily given along with the fundament, and that the effort which we contribute – for instance in apprehending a melody – is not located in the production of the founded content, but merely in the noticing of it. Meinong and his pupil Benussi [main members of the Graz school, M.S.] adhered to the first view, while the second will be represented by Wertheimer and Köhler [main members of the first generation of the Berlin school, M.S.].” [Ehrenfels 1988b: 121–2]

This passage implies that from Ehrenfels' initial point of view, two differing lines of thought branch off: one that more or less holds on to the idea that there are basic elements that found higher elements aka Gestalt qualities via acts of psychological production (the Graz school), and one that locates the existence of Gestalt qualities already in the realm of the stimuli (the Berlin school). Ehrenfels' paper is thus commonly regarded as the groundwork for both schools and, in general, all later work in the Gestalt tradition.⁷⁰ While the Graz school can be said to build on Ehrenfels' own position regarding the one-sided dependency of perceptual wholes

⁶⁹Cf. for the history of Gestalt theory again the detailed works of Ash [1995] and Harrington [1996].

⁷⁰Cf. Rausch [1966: 876f].

on stimuli parts, the Berlin school seems to hold that there is a necessary connection between the fundament and the qualities that emerge from it, such that without these qualities, there would be no fundament. To me it seems that this implication is partly correct. It is correct in the sense that one of the main characteristics of the Berlin school is indeed the inversion of the one-sided dependency relation, which assigns to the whole an ontological independence and impact on its parts such that the latter need to evince the former in order to exist, at least as parts of the whole in question.⁷¹ The empirical and experimental field in which this inversion and its justification becomes the most evident is probably perceptual grouping, i.e. the principles for the arrangement of stimuli parts in order to be immediately perceived as parts that are dependent on a whole.⁷² Such empirical evidence for the dependency of parts on the ways they are arranged in a whole, however, relies on an epistemological and finally ontological stance that was clearly formulated by Wertheimer. According to him,

*“The given is itself in varying degrees ‘structured’ (‘gestaltet’), it consists of more or less definitely structured wholes and whole-processes with their whole-properties and laws, characteristic whole-tendencies and whole-determinations of parts. ‘Pieces’ almost always appear ‘as parts’ in whole processes. [...] Empirical inquiry discloses not a construction of primary pieces, but gradations of givenness ‘in broad strokes’ (relative to more inclusive whole-properties), and varying articulation. [...] To sever a ‘part’ from the organized whole in which it occurs – whether it itself be a subsidiary whole or an ‘element’ – is a very real process usually involving alternations in that ‘part’. Modifications of a part frequently involve changes elsewhere in the whole itself. Nor is the nature of these alternations arbitrary, for they *too* are determined by whole-conditions and the events initiated by their occurrence run a course defined by the laws of functional dependence in wholes. The role played here by the parts is one of ‘parts’ genuinely ‘participating’ – not of extraneous, independent and-units.”*
[Wertheimer 1938: 14]

The primacy given to the whole in this statement and more generally a tendency towards unification instead of differentiation can be regarded as the underlying paradigm not only of Wertheimer’s own research findings on Gestalts, but of the whole Berlin tradition of Gestalt theory.⁷³ If the ontological domain is restricted to empirical perception, i.e. to what is given to our senses, then it is a whole with its properties, internal structure and the influence it exerts on its parts that is the primary entity. On this point, it can be argued that this does not contrast with Ehrenfels’ own conviction. He himself states that “wherever a complex which can serve as the foundation for a Gestalt quality is present in consciousness, this quality is itself *eo ipso* and without any contribution from our part also given in consciousness.” [Ehrenfels 1988a: 110]

⁷¹This is, for instance, confirmed by Simons [1986: 117]: “Wichtiger sind die Merkmale, die Ehrenfels den Gestalten zuspricht. Sie sind erstens von anderen Gegenständen einseitig abhängig, d.h. wenn diese Gegenstände nicht existieren würden, so würde die Gestalt nicht existieren [...]. Diese vorausgesetzten Gegenstände sind die *Grundlage* [...] oder das *Fundament* [...] der Gestalt. Die Abhängigkeitsbeziehung ist nach Ehrenfels deswegen einseitig, weil das Fundament allein, ohne die darauf aufgebaute Gestalt, existieren kann [...]. Dagegen behaupteten Wertheimer und Köhler, eine Gestalt müsse [sic] existieren wenn ihr Fundament existiert.”

⁷²Cf. subsection 6.3.2.

⁷³Cf. Schönplüg [2001] on how and why German psychology of the early 20th century strove towards unity (*Ganzheit*), both in its research and as an academic discipline.

The combination of the stimulus parts and the Gestalt quality, which makes for the perceptual whole, is thus directly given to us and in this sense it is primary in perception. Boudewijnse even goes as far as to locate the ontological status of Ehrenfels' Gestalt qualities outside of the subject itself,⁷⁴ although Ehrenfels himself was, at least in his 'On Gestalt qualities', less clear about whether or not and to what extent the subject is involved in the creation of Gestalt qualities.⁷⁵ In any case, the essential difference from the view expressed by Wertheimer and his colleagues is that for them, the perceptual whole is primary in a much stronger sense, since it cannot be dispersed into its constituent parts again and thereby forfeit its quality of being a Gestalt. On the contrary, the perceived whole is not only perceptually⁷⁶ but also ontologically primary, because what makes it a whole is not already determined by the existence of the stimulus parts. Furthermore, the paradigm of the ontological priority of the whole entails the dependence of the parts on the whole in the sense that parts are determined by the whole 'as parts in whole processes'. Stimulus parts as atomistic building blocks in the sense intended by Ehrenfels, on the other hand, do not seem to undergo any existential change when they are enriched by a Gestalt quality and thereby integrated and organized into a perceptual whole.⁷⁷ Accordingly, Wertheimer [1944: 311] proposes that the "basic thesis of gestalt theory might be formulated thus: There are contexts in which what is happening in the whole cannot be deduced from the characteristics of the separated pieces, but conversely; what happens to a part of the whole is, in clear-cut cases, determined by the laws of the inner structure of its whole."

One of the first empirical proofs of the whole's independence on its stimulus parts and therefore of the just epistemological paradigm introduced above was given by Wertheimer himself in his experiments on apparent movement, i.e. what he calls the 'phi phenomenon'.⁷⁸ Simply put, when two or more lights at a close distance flash alternately in a certain sequence, then an observer clearly perceives movement between these lights that is not in turn reducible to the lights as stimulus parts, but is a stimulus in its own right: a pure stimulus movement directly given in perception without physical fundament. As Wagemans [2015: 4] describes it,

⁷⁴According to Boudewijnse [1999: 153], Ehrenfels "believed that perceived regularities of the stimuli are not put together into a meaningful whole in the observer. He held that those wholes exist outside the observer and that the parts of the whole belong together for reasons not related to the observer. The Berlin school continued in this tradition, believing that gestalten are out there and are reconstructed in the brain and then presented to consciousness."

⁷⁵Cf. on this question Simons [1986: 113] and Ash [1995: 90], who writes that "[o]ntologically speaking, the objects that have Gestalt qualities are not mere collections of properties; they are structures, not sets. But Ehrenfels himself did not clarify the nature of the complexes of which Gestalt qualities are qualities. Psychologically speaking, Gestalt qualities were neither sensations nor judgments. According to then-accepted categories, they were thus neither physical nor psychical. Whichever they were, the relation of such contents to the acts that generated them was unclear." Cf. also Ehrenfels' own *Weiterführende Bemerkungen* from 1922 [Ehrenfels 1988c: 165], in which he addresses this topic, but solves it in a way in which the qualities of stimulus wholes are real and confusingly also called 'Gestalt qualities', whereas the ontological status of the Gestalt qualities of perceptual wholes remains vague. It is not surprising then that Smith [1988a: 18] calls these *Weiterführende Bemerkungen* "sometimes rather cryptic".

⁷⁶Cf. Koffka [1915: 57].

⁷⁷Cf. Köhler [1920: 43].

⁷⁸In this sense, Ash [1995: 198] writes that "Max Wertheimer had a profound metaphysical vision that formed his research at every juncture. That vision generated the epistemology that was the core of Gestalt theory. He showed concretely what that vision revealed first in his essay on number concepts, then experimentally in his demonstration of the *phi* phenomenon."

the “phi phenomenon was simply a process, a transition (‘an across in itself’) that cannot be composed from the usual optical contents of single object percepts at two locations. In other words, perceived motion was not just added subjectively after the sensory registration of two spatiotemporal events (or snapshots), but something special with its own phenomenological characteristics and ontological status.” Observers of this kind of movement could no longer even distinguish it from real movement.⁷⁹ For more familiar examples in which we perceive real movement out of static images we can think of a series of juxtaposed frames that at a certain rate (usually measured in *fps*: frames per second) lets us perceive ‘moving pictures’ like in films or video games. In this kind of apparent motion, the ontological primacy of the whole is manifested not only by its irreducibility to its stimulus parts, but also by the influence it exerts on its parts, by the ‘whole-determinations of parts’: The parts are determined by and therefore depend on the whole, because in the context of their mutual constellation and succession, they are only and can only be a stimulus part of the apparent motion.⁸⁰

When Ehrenfels thus remarks that according to the Berlin school, the Gestalt quality is necessarily given with its fundament, with the biconditional implication that if and only if there is a Gestalt quality, then there is a fundament, then he is certainly right. However, two other aspects of his characterization of the Berlin school are less applicable: Firstly, with the indistinguishability of stimulus and percept in the case of the phi phenomenon, it is no longer justified to speak of a ‘fundament’; and secondly, because the perceived whole is now taken as irreducible to its stimulus and Gestalt parts, we can no longer speak of a ‘Gestalt quality’ that is addable and removable, but it is the perceived whole itself to which the term ‘Gestalt’ now applies. Let us call the first aspect the ‘identification of stimulus and percept’ and the second aspect the ‘wholification of Gestalts’.

The identification of the stimulus and the perceptual realm that is typical for the Berlin school of Gestalt theory⁸¹ reduces what Smith [1994: 255] calls the “two-storey ontology” of Ehrenfels and the Graz school into a ‘one-storey ontology’.⁸² Already Wertheimer’s experiments on apparent motion had shown that the distinction between stimuli and percept can no longer

⁷⁹Cf. Köhler [1967: 19].

⁸⁰“Mit seinen Experimenten sucht Wertheimer aber darüber hinaus zu beweisen, daß solche Phänomene nicht sekundär ergänzte Elemente sind, sondern primär gegebene Zusammenhänge, nicht Täuschungsphänomene, sondern spezifisches und vollgültiges seelisches Erleben. ‘Reize’ bestehen, psychologisch gesehen, gar nicht als solche, sie erhalten ihren Sinn und ihre Funktion erst vom Ganzen her [...]” [Fitzek et al. 1996: 32] Cf. for a clear description of the phi phenomenon and its consequences also Scheerer [1931: 20–5].

⁸¹However, some of the members of later generations of the Berlin school make a strict separation of the stimulus and the perceptual domain, for example Metzger [1974: 58]: “Percepts are never structurally identical with the varying configurations on the receptor level. Percepts are units or wholes coherent in themselves and segregated from each other; stimuli are not. Percepts are tri-dimensional and move in a tri-dimensional space; underlying stimuli are distributed over two-dimensional surfaces of the body, such as retinae or the skin of the fingertips. Percepts have (approximately) constant attributes such as size, shape, surface color, and so on, just as their physical counterparts do, while the underlying stimulus configurations vary continuously. For these reasons percepts are in decisive characteristics more like objects than like the stimuli intercalated between objects and percepts.”

⁸²Epstein et al. [1994: 172] formulate this identification of the two realms in stronger terms: “It is well known that the Gestalt theorists rejected the sensation-perception dichotomy. They could find nothing in ordinary perceptual experience that satisfied the description of sensation nor could they find any evidence in phenomenal experience of a transformation from sensational to perceptual representations. They argued that sensations were observational artefacts, creatures of the favoured methodology of the day, analytic introspection, and that the belief in representational transformation was parasitic on the mistaken belief in the reality of sensations [...]”

be maintained if a stimulus like pure motion is directly perceivable as stimulus without this stimulus being reducible to other given stimuli. What we perceive in the case of apparent motion is, in fact, “rather, complex Gestalten, only some of whose parts bear a certain analogy to the putative discrete and independent data of sense which had formed the basis of earlier theories.” [Smith 1988a: 38] Subsequent to Wertheimer’s research findings in this regard, three years later, in 1915, K. Koffka – himself a member of the first generation of the Berlin school – argues more explicitly against the two-level axiom of the Graz school, in particular against Benussi’s theorem that Gestalts are *produced* via a psychical or intellectual activity by the perceiving subject, i.e. via “prejudgmental processing [*Bearbeitung*] of sensory material” [Ash 1985: 305], *after* their founding stimulus parts have been received by our senses.⁸³ As in Ehrenfels, in Benussi the founding parts are likewise not only the condition for the perceived whole. Their constitution of the perceived whole also leaves them, in their role as founding parts, unchanged and thus constant, although they might undergo minor changes when they are brought into relation by the mental act of production.⁸⁴

This is the case, for example, in the Müller-Lyer illusion with which Benussi was mainly concerned.⁸⁵ Although, in this illusion, two equally long lines are and constantly remain identical as stimulus parts, it is via the respective constellation of these lines with other given stimulus parts that we produce two different Gestalts, one in which the line appears as shorter than in the other. Our perception of these lines is thus ambiguous, i.e. more than one possible perception of a constant, in principle unambiguous stimulus is possible. According to this ‘constancy hypothesis’, which was generally argued against by all Gestalt theorists in the Berlin tradition, what is given in the stimulus domain remains constant under all conditions and determines the perceptual domain such that there is an unchanging one-to-one part determination from the external stimulus via a local excitation of a sensory organ to how something is perceived in the phenomenal realm. It thus says “that the sensation is a direct and definite function of the stimulus. Given a certain stimulus and a normal sense-organ, we know what sensation the subject must have [...]” [Koffka 1922: 534]. If we perceive the lines of the Müller-Lyer illusion as unequal, for example, although they are objectively equal as stimuli and therefore *should* be perceived as equal, then our perception as a result of the Gestalt production is simply *inadequate*.⁸⁶

Koffka, however, argues against Benussi that there is no independent criterion in our direct perception of an ambiguous phenomenon such as the Müller-Lyer illusion for comparing and then deciding about the adequacy of the percept, since our percepts are irreducible to the stimulus domain, as Wertheimer had shown in the case of apparent motion.⁸⁷ In other words, “if

⁸³Cf. Koffka [1915: 16].

⁸⁴Cf. id. [18].

⁸⁵Cf. e.g. Benussi [1904; 2002].

⁸⁶Hence the title of Benussi’s important 1914 [2002] article ‘Gesetze der inadäquaten Gestaltauffassung’.

⁸⁷“Was ist, ohne alle Theorie, bei der Feststellung der Gestaltnährdeutigkeit als Tatsache anzusehen? Offenbar dies, daß bei *gleichem* Reiz verschiedene Erlebnisse möglich sind (ohne daß diese Verschiedenheit etwa auf veränderte Aufnahmebedingungen in den Sinnesorganen zurückzuführen wäre.). B. [Benussi, M.S.] drückt diesen Tatbestand aber, wie wir gesehen haben, anders aus: er spricht nicht nur von *konstantem* Reiz-, sondern auch von *konstantem Empfindungsmaterial*. Welche Beobachtungstatsachen kann er dafür anführen? Keine einzige direkte, denn wenn wir aus der direkten Beobachtung der Gestaltvorstellungen die Anwesenheit der konstanten Sinnesvorstellungen entnehmen könnten, dann gäbe es in der Selbstbeobachtung ein Kriterium dafür, ob wir es mit einer Gestalt- oder einer Sinnesvorstellung zu tun haben, das es aber

constant sensory contents cannot be directly observed, yet are objectively necessary, they must be unnoticed.” [Ash 1985: 311] If our direct, descriptive perception and not the subsequent analysis of the stimulus parts is taken as the basis for empirical research into perceptual phenomena, then what is hypothesized as unnoticed cannot count as an appropriate constituent, either for explanatory or for descriptive purposes. Instead, as Wagemans [2015: 6] formulates it, “the fundamental break with the Graz school was a radical revision of the meaning of the word ‘stimulus’. In this new conception, this word no longer referred to a pattern of excitations on a sense organ, as it had throughout the 19th century, but to real objects outside of and in functional relation to a perceiving and acting organism.”⁸⁸ Gestalts are thus directly evident ‘in the noticing of’⁸⁹ stimulus-percepts, which are already internally organized before they are perceived, without the necessity of a mental production at a later stage. In so doing, the Berlin school antagonized what Scheerer [1931: 18] characterizes in this context as a “‘disensoulment’ of sensuousness” (*‘Entseelung’ der Sinnlichkeit*). Furthermore, because our whole organism, including our brains, are held to correspond with – or: are taken to be *isomorphic* with – the inherent Gestalt structure of the stimulus percept, a pure phenomenological description of the percept stimulus is sufficient both for determining the adequacy of what is perceived⁹⁰ and for doing justice to our whole physiological disposition for perceiving Gestalts immediately.⁹¹

In his brief characterization of the Berlin school of Gestalt theory quoted above, Ehrenfels writes that according to this conception, “the Gestalt quality is necessarily given along with the fundament”. Whereas he was right concerning the necessity, which then leads halfway to the one-sided dependence of the parts on their whole, it is not only incorrect to distinguish ‘fundament’ and consequently founded parts/whole in this context, but also to assume that Wertheimer, Köhler, Koffka and other (later) members of the Berlin school had maintained the notion of a ‘Gestalt quality’. In their view, instead, the entity that differs from the sum of its parts is not an additional part that makes for a perceptual whole, but is the perceptual-stimulus whole itself that is, or at least can be, a Gestalt (if it is neither a sum nor a pure chaos of parts). As Smith [1988a: 13] puts it, “[a]ccording to the later Berlin conception, in contrast, a collection of data (or any other psychological formation) does not *have* a Gestalt: it *is* a Gestalt, a whole whose parts are themselves determined as being such that they can exist only as parts of a whole of this given kind.” Accordingly, a Gestalt *is not* a quality, but *can have* a quality as a “holistic/configural property” [Kimchi 2015: 141], that neither of its parts has in isolation and that even determines the mode of existence of the parts up to the possibility of their very existence as parts itself.

In so doing, the Gestalt paradigm of the Berlin school distinguishes between parts with part qualities and a whole (which is in many perceptual cases a Gestalt) with whole qualities, whereby both parts and whole stand in a functional relation to each other.⁹² A melody, taken

nach B.s Ansicht [...] nicht gibt.” [Koffka 1915: 26]

⁸⁸Cf. for a similar formulation Ash [1985: 312].

⁸⁹Cf. Ehrenfels’ characterization in the quote above.

⁹⁰“Die reine Deskription der Erlebnisse kann daher nicht mehr am Empfindungsbegriff (in seiner deskriptiven Form) orientiert werden, sie wird von der Gestalt und deren Eigenschaften auszugehen haben.” [Koffka 1915: 57]. Cf. also Koffka [1925: 539] and the application of this stance to the field of values in Köhler [1939].

⁹¹“In the Gestalt approach, our perceptions are directly determined by effects of the stimulus *configuration* upon our self-organizing nervous systems, not by the aggregate of their *local* stimulus properties.” [Hochberg 1998: 256]

⁹²“Im Vordergrund steht der *Zusammenhangsnachweis* für die Teile und Momente des Ganzen, die *funktionale*

as a Gestalt, for example, can have the Gestalt quality of being melancholic, which, in turn, makes every tone sound melancholic, although no tone in isolation would have this quality. It is their being related within a Gestalt that gives the parts essential properties they would not possess without being organized in a certain way.⁹³ Or, to give another example, in the case of ‘amodal completion’ an observer clearly ‘sees’ a part that is overlapped as being such and such, whereby the existence of the part is determined by the internal organization of the whole.⁹⁴ In Figure 6-1 below, provided by Metzger, we can see a Gestalt in *a* consisting of a rectangle that apparently covers two crossed lines that continue under the rectangle like in *b*. A pure description of the perceived phenomenon thus automatically lets us complete the stimulus even when it is not visible: We do not just add the two supposedly overlapped lines to the visible ones and thus extend the latter, but we see a partly overlapped cross in the whole from the outset. For this reason, “the impression is self-evident and compelling. So much so that you would feel outright deceived if, on removal of the covering strip, it turned out that the lines were configured something like in [*c*] or did not intersect at all [*d*].” [id.] In general we can say with Wagemans [2015: 8] that in moving away from the conception of a Gestalt quality as an additional (and removable) part, the Berlin school “went further and considered a Gestalt as a whole in itself, not founded on any more elementary objects. Instead of perception being produced from sensations, a percept organizes itself by mutual interactions, a percept arises non-mechanically by an autonomous process in the brain.” To illustrate how this ontological primacy of the whole, understood as Gestalt, becomes evident in empirical perception according to this paradigm of Gestalt theory, we now turn to the field of perceptual grouping.

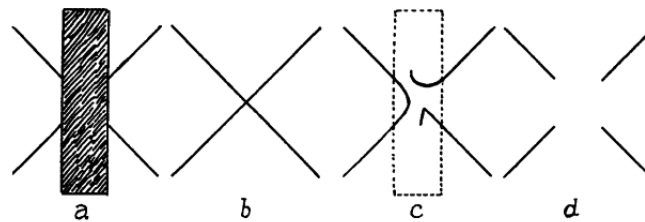


Figure 6-1: *Amodal Completion*⁹⁵

6.3.2 Primacy of the Whole in Perceptual Grouping

One of the main instances of empirical evidence for the ontological primacy of the whole in relation to its parts within the ontological region of empirical perception comprises the organization of single parts into more comprehensive groups. This research area of perceptual grouping, which is, alongside figure-ground perception, one of the two components of perceptual organization,⁹⁶ has probably been – up to the present day – the most extensively studied, elaborated and commonly known field of Gestalt theory. However, the basic idea of perceptual

Abhängigkeit der Ganz- und Teileigenschaften voneinander. [...] Ein *Existenz*problem besteht für natürliche Teile und deren Eigenschaften. Es ordnet sich dem funktionalen Problem unter: Je nach Zusammenhangsverhältnissen kann ein Teil relativ ausgegliedert sein oder im Verband mit der Nachbarschaft ‘aufgehen’.” [Rausch 1966: 891]

⁹³Cf. Koffka 1925: 532.

⁹⁴On amodal completion, cf. Michotte et al. [1966].

⁹⁵Reproduced from Metzger [2006: 134]. The reproduction is kindly permitted by MIT Press.

⁹⁶Cf. Wagemans et al. [2012a: 9].

grouping is relatively simple. In his influential 1923 paper *Investigations on Gestalt Principles II*,⁹⁷ Wertheimer [2012: 128] formulates it as follows: “In general, if a number of stimuli are presented to a person simultaneously, generally that person does not experience an equally large number of individual *givens*, one and another and a third and so on. Rather, the person experiences *givens* of a larger scope, with a particular segregation, a certain grouping, a certain division.” These ‘givens of a larger scope’ then are, as perceptual wholes, the Gestalt. This means that in most cases, in particular in cases of visual perception, what is perceived first is the Gestalt, or in other words, as Navon [1977: 353] puts it, the idea is that “global structuring of a visual scene precedes analysis of local features [...]”.

Moreover, the simple and directly observable fact that somehow our percepts are internally structured such that the single parts form groups that are perceived prior to the parts themselves lets Wertheimer conclude that there must be certain underlying principles according to which organized groups or patterns of parts, i.e. Gestalts, are formed.⁹⁸ The postulation of the existence of such ‘Gestalt principles’ or ‘factors of grouping’ not only serves the purpose of explaining or at least demonstrating the functional dependence of parts on the kind of supra-summative whole in which they are perceived, i.e. “to define the rules of ‘what is or stays with what’ [...]” [Pinna et al. 2010: 293]. It also firstly prevents there being a necessary and actual Gestalt correlate for *any* possible assembly of parts⁹⁹ by ensuring that, due to the underlying principles, only *some* Gestalts naturally occur but not others.¹⁰⁰ Secondly, the independent existence of Gestalt principles for perceptual grouping prevents the perception of Gestalts as grouped parts (only) being ascribable to our subjective attention and previous experience.¹⁰¹ To borrow again from the terminological fundus of Kant: Instead of being *synthetic a posteriori*, Gestalt principles are rather *synthetic a priori*, whereby the ‘a priori’ in this case refers to physiological processes in the brain that correspond with the perceived whole’s internal structuredness¹⁰² such that a visual Gestalt, as Guberman [2015: 30] recently defines it, “is the shortest description of the way in which the visual stimulus can be recreated.”

Although Wertheimer was not the first psychologist who propounded principles for the grouping of parts into more coherent perceptual wholes¹⁰³, he was the first to accentuate the determi-

⁹⁷‘Untersuchungen zur Lehre von der Gestalt II’, cf. Wertheimer [1923].

⁹⁸“Are there principles that govern the nature of the resulting perceptual grouping and division? What are they? If stimuli $a b c d e\dots$ are active together in a certain configuration, what are the principles whereby the typical grouping is perceived as $a b c / d e\dots$ and not, say, $a b / c d e\dots$?” [Wertheimer 2012: 128].

⁹⁹Cf. the ‘bad infinity’ argument in 5.2.4.

¹⁰⁰In this regard, Wertheimer states that the question concerning Gestalt principles “applies whether the first grouping [$a b c / d e$] is what regularly results and in fact a certain other cannot be achieved, or the first grouping is merely the normally expected, spontaneous, ‘natural’ one while the second [$a b / c d e$] is also quite possible, but only artificially or under certain circumstances, and perhaps more unstable.” [id.]

¹⁰¹Cf. id. [129–30] and Metzger [2006: 181], who writes accordingly that the “organization of the visual field occurs within us essentially without our involvement, and without our explicit awareness of any of its laws.”

¹⁰²As Wagemans et al. [2012a: 24] show in their overview of recent research in Gestalt theory, this view is still held today: “In general, Gestalt psychology has tended to emphasize the degree to which the Gestalt laws are innate or intrinsic to the brain rather than learned from past experience. Research suggests that infants are capable of grouping visual elements into unitary structures in accord with a variety of both classic and modern organizational principles.” For the analogy between Gestalt principles and Kant’s a priori conditions for experience, cf. Spillmann [2012: 116].

¹⁰³Cf. Vezzani et al. [2012], who accentuates the contribution of G.E. Müller, F. Schumann and E. Rubin to Wertheimer’s development of Gestalt principles.

native and general character of these principles for figure formation.¹⁰⁴ To do so, Wertheimer employs the most basic manner for demonstrating, verifying and varying them, namely by displaying simple dots and lines.¹⁰⁵ He argues that in our visual impression of a collection of identical black dots, the dots that stand closer to each other than to other dots are directly perceived as forming a group. For example in the row ●● ●● ●●, we perceive the pattern ①②/③④/⑤⑥ instead of e.g. ①/②③/④⑤/⑥ or the mere sum of six mutually independent dots (①/②/③/④/⑤/⑥) due to the unequal distance between the dots. The same is the case in a 2-dimensional arrangement, such as in ●● ●● ●●, in which we usually perceive three diagonal groups instead of two horizontal ones. Furthermore, in stroboscopic alterations of stimuli for producing apparent motion, for example when in ①② ①② ①② the dots ① and ② blink alternately, we perceive movement between the dots that stand closer to each other, i.e. between ①↔②, not ②↔①.¹⁰⁶ This is then the first Gestalt principle: *proximity*.¹⁰⁷ After providing other examples for *proximity* with a higher number of arranged dots, Wertheimer concludes that the higher the number of stimulus dots is, the fewer possibilities there are for grouping them in perception.¹⁰⁸ This implies that in a real life environment in which there is usually a manifold of stimuli, we tend to directly perceive stable, i.e. unambiguous patterns, among others due to *proximity*.

Other Gestalt principles also play an essential role for grouping, such as the principle of *similarity*, according to which we perceive what is similar as belonging together, for example in ○○●●○○●●, in which the distance is equal, we see one group of full and one of empty circles. Such a pattern is acoustically perceptible “with strong and weak tapping in alternation” [id.: 136] as well. *Similarity* also plays a role for apparent movement: When there is no difference in *proximity*, then an alternating blinking of 1 and 2 in ①②①②①②①② results in movement between the similar and not the dissimilar elements.¹⁰⁹ Of course, *proximity* and *similarity* can also be combined, either to complement (as in ○○ ●● ○○ ●●) or to compete with each other (○● ●○ ○● ●○).¹¹⁰ In the course of his article, Wertheimer demonstrates more Gestalt principles, such as *common fate*, “which describes the perceptual tendency according to which stimulus objects that change together in location or that move together group into Gestalten” [Sarris 2012: 185], *good continuation* or *continuity*, according to which “oriented units or groups tend to be integrated into perceptual wholes if they are aligned with each other” [Todorovic 2008: 5345]. An example would be the four lines *A*, *B*, *C*, *D* that we usually see as the two lines \overline{AD} and \overline{BC} in Figure 6-2:

¹⁰⁴Cf. Wagemans [2015: 8–9].

¹⁰⁵On the advantages of this methodological choice cf. Sarris [2012: 186–7].

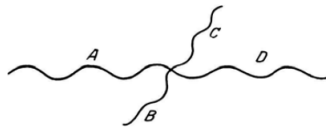
¹⁰⁶Cf. Wertheimer [2012: 142].

¹⁰⁷Cf. id.: 130 f.

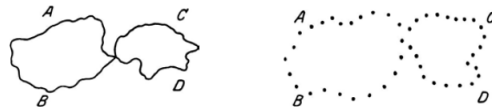
¹⁰⁸“Although it is mathematically and theoretically the case that the more dots there are, the more possibilities of combination are conceivable, the facts do not support this at all. Actually, larger numbers of dots in the stimulus tend to promote fewer perceptual groupings; indeed, such configurations are often unequivocal under normal circumstances. With configurations of fewer dots, there are considerably more alternative groupings possible.” [id.: 134]

¹⁰⁹Cf. id. [143].

¹¹⁰Cf. id. [139].

Figure 6-2: *Good Continuation or Continuity*¹¹¹

Another Gestalt principle is *closure*, which means that “[g]iven $A, B, C,$ and $D,$ if $A B / C D$ generates two closed progressions (running back into themselves), but $A C / B C$ generates two unclosed (open) ones, then $A B / C D$ is favored.” Two examples given by Wertheimer [id.: 155] would be the four line segments $A, B, C, D,$ which form the two closed areas AB and $CD,$ even if other Gestalts are possible, for example the two continuous lines \overline{AD} and \overline{BC} in Figure 6-3:

Figure 6-3: *Closure*¹¹²

Wertheimer provides a plenitude of simple examples and combinations of these Gestalt principles, which there is, however, no need for the present project to present in detail. There is also no need to consider here further research on these¹¹³ or to elaborate on the many additional Gestalt principles that have been suggested in the literature on perceptual grouping to date, for instance *symmetry, parallelism, convexity*¹¹⁴, *common region, element connectedness*¹¹⁵, *synchrony, edge region grouping*¹¹⁶, and *requiredness*¹¹⁷. In fact, since “Gestalt psychology led to a proliferation of hundreds of ‘laws’ (or, more accurately, ‘principles’), of perceptual organization [...] concerns arose that there were more explanations being proposed than the number of phenomena they could explain.” [Wagemans et al. 2012b: 10].¹¹⁸ To this it can be added that “[m]any Gestalt proposals for grouping factors and possible mechanisms are suggestive and promising, but often the Gestalt laws of perceptual organization are expressed casually or subjectively rather than being made explicit.” [Pomerantz 2003: 472].

More importantly for the present development of the idea that parts and whole could also be regarded as dependent on each other, such that there is an active oscillation and enrichment between the two sides instead of a relation of supervenience, is to stress that according to the basic idea behind perceptual grouping and its principles, this is not the case. To me it seems that the main ontological statement that is at the bottom of perceptual grouping is to demonstrate in which ways, i.e. according to which Gestalt principles, a perceived whole supervenes on its parts, whether classified as stimulus or perceptual parts (a distinction that is often blurry and therefore more functional than substantive). Of course, the dots and lines with which the principles are demonstrated have to be there first in order to be arranged and

¹¹¹Reproduced from Wertheimer [1923: 322]. Reproduction kindly permitted by Springer Nature.

¹¹²Reproduced from Wertheimer [1923: 326]. Reproduction kindly permitted by Springer Nature.

¹¹³Cf., as one example for many others, Kubovy et al.’s [1995] quantification of the *proximity* principle for the perception of unstable dot lattices.

¹¹⁴Cf. on these three and other principles the overview provided in Wagemans et al. [2012a: 20-1].

¹¹⁵Cf. on these two and other principles the overview provided in Todorovic [2008: 5345].

¹¹⁶Cf. on these two and other principles the overview provided in Spillmann [2012: 195].

¹¹⁷Cf. Köhler [1939].

¹¹⁸Cf. on this possible criticism also Guberman [2015: 30].

to enter into relations. The problem is that unless one single dot or line is perceived (and even then they probably stand in a perceptual whole, most notably in a figure-ground relation¹¹⁹), there is no real ‘prior to’ for the part’s existence before it becomes a Gestalt part.¹²⁰ According to Koffka, pure isolation, as the condition for forming an ‘and-sum’, is only a limiting case, as is pure chaos, i.e. an amorphous fusion of parts without a unified whole.¹²¹ Thus, from an ontological point of view, perceptual grouping is the natural and empirical manifestation of whole primacy and part dependence on the whole. The ‘meta-principle’ of *Prägnanz*, which will be delineated next, only reinforces this point.

6.3.3 The Meta-Principle of *Prägnanz*

Partly due to the high number and the danger of proliferating Gestalt principles¹²² and partly due to their similitude in the tendency of forming Gestalts that are more simple than other possible organizations of the given stimuli, Gestalt theorists have suggested the idea of *Prägnanz*,¹²³ which therefore can be classified as a ‘meta-principle’. Todorovich [2008: 5345] proposes the following terms for the translation of *Prägnanz* into English: “salience, incisiveness, conciseness, impressiveness, or orderliness”. This meta-principle is generally held to include the more special Gestalt principles such as *proximity* and *similarity*, and it states, “in its broadest form, that the perceptual field and objects within it take on the simplest and most impressive structure permitted by the given conditions.” [Ash 1995: 224], or in other words, “psychological organization will always be as ‘good’ as the prevailing conditions allow.” [Koffka 1935: 110]. In accordance with the cognitive linguistic framework of embodiment depicted above, it is furthermore possible to explain the principle of perceptual *Prägnanz* with the more or less corresponding ways the sensorimotor domain of our bodies interact with the environment. As Goldstein [1995: 292] puts it, “the tendency toward the good Gestalt finds its explanation as an organismic phenomenon. The explanation lies in the tendency toward preferred behavior, which is the essential prerequisite for the existence of a definite organism. It is a special expression of the general tendency to realize optimal performances with a minimum expenditure of energy as measured in terms of the whole. The operation of this tendency includes the so-called ‘prägnanz,’ the closure phenomenon, and many other characteristics of Gestalt. In fact, they are only intelligible from this tendency.”

Apart from the examples already given above for the more special Gestalt principles, a good example for our perceptual preference for salient and stable figures lies in the fact that in perceiving geometrical shapes or in conceptualizing time, often the most distinguished form stands out, even when it is not given as such. When an angle that is slightly more narrow or wider than 90° is given, we tend to perceive this angle as having or at least tending towards 90°, which is the most salient angle in this gradual range. Compared to an angle of 90°, an angle of

¹¹⁹Cf. subsection 7.4.1.

¹²⁰“Nicht also sind ‘die Stücke’ zunächst als das ‘prius’ anzusetzen, als Fundment in Und-Verbindung und unter prinzipiell sachfremden Bedingungen ihres Auftretens, sie stehen vielfach als Teile unter sachlichen Bedingtheiten von ihrem Ganzen her, sind von ihnen her ‘als Teile’ zu verstehen.” [Wertheimer 1922: 53]

¹²¹“Undverbundenheit, Isoliertheit ist keineswegs die natürliche, geringere Leistung, sie ist nicht an den Anfang zu setzen, als Ausgangspunkt anzusehen.” [Koffka 1925: 547]. Cf. also Wertheimer [1922: 52].

¹²²Cf. Wagemans et al. [2012a: 39].

¹²³Wertheimer was the first to suggest this meta-principle in 1914 at the 6th *Kongress für experimentelle Psychologie* in Göttingen. He, as well as other members of the Berlin school, then developed it in later research.

say $85^\circ \pm 4^\circ$ or $95^\circ \pm 4^\circ$ seems to be less good, less stable, less definite and poorer, such that in most cases we do not even immediately perceive the imperfect angle, let alone its precise degree.¹²⁴ The same is the case for our conceptualization of time. For time specification, the full hour is the most *prägnant* reference point, followed by the half-hour and the quarter indications.¹²⁵ Examples like these fall under the category of ‘levels of *Prägnanz*’ (*Prägnanzstufen*), in which some entities exhibit a higher level of *Prägnanz* and therefore serve as reference points for other, related entities.

The tendency of our perceptual system to prioritize the more *prägnant* entities and to consciously or unconsciously realize in perception an entity’s potential salience corresponds to this hierarchical relationship between different entities within the same frame of reference.¹²⁶ In doing so, we do not perceive a *wrong*, but a *better* entity, a more integrated and distinguished one, an entity that seems “to define a basic form or skeleton, a more perfect original image, from which the real object only seems to be diverted through certain distortions, deletions or additions.” [Metzger 2006: 138] Ultimately, the perception of a less perfect image *as* a more perfect image or the direct perception of entities that possess a high level of *Prägnanz* is supposed to express the goodness and simplicity of an object itself (‘objectual *Prägnanz*’) and is thus also categorizable as an aesthetic category to which positive or negative value judgments as well as aesthetic experiences apply.¹²⁷ In this sense, a work of art can be judged according to the measure of its unity, simplicity and orderliness that are perceptible at one single glance, whereby less fitting parts would deform and unsettle the whole composition’s balance and harmony.¹²⁸ Thus, as Luccio [1999: 128] formulates it, “Gestalt theorists use the term *Prägnanz* to mean *both* a tendency of the perceptual process to assume the most regular and economic course, given the constraints (*Randbedingungen*) present in each specific case, *and* a tendency towards the maximum *Ausgezeichnetheit* in the concrete phenomenal result of the process itself.”

In his 1966 paper ‘Das Eigenschaftsproblem in der Gestalttheorie der Wahrnehmung’, which is one of the most profound theoretical treatises on *Prägnanz*, E. Rausch distinguishes between seven aspects the three aforementioned categories of objectual *Prägnanz* feature together. The motivation for this sevenfold distinction is to do justice to the high complexity of the *Prägnanz* concept and to clarify the different applications of it in the literature.¹²⁹ He argues that if we understand *Prägnanz* as a property of an empirically perceptible object, then we can subdivide this property into the following aspects, which are either applicable (p_n) or not (q_n) on a gradual scale.¹³⁰

¹²⁴Cf. Wertheimer [1923: 146] and Rausch [1966: 910f].

¹²⁵Hüppe [1984: 13] uses this example in her study on *Prägnanz*: “Zur Veranschaulichung denke man an die üblichen Zeitbestimmungen. Es ist die Rede von ‘fünf Minuten vor zwölf’ oder ‘drei Minuten nach halb sechs’. Die volle und die halbe Stunde als *Prägnanzstufen* fungieren als Bezugspositionen. Zeitangaben wie ‘fünf Minuten vor neun Uhr fünfundzwanzig’ oder ‘drei Minuten nach vier Uhr elf’ kommen nicht vor.”

¹²⁶“Unter der *Prägnanztendenz* ist ein *autochthones Streben der Wahrnehmung nach Verwirklichung ‘ausgezeichneter’ Strukturen zu verstehen. Ziel ist die Realisierung der in der jeweiligen Gestalt angelegten *Prägnanzform*. In Abhängigkeit von den Reizverhältnissen nähert sich das Phänomen dieser *Prägnanzform* mehr oder weniger weit an.” [id.]*

¹²⁷Cf. [id.: 14].

¹²⁸Cf. on Gestalt aesthetics in the context of the *Prägnanz* meta-principle, including a critique of it, Smith [1988a: 66–69].

¹²⁹Cf. Rausch [1966: 911].

¹³⁰Cf. on the discussion of Rausch’s seven aspects of *Prägnanz* Hüppe [1984: 25–29], Smith [1988a: 62–65], whose translation I will adopt, and Luccio [1999: 125].

Firstly, there is the aspect of *lawfulness* [*Gesetzmäßigkeit*; p₁], which refers to the distinctiveness and uniformity of a Gestalt, to its intuitive clarity, singularity and internal order that can but does not have to lead to pure homogeneity. The lawfulness ranges over every part of the Gestalt and constitutes its firmness and coherence with the other parts. On the opposite side of this aspect lies the *arbitrariness* [*Zufälligkeit*; q₁], which makes a Gestalt appear as being randomly put together, either by accident or on purpose, or even as lacking any uniformity such that it blurs with or disappears entirely in its environment.¹³¹ Rausch highlights that the *Prägnanz* aspect of more or less *lawfulness* is the most fundamental, because all of the other aspects rely on it in one way or another.¹³² This is particularly the case for the next four aspects, because together with the first, they form a group that applies to Gestalts in a purely figural or structural sense.

The lawfulness of a figurally given Gestalt is thus a condition for the positive *originality* [*Eigenständigkeit*, also translatable as ‘discreteness’; p₂] as the second *Prägnanz* aspect, the negation of which would be *derivativeness* [*Abgeleitetheit*; q₂]. While a right angle, for example, is not derived from an obtuse or acute angle, in our perception the latter ones are derived from the former which is the more original one.¹³³ Thirdly, a Gestalt also has to be lawful in order to appear as integral or intact, which makes *integrity* [*Integrität*; p₃] the third positive *Prägnanz* aspect. On the other hand, the “lack of integrity can manifest itself in different ways: something can be absent, missing, there might be a hole, there might be *too little* of something there. There can also be too much, a superfluity, a growth, an alien body. Or it can be a matter of the object’s being something other than what it should properly be.” [Smith 1988a: 63–4] The opposite of *integrity* would therefore occur when an object is somehow *disturbed* or *damaged* [*Gestörtsein*, *Beschädigtsein*; q₃]. Fourthly, a Gestalt can be lawful either in a simple or in a complicated way, which is why *simplicity* [*Einfachheit*; p₄] and *complicatedness* [*Kompliziertheit*; q₄] are classifiable as a fourth gradual *Prägnanz* aspect.¹³⁴ In this regard, one should not confuse the *complicatedness* and the *complexity* of a Gestalt: Whereas being complicated is a property that makes a Gestalt intuitively and intellectually hard to grasp, the complexity of a Gestalt accounts for the etymological sense of *prägnant* as pregnant, fruitful or full. It is thus a positive characteristic that indicates the fifth aspect: the *richness* or *diversity* [*Reichhaltigkeit*; p₅] that is opposed to a Gestalt’s *scantiness* or *tenuity* [*Kargheit*, *Tenuität*; q₅]¹³⁵ and that is etymologically derivable from *praegnans* and not – like the former aspects – from *premere*, which, according to Arnheim [1975: 281], signifies “taking a firm hold, distinct, clear, precise”.

In addition to these five aspects that belong to the structural or formal features of a Gestalt, there is another group consisting of aspects p₆–q₆ and p₇–q₇ and entailing features of content or material. These features have “to do with the specific natures of given structures, with the environments in which they exist, with the types of mental set, traditions, habits, with

¹³¹Cf. id. [912–914].

¹³²Cf. id. [947].

¹³³Cf. id. [914]. This example applies to the category of levels of *Prägnanz* [*Prägnanzstufen*] sketched in the previous paragraph.

¹³⁴Cf. id. [925].

¹³⁵Smith [1988a: 65] characterizes this aspect as “a matter of a structure’s having a richness of elements, its being fruitful, heavy, significant, weighty, full of something. It is a matter of a wide spread of parts, of internal contours and boundaries, as opposed to that which is meagre, sparse, tenuous.”

which they are associated.” [Smith 1988a: 65] While the sixth aspect signifies the degree of a Gestalt’s *expressivity* [*Ausdrucksfülle*, p6] or the negation of it [*Ausdrucksleere*, q6] through which it reveals its more or less pure essence in its physiognomy, the last aspect refers to the empirical *meaningfulness* [*Bedeutungsfülle*; p7] or *meaninglessness* [*Bedeutungsleere*; q7], which means the knowledge and previous experience a perceiver has in order to contextualize a Gestalt. A known word, for example, of which we usually know the meaning and sense its expressivity, can under certain conditions, e.g. after long repetition, lose both *meaningfulness* and *expressivity* and become empty, while all of the structural aspects of the first group still apply. Rausch argues that this example illustrates the separability of the five formal and the two material aspects.¹³⁶

The elaborateness of Rausch’s differentiation of *Prägnanz*, of which the previous paragraph could only scratch the surface, shows how fruitful and multilayered an approach to this meta-principle can be. It is therefore hardly surprising that since the earliest suggestions of *Prägnanz* by the first generation of the Berlin school, visual experiments on *Prägnanz* in particular remain an active field of Gestalt research today. In some cases, however, the postulation of a tendency towards the most simple pattern in our perception has been discussed in a critical light, for example by refusing the category of objectual *Prägnanz* as an object’s distinguished singularity, while at the same time confirming that our perceptual process indeed involves a tendency towards the stabilization of the objects within the perceptual field via their self-organization by principles of grouping.¹³⁷ Another, more general criticism concerns the definitional vagueness of *Prägnanz* in the sense of ‘goodness’. For scientific purposes, ‘goodness’ is neither exact nor objective, but presupposes a subjective value judgment that can be motivated and therefore defined in the most contingent ways.¹³⁸ Moreover, Arnheim refers to a further problem with *Prägnanz*, which he in fact specifies only for the context of artworks, but that I think applies to objects in general.¹³⁹ He argues that it is a common misunderstanding to interpret *Prägnanz* only along the lines of simplicity and geometrical regularity. This misunderstanding is comprehensible, given the fact that most textbook examples of *Prägnanz* make use of simple dots and lines. He points out, however, that in the case of artworks, simplicity does not mean a complete fusion of parts into one simple and stable whole, but is rather the result of a creative tension and interplay between the stimulus parts, in particular their role of constraining the given material, and the perceptual tendency to simplify the constraining stimuli into a coherent whole. The result, then, “is in the artwork a structure in which the maximum richness of the invention of forms connects with the maximum simplicity of compositional organization. Here we have in the language of aesthetics the formula of unity in multiplicity.”¹⁴⁰ [Arnheim 1975: 280] Such an artwork, which stands in a constant dynamic tension between the material parts and the perceptual tendency towards wholeness, does not need to contrast with its environment

¹³⁶Cf. Rausch [1966: 939].

¹³⁷Cf. the theoretical and experimental considerations in Kanizsa et al. [1986] and Luccio [1999; 2003].

¹³⁸Cf. Hüppe [1984: 18–19] for an overview of this objection to the scientific usability of *Prägnanz* and the difficulties for defining it.

¹³⁹Cf. Arnheim [1975: 279–80].

¹⁴⁰My own translation. The original reads: “[...] das Ergebnis ist im Kunstwerk eine Struktur, in der sich der größtmögliche Reichtum an Formerfindung mit der größtmöglichen Einfachheit der kompositionellen Organisation verbindet. In der Sprache der Ästhetik haben wir hier die Formel von der Einheit in der Mannigfaltigkeit.”

as if it does not belong to it and is, in principle, isolatable from it, but should – made possible by the still energetic stimuli – stand in a harmonious relationship with the space surrounding the artistic Gestalt. The more simple and unified the whole is, however, the more it would unnaturally stand out from its environment. This is particularly important for artworks in the public sphere (statues, buildings, urban districts).¹⁴¹ This criticism, or perhaps clarification, of the meta-principle of *Prägnanz* points to a more general issue of Gestalt theory and it will serve to introduce the still remaining option of a two-sided dependency of parts and whole, an option which is crucial for the determination of PWO’s ontological nature.

6.4 From One-Sided to Two-Sided Part-Whole Dependency

To recapitulate, there are four options in which parts and whole can relate to each other in terms of dependency: Firstly, there can be no relation of dependency between parts and whole. This implies a horizontal or ‘flat’ ontology, since there is no hierarchy involved. It is the case for independent parts, i.e. pieces in the Husserlian sense, the wholes of which are ‘agglomerations’, or ‘and-sums’ that are producible only by an external influence.¹⁴² We can express this mutual independence of parts and whole symbolically as follows: $\nabla \not\Rightarrow \square$, which says that neither the parts ∇ necessarily and naturally follow from the whole \square , nor vice versa. Then we saw with Ehrenfels that from the parts as fundament, a – yet not *any* – perceptual whole can follow via the addition of a Gestalt quality as a part that had not existed in the set of fundamental parts. By removing the Gestalt quality, the perceptual whole is in turn reducible to its fundamenta. The direction of one-sided dependency is thus “from below upward” [Wertheimer 1938: 15], whereby the stimulus parts at the bottom enjoy ontological primacy: $\begin{matrix} \square \\ \vdots \\ \uparrow \end{matrix}$.

Wertheimer himself, representative for the other members of the Berlin school and its far-reaching influence on psychological research on perception, argues in the most explicit style against this upwards movement by proclaiming the pertinence of a “procedure ‘from above’”, whereby “the comprehension of whole-properties and whole-conditions *must* precede consideration of the real significance of ‘parts’.” [id.] Using the example of a melody, Wertheimer argues that what “is given me by the melody does not arise [...] as a *secondary* process from the sum of the pieces as such. Instead, what takes place in each single part already depends upon what the whole is. The flesh and blood of a tone depends from the start upon its role in the melody: A *b* as leading tone to *c* is something radically different from the *b* as tonic. It belongs to the flesh and blood of the things given in experience [*Gegebenheiten*], how, in what role, in what function they are in their whole.” [id.: 5] In other words, but again with Wertheimer [1944: 324]: “It cannot matter of what materials the particles of the universe consist; what matters is the kind of whole, the significance of the whole, the meaning of the whole, the nature of the whole.” To a large extent, $\begin{matrix} \square \\ \vdots \\ \downarrow \end{matrix}$ is still the dominating paradigm of Gestalt theory and evinces itself, for example, in the relevance attributed to holistic properties (‘from global to local’), principles of perceptual grouping and the meta-principle of *Prägnanz*.¹⁴³

¹⁴¹Cf. id. [283].

¹⁴²Cf. 2.1.5 and the beginning of 4.2.

¹⁴³In this context, it is important to distinguish the pair ‘from below’ and ‘from above’ from the pair ‘bottom-up’

However, in the recent literature on Gestalts one can discover a couple of approaches that suggest where I myself would like to go with the idea – identified already in the dynamic structure of conceptual metonymy¹⁴⁴ – of an active back-and-forth movement between parts and whole, i.e. a two-sided dependency of parts and whole in which they are equally fundamental by providing mutual completion.¹⁴⁵ This oscillating or reversible primacy $\overset{\square}{\underset{\square}{\square}}$ implies that there is no strict hierarchy of one-sided dependency, but rather a part-whole interdependency, as is outlined, yet not further elaborated on, by Arnheim [1992: 203]:

“One should be wary, however, of the one-sided formulation that in gestalt structures the whole determines the parts. A one-sided stress on the approach from above was justified in the early days of the campaign against the description of entities from below. Actually, something much more complex takes place. The structure of the whole, certainly of dominant importance, is influenced by the parts, which in turn depend on the whole as to their shapes and interrelations. Neither the whole nor the parts are primary constants, primordial executives of influence. Rather, all components from the whole to the smallest detail exert their modifying effect, while they are being modified [...]. Within the local boundaries, which organize complex gestalten, subordinated structures create their own smaller gestalten, dependent though they remain on their surroundings.”

In the next chapter, I will show that the introduction and discussion of this fourth possibility is especially worthwhile when we ask the question of when, how and why a Gestalt does appear as perceptually meaningful to us. First, however, it is expedient to briefly evaluate the two positions of one-sided dependency in order to show which of their characteristics are integrable and which ones are less useful for the development of PWO, the ontological nature of which involves two-sided part-whole dependency. For each position, I suggest two positive aspects (\oplus) that are beneficial to adopt and two negative aspects (\ominus) from which I want to distance

and ‘top-down’. “The latter notions refer more to ‘sense-driven’ and ‘concept-driven’, respectively, and in this regards Gestalts are more sense-driven or bottom-up, by being based on autonomous tendencies, not depending on previous knowledge, expectations, voluntary sets, observer intentions, etc.” [Wagemans 2015: 8] Correspondingly for the framework of the present project, the chapters on cognitive linguistics and on part-whole perception use ‘bottom-up’ methods for an empirical investigation of PWO as being both ‘from below’ and ‘from above’, while in the second chapter on Husserl the argumentation had a ‘top-down’ fashion via a priori reasoning, but could only arrive at a coherent perspective ‘from below’.

¹⁴⁴Cf. sections 5.2. and 5.3.

¹⁴⁵Contrary to my classification of traditional Gestalt theory as entailing one-sided dependency, Wagemans [2015: 5] states that according to Wertheimer, “specifiable functional relations exist that decide what will appear or function as a whole and as parts (i.e., two-sided dependency). Often the whole is grasped even before the individual parts enter consciousness.” Similar statements can be found in Wagemans et al. [2012a: 8, 39, 41] However, if there are indeed ‘specifiable functional relations’ (most probably principles of perceptual organization) that exist *before* and *in order to enable* the correlation between parts and whole, then there is at least a one-sided dependence of this correlation on the pre-existing functional relations. These relations then, as Gestalt principles, cannot occur when parts are given in isolation (let us suppose for the sake of the argument that this is at all possible), but only when there is a whole in and for which the parts function as parts. The parts thus presuppose the whole in this view. On the other hand, as Wertheimer shows in his studies on apparent motion, there can be perceptual wholes that ontologically speaking do not presuppose corresponding stimulus parts, which is in general confirmed by the refusal of the constancy hypothesis. Therefore, and given Wertheimer’s own statements concerning the importance of a ‘procedure from above’, I think we should be careful with and at least justify the attribution of two-sided dependency to the paradigm of traditional Gestalt theory.

the determination of PWO.¹⁴⁶

The first positive aspect (\oplus_1) of Ehrenfels' theory is his distinction between temporal and non-temporal Gestalt qualities. In proceeding from the famous example of the melody, Ehrenfels stresses that there are not only static wholes which are grasped in one single glance, i.e. "those for whose foundation distinct temporal determinations of the separate objects of presentation are not required", but that for many perceptual wholes we need time to adequately grasp them. This is not only the case for melodies, but also for spatial movement and, in general, any perception that involves change over time. It goes without saying that the idea of a perceptible back-and-forth movement of parts and whole falls under the temporal category.¹⁴⁷ To me it seems that this is different than the Berlin school's version of Gestalt theory, which is why I see a negative aspect (\ominus_3) here that should be avoided in a theory of two-sided dependency. Although Köhler [1975: 152] writes that in "the most general case of sensory organization, both space and time are involved in a given experience of grouping", in many cases in which principles of perceptual grouping and *Prägnanz* are demonstrated, the most important result is the first impression an observer has of a given entity. This entity is then often identical with its whole-character (its being a Gestalt) and not with the appearance of the local parts as parts. Even if we assume a temporal movement from global to local over time,¹⁴⁸ we start with the immediate impression of the whole's holistic properties and cannot but regard the appearance and mode of existence of the parts as fundamentally dependent on the whole, i.e. as mediated by what has been given immediately.¹⁴⁹ This may be sufficient for controlled laboratory experiments with dots and lines, but to me it seems that in normal life we usually have the freedom and the capacity to absorb a perceptible entity over time: to observe and check its properties, to view it from different angles, to sense internal and external ambiguities or coherencies, to let it gradually come into its own, in short, to acquire its meaning in a temporal process. It is not by the first glimpse and whole-impression, but only by letting a

¹⁴⁶The following numbering of the aspects refers to the order in which they appear in the table at the end of this section. These advantages and disadvantages only refer to the preceding presentation of the respective theories and therefore put up with possible counter-arguments that rely on literature or research beyond the scope I could provide.

¹⁴⁷Moreover, in his *Weiterführende Bemerkungen* from 1922, Ehrenfels [1988c: 162-167] provides an – albeit vague and poorly conceived – reflection concerning the ontological status of Gestalt qualities. Therein, he grants the temporal category a much higher degree of reality, since the perception of a temporal Gestalt necessitates a past in which perceived elements remain available to complete the perception of the whole. For instance, even if at the present time t_4 , a melody's tones a_{1-3} at t_{1-3} already died away, they are as parts in the past, still perceived and connect with the present a_4 as well as future tones a_{5-7} of the same melody $m\{a_{1-7}\}$. In order to grant reality to the melody as a whole, Ehrenfels classifies the past as a *topomorphic* dimension, as a fourth dimension of space that is as real and constant as the spatial dimensions. The present then is the *chronotopic* moment in which the *chronomorphic* flux of the future (the not-yet-being) falls into the being of the past, like a waterfall down a cliff into the ocean, and continues to exist, i.e. does not vanish there into not-being-anymore. Therefore, a temporal Gestalt has a higher degree of being, since its time span, i.e. the topomorphic time-space it takes up in the past, is bigger than the instant a non-temporal Gestalt requires. Accordingly, in this ontological framework of time conceptualization, an ongoing oscillation between parts and whole would enjoy a high degree of reality since it can reach into the 'still-real' of the past.

¹⁴⁸Cf. Navon [1977: 354].

¹⁴⁹Cf. Petermann's [1932: 48] critical evaluation of Gestalt theory: "And at the basis obviously lies the view that in these gestalt factors we are concerned with *absolutely primary manifestations*, with the *most primordial moments of action*, by which all phenomena, as far as these can be reduced to the factors, are *explained* with entire adequacy."

perceptual entity develop over time that we are able to interpret what Koenderink calls its ‘multiple possibilities’ of being a meaningful world on its own.¹⁵⁰

In so doing – and this is a second negative aspect (\ominus_4) of Gestalt theory in the Berlin tradition for a theory of two-sided dependency –, it should be legitimate to attribute *prägnant* ‘goodness’ not only to the perceptual whole or to our perceptual tendency towards stability of the perceptual field alone, but first and foremost to the development of a Gestalt’s meaningful interplay between parts and whole over time. I find it difficult and even artificial to measure a Gestalt as ‘good’ mainly on the grounds of the *lawfulness* it imposes on its parts. For Rausch, this *lawfulness*, as the first and primary aspect of *Prägnanz*, even determines the intrinsic meaning (*Sinn*) of a Gestalt and its usefulness (*Fruchtbarkeit*).¹⁵¹ Thus a whole that does not impose order but allows for heterogeneity would be devoid of meaning (*sinnleer*), and the parts are only ‘good’ if they fit into the whole.¹⁵² For the perceptual realm and beyond, it is rather implausible to think that imposed *lawfulness* ‘from above’, i.e. unidirectionally from the whole to the parts, is what makes something fruitful, ‘good’ and meaningful. Furthermore, although almost all of the objects of everyday perception are ‘imperfect’ in a geometrical sense and often ambiguous or neutral regarding an explicit regularity, we are surrounded by and surround ourselves with perceptible entities that we more or less consider as ‘good’. It is like in art, where not only a perfectly regular Mondrian, but also a seemingly chaotic Pollock is pregnant in every sense of the word. The meaning of ‘goodness’ for everyday perception is much richer and more context-dependent than what ‘goodness’ amounts to in the context of experimental Gestalt theory. For many people and in many situations, irregularity, asymmetry and unconformity can be much *better* and even more beautiful and reasonable than regularity, symmetry and conformity.

However, while this imposed lawfulness from above gives a whole too much dominance on its parts, it is another extreme to claim with Ehrenfels (\ominus_1) that by removing the additional Gestalt quality, a perceptual whole is fully decomposable into its basic (stimulus) parts such that these are isolated. Isolation implies that a basic part that is isolated would not stand in any relation to another entity with which it could produce a Gestalt quality but instead exists only in and for itself. Both Rausch¹⁵³ and Smith¹⁵⁴ argue that this is impossible: While the

¹⁵⁰“That you entertain multiple possibilities can be shown operationally when you let the picture develop over time in a movie-like fashion. There will be different degrees of surprise for various developments. You will buy many different movie shreds as ‘natural’, thus revealing the indefiniteness of the initial percept. The problem occurs in real life. It is not just a fancy theory or mere philosophising.” [Koenderink 2001: 6–7] I will come back to this idea from Koenderink in the next chapter.

¹⁵¹“Die Bedeutung von p_1 ist entscheidend durch ein Füllemoment bestimmt, nämlich durch *Sinnfülle* (im Gegensatz zur Sinnleere oder Sinnarmut von q_1). ‘Sinnvoll’ gehört zu den treffendsten Ausdrücken, mit denen man das, was mit p_1 gemeint ist, bezeichnen kann. Diese Fülle ist natürlich von anderer Art als die der p_5 bis p_7 . Sie ist nicht durch einen ‘Inhalt’ gegeben, wie bei p_6 und p_7 , sondern liegt in dem gesetzmäßigen Gefüge selbst beschlossen [...]. Der in der Gesetzmäßigkeit liegende Sinn ist vor allem ein solcher, der *fruchtbar* ist, Konsequenzen hat (und ziehen läßt).” [Rausch 1966: 946].

¹⁵²“Ebenso können, wie bei dieser Gelegenheit angemerkt sei, für das Prädikat (bzw. Attribut) ‘gut’ nicht nur – wie im allgemeinen gebräuchlich – Gestalten, sondern auch Gestaltteile, in ihrem ausgesprochenen Teilcharakter, als Träger fungieren. In diesen Fällen bedeutet ‘gut’ so viel wie ‘passend’, ‘zum Ganzen passend’.” [id.: 940, fn. 53].

¹⁵³Cf. Rausch [1966: 888–890].

¹⁵⁴“From Ehrenfels’ point of view, a Gestalt quality (whole-property) disappears when we isolate its parts. A thesis of this sort can be formulated also for part-properties, and we can see that it holds (to a degree) only for certain quite specific kinds of ‘natural’ part (for example of stones in a heap, where the property of

act of isolating a part from a whole might be possible if the part is relatively independent to the whole in question, normally a part can never enter a state of complete isolation, because it immediately forms new relations and (gets integrated into) wholes. Even to *think* of a completely isolated element is impossible without imagining it as appearing on a background, which implies that there is at least a figure-ground relation that prevents the state of being isolated by adding what Smith calls an ‘isolation-property’.¹⁵⁵

This is closely connected to a second negative aspect (\ominus_2) of one-sided dependency à la Ehrenfels. Not only can a part not be fully isolated, but it is also problematic to assume that a part is invariant, i.e. that it does not undergo internal changes – whether empirical, functional, or sociocultural – when it enters into another whole. As Smith [1994: 281] writes, “[a] part does not, on being separated, exist merely *in vacuo*, but always in some context in which it contributes to new Gestalten and thereby undergoes various functional changes within itself. A Japanese glass pyramid appears in one context as a fitting, proper part of its environment; translate it to a different context, and it will stick out as an alien body.” This can even be said of a perceptual whole itself: Although such a whole is theoretically transposable into different contexts (e.g. the same melody is playable on different instruments or octaves or cultural events), it does not remain exactly the same when its parts or the wholes in which it is situated as a part change (at the least the melody sounds different at different octaves; it has a different sociopolitical connotation depending on where and when it is played; how it sounds also depends on the technical medium through which it sounds).

Whereas I consider isolation and invariance to be two negative aspects of Ehrenfels’ theory, his reflections on the danger of infinite proliferation of Gestalt qualities are invaluable for any conceptualization of a part-whole theory that allows for two-sided dependency (\oplus_1). Although the members of the Berlin school were also philosophically trained (and partly held chairs for philosophy), to my knowledge they seem to be less concerned with this problem. Mulligan and Smith point out that Ehrenfels even refused two-sided dependency to avoid risking the logical pitfall of having to assume that “[e]very arbitrary complex of given sensations, however delineated, would give rise to a Gestalt quality of its own.” [Mulligan et al. 1988: 132] But is two-sided dependency unthinkable without infinite proliferation? I will show in the following that all logically possible wholes do not automatically come into existence as soon as we include the notion of (perceptual) meaning into the perception of Gestalts as their existence condition. This can best be demonstrated by using and experimenting with visual figures – and herein lies a positive aspect of Gestalt theory, particularly of the Berlin tradition (\oplus_3): its methodical reliance on an ‘experimental phenomenology’¹⁵⁶ that makes the phenomena that are researched

being for example at the top of the heap simply disappears when the heap is taken apart). Rarely, however does isolation of parts lead to a mere loss of properties: neither whole-properties nor part-properties are simply added extras which spring into existence at the moment of unification and disappear on isolation. For isolated parts qua isolated have peculiar characteristic features of their own, which depend on the one hand upon the peculiar features of their new environment and on the other hand upon what they bring with them from the old.” [Smith 1994: 280]

¹⁵⁵Cf. id. [280].

¹⁵⁶Lobb [2016: 41] writes in this regard: “From the beginning of the 20th century, Gestalt theory has developed the phenomenological perspective in European psychology, using a research method (referred to as phenomenological or experimental phenomenological) based on an accurate description of the immediate experience of situations(-stimulus) by individuals. Hence, the study of perception was put in the spotlight, and the focus was shifted onto senses and sensory experience.” Cf. MacLeod [1964] on the relationship

both directly accessible and intersubjectively valid. Koenderink writes in this regard that “[r]esearchers in the Gestalt tradition frequently use the method of ‘compelling visual proof’. One prepares an optical scene, and collects the majority community opinion on the structure of immediate visual awareness in the presence of the scene. In cases of striking majority consensus, one speaks of an ‘effect’.” [Koenderink 2015a: 46] This inductive-empirical method of visual proofs is thus, also in accordance with the argumentation about the methodology of the present project,¹⁵⁷ a positive aspect of Gestalt theory that I would like to maintain for the development of a two-sided part-whole dependency for PWO.

Together with this, the postulation and demonstration of principles for perceptual grouping, regardless of the specific nature and number of these principles, is not only convincing due to the method of visually proof. It also structures Gestalt theory *as* a theory and thus makes it pregnant on its own such that *Gestalt principles* are – by means of metonymic mapping – adequately conceivable as *Gestalt theory principles* and vice versa. The postulation of principles (\oplus_4) is thus as factually appropriate as it is methodologically and meta-theoretically useful. For these reasons, it is worthwhile to suggest, based on recent literature on Gestalts, a number of plausible principles for two-sided dependency and thus for the idea of PWO. What this simply amounts to is to proceed with the formulation of principles for PWO’s ontological nature, which started with PWO_{ded} as a result of its formal-ontological absence, and continued with PWO_{ind_lang_1-3} for its identification as conceptual metonymy.

In sum, my evaluation of certain major aspects of the two discussed approaches to one-sided part-whole dependency with either part primacy (Ehrenfels) or whole primacy (Berlin school) looks as follows:

Ehrenfels (part primacy):	Berlin school (whole primacy):
\oplus_1 Temporal Gestalt development	\oplus_3 Method of visual proof
\oplus_2 Reflections on infinite proliferation	\oplus_4 Postulation of Principles
\ominus_1 Isolation of parts	\ominus_3 Non-temporal first impression
\ominus_2 Invariance of parts and whole	\ominus_4 Goodness is imposed from above

In the next chapter and by drawing on recent developments in the research on Gestalts, I will indicate how these aspects can be accounted for and how, in so doing, a more dynamic and equipollent relation between parts and whole compared to the ones introduced so far could be conceivable.

between phenomenology and experimental psychology. Cf. Bischof [1966: 27–40] and Toccafondi [2011] on the differences between Husserlian and experimental/psychological phenomenology. Cf. Laguna [1930] and Feest [2014] for a critical discussion of the first-person method of phenomenological introspection in Gestalt theory.

¹⁵⁷Cf. chapter 1, in particular section 1.3.