Variations on Transition:
A Study in Kant's *Opus postumum*

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Abstract

In this study, I propose a new way of reading Kant's unfinished drafts for his final work – now known as *Opus postumum* – through a deepening of the concept of transition at play in his thinking. I push off from the complex twists and turns of *Opus postumum* navigated through the prism of both the pre-Critical and Critical philosophy. The study traces out transitions of architectonic, faculty, matter, force, aether, world and God via Kant's early (*Universal Natural History* and *Physical Monadology*) and middle works (*Critique of Pure Reason* and *Metaphysical Foundations*), culminating in *Opus postumum*. The overarching structure of the work moves from method to epistemology, epistemology to ontology, ontology to cosmology and finally cosmology to theology and philosophy.

My approach to *Opus postumum* involves a close reading in which continuity and discontinuity are allowed to emerge both within the drafts themselves and in relation to Kant's other work. Developing a series of variations on transition, this study argues that reading *Opus postumum* is an interruption into the process of philosophizing rather than the reception of a crystallized philosophy. This allows *Opus postumum* to be used as a manual for reading Kant, opening an untrodden path which reveals the movement of his work and the many transitions it harbours.

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El libro es un acervo indeciso de borradores contradictorios. Lo he examinado alguna vez: en el tercer capítulo muere el héroe, en el cuarto está vivo.

The book is an indecisive collection of contradictory drafts. I examined it once: in the third chapter the hero dies, in the fourth he is alive.

– Jorge Luis Borges, *Ficciones*

I am a great believer in the power of unfinished work to keep you alive.

– Saul Bellow, *Ravelstein*

It is not self-evident that remaining forever unchanged should be regarded as an excellence.

– Arthur O. Lovejoy, *The Great Chain of Being*

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Translations and Abbreviations

References to Kant's work cite the *Akademieausgabe* of *Kants gesammelte Schriften* (1902 – Berlin: De Gruyter. 29 vols.) except *Critique of Pure Reason* which uses the A/B pagination (as is customary). Where possible I cite the English page number when referencing *Opus postumum*. I use the Cambridge University Press translations. If other translations have been used, I have listed them in the references section. When a translation has been modified, I append 't.m', when it is my own, I append 'm.t'. I use the following abbreviations:

AR – *On the Rotation of the Earth on its Axis* (1754)

C – *Correspondence* (1749-1800)

CF – *The Conflict of the Faculties* (1798)

CJ – *Critique of the Power of Judgement* (1791)

CPR – *Critique of Pure Reason* (1781/7)

CPrR – *Critique of Practical Reason* (1788)

F – *Succinct Exposition of some Meditations on Fire* (1755)

FI – *First Introduction to the Critique of the Power of Judgement* (1790)

GMM – *Groundwork for a Metaphysics of Morals* (1785)

LF – *Thoughts on the True Estimation of Living Forces* (1747)

ID – *On the Form and Principles of the Sensible and the Intelligible World* (*Inaugural Dissertation*) (1770)

IM – *On the Influence of the Moon on the Weather* (1794)

L-Anth/Collins – *Anthropology Collins* (1772/3)

L-Anth/Fried – *Anthropology Friedländer* (1775/6)

L-Lo/Blomberg –*Logic Blomberg* (1771)

L-Lo/Dohna –*Logic Dohna-Wundlacken* (1792)

L-Lo/Vienna – *Logic Vienna* (1780/1)

L-Met-K3/Arnoldt – *Metaphysics* K_3 (1794-95)

L-Met/Dohna – *Metaphysics Dohna* (1792-3)

L-Met-L1/Pölitz – *Metaphysics L_1* (mid 1770's)

L-Met/Mron – *Metaphysics Mrongovius* (1782-3)

LOG – *Logic* (*Jäsche*) (1800)

LPR – *Lectures on the Philosophical Doctrine of Religion* (1785-6)

MF – *Metaphysical Foundations of Natural Science* (1786)

MPT – *On the Miscarriage of all Philosophical Trials in Theodicy* (1791)

NM – *Attempt to Introduce the Concept of Negative Magnitudes into Philosophy* (1763)

NT – *New Doctrine of Motion and Rest* (1758)

OD – *On a Discovery Whereby Any New Critique of Pure Reason is to be Made Superfluous by an Older One* (1790)

OP – *Opus postumum* (1796-1803)

OPA – *Only Possible Argument in Support of a Demonstration of the Existence of God* (1763)

OT – *On a Recently Prominent Tone of Superiority in Philosophy* (1796)

P – *Prolegomena to Any future Metaphysic* (1783)

PE – *Inquiry Concerning the Distinctness of the Principles of Natural Theology and Morality* (*Prize Essay*) (1764)

PG – *Physical Geography* (1802)

PM – *The Employment in Natural Philosophy of Metaphysics Combined with Geometry, Of Which Sample I Contains the Physical Monadology* (1756)

PR – *Preface to Reinhold Bernhard Jachman's* Examination of the Kantian Philosophy of Religion (1800)

R – *Reflexionen* (1760's-1790's)

UNH – *Universal Natural History and Theory of the Heavens* (1755)

VM – *On the Volcanoes on the Moon* (1785)

WA – *The Question, Whether the Earth is Ageing, Considered from a Physical Point of View* (1754)

WE – *Answer to the Question: What is Enlightenment?* (1784)

Introduction. How Should We Read *Opus postumum*?

Opus postumum is composed of thirteen 'fascicles' containing a new text Kant was working on between 1796 and 1803, variably titled, '*Transition from Metaphysical Foundations of Natural Science to Physics*' (*Übergang von den metaphysische Anfangsgründe der Naturwissenschaft zur Physik*).[1] The broad aim of the drafts is to develop a concept of transition (*Übergangskonzept*) which forms a continuity between *a priori* metaphysical foundations and empirical physics so as to fill 'a gap (*Lücke*) […] in the system of critical philosophy' (C 12:257). But what we inherit is a mass of notes (around 580 folio leaves equating to 1,269 *Akdemieausgabe* pages) on a multitude of subjects rising to the surface of a career spanning 57 years. The drafts encroach on perennial philosophical subjects centred around continuity such as the transition between sensibility and understanding, matter and force, mechanism and dynamism, organic and inorganic and the relationship between God, world and human being. Moreover, *Opus postumum* is often in conversation with the rest of Kant's corpus (most notably, *Metaphysical Foundations*) prompting a close study of these many continuities.

Interrupting this view, however, is the fact that *Opus postumum* is itself fragmentary; it is a document of radical discontinuity, a plethora of breaks. There are no proper chapters, prefaces or introductions, it is filled with momentary lines of thought, an array of interweaving marginalia and constant anacolutha. In short, it is truly unfinished and therefore cannot really be described as a 'work' in Kant's corpus. Furthermore, whilst the conversations with the rest of Kant's corpus are ever-present in *Opus postumum*, some of these conversations constitute discontinuities, or views which do not fit neatly into the Critical philosophy. There is, then, a schism between these two facets, that in one domain *Opus postumum* proposes a concept of

[1] It is contained in volume 21 and 22 of the *Akademieausgabe* with some fragmentary leaves published in volume 23 (477-488). There are also some early loose pages contained in *Opus postumum* which seem to have been written between 1786 – 1796 (OP 21:414-77). Kant's first mention of the 'transition from the metaphysics of nature to physics' is in the middle of these pages, probably written around 1795 (OP 21:463). However, this is only a title and the content of the page refers mostly to subjects pertaining to the fluidity of matter, weight and the action of water. The transition project proper only begins around 1796 in the 'Oktaventwurf' pages (OP 21:373-412).

continuity, whilst in another is itself discontinuous, which prompts us to ask a deceptively simple question: how should we read *Opus postumum*?

In this study, I argue that the answer to this question lay in the transition concept itself and the way Kant works with it through variation. By emphasizing these variations at the heart of *Opus postumum*, we gain a tool for navigating (1) the relationship between the various fascicles of *Opus postumum* and (2) the relationship between *Opus postumum* and Kant's earlier (Critical *and* pre-Critical) work. It is first important for this study to lay out the context on which it is based.

Eckart Förster (1999, xv-lv and 2000), Erich Adickes (1920), Reinhard Brandt (1999, 11-28) and Felix Duque (1991, 25-53) have provided excellent overviews of the history of *Opus postumum*, and Giovanni Basile (2013) provides the most comprehensive history of it to date. One of the most significant aspects about this history is that for much of its life *Opus postumum* was judged negatively as a product of Kant's senility and that any clear view of it could only remain futile, as is represented in Ernst Cassirer's overview: 'the attempt to coin in detail the intellectual handiwork of [Kant's] old age seems, in view of the state of the manuscript, probably doomed to remain forever vain' (Cassirer 1981, 409). The issue Cassirer points out was common in the earlier literature on *Opus postumum*: because it contains elements which do not conform with the Critical philosophy, it cannot fit into Kant's corpus and so is best left by the wayside. What Cassirer and the earlier literature did not contemplate, however, is the much deeper question of how we should read *Opus postumum*, not only to fit it into the Critical philosophy but on its own philosophical grounds. For the drafts were meant to become the 'keystone to his whole doctrinal system and were to fully document the durability and real application of his philosophy' (Jachmann 2012, 113, m.t) and which would have resulted in his 'chief work' (Förster 1999, xvii), yet by reading them we take on Kant's 'pain like that of Tantalus' (C 12:257). Whilst the initial aim of the *Transition* project was to fill a gap in the Critical philosophy, it trails off into a plethora of other subjects without any

clear indication as to how all the unfinished parts fits together. Perhaps, then, uncovering the final product of *Opus postumum is* 'doomed to remain forever vain' but, as this study will argue, how we choose to situate it in Kant's corpus remains far from doomed or vain, rather it touches on the very nerve of what philosophizing was for Kant. Much of the reason why Cassirer's view of *Opus postumum* has faded and why many interpretations of the drafts are now coming to the fore is bound up with widening the way we use the drafts and what questions can be asked of them.

The contemporary secondary literature has taken on the enthusiasm of one of the earliest 'commentators' on what would become *Opus postumum*, namely Friedrich Wilhelm Joseph Schelling. In his 1804 obituary, 'Immanuel Kant' he notes that Kant was developing a new work: 'Still in 1801, in his few hours of free thinking power, he laboured over a work: *Transition from Metaphysics to Physics*, which, had age granted him the completion of, would have undoubtedly been of the highest interest' (Schelling 1860, 8, m.t).[2] Although Schelling never had the chance to actually look through the drafts, he anticipates significant parts of the secondary literature which broadly falls into two quite different groups. On the one hand there are interpretations which play down discontinuities (both within *Opus postumum* as well as between it and the Critical work),[3] and on the other hand those which play down continuities (both within *Opus postumum* as well as between it and the Critical work).[4]

[2] There is not much scholarship on *Opus postumum* and Schelling, such that this single sentence would be a good place to start. Ernst-Otto Onnasch, whose chapter is the most comprehensive analysis of the *Opus postumum* and Schelling, starts from this sentence, noting that 'the source for Schelling's knowledge of this is still unclear' (Onnasch 2009, 311, m.t). The most probable source is Rink's 1801 edition of *Physical Geography*, where he notes, 'If only the worthy author of this Physical Geography could have made known his *Transition from the Metaphysics of Nature to Physics*!' (PG 9:221). Basile claims that although this is plausible, 'it cannot be completely ruled out that Schelling may have received communication from someone in Kant's circle' (Basile 2013, 449, m.t). Indeed, Schelling is one of the first post-Kantians to mention the *Transition* project in print and to assign a specific date to it, something which Rink did not do. Even Wasianski's 1804 mention of the *Transition* did not allocate a specific date to it: '[Kant] left his last work and only manuscript which was supposed to enact a transition from the metaphysics of nature to physics unfinished' (Wasianski 2012, 260, m.t). Also see Heman (1904, 177-80). For a rejection of this view see Adickes (1920, 33), and for its partial revitalization see the second half of Tuschling (1991).

[3] E.g., Erich Adickes, Bryan Wesley Hall, Michael Friedman, Eckart Förster, Oliver Thorndike and Dina Emundts.

[4] E.g., Gerhard Lehmann, Hans Vaihinger, Burkhard Tuschling and Jeffrey Edwards.

One of the most recent interpretations is Hall's pathbreaking *The Post-Critical Kant*. By presenting *Opus postumum* in continuity with the Critical philosophy, and even an 'elaboration' of the Critical work, Hall hopes to show that it fills a gap left in 'the transcendental part of the metaphysics of nature' (Hall 2017, 2-3). To stake his claim, Hall sets out four hermeneutical principles for reading *Opus postumum*: (1) be consistent with the text, (2) make Kant consistent with himself (that is, with the Critical philosophy), (3) be philosophically plausible, (4) reflect Kant's intent for *Opus postumum* (Hall 2017, 5-6). I argue that these principles are an ill-fit for *Opus postumum* since (a) there is no way to maintain the first principle with a document as inconsistent as *Opus postumum*, but more importantly, (b) the second principle undermines the fourth principle. That is, to make Kant consistent with himself we must overlook Kant's intent for *Opus postumum*. Put another way, if we banish all the contradictions then we miss the actual content of the manuscript as well as the important role of the transition concept and variation. Furthermore, this threatens to blindly cast away interpretations which do not only read *Opus postumum* as the filling of a gap in the Critical philosophy, as Stephen Howard claims in his review of Hall's book: 'Hall presupposes that Kant's intention is solely to fill the gap in the Critical philosophy, and so dismisses interpretations that do not conclude that this is what is at stake' (Howard 2016, 66). In this study I follow through on Howard's suspicion by claiming that applying *Opus postumum* to the hermeneutical principles set out by Hall forecloses the side which involves discontinuity with the Critical work.

From a more technical angle, this entails viewing the supposed 'gap' as a floating signifier, varying as the drafts unfold. Indeed, Kant frequently engages in this type of play with concepts in *Opus postumum*. An example can be gleaned from his linkage of the transition concept with the concept of a propaedeutic in fascicle III: 'This doctrine of the propaedeutic natural science […] does not allow two territories (the metaphysics of nature and physics) to immediately border each other, but rather builds a bridge over a gap (*Kluft*) between the two

[sides]' (OP 21:286, m.t), and then the subsequent disassociation of them in fascicle IX: 'This transition is not merely a propaedeutic, for that would be an unstable concept, and concerns only the subjective [side] of knowledge' (OP 22:240, 56, t.m). To read these notes alongside one another requires us to construct a frame in which Kant varies position and whilst this may not allow us to systematically nestle the *Transition* project solely in the Critical philosophy it grounds a broader picture of the interrelations at play in Kant's work.[5]

But as discussed above, these shifts are often drawn out solely with respect to the Critical work, and this informs the division in the secondary literature. The two groups of research into *Opus postumum*, between those who argue for continuity and those who argue for discontinuity, are therefore both partially correct and incorrect. The route this study opts for is a synthesis of these two sides. Instead of striving for absolute continuity or discontinuity between *Opus postumum* and the Critical work, this study will show how certain concepts develop between and within these fascicles and works, routing out the transitions they go through with respect to all the phases in Kant's corpus. Afterall, Kant's work is not only that contained in the Critical period but is much wider and when we factor this into reading *Opus postumum* there are many more angles to consider than what a frame wishing to stick with a strictly Critical Kant allows for. *Opus postumum* is not strictly Critical *or* pre-Critical and it would be difficult to treat it solely as such, for it both contradicts and harmonizes with a lot of Kant's Critical *and* pre-Critical work. It cannot be academically sufficient to always ignore the contradictions in favour of the occasions when *Opus postumum* agrees with itself or the Critical philosophy.

But even with this aim stated, we arrive at another question: how can we stake a claim based on a text that is always varying? Pushing off from Basile's observation that, 'The understanding of *Opus postumum* occurs through a circular hermeneutical reasoning between

[5] This indicates a resonance with the early German idealist tendency to incorporate both continuity and discontinuity into the system as Schelling points out: 'we must bestow both [as] correct' (Schelling 1858, 286, m.t).

the text and the interpreter, resulting in an inexhaustible dialectic' (Basile 2013, 361, m.t), I answer this question by treating *Opus postumum* like a piece of evolving, ergodic literature.[6] Owing to its unfinished state, Kant essentially passes down an 'open' work that confronts us with a series of pathways; the argument we make is contingent upon the pathway we opt for. But this is not to say that we can claim anything we like about *Opus postumum*, nor that all the pathways through it are equally valid, even though this may seem like a possibility.[7] We certainly need to stick to the frame within which it unfolds or the key it is tuned to and the theme it elaborates upon.

The ground for exploring this path consists in mirroring Kant's own dynamic process of writing, which unravels fugally. We see this at work even in the Critical philosophy. The variations between the two editions of *Critique of Pure Reason*, as well as the variations between the editions of the *Critique of the Power of Judgement*, including that between the *First Introduction* and the published Introduction show us that Kant was often seeking to repeat and reshape certain elements. This is also expressed in the many about-turns Kant makes in his corpus, the most famous example of which is the so-called 'Copernican turn'.[8] Other examples include his turn from the pre-Critical to the Critical, epitomized in the quote about Hume 'interrupt[ing] my dogmatic slumber' (P 4:260)[9] and lesser known turns such as the shift from an atomist model of matter in *Physical Monadology* to a forceful model in *Metaphysical Foundations*. Furthermore, Kant also enacts some returns in his corpus, such as the return to physicotheology in the third *Critique*, first discussed in *The Only Possible Argument*. Underlying these variations, however, is the theme of transition, but it does not surface explicitly *as a concept* until *Opus postumum*. As we will see, one of the most vivid examples

[6] For a discussion of ergodic literature see Aarseth (1997) and for what constitutes an open and closed work see Eco (1989, 3-4).
[7] I agree with Lord (2011, 156) and Hall (2017, 8) in this respect.
[8] See CPR Bxvi-xviii.
[9] It is also worth noting that Kant uses this expression in reference to the Antinomies of Pure Reason: 'It was not the investigation of the existence of God, immortality, and so on, but rather the antinomy of pure reason – "The world has a beginning; it has no beginning, and so on, right up to the 4th: There is freedom in man vs. there is no freedom, only the necessity of nature" – that is what first aroused me from my dogmatic slumber and drove me to the critique of reason itself' (C 12:257-8).

of this comes from fascicle I, where transcendental idealism is repeatedly played out with minor transitions between the iterations. Nothing is firm in *Opus postumum*; we are always in the midst of flight, in the middle of transition, *in media res*.

By reading Kant in this way we ascertain dynamic movements, excavating a wider concern at stake in *Opus postumum* which involves breaking with the rigidity instigated by the division of Kant's corpus into neatly detachable blocks: pre-Critical, Critical and post-Critical. And although Kant himself regularly talks of his 'Critical works' or his 'Critical philosophy' as distinct from his preceding or succeeding work, we must go beneath the surface toward the filament of his thinking that even Kant himself might not recognize, to see the Critical philosophy as one frozen moment.[10] Indeed, when we unfreeze this moment, we find a musical thinker 'playing' certain concepts throughout his career, unfolding them through various rhythmic cadences of which transcendental idealism is only one song. In this connection, *Opus postumum* provides both the labyrinth and the 'manual' (*Leitfaden*),[11] the leading thread through which to view Kant in his musicality. To get to this perspective we can even follow the Critical Kant when he says of Plato: we must 'understand him even better than he understood himself' (CPR A314/B370).[12] This requires a type of reconstruction, although not reconstruction in the sense of repeating Kant's system, but a striving towards the kernel of its possibility for the sake of thinking *with* Kant rather than *about* him. Owing to its unfinished state, *Opus postumum* is particularly conducive to this approach.

An outcome of this approach is to take forward Howard Caygill's premise (Caygill 2007, 16-7) and Stephen Howard's conclusion, that importance must be placed on 'Kant's *philosophizing*' (Howard 2017, 225), that is, to view *Opus postumum* as part of a project of philosophizing rather than philosophy. Whilst Howard achieves this through his engagement

[10] See Hastie 1900, xvi.
[11] See Kant's letter to Mendelssohn from 1783: 'the Critical philosophy would gain acceptability and become a promenade through a labyrinth, but with a reliable manual (*Leitfaden*) to help us find our way out as often as we get lost.' (C 10:346, t.m).
[12] Also see OD 8:250-1.

with force as the 'covert impetus' in Kant's work, I do so by reading the transition concept as this covert impetus. That is to say, I interpret the act of philosophizing as indicative of a project sustained in its continual transformation, not a system but the constitutive aspects of a system premised on variation and change. Kant's largely undiscussed differentiation between learning the noun 'philosophy' and the verb 'to philosophize' is found throughout his corpus.[13] It is particularly clear in a handwritten fragment from the 1780's: 'to learn not philosophy, but philosophizing' (R 16:50, m.t), that is, to learn the process of philosophizing, indeed, to reiterate Kant's echo of Horace's refrain, to 'think for oneself', to 'dare to know!' (*sapere aude!*) (WE 8:35). This theme also crops up throughout *Opus postumum*, especially towards its later parts in fascicle I. There, Kant reiterates, 'Philosophy (*Philosophie*) is to be regarded either as the *habitus* of philosophizing (*Philosophiren*) or as a work: through which there arises, proceeding from it, a work as a system of absolute unity.' (OP 21:80, 247).[14] The *habitus* of philosophizing is premised on the repetition of variation, on transition, on keeping open, on refusing to kill off thinking.[15] Speaking to this need is the final title Kant ascribed to the *Transition* project before his death: '*Philosophy as Doctrine of Science* (*Wissenschaftslehre*) *in a Complete System Established by* [...]' (OP 21:155, 255). Kant did not sign off on this title, leaving its authorship open as though it is for the inheritors of this document, its readers, translators, editors, commentators and scholars, as well as those who unwittingly took (and take) on some of its themes without even knowing of its existence, to inscribe their names here. And this is striking in many ways, for the final draft contained in *Opus postumum* sets out a profound confrontation with what philosophy is and what it means to construct a philosophical system, a problem that was already essential for post-Kantians such as Friedrich Heinrich

[13] E.g., See L-Lo/Blomberg 24:50; L-Lo/Vienna 24:798 and L-Lo/Dohna 24:698. It is also in *Critique of Pure Reason* (CPR A837/B865). Caygill (1993, 3 and 8) constructs his dictionary exactly on this premise. Also see Caygill (2007, 16).
[14] Also see another passage from fascicle I which ascribes this method to transcendental philosophy as a whole: 'Transcendental philosophy is not a kind of knowledge (*Erkentnisart*) of some object (*Objects*) of philosophy, but rather [is] only a certain method, or (formal) principle (*Princip*) of philosophizing.' (OP 21:85-6, m.t).
[15] See Collins (1943, 251).

Jacobi, Johann Gottlieb Fichte, Schelling and the *Frühromantiker*. But clearly *Opus postumum* is far from resembling a philosophical system, instead offering us a window into Kant's necessarily incomplete act of systematization, which we must take up and take forward. As mentioned above, the last drafts of *Opus postumum* end in variations on the theme of transcendental idealism and whilst this is seen as a failure by many, it tells us something profound about Kant's requirement to keep the act of philosophizing open. Variation and transition are methods for Kant and *Opus postumum* provides the aperture through which to view them in action.

To formalize the above, I explore the concept of transition as having three interrelated meanings: (1) the transition as a concept in *Opus postumum*; (2) the transitions between Kant's works; (3) the transitions between concepts. These meanings play out in five variations, concerned with specific elements of *Opus postumum*: (1) architectonic transition ; (2) epistemic transition; (3) ontological transition; (4) cosmological transition; (5) theological and philosophical transition. These variations underpin each chapter of this study: chapter one focuses on the methodology of transition and its role in Kant's Critical architectonic. Chapter two discusses the epistemological role of the understanding and sensibility, specifically in fascicles X, XII and VII and their transition into an ontology. Chapter three is the first exploration of the 'doctrinal' aspects of *Opus postumum*, which sees Kant transitioning into an ontology of force in the first set of 'elementary system' drafts. Chapter four discusses aether in the 'Übergang 1-14' drafts, showing how it informs an answer to a problem left over in Kant's early cosmology. Chapter five discusses Kant's theological considerations in fascicle I, culminating in a meditation on the role of philosophy in the very last sheets of the fascicle.

Chapter 1. Architectonic in *Transition*: A Suspicion

Introduction

The *Transition from Metaphysical Foundations of Natural Science to Physics* found at the heart of the *Opus postumum* has prompted some serious interrogations in recent years. If ever the Saul Bellow quote which opens this work, that 'I am a great believer in the power of unfinished work to keep you alive' (Bellow 2001, 231) were an apt description, it is surely in reference to *Opus postumum*. Kant was truly kept alive by the unfinished drafts and continues to be kept alive in the monographic studies aimed at unravelling their mysteries. In the *Transition* project Kant attempts to construct a bridge between two otherwise separate territories, but this is by no means an unambiguous enterprise. In this first chapter I explore both the *Transition* project and the transition concept by foregrounding their architectonic stakes to set up the framework of the rest of this study.

At its most basic, the transition concept involves establishing a conceptual move from metaphysical foundations to physics, but it can also be extended to denote the continuity or discontinuity between Kant's earlier works in the philosophy of natural science (e.g., in *Universal Natural History and Theory of the Heavens*, *Physical Monadology* and *Metaphysical Foundations of Natural Science*) and a metaphysics of nature. Although there is not always a sharp line between these two aspects in *Opus postumum* we can begin to trace the differences by focusing closely on the theme of the various fascicles. It is for this reason that in this chapter – unlike the other chapters – I skip between fascicles of *Opus postumum*. When Kant drafts sections concerning the meaning of transition and the role of metaphysics, metaphysical foundations and physics, we can ascertain that he is operating within a methodological register, that is, in a context concerned with the delimitation of subject-areas and how each side might

be brought into unity with the other. This occurs throughout all the fascicles.[1] In this connection, we may hazard a suspicion: a transition is at stake between the Architectonic of Pure Reason in *Critique of Pure Reason* (CPR A832-51/B860-79) and the methodological ruminations on transition found in *Opus postumum*.[2] And more specific to this chapter, how Kant treats metaphysics and physics in the Architectonic may be different to how he treats them in *Opus postumum*. The initial question, then, which guides this chapter is: what relationships are there between metaphysics and physics in the Architectonic of Pure Reason and *Opus postumum*, and how do these relationships pertain to each other?

I conclude the chapter by suggesting that a transition of the concept of architectonic itself emerges in answering these questions. This suggestion is premised on showing how the methodological perspectives in the Critical philosophy are unclear as to the systematic division of metaphysics, metaphysical foundations and physics, and that they do not allow for the transition between different disciplines. In contrast to this, what is at stake in *Opus postumum* is the need to think how we arrive at, account for, and create the possibility of methodological transition. Hence, the architectonic elements found in *Opus postumum* such as the meaning of transition as well as the attempt to incorporate it into a metaphysics of nature are conceived of as a site upon which to find shared concepts between the disciplines, changing our understanding of architectonic in Kant's corpus.

1. The Basis of a Suspicion: Transition, Metaphysics of Nature and Physics

'*Übergang*' is a term repeated throughout *Opus postumum* but scholars still do not precisely agree on what Kant means by it. In its most skeletal form it means 'transition', or a serial

[1] From the transition between metaphysical foundations and physics in fascicle IV, to the transition between epistemology and ontology in fascicles X, XI and VII, to the transition between philosophy and philosophizing in fascicle I.

[2] The importance of method for Kant cannot be overstated. According to Cassirer 'Kant called his first work in the philosophy of physics a "treatise on method", as he later, at the zenith of his creative life, termed *Critique of Pure Reason* a treatise on method' (Cassirer 1981, 28).

'going-over' from one species of knowledge to another. It emerges from Kant's adherence to the principle that 'nature makes no leaps' (*Natura non facit saltus*), first proposed by Gottfried Wilhelm Leibniz (1996, 473) in his law of continuity and used as the basis for 'natural method' by Carl Linnaeus (2005, 40). Leibniz says of the law, 'Nothing takes place suddenly, and it is one of my great and best confirmed maxims' (Leibniz 1996, 56). In Kant's pre-Critical work the concept of transition rarely arises and when it does it refers to a physical transformation of an 'elementary fire' which moves 'from one material to the other' (NM 2:185), closely linked to Leibniz's formulation of a dynamical continuum. Whilst the Critical Kant is often cast as an enemy of Leibniz, the skeletal concept of transition and the need for continuity are not entirely alien to the Critical philosophy. We can, for example, already see a 'secret transition' between the faculties in the first *Critique*. Caygill rationalizes this argument in the following way:

> if the demarcations between the faculties are followed rigorously, if the unities of reason and the understanding are generically different, then experience and the process of unification becomes problematic. It is thus necessary, already in the first *Critique*, to show that the demarcations between the faculties are bridgeable, or in the language of the *Opus postumum*, that it is possible for there to be a transition between them. (Caygill 2007, 19).[3]

Kant never fully elaborates upon these bridgeable demarcations in the first *Critique*, instead burying them in the subterranean depths of the work, with perhaps On the Schematism of the Pure Concepts of the Understanding (CPR A137-47/B176-87) coming closest to bringing the need for transition to the fore. How to unify appearances in sensibility with the pure concepts of the understanding to this day remains problematic precisely because there is not a clear concept of transition at work in the first *Critique*. Another place transition is tacitly called upon

[3] See McCall (1983, 172-5) for an exposition of a transition at work in the first *Critique*. Mathieu (1989, 175-6) also discusses a transition between the 'I think' (*Ich denke*) and the 'I sense' (*Ich empfinde*) at stake in the B edition of the Paralogisms of Pure Reason (CPR B406-32).

is in the Doctrine of Method under the title, The Discipline of Pure Reason (CPR A708-94/B736-822). There, Kant says, 'the proof does not show, that is, that the given concept (e.g., of that which happens) leads directly to another concept (that of a cause), for such a transition (*Übergang*) would be a leap (*Sprung*) for which nothing could be held responsible' (CPR A783/B811). Clearly Kant has something in mind for this concept, but once again he does not fully elaborate upon it, leaving it in all essentials undistinguished from a transgressive leap.

The concept of transition arises more forcefully, however, in the third *Critique*, specifically in the passage from theoretical to practical philosophy:

> There must, therefore, be a ground (*Grund*) of the *unity* of the supersensible that lies at the basis of nature, with what the concept of freedom contains in a practical way, and although the concept of this ground (*Grund*) neither theoretically nor practically attains to a knowledge of it, and so has no peculiar realm of its own, still it renders possible the transition (*Übergang*) from the kind of thought according to the principles of the one to that according to the principles of the other. (CJ 5:176, t.m).

That is to say, there is need for a movement between the two fundamental axes which underpin the Critical philosophy: nature and freedom. And such a movement is indexed as a transition from one pole to the other, from one species of knowledge to the other. But even though this is called for, transition *as a concept* and as that which bridges metaphysical foundations and physics remains elusive. In other words, Kant does not orient the peculiarities of transition in a decidedly methodological way as its own specific domain of investigation or discipline.[4]

[4] For more on this topic see Lord (2011, 156-7), Förster (2000), Friedman (1994, 242-64 and 2003, 216-7), Lehmann (1980, 105-7), Rosales (2005, 225-6n25) and especially Mathieu (1989, 42-4 and 239-247) and Basile (2013, 376-80). For a chronological refutation of reading *Opus postumum* through the third *Critique* see Edwards (2008, 236-7).

Another place that the transition concept arises is in 1797's *Metaphysics of Morals* where Kant says, 'just as a passage from the metaphysics of nature to physics is needed – a transition having its own special rules – something similar is rightly required from the metaphysics of morals' (MM 6:468). But this discipline is not elaborated upon on its own terms with regard to the theoretical side of Kant's philosophy, remaining on the practical side. This also goes some way in explaining that Kant had the elaboration of the transition concept in mind for quite some time. For he speaks as if the transition from metaphysics of nature to physics had already been established.[5]

Although in places it overlaps with the concerns of the third *Critique* such as the distinction between the organic and inorganic, the 'feeling of life' (*Lebensgefühl*),[6] and the relation between the theoretical and the practical, *Opus postumum* also harbours the explicit coming to the surface of transition as a concept. Indeed, the transition from metaphysical foundations to physics is central to the extent that in *Opus postumum* the transition as a concept bubbles to the surface for the first time in Kant's corpus and that its elaboration would have occupied a (if not *the*) centrepiece of the finished *Transition* work. To pick one example, in a passage from the 'α-ε' drafts of fascicle V, Kant immediately skips from a discussion of heat (*Wärme*) on one side of the sheet to a 'Preface' in which he discusses the meaning and status of 'science of nature', 'transition' and the structural role of *Metaphysical Foundations* on the other (OP 21:523-4, 35-6). Kant generally liked to stick to one subject on each side of a sheet,

[5] Förster explains J.G.K.C Kiesewetter's letter asking Kant to deliver his transition which Kant had been promising 'for some years now' (C 12:23) by showing that the transition has its genesis in 1790 (Förster 2000, 3). But it seems to me that based on the quotation from the *Metaphysics of Morals* the transition is built into the development of a metaphysics of nature. And if this is so then the very character of the distinction between 'metaphysics of nature' and 'metaphysics of morals' – each of which is divided into a rational (*a priori*) and empirical (*a posteriori*) part – in 1785's *Groundwork for a Metaphysics of Morals*, already implies the need for a transition (GMM 4:388-9).

[6] E.g., see CJ 5:204 and 400, and also note the method of unfolding the investigation into judgements of taste according to the categories: of quality (CJ 5:203-11), quantity (CJ 5:211-9), relation (CJ 5:219-36) and modality (CJ 5:236-40), which is reflected in Kant's early investigations into the operation of the forces of matter in *Opus postumum* – especially in the early elementary system.

but it is curious when he shifts entire registers between the sides, demonstrating how the theme of transition often violently erupts onto the page.

In this less obscure context Kant expounds upon his more secret use of the term in the first and third *Critiques*. Throughout *Opus postumum* Kant rephrases and repeats its meaning, varying it, gradually transforming it, sometimes into monstrous concatenations. As Hall (2017, 12) argues, there is a progressive arch to these repetitions (Hall locates three different incarnations in the later fascicles), which gives a sense of movement each time the concept of transition recurs. But as William Werkmeister (1980, 115-6) claims, these changing iterations of transition can ultimately be whittled down to a relationship with the work *Metaphysical Foundations*, a view that a significant part of the secondary literature agrees with. Indeed, there is a basic thematic which remains somewhat stable in the early fascicles: the bridge from *a priori* foundations set out in *Metaphysical Foundations* to empirical physics. As much as Kant's last work continually weaves, shifts and contorts – such that, as Beth Lord describes 'one could find in [*Opus postumum*] material both to affirm and to contradict any position' (Lord 2011, 156)[7] – the theme of these two sides forming a distinctive framework of natural philosophy (*philosophia naturalis*),[8] or a metaphysics of nature, remains consistent throughout the early fascicles and this warrants further investigation. A clear expression of this is found in fascicle II where Kant proposes the much repeated title, '*Transition from the Metaphysical Foundations of Natural Science to Physics*' (OP 21:174, m.t) and a few *Akademie* pages later under the heading 'Preface', he conflates this with a metaphysics of nature:

[7] See Hall (2017, 8) where he says that *Opus postumum* can be considered 'a philosophical Rorschach test'. Tuschling also comments on this: 'Paradoxically, precisely because an immediate pathway through it is not possible, *Opus postumum* "facilitates" in this – but only in this! – relationship to interpretation: the reader is at no point in danger of mistaking Kantian turns with modern turns and therefore missing the correct understanding.' (Tuschling 1971, 28, m.t).

[8] In a loose sheet of fascicle IV Kant is particularly direct: 'But there must be a transition from the metaphysical foundations of natural science to physics for natural science (*Naturwissenschaft*) to become science of reason (*Vernunftwissenschaft*) (*philosophia naturalis*).' (OP 21:474-5, 39, t.m). For a historical discussion of this topic see Friedman's introduction to the Cambridge Edition of *Metaphysical Foundations*, Zammito (2017, 486-92) and Thorndike (2019, 7).

> Natural science (*philosophia naturalis*) is the science of the moving forces of matter in cosmic space (*Weltraum*). In so far as such a system relies merely on *a priori* concepts and theorems (*Lehrsätzen*) it is called metaphysics of nature, but in so far as it must at the same time be based on principles of experience [it is called] physics. (OP 21:176, m.t).

The aim of the early drafts in *Opus postumum* is to construct a concept which is robust enough to enact a shift from one discipline to another. But the division between the two sides is key as is their respective definitions. For, as we will see, the terms, 'metaphysics', '*Metaphysical Foundations*', 'metaphysical foundations' and 'metaphysics of nature' as well as 'physics' mark ambiguous positions in the Critical philosophy[9] such that the proposed transition describes a variety of moves, not only between disciplines but also between works and concepts.

We get a gloss of these terms in the Preface to *Metaphysical Foundations* where Kant demarks one part of natural science as pure and the other as applied, aligning the former with *a priori* knowledge and the latter with empirical knowledge (MF 4:468-9). Kant remarks, 'proper science (*eigentliche Wissenschaft*), especially [science] of nature (*Natur*), requires a pure part lying at the basis of the empirical part, which rests on *a priori* knowledge of natural things.' (MF 4:470, t.m). Whilst divisions between pure and mixed, or simple and composite were commonplace in eighteenth-century rational metaphysics,[10] unique to the divisions in *Metaphysical Foundations* is a much more nebulous arrangement of natural science and metaphysics. For Kant, natural science harbours a metaphysics of nature since it attempts to

[9] This is especially the case with 'metaphysics of nature'. See Kant (1999) where in one introductory comment the 'metaphysics of nature' is found in the *Metaphysical Foundations of Natural Science* (1999, xxv), whilst in another it is seen as a project not yet complete, that the metaphysics of morals was 'produce[d] […] first.' (1999, 361). This highlights the ambiguous place of the metaphysics of nature, that we really do not know with certainty where it is in Kant's corpus.

[10] E.g., Alexander Gottlieb Baumgarten's *Metaphysica*, a textbook Kant used extensively for lecturing on metaphysics, administers these divisions with respect to 'internal being' (Baumgarten 2017, 142-3).

understand necessity in the existence of things, a necessity which cannot be given *a posteriori* in experience but is gathered from *a priori* principles. Metaphysics of nature is accordingly condensed to signify a purely *a priori* inquiry: it 'must always contain solely principles that are not empirical (for precisely this reason it bears the name of a metaphysics).' (MF 4:469). Kant further divides the metaphysics of nature into a part which deals with general nature – the 'transcendental' – and a part which deals with particular nature – 'special metaphysics' (*besondere Metaphysische*), which is sometimes even conflated with 'physics' (*Physik*) (e.g., MF 4:470).

There are several ways to approach these formulations, but it is generally understood that the transcendental side of the metaphysics of nature is contained in the Transcendental Analytic of the *Critique of Pure Reason*, whilst the special metaphysics side is the *Metaphysical Foundations*.[11] There is, however, a problem with such a reading at a quite basic level. First, Kant references a future work entitled *Metaphysics of Nature* in both the A and B editions of the *Critique of Pure Reason* (CPR Axxi and Bxliii). This indicates that Kant had a work *other* than the first *Critique* and *Metaphysical Foundations* in mind when citing metaphysics of nature.[12] Indeed, the first *Critique* is certainly the transcendental *propaedeutic* to such a work instead of the work itself, as Kant himself indicates:[13]

> Such a system of pure (speculative) reason I hope myself to deliver under the title *Metaphysics of Nature*, which will be not half so extensive but will be incomparably richer in content than this critique, which had first to display the sources and conditions of its possibility, and needed to clear and level soil (*Boden*) that was completely overgrown. (CPR Axxi, t.m).

[11] See Friedman (2015, 588) and Buchdahl (1986, 131-42; 1986b, 627).
[12] Further evidence is given to this conclusion when we consult a table written up by Arnoldt based on Kant's 1794/5 metaphysics lecture (L-Met-K3/Arnoldt 28:822). Also see Förster's (2000, 54) brief remarks on this.
[13] I agree with Förster (2000, 53-54) on this point.

Second, Kant recognizes the need to actively separate the transcendental branch of metaphysics of nature and special metaphysics as a methodological issue in *Metaphysical Foundations*:

> And because this pure part is wholly different, in regard to its principles, from those that are merely empirical, it is also of the greatest utility to expound this part as far as possible in its entirety, separated and wholly unmixed with the other part; indeed, in accordance with the nature of the case it is an unavoidable duty with respect to method. (MF 4:469).

As Freidman puts it: 'The line between metaphysical questions […] and physical questions […] is therefore sharply drawn.' (Friedman 1994, 216). But *Metaphysical Foundations* goes on to discuss problems concerning physical characteristics such as phoronomy and mechanics blended with a transcendental methodology drawing heavily on the pure concepts of the understanding (the categories) and the analogies of experience. In other words, the two sides seem inextricably linked under the rubric of natural science.[14] The problem is that Kant seems to assume that natural science, for it to be natural science *proper*, inherently conflates the special (*besondere*) and transcendental branches of the metaphysics of nature without indicating *how* the line is drawn methodologically or where we are to find the metaphysics of nature in the first place. In the wording of the Preface, for example, Kant's tone is of a primordial stature: 'Properly so-called natural science (*Naturwissenschaft*) first presupposes (*setzt* [...] *voraus*) metaphysics of nature (*Metaphysik der Natur*).' (MF 4:469, t.m). What can this 'presupposes', this '*voraussetzen*' mean other than 'to begin with' or 'assumes'?[15]

This discussion intersects different debates on the relation between *Metaphysical Foundations* and *Opus postumum*. There are many nuances to each commentator's position but, as claimed above, there is a consensus that on some level the *Transition* project is in

[14]For more responses to this problem see McNulty and Stan (2017, 502-5).
[15] For a discussion of related themes in the Preface to *Metaphysical Foundations* see Zammito (2017, 476-9).

dialogue with *Metaphysical Foundations*.[16] One of the main issues highlighted is a problem concerning a 'circle' (*Zirkel*) or problem of density wherein Kant is at pains to escape the paradoxical logic in *Metaphysical Foundations* that attractive force is relative to the density of matter, but that the density of matter is composed by attractive force. This is mentioned in an oft-quoted letter Kant sent to Jakob Sigismund Beck in 1792:

> I think the solution to this problem lies in this: the attraction (universal, Newtonian attraction) is originally equal in all matter; it is only the repulsive force that varies in different kinds of matter, and this is what determines differences in density. But this solution seems to lead to a kind of circle (C*irkel*) from which I cannot escape and about which I must give more thought. (C 11:376-7, t.m).

Hall provides the clearest overview of the problematic: 'Kant's theory of density is circular since original attraction is proportional to the density of matter (or its quantity in a given volume), but the matter itself could not exist were it not for original attraction.' (Hall 2017, 9).[17] The secondary literature projects this problematic into *Opus postumum* in various ways: the *Transition* is a correction of the contradictions in *Metaphysical Foundations* (Tuschling), an extension of its thesis (Friedman), an attempt to go beyond it (Förster), a reversal of it (Hall) or even its completion (James McCall). Another rendition is put forward by Vittorio Mathieu, where he allocates the circle problem to a struggle Kant had with the origin of elasticity in his development of aether (*Äther*) or caloric (*Wärmestoff*) (Mathieu 1989, 100-2). Mathieu sources the problem to a marginal passage in 'Farrago 2' of fascicle VI to support this claim, which

[16] See Tuschling (1989, 194-5; 1971, 56-61), Friedman (1994, 237; 222-42), Förster (2000, 61-66), Hall (2017, 10), Emundts (2004, 149-55), Mathieu (1989, 39-41), McCall (1983, 14-5) and Werkmeister (1980, 116).
[17] Kant himself notes the paradoxical character of this reasoning in fascicle IX although he never explicitly refers to a 'circle' in this context (OP 22:205-06, 27). Also see a curious fragment from fascicle I where Kant suggests an 'allowable circle (*Cirkel*) of connection in the extremities of the forces.' (OP 21:14, 221). See Westphal (2009, 190-7), Förster (2000, 35), Thorndike (2019, 103-6), Kahn (2017, 210-7) and Emundts (2004, 106-17).

reads: 'Caloric (*Wärmestoff*) is an elastic fluid, but what makes caloric (*Wärmestoff*) itself elastic?' (OP 21:634, m.t).

Whilst the circle problem may have originally prompted Kant to begin work on the *Transition*, it cannot and does not fully explain the meaning of the transition concept or its relation to *Metaphysical Foundations*. We are left asking an unanswerable question: why and how does the transition concept solve the circle problem? Moreover, orienting the transition solely around the circle problem cannot tell us how *Opus postumum* fits (or does not fit) into Kant's corpus beyond *Metaphysical Foundations*. In other words, focusing solely on this interpretive strand cannot account for the diverse elements found in *Opus postumum* nor is it conducive to developing a more profound concept of transition at work in Kant's thinking as a whole. If we start solely from the circle problem, we risk only shedding light on the material problem of density or discussing a historical definition of matter and force by way of their antagonism with atomistic theories such as corpuscularianism.

Another influential line of interpretation pushes off from Kant's 1798 letter to Christian Garve,[18] in which he describes the *Transition* as his current project, and that if it is not completed, 'a gap (*Lücke*) would remain in the system of Critical philosophy.' (C 12:257). Whilst this letter provides interesting material for reading the genesis of the *Transition* project, it does not explain exactly what this gap is, prompting a diversity of arguments. As will be shown in this study, the gap is not fixed in the sense of a consistent hole but is rather like a floating signifier pointing to many issues in Kant's corpus. The term *Lücke* is put to a variety of uses in *Opus postumum* such that it can be seen in a variety of competing hues, from a gap in the *Critique of Pure Reason*,[19] to a gap in *Metaphysical Foundations*;[20] from the gap as

[18] E.g., Förster (2000, 48-9).
[19] Even within this remit there are many concepts this might apply to. E.g., the filling of a gap 'through regulative principles of synthetic knowledge' (OP 22:182, m.t) or the gap between perceptions and things (OP 22:552), or even a gap in 'the pure doctrine of nature and the system of general *a priori* principles' (OP 21:626, m.t).
[20] Where the gap is said to be 'in the system of pure natural science' (OP 21:640, m.t) or between 'metaphysical foundations of natural science and physics' (OP 21:482, 43).

empty space[21] to the gap between metaphysics and physics.[22] Based solely on the text of *Opus postumum* itself, all of these are equally correct, for the gap Kant speaks of is multiple and varies depending on context, thus it should be treated as such if we are to read *Opus postumum* with philosophical integrity. This multiplicity of the gap is also vividly wrought out in Kant's reference to gaps which are not *Lücke*: e.g., a gap which is a *Abstand*[23] or a gap which is a *Kluft*.[24] Yet another interpretation of these gaps might involve what I have alluded to above, namely, the gap left by the missing metaphysics of nature. Pushing off from this interpretation of the gap renders *Opus postumum* and the *Transition* project as an explicit attempt to construct a metaphysics of nature. It is no surprise, therefore, that the term 'metaphysics of nature' is mentioned more times in *Opus postumum* than anywhere else in Kant's corpus.[25] Hence, although the gap floats and signifies many problems, the gap left by the metaphysics of nature is a compelling candidate for what Kant had in mind in his letter to Garve.

Following the above, I provisionally divide *Opus postumum* into two interconnected sides. The first side comprises the development of a clear methodological transition between the work *Metaphysical Foundations* and physics, which is incorporated into a metaphysics of nature. Thus, the second side comprises the development of the doctrinal elements for the metaphysics of nature. The former can be identified in discussions of the concept of metaphysical foundations, of the structure and division of natural science and physics, and their possible intervalence in or departure from the Critical philosophy. The latter can be identified by the extensive discussions of matter, force, motion, aether, the elementary system (*Elementarsystem*) and the world system (*Weltsystem*).

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[21] Where the gap is considered analogous to the '*emptiness* mixed between [objects] which is not an object (*Gegenstand*) of possible perception' (OP 21:583, 91, t.m).
[22] Where the gap is considered a constitutive part of the transition between metaphysics and physics, that 'one cannot explain' what a transition is, 'without thinking the gap between' them. (OP 21:642, m.t).
[23] See OP 21:304, 362, 563; 22:571, 580.
[24] See OP 21:286, 576, 620, 22:167, 491, 520.
[25] It is mentioned 16 times in *Opus postumum*, five times in *Critique of Pure Reason*, three times in *Metaphysical Foundations* and *Metaphysics of Morals* and once in *Groundwork for the Metaphysics of Morals*, *Conflict of the Faculties* and *Critique of the Power of Judgement*.

Some may be reminded here of the 'two works thesis' (*Zwei-Werke-These*). The argument states that *Opus postumum* is comprised of two works: one designed to tackle issues in *Metaphysical Foundations* resulting in the transition concept and another dealing with 'self-positing' (*Selbstsetzung*) and theological issues pertaining to the idea of God.[26] The contention is that the early and middle drafts in fascicles II – VI and VIII – XII (1796-1800) are one work, whilst the later drafts in fascicles I and VII (1800-1803) constitute the beginning of a different work altogether. Although this does sometimes seem the case, I would like to distinguish my position from this since I do not claim that there are two *works*. My position is that there are two sides of a single work tied together by Kant's various experiments with the transition concept: one with the task of developing the methodological elements of transition and one with the task of developing the doctrinal elements of the metaphysics of nature proper.[27] And although this takes Kant through some peculiar terrain and ultimately quite far from the starting point, central to all of the fascicles is an unequivocal need to think the transition concept.

Focusing on the methodological task, I believe we can trace a more specific problematization *Opus postumum* instigates on at least two fronts: (1) an assumed synthesis in *Critique of Pure Reason* and *Metaphysical Foundations*; and (2) the inadvertent overlapping of metaphysical foundations, metaphysics and physics. Correlated to each front are two moves Kant makes in *Opus postumum*: (1a) the systematic division of metaphysics from physics; and (2a) the absolute unification of metaphysics and physics.

Whether this suspicion can be proved will be the objective of this chapter, but at the very least I aim to offer a different strand of interpretation from those found in the literature by opening *Opus postumum* to this reading and grounding my study on it.

[26] See Adickes (1920, 600-1 and 732), Werkmeister (1975, 19; 1980, 173 and especially 1993, 169-87), Basile (2013, 12-5), Collins (1943, 254), Tuschling (1971, 10-11) and Brandt (1991, 4-5).
[27] See Di Giovanni 1979, 214. In short, Kant realized he needed to first construct the metaphysics of nature proper before he could index the transition from metaphysical foundations to physics within it.

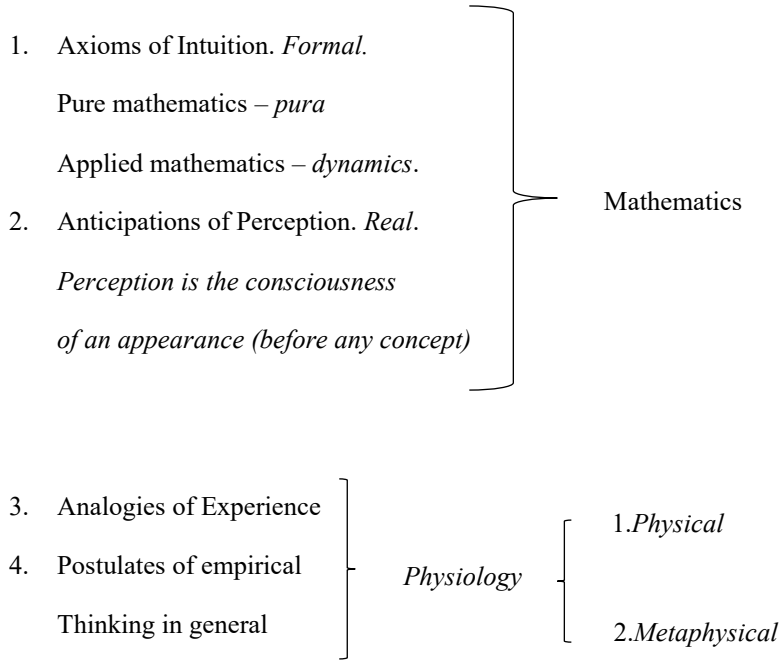
2. Systematic *Einteilung*

In a loose sheet from fascicle II written in 1798, Kant proclaims that,

> There is not a leap (*Sprung*) from one territory (*Territorium*) to another since that would not deliver a *necessary* binding (*Verbindung*) for the purpose of [attaining] the whole (*Gantzen*) of a natural science (*Naturwissenschaft*), rather [there must be] a position which reason must adopt so as to touch both banks simultaneously with one step (*Schritt*). (OP 21:175, m.t).

We are given some key information here; two territories which are divided must be bridged or bound together, not through a leap (*Sprung*) but through a step (*Schritt*). Related to this, in a marginal note from 'Farrago 2' of fascicle VI Kant lists three methodological modes of travel, including their equivalent Latin gloss: 'A step (*Schritt*) (*passus*). A way (*Gang*) (*gressus*). A transition (*Übergang*) (*transitus*).' This is followed by the contextual setting each term refers to: 'From one territory (*Territorium*) to another; from metaphysical foundations of natural science to physics.' (OP 21:643, m.t). The transition concept must proceed according to these methods which are opposed to immediately skipping from one territory to another. In short, its role is to first distinguish two territories and then find a way of travelling from one to the other *without assuming that a binding has already taken place.* This is all a way of Kant subscribing to the old metaphysical view outlined above, that nature makes no leaps, that the key is to find a point of unison between apparently different parts of nature for the sake of a systematic doctrine of nature. In this connection, the problem with *Metaphysical Foundations* was that it presupposed a type of binding between the two species of metaphysics it delineated, – special and transcendental – resulting in a leap. If Kant shows an unhappiness with *Metaphysical Foundations* in *Opus postumum*, then it would hinge upon this 'division'.

But before we can understand and unpack exactly what this means we must first unpick the source of this division. We find this right at the heart of the Critical philosophy. Kant inserted a diagrammatic note into his own copy of the first edition of the first *Critique* (CPR A161/B200nA):



The heading 'physiology' is what I will discuss. What does this term mean for Kant? In Paul Carus' edition of *Prolegomena to Any Future Metaphysics*, a footnote explains it succinctly: 'Kant uses the term *physiological* in its etymological meaning as "pertaining to the science of physics," that is, nature in general.' (P 4:303n5).[28] We now understand the term 'physiology'

[28] Kant's understanding of physiology is multi-faceted and indeed transitions throughout his corpus. It is particularly pronounced in his lectures on anthropology where it is aligned with outer sense (L-Anth/Collins 25:7). For an engaging discussion of this see Hatfield (2014, 41-7).

as the study of organic bodies, but Kant took it to mean the physical investigation of nature and as such it mirrors contemporary physics. But as we can see in the diagrammatic note this would prove problematic since he further divides physiology into a physical and metaphysical arm. This is curious, challenging the received notion that Kant had already instigated a divisive split and subsequent bridge between metaphysics and physics at this point in his corpus. Recall that some of Kant's earliest work deals with this exact problem, *Physical Monadology* for example, which treats metaphysics and geometry (represented by Leibnizian-Wolffian monadology and Newtonian mechanics, respectively)[29] as two different poles in need of a bridge (PM 1:475). In particular, Kant is interested in space, where metaphysics denies its infinite divisibility whilst geometry affirms it. Working from the assumption that 'it is neither the case that the geometer is mistaken nor that the opinion to be found among metaphysicians deviates from the truth' (PM 1:480), Kant proceeds to carefully unite these two seemingly opposed sides in a way which does not subordinate one to the other but marries them into a tenable framework. Thus, metaphysics is conceived of as the 'support' (*adminiculo*) of physics, but nonetheless a separate, self-standing discipline (PM 1:475). Must we say, then, that Kant modifies this stance in *Critique of Pure Reason* by dividing the metaphysical and physiology (physics) along different lines, whereby the metaphysical appears subordinated to and indexed in physiology (physics)?

To stake an answer, we must turn in more detail to the first *Critique*. In the Architectonic of Pure Reason, Kant gives us the layout for the metaphysics of nature, placing physiology on one of its sides: 'Metaphysics in this narrower sense consists of *transcendental philosophy* and the *physiology* of pure reason.' (CPR A845/B873). He explains that 'the latter [physiology of pure reason] considers *nature*, that is, the sum (*Inbegriff*) *of given* objects (*Gegenstände*) […] and is therefore *physiology* (though only *rationalis*).' (CPR A845/B873, t.m). Kant then says that rational physiology 'contains two compartments (*Abtheilungen*),

[29] See Pecere (2014, 161-2), Friedman (1994, 2-3) and Thorndike (2019, 37).

physica rationalis and *psychologia rationalis*.' (CPR A846-7/B874-5, t.m). Between the diagrammatic note quoted above and the Architectonic of Pure Reason, a change in the place of physiology seems to have occurred. In the diagrammatic note, Kant starts by using physiology to describe the empirical application of the Analogies and Postulates, branching it into a physical and a metaphysical side such that physiology is open to the physical and the metaphysical in equal measure, but is fundamentally concerned with application in experience.[30] By the time we reach the Architectonic of Pure Reason the openness of physiology has closed, as has its fundamental empirical concern. No longer is physiology concerned with application in experience, it now denotes a purely 'rational' (metaphysical, *a priori*) operation in that it studies the *sum* (*Inbegriff*) of given objects (=nature) and stands in opposition to the transcendental under a projected metaphysics of nature. What started as an empirically oriented discipline in the diagrammatic note becomes a wholly rational activity in the Architectonic. With the empirical closed, Kant goes on to index *physica rationalis* in rational physiology; but does Kant mean to say that *physics* should be placed under the heading of a purely metaphysical, *a priori* discipline?[31] Kant certainly seems to do so in an earlier note from the 1770's: '*metaphysica* (*psychologia rationalis* and *physica rationalis*)' (R 17:520), but we must first grasp what Kant meant by *physica rationalis* and whether it is so easily aligned with physics as we understand it today.

Physica rationalis occupied a central role in the scientific climate of Kant's time. Hein Van den Berg provides a detailed historical itinerary of what this term means and how it affects Kant's understanding of natural science. Berg tells us that, as it was understood in eighteenth-century physics textbooks, *physica rationalis* pertains to 'universal properties or a universal doctrine of nature.' (Berg 2014, 158). It is a physics based on rational principles, which tries

[30] Kant is clear about this in the Analogies of Experience: 'all synthetic principles […] have their sole significance and validity not as principles of the transcendental use of the understanding but merely as principles of its empirical use' (CPR A180-1/B223).
[31] See McNulty and Stan (2017, 498).

to describe phenomena synthetically according to conceptual causes and effects. Essentially, it is the part of physics that deals with concepts, rather than observable and particular phenomena. For example, we can only observe forces indirectly through their effects, we cannot observe them directly as particular instances of pure force. For this reason, according to *physica rationalis*, to understand and probe forces we must construct an *a priori* concept of them. We might perhaps best understand it as an early pre-cursor to contemporary theoretical-speculative physics. Berg tells us that opposed to *physica rationalis* is *physica specialis* which is concerned with empirical phenomena and particular behaviours of objects observed in physical experiments. An example of this would be the study of 'fluids in capillary tubes,' (Berg 2014, 162) where a specific behaviour of liquid is observed and a fact derived, a subject which occupied Kant a great deal in *Opus postumum*. To extend this example a little further, such a fact looks like this, 'The liquid wets the tube with an advancing contact angle of θ. If D is small and $\theta<90^{o}$, then a concave meniscus forms inside the tube.' (Extrand 2015, 136). This material fact remains mute regarding universal concepts; it only describes an effect observed under given specialized conditions. No universal concept is necessitated since the experimental root of *physica specialis* binds it firmly to empirical phenomena. For all intents and purposes it is perhaps *physica specialis* which corresponds more with contemporary physics in its experimental and realist understanding of nature.

Considering this historical context, we can begin to locate the weight, but also the profound problematic of *physica rationalis* and physiology in the Architectonic of Pure Reason in a fuller sense. Since *physica rationalis* is a pursuit involving universal concepts in the scientific paradigm of the day, Kant pairs it with *a priori* knowledge in his own system, whilst remaining cautious not to conflate it with mathematics: 'One should not think, indeed, that I understand by [*physica rationalis*] what is commonly called *physica generalis*, which is more mathematics than philosophy of nature.' (CPR A847/B875). *Physica rationalis* is not mixed

with empirical elements and is to be separated from mathematics, establishing its role as a subordinate type of metaphysics.

But, as mentioned above, there is still a schism between the diagrammatic note and the Architectonic in so far as in the former, physiology (physics) has both a physical and metaphysical branch whereas in the latter, physiology and its two branches are nested into an immanent (supposedly empirical) frame.[32] Whilst this suggests an interesting movement internal to *Critique of Pure Reason*, it also makes it difficult to ascertain exactly what Kant means both by metaphysics of nature and physics. Clearly, this does not go entirely over Kant's head as he tries to rectify the problem in the Architectonic itself, stating, 'The metaphysics of corporeal nature is called physics, but, since it is to contain only the principles of its *a priori* knowledge, *rational physics*' (CPR A846/B874, t.m) and it is with this definition that the transition of physiology is brought to an abrupt close in the first *Critique*.[33] Another layer of complication is introduced here in which physics is not entirely distinct from being a species of metaphysics, this time of corporeal nature. Although there should not be a problem with the migration of terms, the issue is twofold: an empirical enterprise has trespassed into *a priori* territory and physics has bled into metaphysics, without a clear principle for their transition or 'behind our backs,' so to speak.[34]

Returning to *Metaphysical Foundations*, this problem migrates to the division of the metaphysics of nature, continuing the covert transition from the diagrammatic note to the Architectonic. In his discussion of the metaphysics of nature set out in the Preface of *Metaphysical Foundations* Kant introduces the term 'special metaphysics' (*besondere Metaphysische*) to denote the empirical concepts of particular objects. That is to say, the two branches of metaphysics of nature are now redefined as 'transcendental' and 'special,' rather

[32] This is further pointed up in a significant note on a loose page from the late 1770's in which Kant divides general and special metaphysics, with *physica rationalis* appearing under the latter term (R 18:9).
[33] See Adickes (1920, 156-7).
[34] I disagree with Pecere (2014, 156-7).

than 'transcendental' and 'physiological.'[35] Under the banner of this new term, Kant says that it must,

> concern itself with a special (*besonderen*) nature of this or that kind of thing (*Dinge*), for which an empirical concept is given, but still in such a manner that outside of what lies in this concept, no other empirical principle is used for its knowledge […] and here such a science must still always be called a metaphysics of nature, namely, of corporeal or of thinking nature. However, [in this second case] it is then not a general (*allgemeine*), but a *special* (*besondere*) metaphysical natural science (physics and psychology) (MF 4:470, t.m).

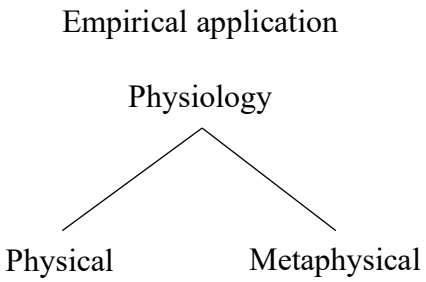
We see, then, that the same description is given to account for corporeal nature as in the Architectonic, but the terms reflect a tacit transition, or perhaps even a transgression. This may explain why the two poles of the metaphysics of nature seem to embody an assumption of unity in *Metaphysical Foundations*. Special metaphysics emerges first from physiology understood as both metaphysical and physical empirical application, then to physiology which is immanent yet cached in an *a priori* metaphysics of nature, and then to a disciplinary branch of metaphysics meant to delineate empirical concepts of corporeal nature.[36] Taken by itself, special metaphysics is an innovative nuance of the Critical philosophy, one which is designed to provide foundations to Newtonian mechanics whilst appropriating a discipline with deep roots in the history of metaphysics. However, when considered within Kant's own work it suggests a conflation, or at least an undecidability on Kant's part. Between the first *Critique*

[35] I disagree with Hoppe's identification of special metaphysics with the 'transcendental part' of the metaphysics of nature. Although they are 'not entirely distinguished' (Hoppe 1969, 36, m.t) it is important to show that transcendental philosophy occupies a different branch than the physiology of pure reason which in *Metaphysical Foundations* is called 'special metaphysics'.

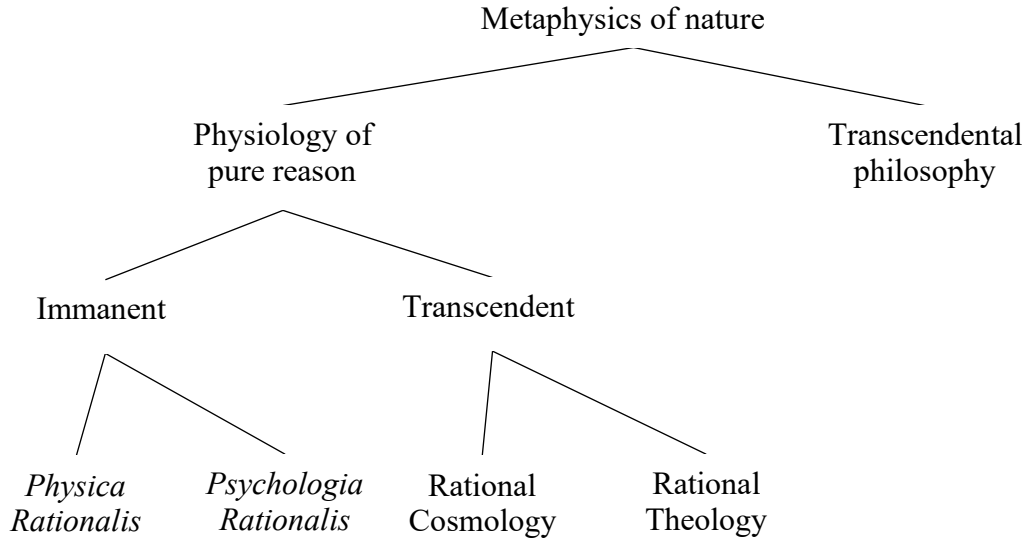
[36] See Westphal (1995, 49-52) and Buchdahl (1986, 127-63) for engaging discussions of the continuity of special metaphysics in *Metaphysical Foundations*. This might also go some way to explaining Daniel Warren's concern that contained in *Metaphysical Foundations* is 'an odd mixture of arguments. Some are clearly of an epistemic nature and are explicitly intended to connect up with the transcendental themes of the first *Critique*. Other arguments, though they are harder to tie to concerns with the conditions of knowledge, can be thought of as having epistemic concerns laying beneath their surface presentation.' (Warren 2010, 194).

and *Metaphysical Foundations*, the two terms of metaphysics of nature (physiology and transcendental philosophy, or special and general) are not systematically distinguished, meaning that Kant seems to have engaged in a slippage between them and conflated metaphysics with physics. It is helpful to visualize each moment in the following diagrams:[37]

Diagrammatic Note:

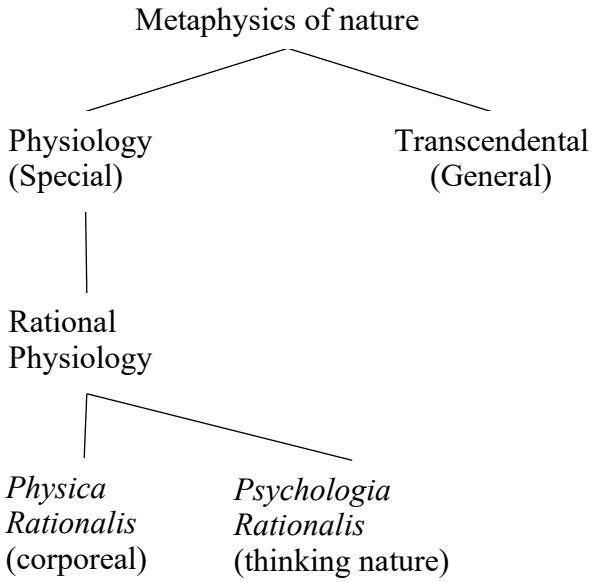


Architectonic:

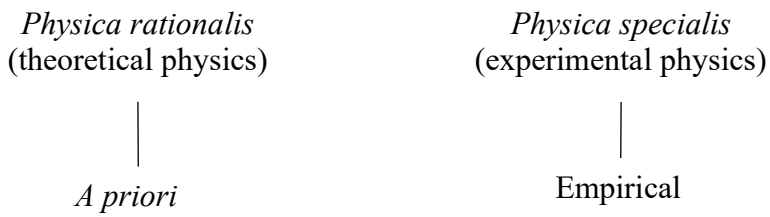


[37] For an alternative layout see Plaas (1994, 207-8) and Pollok (1997, xxx). I diverge from these layouts only to the extent that I do not carry the layout presented in the Architectonic over to *Metaphysical Foundations*.

Metaphysical Foundations:



Eighteenth Century Physics:



It seems that what has occurred is an amphiboly between a branch of physiology allotted to empirical application (diagrammatic note), immanent physiology as indexed within an *a priori* metaphysics of nature (Architectonic) and a corporeal (empirical) moment signalled by the term 'special' (*Metaphysical Foundations*). Moreover, there are also ambiguous points of contact between the metaphysics of nature, physiology of pure reason, transcendental philosophy and *physica rationalis* such that we are left asking after the *topoi* of these terms: *where* are they located? Whilst this may not be immediately answerable, we can see how it is necessary to emphasize the multiplicity of meanings Kant ascribes to the transition in this regard; it occurs between works (from *Metaphysical Foundations* to a doctrine of physics),

between concepts (metaphysical foundations to physics, *a priori* to empirical), and between architectonic *topoi* (metaphysics of nature to physics, metaphysics to physics). So through this multiplicity of meanings are these issues of possible amphibolous convergences resolved in *Opus postumum*?

Berg argues that in *Opus postumum physica rationalis* forms the 'part of physics that is concerned with corporeal nature' (Berg 2014, 157). Considering the preceding, this would mean that Kant carries over the entire problematic structure into the core of *Opus postumum* without acknowledging it.[38] But Kant never directly mentions *physica rationalis* in *Opus postumum*, instead using the distinction between *physica generalis* and *physica specialis*,[39] indicating his establishment of a hard and fast (architectonic) line between metaphysics and physics. One example of this line is found in draft 'A' of fascicle III: 'The doctrine of the laws of the moving forces of matter, insofar as they are known *a priori*, is called metaphysics, insofar as they can only be derived from experience, physics.' (OP 21:310, 25). Knowledge of the *a priori* laws of nature identified with the moving forces of matter are aligned with metaphysics, whilst facts derived from experience of nature through empirical natural research (*Naturforschung*) are aligned with physics. In this regard, Kant goes much further in delineating metaphysics and physics than Berg suggests, tackling a deeper problematic of philosophical division.[40] Moreover, the thematic of a transition, whether from metaphysics to physics or from metaphysical foundations to physics is premised on their initial division.

[38] Kant also hints at this argument: 'There is still, however, in these *Foundations of Natural Science*, a tendency toward physics, that is, to a system of the moving forces of matter which must be taken from experience, and whose investigation (*indagatio, perscrutatio naturae*), as a system of these forces, is called physics. This is a doctrine of motion (*Bewegungslehre*) from *empirical* principles which must be [ordered] in a system of perceptions and, hence, formally subordinated to certain *a priori* principles.' (OP 22:189-90, 51). Compare with: 'In the transition from the metaphysical foundations of natural science to physics it is necessary to abstract from everything which rests on empirical principles, for, otherwise, this would amount to a transgression of foreign territory (by μετάβασιν είς ἄλλο γένος).' (OP 22:200, 54). The Greek quotation reads: 'Transition into a different sphere,' which is generally understood as a 'category mistake' in today's language (Förster 1999, 264n40). Also see Kant's same reference to the Greek phrase, specifically in relation to an inadvertent transition (*Überschritt*) from the metaphysics of nature to the metaphysics of morals in *What Real Progress has Metaphysics Made in Germany?* (RP 20:293).

[39] E.g., see OP 21:408, 78 and 21:474.

[40] Also see Ducheyne (2011, 26) and Cassirer (1981, 36).

Without first establishing how these two fields or concepts are divided there can be no transition concept to develop. It is in this connection that the gap is not only primordial but forms the condition of possibility for the transition. Kant says in a loose leaf from fascicle IV:

> These two territories (*Territorien*) (metaphysics of nature and physics) do not immediately interconnect (*zusammen*); and, hence, one cannot cross from one to the other simply by putting one foot in front of the other. Rather, between the two is a gap (*Kluft*) over which philosophy must build a bridge (*Brücke*) in order to reach the opposite bank. (OP 21:475, 39, t.m).

And,

> Between metaphysics and physics is a wide gap (*Kluft*) (*hiatus in systemato*) across which the transition (*Übergang*) is not made possible through a step (*Schritt*) but requires a bridge (*Brücke*) of intermediary concepts (*Zwischenbegriffen*) which constitute a special structure (*besonderes Bauwerk*). (OP 21:476, 40, t.m).

The architectonic nuance of the *Opus postumum* and the transition concept is seen in microcosmic form in these quotations. No longer is transition only a simple movement aligned with the step as opposed to the leap, rather, its key characteristic is the act of construction. But bound up with this act is also a profound methodology of division. Metaphysics and physics are now two entirely divided lands that are not connected in any way, nor united in any natural sense, instead their systematic division is the condition of possibility for the transition concept. Only when this has been achieved can we proceed to labour over the construction of a bridge from one to the other, and this requires a shift from the previous Critical account. It is at this juncture that an architectonic cut is made in *Opus postumum* which forms a new branch:

metaphysics is strictly transcendental and *a priori*, and stands in opposition to physics, which is strictly special and empirical. It is from within this division that many lines jut out from *Opus postumum* specifically those reformulating the doctrinal contents of *Metaphysical Foundations*, e.g., the curious role of cohesion, the density of matter or the changed role of attractive and repulsive force, but they are all fundamentally indexed in the architectonic mode of division at work in *Opus postumum*, which participates in the formation of an overarching metaphysics of nature.

In this connection, the transition concept must be thought of as a new disciplinary field: 'the concept of a transition (*Uberschritts*) is a concept given *a priori* in the doctrine of elements of natural science (*Elementarlehre der Naturwissenschaft*) in general, and demands a special (*besondere*) discipline of its own.' (OP 21:525, 36, t.m). This discipline uses the vocabulary of bridges and territories, structures and architectures, division and unification. It is in this interstice that we can see the emergence of the wider problem with gaps in *Opus postumum*, for 'a leap over a gap (*Kluft*) which is much too wide' would result in an erroneous connection between two territories or perhaps none at all, leaving a chasm. Instead, 'a bridge – *transitions* (*Übergange*) from one soil (*Boden*) to another – must be built, namely, a special discipline as a part of natural science (*philosophia naturalis*).' (OP 21:506, m.t). It is this need to develop a discipline of transition as a methodological tool both of division and continuity which informs the ground of what Kant is trying to do in *Opus postumum*.[41]

3. Absolute *Einheit*

As can be ascertained from the preceding discussion, in *Opus postumum* we are not merely presented with a pre-established connection between metaphysics and physics, nor do we

[41] It is precisely this element of Kant's project that I think Adickes misses in so far as he calls the aim of the *Transition* project a '*fata morgana*' (Adickes 1920, 162). See Förster's (2000, 50) critical discussion of this judgement by Adickes.

encounter a simple description of the passage from one to the other, instead we join Kant *in the process* of dividing and bridging them. This owes much to the fact that *Opus postumum* is an unfinished work, but more importantly, it indicates that interpreting unity in *Opus postumum* requires tapping into the filament of Kant's project, rather than tracing it out to a preconfigured conclusion. Only then can we see how Kant prepares the ground for the unification of metaphysics and physics into a doctrine of nature, and what light this sheds on the terms more generally. Furthermore, it is only through a type of reconstruction that we may find a pathway from Kant's previous work to *Opus postumum* on the concept of unity.[42]

On a loose page of fascicle IV Kant says, 'Merely empirical science of nature can never amount to a system, but, at best, a fragmentary (*fragmentarisches*), ever-increasing aggregate (*Aggregat*)' (OP 21:474, 39) and he later continues,

> The metaphysical foundations have a tendency toward physics as a system of the moving forces of matter (*System der bewegenden Kräfte der Materie*). Such a system cannot emerge (*hervorgehen*) from mere experiences, for that would yield only *aggregates* (*aggregate*) which lack the completeness of a whole (*Ganzen*); nor can it come about solely *a priori*, for that would be metaphysical foundations, which, however, contained no moving forces. (OP 21:478, 42, t.m).

The lexicon Kant uses in these quotations is quite consistent throughout *Opus postumum.* He repeatedly uses terms such as 'aggregate' (*aggregat*) and 'fragmentary' (*fragmentarisches*) to denote physics as an empirical activity. In the marginalia of fascicle II, Kant is particularly direct: 'The empirical is a fragmentary aggregate (*fragmentarisches Aggregat*) and belongs to physics. Only metaphysics creates the form of the whole (*Ganzen*).' (OP 21:183, 59). Thus, the layout seems clear: the findings of empirical science only amount to aggregates, which lack

[42] See Lord (2011, 156).

the requirements needed to form a coherent whole or unified system.[43] On the face of it, such a conception rests on the regulative ideas of reason as developed in the Appendix to the Transcendental Dialectic of the first *Critique* leading to the question: can we explain Kant's concept of an aggregate in *Opus postumum* simply by reading the Appendix?

In the Appendix, Kant shows how ideas of reason work on distinct parts of knowledge given by the understanding to bring about their systematic 'interconnection' (*Zusammenhang*). Kant says, 'this idea postulates complete unity (*Einheit*) of the understanding's knowledge, through which this knowledge comes to be not merely a contingent aggregate (*Aggregat*) but a system interconnected (*zusammenhängendes*) in accordance with necessary laws.' (CPR A645/B673, t.m). If we are to avoid dialectical error, the ideas cannot be considered constitutive, that is, we cannot know if they pertain to a true absolute unity, rather, they serve as guidelines outlining the negative horizon of absolute unity. In other words, no matter how much reason demands absolute unity, it exceeds the possibility of experience and so we can only consider the idea a manual or leading thread (*Leitfaden*) if we are to remain undogmatic.

Kant also gives an example in the Appendix which is illuminating. He pictures a scenario wherein many different effects are attributed to a 'manifold of forces (*Kräften*)', but he suggests that these can be brought under a unified idea, entitled 'primary force (*Grundkraft*)' (CPR A649/B677, t.m). The more equations of one force with another under the heading of primary force, the more a unity crystallizes. But, as Kant explains,

> this unity of reason is merely hypothetical. One asserts not that such a force (*Kraft*) must in fact be found, but rather that one must seek it for the benefit of reason, namely for setting up certain principles for the many rules with which experience may furnish us. (CPR A649-50/B677-8).

[43] We might also note Kant's reaffirmation of this view in the *First Introduction* to *Critique of the Power of Judgment* where he speaks of a 'raw (*rohes*) chaotic aggregate (*Aggregat*)' (FI 20:209).

Primary force can only be a regulative, heuristic idea of reason, which indicates what the problem is, keeping the pathway open for constructing an absolute unity but is not itself capable of attaining it with certainty.

In a compelling essay, Alexander Rueger claims that for Kant the systematicity of natural science is also regulative in *Opus postumum* in the way outlined above (Rueger 1995, 34). In a similar vein, Thorndike concludes his study of *Opus postumum* by claiming that the *Transition* project 'lies at the intersection of metaphysical laws and the empirical variety of specific laws, and it attempts to comprehend the latter as modifications of the former in order to bring empirical regularities "under" *a priori* principles' (Thorndike 2019, 238) and hence *Opus postumum* 'can thus be seen as Kant's attempt to connect the constitutive principles of cognition to the regulative principles of empirical inquiry.' (Thorndike 2019, 239). Indeed, Kant does seem sceptical about physics attaining constitutive absolute unity on its own terms since it is aligned entirely with the empirical. As the quote from fascicle IV suggests, it can only achieve an 'ever-increasing aggregate' and in this connection it seems logical to any well-versed Kantian to claim along with Rueger and Thorndike that physics rests upon a regulative idea of absolute unity which it finds in metaphysics and that this is exactly what Kant's transition concept is oriented around.

Such a reading also has the benefit of being quite easy to give a contemporary correlative. For example, if we take a material fact such as the spin of a subatomic particle but stay within the bounds of particle physics, we could not go beyond the regulative unity that the original discipline tries to achieve, e.g., the completion of the standard model. Accordingly, we could not construct a constitutive absolute unity, in this case 'a grand theory of everything', which requires a wider connection to other paradigms such as cosmology, astronomy, biology, chemistry etc. Instead, the fact about the spin of a subatomic particle would cumulatively add

to the discipline of particle physics alone, leaving us with what Thomas Kuhn calls '*mere* facts,' that is, isolated, discreet blocks of knowledge, which are 'unrelated and unrelatable' to wider research projects (Kuhn 2012, 35). In short, particle physics needs to look outward to some other field to find the grounds for its absolute unity.

Although useful, this analysis is not the only view Kant puts forth in *Opus postumum,* for he explicitly states in the 'A/B Übergang' drafts of fascicle IX, 'There is a not merely regulative, but also constitutive formal *a priori* principle of natural science, for the establishment of a system.' (OP 22:240, 56, t.m). In other words, in the case of physics, absolute unity must be something more than and prior to regulative ideas; it must have a constitutive base inherently grounding its practice. We also find a similar contention in the introductory remarks of *Physical Geography*, published in 1802: 'for in a system the *whole* (*Ganze*) is prior to the parts, while in an aggregate (*Aggregat*) the *parts* have priority.' (PG 9:158, t.m). The priority of the whole (*Ganze*) means it has a constitutive base, a unity which goes well beyond a regulative negative horizon. Kant goes on to specifically problematize regulative ideas even more in this connection when he casually notes, 'Regulative principles which are at the same time constitutive.' (OP 22:241, 57, t.m). Accordingly, Kant prompts us to go further than the Appendix to grasp a more subtle, complex and problematic concept of unity, which is not simply an exercise in subsuming physical facts under *a priori*, metaphysical principles but requires uncovering a more primordial constitutive ground within the regulative itself.[44]

I would like to bring out another aspect of the preceding discussion. Clearly Kant abides by the difference between the act of fact gathering and the act of sewing elements of knowledge

[44] We must also note that this is not the same as when Kant says in the Ideal of Pure Reason that 'a *regulative* principle is transformed into a *constitutive* one' (CPR A620/B648). The transformation of a regulative into a constitutive is indicative of a dialectical inference or illusion in which a subjective idea is erroneously taken to be a giveable, objective thing. A regulative principle which is *at the same time* constitutive signals a different scenario wherein what we think as a merely subjective principle actually has implicitly braided into it a constitutive ground we had not properly taken account of.

into a meaningful unity in *Opus postumum*, so much so that he indicates that this difference cannot be avoided. One striking example is in draft 'X' of fascicle XI, where Kant says, 'It is not by compilation (*Stoppelung*), but according to a principle of connection (*Verknüpfung*) of the moving forces of matter in a system […] that can yield an *a priori* knowledge of the object (*Objects*).' (OP 22:509, 150). Howard points out that the word '*Stoppelung*' is translated into 'compilation' in the English translation of *Opus postumum* (Howard 2017, 214). Although this fits Kant's Latin gloss of the term '*compilando*' it has the effect of rendering the act of 'gleaning' quite insignificant, which is important in the frame of *Opus postumum*. Accordingly, Howard modifies the translation to 'scrabbling-together,' which conveys Kant's intention more effectively, despite its apparent clumsiness, although I prefer to read it as 'gathering-together'. On the next *Akademie* page, in a marginal note headed 'Corollary' Kant repeats this formulation, which with the suggested translation reads: 'One cannot compose (*zusammensetzen*) by gathering-together (*Stoppelung*) (*compilando*) – that is, through an aggregation of perceptions – without [first having] an *a priori* principle (*Princip*) of experience' (OP 22:510, m.t). When we fit this modification into the *Opus postumum*'s general thesis on aggregates, it means: instead of gathering-together isolated empirical facts, we must find the principle underlying their connection, the seams of their points of contact or the constitutive transitions informing their unity, the parallax through which a regulative principle is seen to contain the constitutive. The early Hegel expresses something similar in this regard when he says that 'it matters little to the spirit that it is forced to augment the extant collection of mummies and the general heap of contingent oddities; for the spirit itself slipped away between the fingers of the curious collector of information' (Hegel 1977a, 86). The mummification implicit in the act of fact-gathering will amount only to a collection, an aggregate of empirical information, never a system.

The centrality of the concept of connection, therefore, is a consistent thread throughout Kant's work. Even in the notes of Kant's lectures, *Metaphysics* L_1 written by Karl Heinrich

Ludwig Pölitz in the mid 1770's, the claim is made that 'in every whole (*Ganzen*) there is a connection (*Verknüpfung*) and a connection (*Zusammenhang*).' (L-Met-L1/Pölitz 28:212, t.m). In English this sentence clearly loses its potency, but in German we see the difference between '*Verknüpfung*' and '*Zusammenhang*.' As we saw above in the Appendix to the Transcendental Dialectic, *Zusammenhang* was translated as 'interconnection'[45] and that seems applicable here also; Pölitz goes on to question, 'But how is an interaction (*commercium*) in a whole (*Ganzen*) even possible? […] for where there is an aggregate of substances there is not yet a world, rather the interaction (*commercium*) of substances first constitutes a world.' (L-Met-L1/Pölitz 28:212). Likewise, a concept of interaction or interconnection is exactly what Kant seeks out in the transition concept, otherwise physics will remain fragmentary, aggregated and regulative. But herein lies Kant's enormous, seemingly impossible task: what would such a concept consist of?

Before explicitly trying to answer this question, it is useful to explore some of the parallels and differences between 'interconnection' in *Opus postumum* and 'synthesis' (*Synthesis*) in *Critique of Pure Reason*. According to the first *Critique*, synthesis is the act which binds (*verbinden*) concepts and intuitions together. It is 'the action of putting different representations together with each other and grasping (*begreifen*) their manifoldness in one [act of] knowledge.' (CPR A77/B103, t.m). In the B edition of the Transcendental Deduction, the first section entitled, On The Possibility of Binding (*Verbingung*) in General details the operation of an act of synthesis:

> the *binding* (*Verbindung*) (*conjunctio*) of a manifold in general can never come to us through the senses, and therefore cannot already be contained in the pure form of sensible intuition; for it is an act (*actus*) of the spontaneity of the force of representation (*Vorstellungskraft*), and, since one must call the latter understanding, in distinction from sensibility, all binding

[45] Kant also uses the term '*Zusammenhang*' to denote material cohesion, which the methodological use echoes.

> (*Verbindung*), whether we are conscious of it or not, whether it is a binding (*Verbingdung*) of the manifold of intuition or of several concepts, and in the first case either of sensible or non-sensible intuition, is an action of the understanding, which we would designate with the general title *synthesis* (*Synthesis*) (CPR B129-30, t.m).

To bind several separate elements into a unified representation (longhand for 'to synthesize') is an act of the understanding,[46] but more pertinent to our purposes here, it is an act which complicates how unity is understood. For as Kant tells us, 'the concept of binding (*Verbindung*) includes [...] the concept of unity of the manifold' (CPR B130-1, t.m), or both unity in the sense of the category (quantitative unity of parts) and what is expounded in the transcendental unity of apperception. Thus, binding is inherently tied up with synthesis in so far as it has always, already taken place, it is located in the persisting unity of the transcendental 'I' (CPR B131-2). But aside from this, synthesis is also deeply connected to the imagination (*Einbildungskraft*) in the Transcendental Deduction, which is interesting from an architectonic point of view since it is the imagination which is attributed the role of bridging the gap between the understanding (concepts) and sensibility (intuitions) in the Schematism chapter. With this in mind, synthesis can be thought of in the following way: it takes two elements and puts them side by side, creating a passage from one to the other. It then 'grasps' (*begreift*) these elements not as a unity (*Einheit*) but as a manifold represented in a unified act of knowledge. We can dial in Kant's discussion of cinnabar from the B Deduction here: it is taken up by the understanding as a single object, yet this act of taking up involves pushing together otherwise separate qualities, in this case 'redness' and 'heaviness' (CPR B101). It is this act of pushing together and

[46] It is important to mark the deep roots the concept of binding has in Kant's corpus. One early example of its use is found in the 1764 'prize essay', *Inquiry Concerning the Distinctness of the Principles of Natural Theology and Morality*, where Kant's first move is to distinguish between two opposed ways (*Wege*) of thinking about the genesis of concepts: through binding or through segregation (*Absonderung*) by means of analysis (PE 2:276). The kernel of this thought is continued in the *Inaugural Dissertation* through a division between analysis and synthesis, the former as a breaking down of the whole into parts, the latter as the whole considered as a whole or, what for Kant is the same, a world. (ID 2:387). This changes in the Transcendental Deduction of the first *Critique*, where analysis is now said to 'presuppose' synthesis (CPR B130). Furthermore, with regard to synthesis there is a general switch from a mathematical-technical register to a transcendental-epistemological register.

continuously reproducing an identity which delimits the concept of synthesis, since 'pushing together' does not mean 'uniting into a singularity', e.g., 'redness' and 'heaviness' are not melded into an inseparable goo, rather they run parallel in cinnabar and can still be investigated separately. It is, in a sense, the opposite of how we might consider the Moebius strip wherein a unified object is grasped as a multiplicity. Synthesis takes two separate elements, places them next to each other and allows the understanding to grasp them in one act.[47] From this angle, then, there would be no need for a concept of transition since synthesis could easily fulfil this role and we might ask what the point of developing a concept of transition is. Why not use the already highly developed concept of synthesis in the bridging of metaphysics and physics?

It is evident that Kant is not content with synthesis since he often relates the concept of transition to the role of interconnection rather than binding which indicates a difference. Interconnection, and by the same token the physical process of cohesion, involves a seamless merging together of two otherwise separate territories to form a unified whole, which takes place according to the gradual increments presented by traversing a gangway. The elements are not only grasped by a singular act of knowledge, they actually constitute a single 'composition' (*Zusammensetzung*); it is a space in which contradictory elements are interconnected without being entirely reduced. In this way, Kant is searching for a concept other than synthesis to account for a unity which can no longer be separated out into parts, nor is solely dependent on transcendental apperception. The transition concept signals a continual movement premised on a process of interconnection which is not regulative but constitutive.

Returning to the main thrust of the argument, we have so far seen how Kant encounters a problem when constructing a unified system based on physics alone. It is certainly tempting to resort to a metaphysical, *a priori* principle to provide such an interconnection. This seems the case in the first *Critique* and *Metaphysical Foundations* as well as in some key passages of

[47] See Werkmeister (1980, 49-50).

Opus postumum and would garner an initial base for tying it into the Critical philosophy more comprehensively. One example is in draft 'C' of fascicle X where Kant says,

> To empirically take hold of the moving forces of matter and to gather them (*sammeln*) fragmentarily (*fragmentarisch*) cannot ground (*begründen*) physics as a science. Rather, it must be capable of being erected as a whole (*Ganzes*) – not as an aggregate (*Aggregat*) (*sparism*) but as a system (*coniunctim*) – according to an *a priori* principle which determines the number and order of the moving forces. (OP 22:322, 108, t.m).

This suggests that an *a priori* principle is responsible for the arrangement of physics and is the key to its interconnection. Echoing the categories in the first *Critique*, such a principle would determine the different species of forces and their order but would itself be *a priori*. The problem with this reading is that the transition concept would then only sketch out a passage from one *a priori* territory (the moving forces of matter) to another *a priori* territory (the unity of the moving forces of matter), rather than the more radical thesis Kant actually strives for, namely, that it bridges the *a priori* and the empirical as well as the constitutive and regulative. It is for this reason that we find transitory and anomalous claims such as this: 'Subjective principles of *natural research*: regulatively objective, constitutive of *natural study* (*Naturkunde*)' (OP 22:312, m.t).

Kant also bluntly proclaims that we cannot form an absolute unity based on *a priori* principles alone in the block quotation from fascicle IV that opened this section: 'nor can it come about solely *a priori*.' (OP 21:362-3). In illustration, and returning to the example above, if we only speculate about spinning subatomic particles *a priori*, we could not provide an adequate constitutive frame of reference for empirical investigation to take place. It would be like using the *Metaphysical Foundations* as a map for locating and explaining geological

markers, such as lashes in rock or scars on the ocean floor.[48] We would fall upon an aggregate of universalizing principles, which would be at best unreliable, at worst in serious dialectical error but, most significant, negatively regulative. Moreover, the two sides would be no closer to unification; the gap would remain. Kant seems fully aware of this danger in *Opus postumum* and accordingly instigates a tortuous trajectory to avoid constructing a notion of absolute unity on the back of metaphysical foundations alone.

Instead, a system must comprise equal albeit different empirical and *a priori* aspects: 'For those concepts, which lead across from a system of one sort [metaphysical foundations] to another [physics], must be accompanied by empirical principles as well as *a priori* principles.' (OP 21:482, 43, t.m). That is, the concepts that are formulated between metaphysical foundations and physics, as a part of the transition from the one to the other, are 'intermediary concepts' (*Mittel*/*Zwischen-begriffe*): 'The transition (*Übergang*) from one science to the other must have certain intermediary concepts (*Zwischenbegriffe*), which are given in the one and are applied in the other, and which thus belong to both territories (*Territorium*) alike' (OP 21:525, 37). And even more vividly: 'there must be intermediary concepts (*Mittelbegriffe*) which [enable] the transition (*Übergang*) to cross (*überzuschreiten*) from one doctrine of nature (*Naturlehre*) to another.' (OP 21:311, 25, t.m). The methodological import of this figuration is that the transition concept uses architectonic elements, not merely to *present* a system, but to identify intermediary concepts whose content is shared to allow for a movement between the two disciplines and absolute unity to be achieved.

In this regard, rather than a description, the architectonic ruminations found in *Opus postumum* constitute a kind of building-site wherein transitions take place via concepts which are both *a priori and* empirical, regulative *and* constitutive, metaphysical *and* physical.[49] Such

[48] As Thorndike (2019, 24) also picks up on.
[49] Hoppe has also suggested this: 'Thus the intermediary concepts (*Mittelbegriffe*) bind the empirical and *a priori* in a peculiar way; they realize the *a priori* object-concept (*Objekt-begriff*), but they also simultaneously objectify the empirically given and thereby first make possible an empirical *and* scientific doctrine of nature.' (Hoppe 1969, 84-5, m.t).

a building-site is constantly evolving in its production; disciplines divide and coalesce, concepts are identified as intermediary zones lodged halfway between metaphysics and physics. It is a work-in-progress, which allows for interconnections to emerge, a site upon which Kant tries out various configurations. Not only is this an important aspect within *Opus postumum*, however, it also helps us frame the fascicles and guides us on how to read them.

But residual questions remain. One question is: is *Opus postumum* successful in enacting a transition of metaphysics and physics through intermediary concepts? That is, does *Opus postumum* achieve the absolute unity of the two territories and what does this look like? For if the territories are merely bridged then surely this implies motion between two divided positions instead of unity?

To put it bluntly, I do not think intermediary concepts enact absolute unity on their own, but I do think they open a path for viewing how such a unity might be possible.[50] The more intermediary concepts are identified, the more they draw the disciplines into an irrevocable constitutive unity. The intermediary concepts imply, however, a changed concept of unity: instead of a static unification, Kant wants to institute an evolving interconnection. As mentioned above, he inquires into how we can view the constitutive aspects of the regulative, the metaphysical inside the physical and the *a priori* inside the empirical. These terms jostle for prime position but only ever with respect to the poles they unify, and it is this type of dynamism which is on display in *Opus postumum*, one which takes account not only of dynamic forces in natural science but the dynamism of philosophy itself, the dynamism of thinking. Unity is no different, such that the question becomes: how do we think the unity of metaphysics and physics without causing them to freeze over, thereby sapping them of the life which keeps them jostling with respect to each other?

[50] This is the reason why Mathieu bases the task of the intermediary concept (specifically of aether) on the need to account for 'the unity of experience [which] is certainly no sensory object (*Sinnenobjekt*)' (Mathieu (1989, 118, m.t).

This also prompts another related question: in so far as the intermediary concepts play a crucial role in dynamic interconnection, does this constitute Kant's final attempt to account for absolute unity? As methodological markers, intermediary concepts certainly act as one of Kant's last formulations to bring about unity, but we must remember that they mostly appear between 1797-8, and that Kant writes much more after that point. Hansgeorge Hoppe, for example, hints that the *Transition* project itself and the attempt to unify metaphysics and physics is actually found in fascicles X and XI (1799-1800), where Kant starts from the conditions of possibility for scientific experiment and attempts to construe aether as an intermediary concept (Hoppe 1969, 117). The question of Kant's last attempt at an absolute unity, indicated by the material form of *Opus postumum*, remains fundamentally open and for this reason prompts further investigation into the doctrinal elements of *Opus postumum*. But for the sake of clarity it might be worth temporarily substituting the concept of unity with that of interconnection and continuity so that Kant's search for absolute unity between metaphysics and physics can be seen in a more nuanced light, open to a variety of shifting configurations and routes. Laying the emphasis on interconnection, continuity and dynamism in this way points out how the transition concept manoeuvres and what its stakes are.

Furthermore, this is more conducive to reading *Opus postumum* as a series of variations on the theme of transition. Therefore, whilst the transition concept may be liable to fail at successfully unifying metaphysics and physics, there *is* a unity in the transition concept itself in *Opus postumum*. Throughout the various fascicles there is always a striving for continuity whether on an architectonic, an epistemological, an ontological, a cosmological or a theological level. The transition concept itself is what unifies the disparity of *Opus postumum*.

4. Architectonic in *Transition*: Transition of Architectonic

I would like to open the preceding to a more general perspective concerning the role of *Opus postumum* in Kant's corpus. My contention is that by viewing *Opus postumum* as the site of transition whose constituent elements are intermediary concepts, we must retrospectively change how we understand the Architectonic of Pure Reason and its stakes in Kant's thinking. That is, if we work retroactively, reading the methodological stakes of the transition concept as the culmination of a problem inherited from the Critical architectonic, we find the grounds for a *textual* transition.

Recall that the basic stance of the Architectonic is that of unification and 'the art of systems' (CPR A832/B860) which occurs by transforming aggregates into a unity. And such systems seem 'formed, like maggots, by a spontaneous generation (*generatio aequivoca*) from the mere confluence of aggregated concepts.' (CPR A835/B863). There is a contingency to the formation of systems from aggregates; parts just so happen to be worked into more complete and unified constructs through spontaneous generation. Furthermore, there is a 'natural unity of the parts that have been brought together' (CPR A834/B862) and each distinct discipline of pure reason is marked by such a natural unity.

Considering the exegetical sections of this chapter we do not have to make too many assumptions to claim that a very different model of architectonic is at stake in *Opus postumum*. There is no seemingly spontaneous generation of unity or natural formation of aggregates into wholes (*Ganze*). Rather, there is division along entirely *artificial* lines followed by a considerable labour over developing a method for unification.[51] In short, architectonic becomes experimental in *Opus postumum*. When we go back to the Architectonic of Pure Reason with this trajectory in hand, a rigidity can be discerned, whereby disciplines are delineated without

[51] This is perhaps a methodology whose root lay in what Kant calls 'transcendental reflection' in the first *Critique*, a method by which one carves out a place for a concept, a mode by which a *topos* is demarked (CPR A261/B317). In this connection, the *topos* is an invention of transcendental reflection, such as can be seen in Kant's description of the first category of nothing, that it is 'mere invention' which posits the empty, negative noumena as the horizonal boundary of the phenomena (CPR A292/B348)

any chance of transitioning, let alone sharing concepts. Thus, within this context a transition could only ever be at best an amphiboly. We see clearer than ever a Kant who is a true disciple of Linnaeus in the Architectonic of Pure Reason and a Kant who has a Heraclitan quality in *Opus postumum*.

In the Architectonic, Kant sticks to the division of the 'philosophy of material things' instigated by Christian Wolff (ontology, natural theology, psychology, cosmology, physics), changing the order and level of the branches (Wolff 1963, xii, 35 and 40-5).[52] Whilst *Opus postumum*'s programme for a metaphysics of nature tends to stick to this order, how to think the relationships between the terms is transformed. With *Opus postumum* in hand, we are prompted to subtract certain of the Architectonic's elements and run them through the more fluid discipline of transition. Instead of reading the metaphysics of nature as a static compartmentalization, (e.g., asking questions such as how ontology *relates* to rational psychology) it is now to be read as dynamic division, (e.g., asking questions such as how ontology *becomes* rational psychology). This is partly indicated above in the term, 'Rational Physiology' which Kant notes has *physica rationalis* within it as a subordinated type of metaphysics, which, if we were to remain within the Critical philosophy, leads to the suspicion that it harbours an amphiboly. As argued above, this problem does not initially arise in *Opus postumum* since Kant starts with a binary opposition between metaphysics and physics wherein the point at which they interconnect, at which they are continuous, is sought. And here is where we find the core problem of the Architectonic and its role in *Opus postumum*: we are forced to read the Architectonic as necessitating a leap between the disciplines it delineates because it does not explain how they are to be connected in a single system. In other words, we are forced to introduce a rogue concept of transition between the disciplines without any explicit development of its role, resulting in nothing more than a transgression. Whilst the terms of the

[52] Kant's own version of this runs as follows: '1. Ontology. 2. Rational Physiology. 3. Rational Cosmology. 4. Rational Theology' (CPR A846/B874).

architectonic of a metaphysics of nature remain largely intact in *Opus postumum*, the concept of transition becomes the driving force behind their continuity. That is, *Opus postumum* can be explored according to the order of a metaphysics of nature, but with the terms dissolving into one another. The condition of possibility for this is the whole *raison d'etre* of the transition concept, it is a fundamental part of the constitutive and dynamical metaphysics of nature.

Before concluding, it is worth pausing to consider some doctrinal remarks Kant made in *Metaphysics L1* about transition. In a section entitled On the Leap and the Law of Continuity (*De Saltu et Lege Continuitatis*), following Baumgarten's *Metaphysica*, Kant puts forward a conceptual regime within which to nest what I have been discussing. He begins with some familiar lines:

> The leap (*Sprung*) is a transition (*Übergang*) to a determination from a more distant ground (*Grunde*) in a binding (*Verbindung*) of many [members or links], without going through the intermediate members [or links] (*membra intermedia*). The concept of a jump (*Saltu*) concerns not merely events, but rather also things (*Dinge*), and is opposed to continuity. (L-Met-L1/Pölitz 28:200, t.m).

As in *Opus postumum*, Kant is pitted against conducting a philosophy in the manner of bounds, jumps and leaps. He is, rather, interested in a philosophy of transition and indeed, he goes on to outline just such a theory, where

> the transition (*Übergang*) from one point to another cannot happen suddenly but rather continuously; that is: when a body skips from one point to another, then it must go through infinitely many intermediate spaces, it must go through all intermediate locations lying between the one point in the line and the other. (L-Met-L1/Pölitz 28:201, t.m).

Kant continues to expound and widen this concept: 'The law of continuity is no metaphysical whim, but rather a law that is spread through the whole (*ganze*) of nature. E.g., the mind (*Gemüth*) goes from dark to clear representations not immediately, but rather through all the intermediate representations which are clearer than the first ones.' (L-Met-L1/Pölitz 28:201-2, t.m). In the pursuit of the continuity indicated by the concept of transition it must be stretched out to encompass all elements of nature and philosophy.[53] But as I have argued, this concept only comes to the fore *as concept* in *Opus postumum*. Kant begins to see how injecting transition into the Critical Architectonic might not be so simple since the latter is premised on a rejection of continuity and the rigidity of 'natural' lines of differentiation. Yet, the architectonic aspects of *Opus postumum* also show us how the transition concept already lay implicitly at the foundation of Kant's philosophizing such that it can be used as a tool for reading his work as a whole. The implications this has on concepts in Kant's arsenal may be great. Such divisions as sensibility and understanding, intuition and concept, *a priori* and empirical knowledge, matter and force, mechanism and dynamism may have to be re-examined and redrawn in light of *Opus postumum* and the transition concept.[54]

Herein we have gained a foothold into a deeper picture of a thinker who is prepared to question and re-define his own supposedly firm distinctions from the ground up. *Opus postumum* shows us that methodologically Kant did not arrive at his concepts ready-made as if through spontaneous generation, but laboured over their division and unity relentlessly,

[53] This can also inform the leap between the first and second *Critique*. As Miguel Unamuno so elegantly points out, leaps are an indication of Kant's refusal to completely kill off his previously critiqued positions: 'The man Kant did not resign himself to die completely. And because he did not resign himself to die completely made that leap (*salto*), the immortal leap (*salto*), from one *Critique* to the other.' (Unamuno 2011, 24, m.t). This refusal to put to death previously held positions informs the logic for spending so much effort and time on a revitalized law of continuity and a philosophically rigorous concept of transition. Palmquist (2019, 132n4) also discusses Kant's relation to death and dying but from a very different angle. He claims that the birth of Kant's system is in Swedenborg's claims to have communicated with the dead. Furthermore, Palmquist claims that Kant's own death barred the possibility of permanently putting to death his system in *Opus postumum*.

[54] I adopt Tuschling's (1989, 208-9) conclusion here.

subjecting them to endless variation. It is for this reason that, as Basile remarks, '*Opus postumum* probably presents the richest source of information on Kant's method of composing texts' (Basile 2013, 361, m.t). Indeed, it is this approach that Kant reveals in early 1772 when, in a letter to Herz, he says:

> Even though the mind is not always exerting itself, it must still, in its quiet and also in its happy moments, remain uninterruptedly open to any chance suggestion that may present itself. Encouragements and diversions must serve to maintain the mind's powers of flexibility and mobility, whereby it is kept ever in readiness to view the subject matter from other sides and to widen its horizon from a microscopic observation to a general outlook in order that it may see matters from every conceivable position and so that views from one perspective may verify those from another. (C 10:132).[55]

And this is the stance that we are also asked to adopt in reading *Opus postumum*: to modify, adapt and transform basic tenets of our assumptions about Kant's philosophy. As mentioned in the introduction, the way the present work attempts to do this is by developing the concept of transition as playing out in a triple movement: as a concept at work in *Opus postumum*, as a concept at work between Kant's works and as a concept at work between Kant's concepts. These transitions form the bedrock upon which this study rests.

[55] See Smith (1992, 609-10) on Kant's capability 'of revising, and [...] of modifying, his older teaching.' It also appears that Kant took a great deal of inspiration from Lambert's methodology. Lambert tells Kant in a 1766 letter, 'First, I write down in short sentences whatever occurs to me, and in just the order that it occurs to me, be it clear or conjectural or doubtful or even in part contradictory. Second, I continue until it looks as though something can be made out. Third, I consider whether the contradictory propositions can be made consistent by limiting or more closely determining them' (C 10:63). It seems that *Opus postumum* forces us to interrupt Kant at the first or second stage.

Chapter 2. Transition of the Understanding: Fascicles X, XI and VII

Introduction

The order of the faculties is a much-discussed topic in Kant scholarship. Much less discussed, however, is the complicated relationship of the faculties in *Opus postumum*. Following on from the previous chapter, I seek to investigate this by tracing an implicit transition of the faculty of the understanding in the 'A-R', 'S-Z' and the 'Beylagen I-IX' drafts.[1]

The question of the transition of the understanding is a controversial topic in *Opus postumum* scholarship, since it suggests that Kant undermines the Critical philosophy at the level of faculty – a major claim. Early literature on *Opus postumum* shrugged this question off by appealing to the deterioration of Kant's mental state; if fundamental changes are made to the Critical philosophy, we should not take this seriously since it was written by an author not in his right mind. Whilst most contemporary secondary literature does not agree with this assessment, much of it agrees that *Opus postumum* presents no major change to the faculty of understanding. It will be such an opinion that this chapter challenges. For, following chapter one, if we find a transition in *Opus postumum* at the level of method and discipline, then we can trace this through to the faculties also, since they are also architectonically ordered. Hence, the basic questions underpinning this chapter are: (1) what justifications are there for the transition of the understanding in fascicles X, XI and VII? (2) If there is a transition, what is its genesis? (3) How can we account for it in the wider context of the *Opus postumum*?

[1] 'A-R' were written between August 1799 and March 1800 and are found in fascicle X (OP 22:279-409). 'S-Z' were written around the same period and are found in fascicle XI (OP 22:453-539). 'Beylagen I-IX' were written between April and December 1800 and are found in fascicle VII (OP 22:3-131).

1. A Problem in the *Sinnenwelt*

In the B Introduction of *Critique of Pure Reason*, Kant says that the faculty of understanding forms one of 'two stems of human knowledge' the other being sensibility, both of which 'may perhaps arise from a common but to us unknown root.' (CPR A15/B29, t.m). The division of these faculties describes two interrelated sides: sensibility is the receptive faculty of intuitions whilst understanding is the spontaneous faculty of concepts. Kant tells us repeatedly that one is not possible without the other, that for experience to be possible both must simultaneously operate in the subject such that the first *Critique* is rooted in this equiprimordiality.

Yet a peculiar seriality emerges between the faculties in the first *Critique*, wherein sensibility sometimes precedes the understanding.[2] One of the places this is most apparent is in the famous 'stepladder' (*Stufenleiter*) passage of the Transcendental Dialectic (CPR A320/B376-7).[3] In this section, Kant describes an order of representations which starts with perception, goes through (subjective) sensation (*Empfindung*) and (objective) knowledge, then through intuitions and concepts, finally ending in ideas. This is expressed elsewhere as an order of faculties: 'senses […] understanding […] reason' (CPR A298/B355). Sensibility and understanding form distinct halves of a staggered/stepped (*gestuft*) relationship whereby the former passes raw content to the latter. The receptivity of sensibility first makes the encounter with an object possible and without it nothing could be given. The sequential theme is continued in the Amphiboly of Concepts of Reflection, which is specifically designed to keep sensibility and understanding from inadvertently crossing paths by introducing a demand for the precedence of sensibility: 'Namely, the understanding demands that something first be given (at least in concept) in order to be able to determine it in a certain way. Therefore, in concepts of the pure understanding, matter precedes form' (CPR A267/B322-3, t.m).[4] The

[2] E.g., see CPR A210-1/B256.
[3] See Caygill (2007, 18-9).
[4] Developed by Kant as early as the 1775-6 *Anthropology Friedländer*: 'The understanding cannot carry anything out, rather sensibility must give it the material.' (L-Anth/Fried 25:486).

reason for the sequential ordering of the faculties is to critique Leibnizian rationalist metaphysics, which Kant believes involves a conflation of thoughts and appearances. In this regard, the empiricist sentiment of the Critical philosophy is emphasized, and the words of John Locke echoed: 'the understanding is not much unlike a closet wholly shut from light, with only some little opening left to let in external visible resemblances or ideas of things without' (Locke 1995, 107) and this acts as an historical anchor to the seriality of the faculties more generally. Whilst Kant resists entirely falling into Locke's '*noogony*', the first *Critique* puts forward the assertion that the understanding *depends* on sensibility for its content, i.e., it does not produce content, and this informs the relationship of the understanding and sensibility throughout the first *Critique*. Although they are supposed to be equiprimordial, to ward off rationalist metaphysics sensibility must serially precede the understanding.

But this is not without problems in *Critique of Pure Reason* nor is it entirely unequivocal. How can Kant maintain a genuine equiprimordiality of the faculties alongside seriality; does this not risk exactly the type of amphiboly Kant attempted to arm the Critical philosophy against? To draw out the stakes of this question further, it is useful to read a revealing passage in the Antinomy of Pure Reason:

> as we have repeatedly shown, there is just as little transcendental use of pure concepts of understanding as there is of concepts of reason, because the absolute totality (*Totalität*) of series of conditions in the sensory world (*Sinnenwelt*) is itself based solely on a transcendental use of reason, which demands this unconditioned completeness from what it presupposes is a thing in itself (*Ding an sich selbst*). (CPR A515/B543, t.m).

The German noun '*Sinnenwelt*' is usually translated 'sensory world' in English, which is largely uncontested in Kant literature.[5] I would, however, like to draw attention to the complexity of Kant's use of the word in this context and suggest alongside Caygill that 'the doctrine of sensibility is itself internally complex.' (Caygill 2003, 164). As a noun '*Sinnen*' means 'thought' or 'meditation', and it can also be used as a verb (*sinnen*) meaning, 'to think' or 'to meditate'. Kant does not use the word as a verb so it appears that the literal translation of '*Sinnenwelt*' should be 'thought/meditation world'. Yet, the noun from which *Sinnenwelt* is actually constructed, the pluralized form of '*Sinn*', pertains to physiological sensibility and is accordingly translated, 'sensory world'. I do not want to semantically contest the meaning of words, but I would like to suggest that an implicit slippage accrues in the term. Although Kant uses it in an apparently easy and relatively unproblematic way, it does not clearly mark the sequential line between sensibility and understanding or thought perhaps because it is being used in the context of the Transcendental Dialectic, where the understanding is forced by reason to move beyond the bounds of sensibility. Moreover, when we index the term in the original ambition of Kant's equiprimordial architectonic of the understanding and sensibility, the paragraph becomes ever-more elusive. The *Sinnenwelt* seems to depend upon a more primordial condition; it has before it the 'transcendental use of reason' or a demand for the unconditioned. Ultimately what we witness is a complication in the assumed simplicity of the *Sinnenwelt*.

To flesh out this claim, when we consider the wider context of Kant's discussion in the quotation above, we can see how the two poles of sensibility and understanding become ambiguous. Kant is trying to show that a totality of conditions (the unconditioned) is demanded by reason but that this totality cannot be given in sensibility, yet the *Sinnenwelt* depends upon this very demand. If we read *Sinnenwelt* unambiguously in the register of sensibility as pure receptivity – as it is defined in the Transcendental Aesthetic (CPR A68/B93) – a confusion

[5] E.g., Martin (1974, 190).

seems to be at stake. For if a more primordial faculty lay at the foundation of sensibility, how could it remain purely receptive? Perhaps to avoid opening the Critical philosophy to the need for an explicit ontology, Kant goes on to say, 'the sensory world (*Sinnenwelt*), however, contains nothing like that completeness.' (CPR A516/B544, t.m). That is, sensibility depends on the absolute totality of conditions as its ground, but for this very reason it cannot be given in sensibility itself. But we are nonetheless forced to momentarily introduce into the *Sinnenwelt* a dependence on the conceptual, the intellectual or the ideal and in doing so we inadvertently introduce a moment of conflation between sensibility, understanding and reason which is not explicitly unravelled by Kant.

The outcome of such a reading is that it propels the first *Critique* back to the rational metaphysics it wants to refute; it returns the Copernican turn. The first node in this line is the conflation of thinking and sensory awareness found in René Descartes' *Principles of Philosophy*, summed up in the following: '*thinking* is to be identified here not merely with understanding, willing and imagining, but also with sensory awareness.' (Descartes 1999, 162). The second and perhaps more relevant node is found in Leibniz's conflation of the sensible and intelligible. Of particular note is the 1702 letter to Queen Sophie Charlotte of Prussia, where Leibniz defines three types of notion: sensible, sensible and intelligible and intelligible (Leibniz 1989, 188). The first of these notions is 'confused,' which is explored a few pages later where Leibniz says, 'The senses provide us material for reasoning, and we never have thoughts so abstract that something from the senses is not intermixed with them' (Leibniz 1989, 191). For Leibniz, no thought is without an element of sensibility and no sense is without an element of thought, which leads Kant to famously say that he 'intellectualized the appearances' (CPR A271/B327). It is precisely this Leibnizian conflation Kant seeks to undo by introducing seriality into the order of the faculties, a seriality that is instituted to resolve the possible confusion of faculties in the first *Critique*.

Kant first attempts to systematically distinguish sensibility from understanding in 1770's *On the Form and Principles of the Sensible and the Intelligible World* (*Inaugural Dissertation*) (ID 2:392-8), the work which sparks off Kant's so-called 'silent decade' before the publication of the first edition of *Critique of Pure Reason* in 1781. The need for this distinction was in large part prompted by the work of Johann Heinrich Lambert, a Swiss polymath with whom Kant corresponded. Lambert had begun to disentangle the term 'architectonic' from its rationalist metaphysical alignment with ontology – as it was used in Baumgarten's *Metaphysica* – so as to redefine it as a tool for making systematic divisions and determining the true seriality of concepts. This is especially apparent when Lambert divides the *a priori* and *a posteriori*: 'For one, the words *a priori* and *a posteriori* reveal in general a certain order according to which one thing in a series is before or after another.' (Lambert 2009, 267). In this connection, the *Inaugural Dissertation* is a wholehearted attempt at discovering the means by which the order of the faculties can be determined: 'it is the propaedeutic for this science [metaphysics] that shows the difference between sensible and intellectual knowledge.' (ID 2:395, m.t). After reading *Inaugural Dissertation* and praising it, Lambert pointed out to Kant the difficulty of systematically keeping the faculties separate from one another (C 10:105). Later, after Kant published the first *Critique*, Johann Augustus Eberhard also claimed that it is not so simple to keep the faculties separate. He claims, albeit much more harshly than Lambert, that although Kant wants to work from the basis of a complete division of the faculties, he inadvertently falls back into the Leibnizian confusion of the sensible and conceptual.[6] Clearly, Kant was already struggling with this distinction in *Inaugural Dissertation*, which leads him to put forth an interesting scenario informing much of the first *Critique*.

In Section Five, §23 of *Inaugural Dissertation*, Kant raises a curious problem. He talks of 'the *contagion that sensible knowledge exerts on the intellectual*.' (ID 2:411, m.t). This gives

[6] See Allison (1973).

us a clear indication of Kant's thinking at this point: rationalist metaphysics allows for a disease-like sensibility to infect the intellect (or understanding) at a devastating cost. He goes on to show how such a contagion leads to 'fictions of the intellect' best stated in the expression, *'metaphysical vice of subreption*' (ID 2:412, m.t) whereby a shaky assumption is made based on misguided reasoning. Like much of the terminology of *Inaugural Dissertation*, 'subreption' is appropriated by Kant from Wolff, who himself appropriated it from Roman law where it originally meant an act of theft through concealment or smuggling. Wolff uses the term to mark erroneous conflations of experience and knowledge, where an element of one is smuggled into the other.[7] When Kant uses the term, however, he means something like 'tacit assumption', as when we assume that something is the case even though this 'something' is concealed from us. Although the first *Critique* encrypts a general opposition to subreption, the issue is transposed into the Transcendental Dialectic where Kant redresses the term as 'transcendental illusion' and 'dialectical inference' aligning it with something like reification. These contagions appear to be built into the very fabric of experience, arising from the 'unnoticed influence (*Einfluss*) of sensibility on understanding' (CPR A294/B350). This is the same dynamic as that put forward in *Inaugural Dissertation* but when subreption is mentioned directly it is in relation to an error of reason rather than solely understanding or sensibility (CPR A643/B671). In both the *Inaugural Dissertation* and the first *Critique* elements of sensibility inflect the understanding such that sensibility requires an 'apology'.[8] This marks a rejoinder in Kant's corpus, suggesting an entwinement between the two works at the level of faculty. Hence, whilst John McDowell's thesis that, 'the understanding is already inextricably implicated in the deliverances of sensibility themselves' (McDowell 1996, 46) might be correct, it is also the case that even before the Critical project Kant saw sensibility as distorting the deliverances of

[7] See Sng (2010, 79).
[8] See Caygill (2003, 167).

the understanding. For we cannot help but note that the faculties tend to slip back into a serial relationship where sensibility precedes and influences the understanding but not *vice versa*.

The *Sinnenwelt* passage opens a key clue in this scenario in that it marks a transitory wavering stamped into Kant's thinking; it ambiguously straddles both the serial and equiprimordial renderings of the faculties. Accordingly, interpretations premised on the rigid seriality *or* equiprimordiality of sensibility and understanding need to account for the *Sinnenwelt* passage above, which cannot be answered by only one side. In fact, Kant wavers back and forth between the two well into the 1790's, as we shall see in the ensuing sections.

2. The Blow which Follows the Wound: Fascicles X and XI

I now move on to the 'A-R' and 'S-X' drafts in fascicle X and XI to see how the understanding/sensibility relationship develops.[9] Although these fascicles mostly deal with the question 'what is physics?' (*Was ist Physik*?) and other questions of a more natural science bent, also included in these fascicles are passages on sensibility and understanding in which they are twisted and contorted, and I claim this culminates in the primacy of the understanding. To quote from the later fascicle I, there is a jostling of the faculties at stake in the context of the *Stufenleiter*: 'In the gradation (*Gradation*) of my faculties there is an impulse (*Antrieb*) of ascension (*Steigerung*) to be the highest step (*Stufe*)' (OP 21:154, m.t). The faculties fight to be at the top of the ladder, to be primary. With the preceding section in mind, this should not come as a surprise to us since the faculties have already been shown to occupy somewhat shifting positions. Hence this section explores the genesis of this modification within *Opus*

[9] It has been argued that these drafts constitute a 'new deduction'. See Basile (2013, 412-3), Lehmann (1980), Werkmeister (1993, 175) and Hoppe (1991, 61).

postumum as well as providing a defence of its necessity via the notion that 'we make' (*wir machen*) experience.[10]

By way of contextual background, we must recount the structure of the proposed work enclosed in *Opus postumum* which we glimpsed in the previous chapter. Kant distinguishes between metaphysics, which is bound up with *a priori* content, and physics, which is bound up with empirical content, according to a hard and fast architectonic line. He then strives to develop a discipline of transition which is a site for constructing bridges via intermediary concepts between the two territories. This way we can view the physical in the metaphysical and *vice versa*, which are unified in a metaphysics of nature. It is in this frame that Kant distinguishes between conceptual, formal principles and empirical principles in draft 'C' of fascicle X:

> Physics is the doctrinal system of the moving forces of matter in so far as they are objectively contained in a natural system (*Natursystem*) of them. It contains an absolute whole (*Ganze*) of empirical knowledge of outer sensory objects (*Sinnengegenstände*) as a science. The enterprise of attaining this is called natural research (*Naturforschung*), whose material (empirical) principle (*Princip*) rests on observation and experiment; the formal [one], however – how and what one researches – rests on *a priori* principles (*Principien*). (OP 22:319, 106, t.m).

The formal (metaphysical) principle provides the coordinates of investigation, the 'how' and the 'what', whilst experimental physics conducts specific, empirical research into nature (*Naturforschung*) through experiment and observation. Interestingly, it is the tools used in experimental physics which open a change in the understanding/sensibility relationship,

[10] Mathieu (1989, 107) is one of the few *Opus postumum* commentators to centralize Kant's discussions on making experience in the late fascicle X.

starting with Kant's discussion of the lever-arm or scale (*Hebelarm*/*Waagbalken*), one of Kant's favourite topics of discussion in *Opus postumum*.

In 'El.Syst 1' from fascicle VIII, Kant says that the ponderability of matter, or matter's tendency to be a significant, measurable quantity, 'presupposes an instrument for the measurement of this moving force (of weight) in the form of a lever-arm (*Hebelarm*)' (OP 22:138, 46). Following this, Kant says we are also inclined to account for the ponderability of the lever-arm itself along the same lines as the matter it weighs, but that this is impossible. The lever-arm cannot measure itself simultaneously in the act of weighing, just as it is impossible to 'lift oneself up by one's own bootstraps,' as the saying goes. Thus, if we conceive of the fact that matter can be weighed, we must introduce a mysterious 'something', a substrate to account for the matter constitutive of the lever-arm, which is unweighable:

> Thus the ponderability (*Wägbarkeit*) of matter is not a property knowable *a priori* according to the mere concept of the quantity of matter; it is, rather, physically conditioned and requires the presupposition of an *internally* moving matter which results in the immobility of the parts in contact with one another [in the lever-arm], by itself being mobile inside this matter […] Thus, even ponderability (*Ponderabilität*) (represented subjectively as the experiment of weighing) will require the assumption of a matter which is not ponderable (*wägbar*) (*imponderabilis*); for, otherwise, the condition for ponderability would be extended to infinity, and thus lack a ground (*Grund*). (OP 22:138, 46).

The ponderability of matter understood as an external, physical determination, rests upon an elusive internal and non-physical substrate, that Kant calls the *imponderabilis*, the unweighable. The lever-arm invokes a substratum of matter which cannot be observed but is nonetheless present as a necessary condition of possibility for both the matter and its weighing. Such a view was not uncommon in seventeenth and eighteenth-century natural science, where

it was postulated that an invisible fluid or aether existed which allowed heat to travel through space. The difference in Kant's reading of the *imponderabilis* is that he tries to bed it into the Critical philosophy as a transcendental condition. But this poses a problem in *Opus postumum* since the *imponderabilis* is precisely that which cannot be written into a conceptual frame (it is a 'something' without measurable properties) nor is it governed by the categories (it is unweighable and unqualified), nor can it be equated to pure sensible data (it is internal and non-physical). Whilst the *imponderabilis* takes much from Kant's earlier discussions of aether in the 'Übergang 1-14' drafts,[11] here it is only the condition of possibility for the empirically determinable weight of matter or the matter of the lever-arm itself which cannot be accounted for directly. It thus lies in an intermediary state; it is neither an entirely empirical item given by sensibility nor an entirely conceptual ordering by the understanding.[12]

Later, in draft 'A' of fascicle X the *imponderabilis* leads into further methodological engagements, in which contortions of the distinction between sensibility and understanding take off: 'Physics is a system, but we cannot know (*erkennen*) a system as such unless we ourselves insert (*hineinlegen*) the manifold of an aggregate according to *a priori* principles' (OP 22:299, 103, t.m). We actively insert (*hineinlegen*) a manifold via *a priori* principles (which have their basis in the understanding) for the purpose of constructing a system of physics. As Hoppe says, it is the problematic of insertion which defines the discussion in these fascicles: 'one has before oneself the central concept of fascicle X and XI in the concept of insertion (*hineinlegen*), which is at the same time clearly relevant to the experimental approach of physics.' (Hoppe 1969, 117, m.t). The act of insertion is then connected explicitly to the understanding. I quote two passages:

[11] See chapter four below.
[12] See McNulty (2016, 68-72).

> The understanding must therefore insert (*hineinlegen*) the synthetic elements of sensible knowledge into a system of the moving forces to make an experience, hence, it inserts not *from* experience rather *for* experience and its possibility [to make] an empirical whole (*Ganzen*) as a system of physics. (OP 22:316-7, m.t).

> We can extract nothing other from our sense-representations than that which we have inserted (*hineingelegt*) (with consciousness of its presentation) for the empirical representation of ourselves – that is, by the understanding (*intellectus exhibet phaenomena sensuum*). (OP 22:343, 112).

The act of the understanding forms the possibility of experience by inserting 'the synthetic elements of sensible knowledge' which implies that the understanding goes beyond simply sieving sense data through the organizational net of the categories towards actively intervening or putting content into sensibility, perhaps to a model in which it is sensibility that is infected by the understanding and not the reverse.[13] But something even more fundamental happens here, for the source of experience is attributed not to the equiprimordiality of sensible and conceptual elements or to the primacy of sensibility but solely to an act of the understanding. It is as though the understanding has become the condition of possibility for experience over and above sensibility and the pure forms of space and time. To account for the stakes of this reading we may be tempted to return to the first *Critique*, where, in the B Introduction, Kant says, 'we can cognize of things *a priori* only what we ourselves have put (*legen*) into them' (CPR Bxviii). On the face of it, this is similar to the passages from fascicle X. Even Adickes reads passages like these in a purely logical key, stating that the insertion is of a 'categorial function' (*Kategorialfunktionen*) (Adickes 1920, 633).[14] Adickes bases this reading on

[13] See McCall (1983, 59).
[14] See Smith (1992, 614-5).

passages in the first *Critique* which use the term '*hineinlegen*' in a categorial sense (CPR A125), e.g., the insertion of order into the chaos of a sensible manifold. Sometimes, Kant himself confirms this reading, as in the following (crossed out) passage from draft 'H' of fascicle X:

> the general moving forces of matter and their influence on the senses through matter and bodies as empirical representations in experience are to be absorbed into a system, the principle according to which we cannot take out from the whole field of appearances more than we have inserted (*hineingelegt*) into them [namely,] the elements of experience for our use in knowledge. That is, we cannot passively place them together but rather self-form (*selbstbildend*) [them] into species (*Gattungen*) and kinds (*Arten*) according to the categories (OP 22:348, m.t).

The 'field of appearances' is identical to our insertion, which is comprised of predicates culled from the application of the categories to matter and force. But we see in the passages quoted from draft 'A' that the insertion is made into the *system* of moving forces such that we not only extract the categorial, *a priori* forms of experience but also the whole world of experience itself. Moreover, the *imponderabilis* indicates a 'something' which is precisely non-categorial yet is inserted as condition of possibility, nonetheless.[15] This is summed up in Kant's hint that the insertion made by the understanding *precedes* our extraction of categorial, *a priori* elements:

> The transition to physics does not occur through what the senses in empirical intuition (perception) *take out* from experience, for then everything would remain undetermined, rather, what and how much may be given to our sensory representations occurs through that which the

[15] Clearly this encroaches into thing in itself territory. But how the *imponderabilis*, aether and thing in itself differ requires an exhaustive investigation.

> understanding *inserts for* experience and its possibility in sensory representations, [so as to construct] a system and possible unity of them according to the categories of *quality* (ponderable or not), *quality* (coercible or not), *relation* (cohesive or not), and *modality* (exhaustible or not). [They are] inserted to subordinate the object (*Gegenstand*) of empirical intuition to a system of perceptions through concepts of the relations of moving forces (OP 22:378-9, m.t).

Moreover, it is in this connection that we can emphasize Kant's Latin inscription in the quotation from draft 'A' as marking a departure in how the understanding operates: '*intellectus exhibit phaenomena sensum*', 'the understanding exhibits the phenomena of sense'. At the very least, the understanding is no longer a faculty in need of matter given to it but is productive, not only organizing sensible content but occupying a more constitutive role.[16]

We may still object, however, that no change occurs since in *Critique of Pure Reason* the understanding is endowed with spontaneity, productivity and 'is itself the source of the laws of nature' (CPR A127). This is especially the case in the transcendental deductions where the understanding is construed as the act of binding appearances to institute common rules.[17] At the beginning of the B Deduction Kant says: 'for it is an act (*Actus*) of the spontaneity of the force of representation, and, since one must call the latter understanding in distinction from sensibility, all binding (*Verbindung*) […] is an action of the understanding (*Verstandeshandlung*).' (CPR B130, t.m). This is pointed up by Gottfried Martin, who emphasizes the understanding as the spontaneous power of binding via the categories, quite radically concluding that the 'understanding underlies the sensible world.' (Martin 1974, 193 and 124-5). This would mean that the transition of the understanding is already implicitly folded into the first *Critique* and that *Opus postumum* does not actually change anything *per se*, but merely makes the transition explicit, which is Werkmeister's view of fascicles X, XI

[16] Smith (1992, 617) concludes with a similar thesis.
[17] See Beiser (2008, 206).

and VII. According to Werkmeister, although these fascicles see the foaming to the surface of productive activity, 'we must bear in mind [...] that Kant's basic thesis has been at all times that experience is *made* rather than given.' (Werkmeister 1993, 172). And so, when there seems to be a change in the faculty of understanding, Werkmeister warns us: 'in all of these passages Kant but reinstates the basic thesis of the *Critique of Pure Reason*.' (Werkmeister 1993, 173). Whilst convincing, Werkmeister's argument does not take stock of the irreconcilable differences between the first *Critique* and *Opus postumum* on this point. One of the stumbling blocks of Werkmeister's reading is that in *Critique of Pure Reason* the understanding cannot really be a productive faculty since it always needs content given to it, which even Martin admits: 'human understanding is discursive, dependent on sensibility, it does not simply create its objects (*Gegenstände*) but has to have something given to it' (Martin 1974, 163).[18] Gerd Buchdahl adds to this sentiment by saying that it is only in the sense of overlaying the categories onto a 'sensory manifold' that 'the understanding [can] "create", so to speak, its object.' (Buchdahl 1992, 170). Despite Kant's attempts at shaping the understanding into a spontaneous faculty, it remains a solicitor, always trying to organize the files of its bothersome, disorganized client, sensibility; it 'is always busy poring through the appearances with the aim of finding some sort of rule in them' (CPR A126); the understanding *relies* on sensibility and this belies the productive aspect of spontaneity.[19] It is perhaps best expressed by Samuel Taylor Coleridge in his *Aids to Reflection* where he marks out the differences between understanding and reason, claiming that the former 'in all its judgments refers to some other faculty as its ultimate authority' (Coleridge 1854, 174), the understanding always points away from itself, relying on some other; sensibility for its content and imagination for its unity. Although this argument is by no means exhaustive, it highlights why we cannot account for the transition of

[18] This also echoes the *Jäsche Logic*, where the distinction is made between the '*lower* faculty' of sensibility and the '*higher* faculty' of understanding 'on the ground (*Grunde*) that sensibility gives the mere material for thought, but the understanding rules over this material and brings it under rules of concepts.' (Log 9:36). For an historical root of this division in Baumgarten see Caygill (2003, 177-80).
[19] See Massimi (2018, 170).

the understanding by simply returning to the first *Critique*. It may be implicitly folded into *Critique of Pure Reason,* but it only comes to the fore in *Opus postumum*.

Returning to fascicle X, this time to draft 'R', the structure of the faculties given in the first *Critique* is initially adhered to*,* but it soon becomes clear that this is no longer a viable possibility. For the changed role of the understanding begins to call into question the basic Critical thesis that it only operates with pure concepts:

> All our knowledge consists of two constituents: intuition and concept, which both lie *a priori* at the ground (*Grunde*) [of knowledge]; and the understanding is that form of connection (*Verknüpfung*) of both into unity (*Einheit*) of the manifold in the subject, where, through that which was subjectively thought is represented objectively as given (OP 22:415, 181, t.m).

In this sentence the formulation of the understanding indexes a subtle change from its formulation in *Critique of Pure Reason*, shifting from an act of connecting to a form of connection. More specifically, it is now a form of connection between concepts and intuitions, instead of only between concepts. Now, in the Transcendental Dialectic, whilst distinguishing between understanding and reason, Kant says that 'connection' (*Verknüpfung*) denotes the linking of concepts: 'the understanding does not look to this totality (*Totalität*) [of a series] at all, but only to the connection (*Verknüpfung*) *through which series* of conditions always *come about* according to concepts.' (CPR A643/B671). That is, the understanding is not considered as itself a mediating form of connection, least of all between intuitions and concepts, a task given to transcendental schematism, which is an operation of the imagination (CPR A179/B140).

A similar movement in Kant's foregrounding of the force of imagination (*Einbildungskraft*) in the third *Critique* can be demonstrated here. For in the third *Critique* the

imagination takes on an increasingly foundational role, until Kant ascribes much of the work of the other faculties to its productivity: 'The imagination (as productive faculty of knowledge) is namely, very powerful (*mächtig*) in creating, as it were, another nature out of the material (*Stoffe*) given to it from actual [nature]' (CJ 5:314, t.m). This is a well-documented and obvious turn from the imagination as a subordinate operation of the understanding, which is how it was conceived in the first *Critique*, to one whose connecting power lay at the foundation of the faculties themselves. One of the reasons for this shift in the third *Critique* is Kant's desire to develop a more substantial role for dynamism and forces, a nod to his early forays into natural science. Viewed through the aperture of dynamism, the faculties must involve a degree of plasticity if they are to be correlated with forces, which Kant conceives of as perpetually oscillating. Accordingly, the faculties of understanding and reason are dislodged from their static positions of the first *Critique* and put into a series of moving combinations through the famous 'free play' (*freien Spiele*) instigated by the creative, bridging force of imagination (CJ 5:217-9). But the question looms here as to how far this could go regarding the specific field of action attributed to the understanding which still operates according to concepts and categories, and reason which still operates according to ideas, and how this might inflect or change the content of sensibility. This question is not lost on Kant as we see in his warming to the possibility of intellectual intuition (CJ 5:409), something strictly prohibited in the first *Critique* (CPR B72 and B308-9). It is, however, this looseness given to the faculties via the imagination which continues into *Opus postumum*; the understanding is imbued with force in this way.[20]

At this point, we can say: the understanding partially turns away from its operation in the first *Critique* and instead parallels the all-encompassing role of the imagination in the third

[20] This echoes Mathieu's reading: 'Thus the understanding itself becomes a moving force (*vis repraesentativa*), which replaces the mere *facultas*' (Mathieu 1989, 198, m.t).

Critique. But this is not the only change the understanding goes through, for there is also an internal transition within the *Opus postumum* itself, which we will move onto now.

In fascicle XI Kant 'tumbles down the rabbit-hole' so to speak, experimenting with a series of formulations which challenge the Critical understanding/sensibility relationship. I will quote three representative passages, which I interpret as a single transitional arch. I would like to add one caveat to this schematic, however; this transition should be contextualized as a problematic, especially in relation to the second position. This is because in these quotations we still see elements of Kant's previous distinctions bubbling and jostling, such that we might frame these moments as merely temporary stopping points.

1. From draft 'X': 'the understanding anticipates (*anticipire*) the influence on the senses' (OP 22:509, 150).

2. From draft 'X' and 'AA': 'the understanding cannot begin from perception (empirical knowledge with consciousness), [if it is] to determine the intuiting subject into a sum (*Inbegriff*) of representations, as knowledge of the object (*objects*). It [the understanding] contains *a priori* the formal element of a system of perceptions prior to these empirical [parts of] knowledge' (OP 22:439, 161, t.m); and 'The faculty to make an experience is the understanding' (OP 22:497, m.t).

3. From draft 'AA': 'The material (*Stoff*) out of which experience is originally woven is not the perception of some object (*Gegenstandes*) (empirical representation with consciousness) that is, [it is] not [woven] out of what the sense (*Sinn*) *receives* as material (*Stoff*), but rather [from] what the understanding *makes* out of the form of sense

> (*Sinnen*) [or] intuition' (OP 22:447, 165, t.m) and hence, 'The object (*Object*) is neither idealistically nor realistically given, it is, on the contrary, not *given* at all, but is merely thought (*non dari, sed intelligi potest*).' (OP 22:441, 162, t.m).[21]

Whilst these phases raise many issues in Kant's corpus, I shall only home in on the issues posed to the understanding as we have explored it so far. Because of the rapid change between these phases, it will be helpful to briefly unpack them.

1. *The understanding anticipates the influence on sensibility*. In this formulation, the understanding expects content *before* it has been given to/by sensibility but not in an exactly congruous way as the Anticipations of Perception in *Critique of Pure Reason*. That is, whereas in the Anticipations the aim is to show that 'an object of sensation has intensive magnitude' (CPR B207), here the aim is to show that the understanding has content-giving and not merely form-giving qualities. But by this point Kant is working with a model of the understanding as inserting content into sensibility for the sake of experience such that the understanding's anticipation of or influence on sensibility is not only predictive distortion or contagion but is constitutive of content in sensibility.

2. *The understanding makes and is prior to experience and empirical knowledge.* This leads to a step which involves premising the possibility of experience on the understanding's formal-cum-contentful creation. In this phase the understanding not only anticipates elements of sensibility, nor does it merely indicate the categorial possibility of experience, it *contains* content before the subject receives anything sensible such that it makes experience. In this phase the understanding is uncoupled from sensibility entirely and is no longer sequentially reliant on it, rather, it now autonomously generates its own content, identical to experience. It is with this phase that Kant undoes *both* the *Stufenleiter* series and the equiprimordiality of the

[21] The Latin quotation reads: 'It cannot be given, but it can be understood'.

first *Critique* so that the possibility of experience has a distinctly *conceptual* basis. This all leads to Kant later saying: 'we make everything ourselves (*Wir machen alles selbst*)' (OP 22:89, 189).[22] It is also worth noting that this allows Kant to open up the *Stufenleiter* conception to encompass a wider significance in the elementary system: 'This stepladder (*Stufenleiter*) in the elementary system of the moving forces of matter for physics (and also just the possibility of the transition (*Überganges*) to physics) can be presented entirely *a priori* yet only problematically.' (OP 22:374, m.t).

3. *The understanding thinks the object in place of its 'givenness' in sensibility.* In a final step Kant sees the object not as given, but as thought or produced. This last phase indicates how the relationship between the faculties is crucial for deciding whether a system is idealist or realist and how fascicles X and XI fit into this. If sensibility comes first, a system resembling realism would be put forth in which the object and the content of sensibility (intuition) are identical. If reason comes first, a system resembling idealism would be put forth in which the object and the content of reason (idea) are identical. But Kant does not want either of these, instead opting for the primacy of the understanding in what we might call a 'conceptualism'. This is where the object is identical to the content of the understanding (concepts). And this leads to Kant's claim that the object is not really given but only thought. Another way of viewing this is that the object is only as much as what can be unravelled discursively. This is the logic behind Kant's Latin inscription: '*non dari, sed intelligi potest*', 'It cannot be given,

[22] Hall (2017, 192) claims this sentence is phrased in a purely organizational key, that is, it simply denotes the organization of perceptions emanating from the aether. But this insufficiently accounts for the radical thesis of the understanding 'making'. It is worth reviewing Mathieu's perspective here where he forges an intermediary path in the aether concept: 'The aether supplies the material (*Material*) to this construction, I repeat, not as physical material (*Stoff*), but as transcendental concept.' (Mathieu 1989, 114, m.t). Another account (Kaplama 2014, 31) tries to undo the emphasis on 'making' by reading a similar passage – 'Experience is not empirically given but is objectively made (*gemacht*) by the subject' (OP 22:406, 122, t.m) – through the lens of making relations between experience and the object. Whilst this is certainly an important observation it underplays Kant's emphasis on 'making'. Kant is not saying we only 'make relations' but that we make experience *rather than* experience being given in a sensible object.

but it can be understood'. Now sensibility is subordinate and reliant on the understanding as its seat of possibility, receiving only what the understanding has previously inserted.

From this transition, a question is put to materialist readings of fascicle XI. One such reading is given by Edwards, who proposes that aether constitutes a transcendental material condition for sensible experience (Edwards 2000, 163-4). But this is problematized by the above transition in that it would mean the understanding elementally inserts the aether, which could not then be a transcendental *material* condition, but a transcendental *conceptual* condition. This discussion leads back to a problem found in many pages of *Opus postumum*: how material forces affect a subject that *a priori* creates the concept of attractive and repulsive force.[23] Stated more generally: how does the understanding produce content before it is given in sensibility?[24] In fascicle XI Kant is clear that to answer these questions effectively we must change the order of the faculties: we only experience what the understanding first makes possible and so this cannot be read in a purely materialist sense, which rests on the primacy allotted to sensibility in the first *Critique*. But there is, nonetheless, something stubborn and irrational in this reversal as when F.H. Bradley spoke of a Hegelian world where 'Death would come before birth, the blow would follow the wound, and all must seem to be irrational.' (Bradley 1916, 215). Kant's argument for the primacy of the understanding and the conceptual could not square up to the sober rationality of the Critical philosophy since it asks for a seemingly irrational circumstance, for intuitions to arise from concepts; it asks for a fundamentally post-Kantian, German idealist position. Dieter Henrich presents a reading which is consonant with this formulation, *Opus postumum* 'defined philosophy as the theory of, first, the principle of the intellectual world; second, the sensible world; and third, what conceives both in a real relationship – namely, the subject as a rational being in this world' (Henrich 2008, 52). Other commentators influenced by German idealism have also picked up on this aspect of

[23] See OP 21:477, 41; 22:320, 107 and 22:408, 123.
[24] This is effectively identical to the question of how synthetic *a priori* knowledge is possible, only the primacy of the understanding places this question into the background in favour of production.

Opus postumum, since it leads to the collapse of the spontaneity/receptivity distinction necessary for Kant's introduction of 'self-positing'. One example is Slavoj Žižek, who sees a Hegelian quality in *Opus postumum* precisely because a reversal occurs. He claims *Opus postumum* proposes that

> in an original act, the pure Self has to posit itself as passive, as a recipient of affections [...] Even a naïve intuitive approach can perceive the profound truth of this idea: at a certain elementary level, the spontaneity of apperception and the passivity of being affected coincide (Žižek 2019, 122).

It is difficult to overstate the close ties Kant's rendering of the understanding has to Fichte, Schelling and even Hegel. We can, for example, see that Kant is not too far from the 'Preface' of *Phenomenology of Spirit* where Hegel first proclaims, 'the living substance is being which is in truth *subject*, or, what is the same, is in truth actual only in so far as it is the movement of positing itself' (Hegel 1977, 10). But it requires an immense amount of unpacking to accept an internal switch from the Critical perspective to a more dynamic perspective in Kant's own work, which leads some commentators to profoundly question this thesis.

Fredrick Beiser is explicit in not believing the faculties to change in *Opus postumum*. His argument runs as follows. After detailing the malleability of the understanding and sensibility, he goes on to question whether this constitutes a '*transformation* or *revision*' of the faculties (Beiser 2008, 195-6). He answers in the negative, claiming that Kant retains his 'old dualisms', or his 'continuing allegiance to the distinction between understanding and sensibility.' (Beiser 2008, 197-8). Understanding must still rely on sensibility, otherwise Kant's whole Critical philosophy is jeopardized; he would have to modify the theory of space set out in the Transcendental Aesthetic as well as the Transcendental Schematism and perhaps

even the Transcendental Deduction.[25] Furthermore, there are textual elements in *Opus postumum* which contradict this thesis, showing Kant's allegiance to the serial rendering of the faculties as sequential (sensibility first, understanding second) and dual. How should we account for these moments?

In my view, Kant does not abolish the need for a *distinction* between the faculties, remaining committed to their difference, but this does not rule out the places where he contorts the way this distinction works. So whilst I agree with Beiser that there is still a difference between the faculties in *Opus postumum* and even that Kant is still engaged in a series of dualisms, I do not agree that this necessitates reading Kant as sticking with the *Stufenleiter* order of the faculties. But also a lot depends on what part of *Opus postumum* we are reading from since Kant is quite playful with the relationship between the faculties, sometimes insisting on the primacy of sensibility, sometimes on the primacy of the understanding. But what favours emphasizing the primacy of the understanding is that much of fascicle VII depends upon the primacy of spontaneity. For if sensibility were primary Kant's experiments with the primacy of spontaneous self-positing would be hard to understand. As the draft 'Beylage V' from fascicle X shows, it is in the context of the shifting faculties that the subject becoming an object for itself initially arises:

> Space and time are not objects (*Gegenstände*) of perception (empirical representation with consciousness) but rather *pure intuitions* (*a priori*). They are not *things in themselves* (*entia per se*), that is, not something existing outside of representations but rather they belong to the subject as an act through which it posits itself, that is, makes itself into the object (*Gegenstande*) of its own representations (OP 22:409, m.t).

[25] See Collins (1943, 260-73) and Lehmann (1980, 100-1).

And this later transforms in draft 'X' from fascicle XI into: 'material (*Materiale*) of sensible representation lies in perception, that is, in the act whereby the subject affects itself and becomes appearance of an object (*Objects*) for itself.' (OP 22:502, 146, t.m). As Lehmann points out this suggests not only a logical act but one in which what is conceptual is also phenomenal: 'The subject posits itself not merely as *cogito*, rather as an object in appearance, as psychophysical subject, as an organism' (Lehmann 1969, 402, m.t),[26] an act which is rooted in pure spontaneity.

3. A Problematization of Phenomena

Before moving on to fascicle VII, I will consider a wider problematization around Kant's notion of 'phenomenon' here. In *Inaugural Dissertation* Kant first lays out the distinction between phenomena and noumena. The former is the 'object of sensibility' whilst the latter is 'that which contains nothing but what can be known through the intelligence' (ID 2:392, m.t). This alignment is ported over to the first *Critique* without much modification. That is, phenomena in the first *Critique* are objects given through sensibility, divorced from the conceptual. But we face a stark problem; in light of the reversal of the faculties would this distinction be rendered untenable in *Opus postumum*? The issue is brought out in Kant's discussions of Isaac Newton's Book III of the *Principia*, for one of the main themes of fascicle XI is a critique of Newton's 'magnum opus'.[27] Kant's interrogation of the sensibility/understanding relationship initially puts Newton's natural philosophy in which 'propositions are deduced from the phenomena' (Newton 1999, 589) into question since phenomena would now rest upon and be conflated with the primary *conceptual* positing of the understanding.

[26] See Basile (2013, 135-7).
[27] See Tuschling (1971, 91) for a list of references to the 'Newton-Polemics' in *Opus postumum.*

In On the Ground of the Distinction of all Objects in General into Phenomena and Noumena of the first *Critique*, Kant connects phenomena with the empirical and sensible (CPR A248/B305nC) and noumena with abstraction by the understanding (CPR A255/B311). After showing the impossibility of having one without the other, Kant explores their 'sophistical' use in the two terms *mundis sensibilis* and *mundis intelligibilis*, or 'sensory world' (*Sinnenwelt*) and 'world of understanding' (*Verstandeswelt*), respectively. *Mundis sensibilis* pertains to the 'sum total of appearances,' which is intuited (correlated to theoretical cosmology 'which expounds the mere observation of the starry heavens'), and *mundis intelligibilis* pertains to the interconnection of appearances which is thought (correlated to contemplative cosmology such as Newton's laws of gravitation). The latter makes 'an intelligible world representable', or conceptually generated content phenomenally given (CPR A256-7/B312-3). Kant's theorization of phenomena here is quite bound up with Newton's use but in a very peculiar way. By aligning Newton's phenomena with *mundis intelligibilis*, Kant effectively places them in the register of the conceptual, which is difficult to understand since Newton could surely not have deduced his theory only from conceptual content. So, we first need to explore further what phenomena are for Newton to understand Kant's point.

To begin an exegesis of what phenomena are in Newton's system, we must start with the basic premise that Newton claims to have no metaphysical edifice in his work, since he is not engaging in formal questions of *how* we know, but with the mathematical foundations of *what* we know through observation and experiment. It is in this sense that he 'present[s] principles of philosophy that are not […] philosophical but strictly mathematical' (Newton 1999, 439) and that these are 'deduced from the phenomena' (Newton 1999, 589) rather than from hypotheses. Hence, trying to locate a philosophical vocabulary of phenomena in the framework of *Principia* would seem like a futile exercise. But we can find clues in how Newton deals with hypotheses. Newton meant many things by the term 'hypothesis' which Alexandre Koyré has usefully catalogued. Koyré demarks an early use of the term as 'a fundamental

assumption or supposition in a theory.' (Koyré 1965, 264). This is the general sense of the term in the seventeenth-century, where one develops a hypothesis to justify a more general theory. It is not this definition of hypotheses Newton is against later in his life, however, but a narrower definition with connotations of fictionalization or unscientific presumption for the sake of a theory, of which Descartes and Leibniz are the chief targets in Newton's mind. In this narrower definition, hypotheses present a feigned (*fingo*) framework upon which no science could/should be based.[28] In Book III of *Principia* ('The System of the World') hypotheses are contrasted with the rules of philosophical reasoning (*regulae philosophandi*) and the phenomena from which wider mathematical propositions can be inferred. We know this contrast is great because, as Koyré points out, the first edition of Book III lists nine 'hypotheses', whilst the second and third editions replace these with three, and later four, 'rules' and six 'phenomena.'[29] With this change we are given the entry point into a more speculative perspective than other sections of the *Principia*. What are the rules of philosophical reasoning and what are the phenomena? Are we to assume that phenomena are given in sensibility, whilst rules are the categorical strictures placed upon this content?

That there is an epistemology in Book III is a difficult claim to stake, but this does sometimes appear to be an adequate description and has been discussed in some of the (non-philosophical) Newton literature.[30] In Rule 3 for example, Newton claims that based on evidence gleaned from experiments on particular bodies, we can conjecture about all other bodies like them. That is, the rule acts much like a categorical generalization: 'The extension of bodies is known to us only through our senses […] but because extension is found in all sensible bodies, it is ascribed to all bodies universally.' (Newton 1999, 441). The 'all' in this sentence anticipates the Critical model of the understanding as that which finds and makes

[28] See Koyré (1965, 34-5).
[29] See Koyré (1965, 262-3) and Newton (1999, 440).
[30] For example, Kerszberg (2012, 530) discusses 'two epistemological strategies' at play in the deduction from phenomena.

connections in sensible content. So far this is a model which seems to conform to the Critical philosophy, as one would expect. But a problem emerges when trying to map the faculty of sensibility onto Newton's phenomena. To take the first two examples:

> Phenomenon 1: *The circumjovial planets [satellites of Jupiter], by radii drawn to the centre of Jupiter, describe areas proportional to the times, and their periodic times – the fixed stars being at rest – are as the 3/2 powers of their distances from that centre*. (Newton 1999, 443).

> Phenomenon 2: *The circumsaturnian planets [satellites of Saturn], by radii drawn to the centre of Saturn, describe areas proportional to the times, and their periodic times – the fixed stars being at rest – are as the 3/2 powers of their distances from that centre*. (Newton 1999, 444).

These phenomena constitute a series of inferences which numerically plot the behaviour of physical bodies. Within the descriptions of the phenomena, Newton includes a table which collates all the observational data that goes toward making up a single phenomenon, from the observations of Giovanni Alfonso Borelli to the observations of Giovanni Domenico Cassini. The importance of observational data not only for verifying but even for constructing phenomena tells us immediately that they are not simply 'given' in sensibility. The phenomena Newton works with are strictly numerical tables of the times and distances of elliptical orbits and hence are resistant to alignment with the Critical conception of the faculties more generally. There are, in fact, no sensible correlatives in Book III, only mathematical correlatives, which is Newton's intention *vis a vis* claiming to only engage in principles of mathematics which form a foundation on which to base natural philosophy. It is this aspect which Kant innovatively picks up on in *Critique of Pure Reason* when he aligns Newton's cosmology with *mundus intelligabilis*, for, in Kant's view Newton's phenomena are constructed out of previously conceptualized content.

Kant takes this analysis further in fascicle XI by problematizing the title of Newton's *Principia*. The problem for Kant is that a mathematical principle cannot properly lie at the foundation of a *philosophy* of natural science, just as a philosophical principle cannot lie at the foundation of a *mathematics* of natural science; both occupy separate territories and are implicitly conflated (through subreption) in Newton's 'natural philosophy' (OP 22:488-9, 138).[31] Kant takes this issue to an extreme, suggesting two entirely separate branches: 1. 'Philosophical principles of natural science' (*scientiae naturalis principia philosophica*) and 2. 'Mathematical principles of natural science' (*scientiae naturalis principia mathematica*) (OP 21:238, m.t). A year or so before fascicle XI, Kant gives the details on a loose page from fascicle IV:

> What are called the *mathematical* foundations of the science of nature (*philosophiae naturalis principia mathematica*), as expressed by Newton in his immortal work, are (as the expression itself indicates) no part of the *Naturphilosophie*. They are only an instrument (albeit a most necessary one) for the calculation of the magnitude of motions and moving forces (which must be given by observation of nature) and for the determination of their laws for physics (OP 21:482, 43).

For Kant it is absurd to engage in a *mathematical* foundation of natural philosophy, since it acts merely as the instrumental calculation of the quantity of moving forces, not their grounding principle. And philosophy is to do with finding out what these grounding principles are, not in terms of quantity alone but also in terms of quality. According to Kant, Newton made an amphibolous error by running the two different territories of mathematics and philosophy together without first explaining their distinction and then their transition into unity.[32] In

[31] See Pecere (2014, 158).
[32] As Mathieu (1994, 164) also claims.

fascicle XI Kant claims that because of this confusion, the *Principia* 'assumes' gravity 'for the sake of the system' (OP 22:455, 125)[33] which means it encroaches on conceptual territory over/against sensible territory. Thus, from the perspective of *Opus postumum* a conceptual gloss must be given to Book III because it cannot be said to unfold according to phenomena in sensibility, but phenomena (and not noumena) in the understanding. But Newton already assumes such a position the moment he claims only to posit mathematical principles for the sake of grounding natural scientific investigation into physical phenomena. Hence, whilst Kant directs criticism at Newton in fascicle XI, it might well be his own previous understanding of phenomena in *Critique of Pure Reason* that he critiques.[34]

Much can be chalked up to the enlarged role of force in fascicle XI which is both rooted in the understanding and is the condition of possibility for phenomena. Both Book III of *Principia* and *Critique of Pure Reason*, whilst also elevating the role of the understanding in the explication of forces ('induction' in Newton and '*mundus intelligibilis*' in Kant) do not go as far as fascicle XI. For in fascicle XI forces are more complex, spotlighting the mid-point between the receptivity of intuitions and the spontaneity of concepts, both of which are inserted by the understanding:

> The first principle (*Princip*) of representation of the moving forces of matter [is] to regard them not as things in themselves (*Dinge an sich*) but as phenomena, according to the relation which they have to the subject – as they affect our sense, or as we affect our sense ourselves. [It involves] inserting the formal element of sensible representation into the subject in order to progress from the Axioms of Intuition, the Anticipations of Perception, etc. to experience – that

[33] Friedman (1994, 149-50) traces this problem to *Metaphysical Foundations*.
[34] Adickes suggests that Kant missed this due to the peculiar English use of the term '*philosophia naturalis*' (natural philosophy), which is equivalent to '*Naturwissenschaft'* (natural science) (Adickes 1920, 159n1). But it seems unlikely, since the two terms in German or English were not explicitly separated in the seventeenth- and eighteenth- centuries. Even in Newton's hands the terms were still obscure, although some argue that he set in motion their separation and the eventual superseding of natural philosophy by natural science in the nineteenth-century, e.g., Maxwell (2017, 30-58).

> is, *for* experience as a system, not as derived from experience. Consequently, [it amounts to] oneself founding such a system *a priori* – composing it synthetically, not deriving it analytically from the material (*Materialen*) of empirical representation. Hence, it is this principle (*Princip*) of form – not the *material* which moves the senses (*Sinnenbewegende Stoffe*) – which provides *a priori* the basis for the possibility of experience (by the rule, *forma dat esse rei*). (OP 22:300, 103-4).

Here, Kant's notion of phenomenon diverges from a purely sensible element to reflect an intermediary location, whose form comes first, reflected in the Latin inscription, '*forma dat esse rei*', 'form gives being to the thing'. This scholastic saying is repeated throughout *Opus postumum*,[35] becoming a motto for Kant, marking out the shift which has occurred between *Critique of Pure Reason* and fascicle X; content – the phenomenon – is brought into being only by form – the understanding. Strangely, for this reason phenomena in *Opus postumum* are closer to Newton's Book III than to *Critique of Pure Reason*.[36]

Nesting this into a more contemporary perspective, whilst the experimental physicist may argue that they merely observe and derive brute facts,[37] the transition in fascicles X and XI suggests they can no longer maintain this argument since 'to observe' rests upon a more primordial conceptual determination. This throws up an extremely *modern* perspective of physics as Werkmeister points out: 'It is a fact […] that in the *Opus postumum* Kant developed ideas that are strikingly similar to principles and conceptions of modern physics and quantum mechanics.' (Werkmeister 1980, 127). The understanding in fascicles X and XI ties a Gordian knot between observer and observed, between subject and phenomenon but in a different way

[35] See OP 21:11, 577, 638 and 22:114, 306, 446, 553. Especially noteworthy is a note in which Kant gives a definition of the saying: 'The saying of the scholastics: form – as the place of binding (*Verbindung*) of the manifold under one principle (*Princip*) – constitutes the essentiality (*Wesentliche*) of the thing (*Sache*) (*forma dat esse rei*) and precedes all material (the empirical) which may be empirically subordinated to that concept' (OP 21:641, m.t). Also see OT 8:404 for a contemporaneous published use of the saying.
[36] I agree with Friedman (1994, 230-1) on this point.
[37] E.g., Kuhn (2012, 25-8).

than Kant's so-called 'Copernican turn'. Rather, it is an anticipation of the wave function collapse in the Copenhagen theory of quantum mechanics.[38] The subject makes phenomena possible through observation in such a way that they cannot be properly distinguished, that form gives rise to content exactly at the point of interruption. Although Kant had this thought in earlier work – perhaps most notably in a Reflection from 1788-9 in which he states that, 'the container (*continens*) is simultaneously the content (*contentum*)' (R 18:314, t.m) – it comes to the fore most forcefully in the context of *Opus postumum*.

In as much as the 'what is physics?' reflections of fascicle X are intimately bound up with the observation of phenomena, the meaning of both observation and phenomena take on a richer hue. Much of this is premised on the transition whereby the understanding becomes the root from which all phenomenal possibility grows, or in Tuschling's words: 'We cannot understand nature, the world and its objects, as absolutely independent entities but only as products of the synthesizing activity of our understanding' (Tuschling 1989, 210). Only we must now reintegrate the understanding beyond solely engaging in synthesizing to its newly theorized role as a creator. In this way Kant comes close to his contemporary Lichtenberg's adage that, 'in observing nature, and especially the order found in nature, we are always only observing ourselves.' (Lichtenberg 2012, 113), a sentiment which is itself derivative of Giambattista Vico's '*verum ipsum factum*'; 'what is true is what is made'.[39]

Building on such a sentiment, Kant races to an extreme point in the succeeding fascicle VII which I now turn to.

[38] It is for this reason that McCall comes to the same conclusion when he says: 'Inorganic nature, as real object of physics, is only *as it were* an understanding. It is we who do the understanding and we who construct an experience of nature. Inorganic nature is merely an analogue of understanding.' (McCall 1983, 73). And see Bell (1995, 48).
[39] See Mathieu (1989, 132 and 1991, 67).

4. *Selbstsetzung* and Fascicle VII

Much of fascicle VII's 'Beylagen I-IX' drafts discuss 'self-positing' (*Selbstsetzung*). Exactly what this means for Kant, how it plays into the transition of the understanding and how it anticipates a wider transition from an epistemology of the subject to an ontology of force is the focus of this section.

It is worth starting with Kant's use of the term 'positing' (*Setzung*) in his 1763 essay *The Only Possible Argument in Support of a Demonstration of the Existence of God*. Kant tells us that positing involves creating relationships through the concept of binding (*verbindungsbegriff*) (OPA 2:73). This constitutes a 'relative' or epistemological side of the act of positing which becomes an important aspect of the categories in *Critique of Pure Reason*. Furthermore, this is opposed to the 'absolute' or ontological side of positing, which is attributed to God. More importantly, in the next sub-section Kant goes on to state that 'a distinction must be drawn between what is posited and how it is posited' (OPA 2:75). Although Kant was far from the Critical philosophy in 1763 the distinction between 'how' and 'what' in the act of positing informs the theoretical/practical divide. Indeed, these two sides return in fascicle VII, written some 37 years after the *Only Possible Argument*, playing an important role in differentiating the theoretical-epistemological ('how') discussions from the practical-moral ('what') discussions of self-positing. In the following, I investigate the theoretical-epistemological ('how') side of fascicle VII. This brief point of departure is intended merely as a reminder that Kant is not introducing a new concept, he is transforming an old concept, and often reviving its original distinction.[40]

[40] I disagree with Adickes when he says that Kant only engages in a repetition of Fichtean 'extreme idealism' by adopting the popular discourse of '*setzen*' (Adickes 1920, 668). The term had already been theorized in Kant's work long before as Förster (1989, 217-8) shows.

Indicative of this position, Johann Heinrich Tieftrunk's November 5, 1797 letter to Kant describes the act of positing as 'the *a priori* condition of apperception', claiming that 'positing, as a function of the mind, is spontaneity and, like all functions of self-consciousness, is a spontaneous positing-together (*zusammen setzen*) and therefore a function of unity.' (C 12:213, t.m). Accordingly, Tieftrunk places a considerable weight on this act: 'All existence (*Dasein*) is therefore based on this original positing, and existence (*Dasein*) is actually nothing else than this being-posited (*Gesetztsein*). Without the original, pure act of spontaneity (of apperception), nothing *is* or exists.' (C 12:214). In a Reflection written on a loose sheet from 1797, Kant restates Tieftrunk's problematic in the following way: 'To answer Tieftrunk – How can a subject intuited by itself, know itself merely as appearance?' (R 18:672, t.m). And then around three years later Kant begins writing on self-positing in earnest, specifically homing in on Tieftrunk's observations. But to grasp self-positing with more clarity we must also understand Tieftrunk's basis for grounding self-consciousness on positing and this, as he shows, he finds in Kant's 'transcendental unity of apperception' found at the heart of the Transcendental Deduction.

Although there are voracious disagreements over the two transcendental deductions,[41] we may say that both share the contention that transcendental apperception is a primordial unity. To pick two examples, the A edition reads, 'the original and necessary consciousness of the identity of oneself is at the same time a consciousness of an equally necessary unity of the synthesis of all appearances in accordance with concepts' (CPR A108); and the B edition reads, 'it is only because I can bind a manifold of given representations *in one consciousness* that it is possible for me to represent the *identity of the consciousness in these representations* itself' (CPR B133-4, t.m). Transcendental apperception is the identity of the subsisting 'I think' which accompanies and binds all representations in sensibility to a particular self-conscious experience (CPR B131-2). In its role as a binding, Kant sees apperception as preceding the

[41] E.g., see Strawson (2007, 86-9) and Beiser (2008, 176-9).

sensible content of objects: 'no parts of knowledge can occur in us, no connection and unity among them without that unity of consciousness that precedes all data of the intuitions' (CPR A107, t.m). It is for this reason that the transcendental unity of apperception finds its place in the Transcendental Deduction, for the aim of this section is to show that the subject has certain concepts which accurately line up with sensible content, *before sensible content has been given* – that is, *a priori*. And the most elementary of these concepts is the transcendental unity of apperception, which becomes 'the supreme principle in the whole of human knowledge' (CPR B135, t.m), or the condition of possibility for all knowledge. But it is only this in so far as it formally unifies the field of disparate sensible content into a particular experience sustained through time. That is, Kant merely elaborates upon the *Stufenleiter* ordering of the faculties as serial, in which sensibility still precedes understanding but where some higher act of binding precedes both: 'this unity, which precedes all concepts of binding *a priori*; is not the former category of unity […] We must therefore seek this unity […] someplace higher' (CPR B131, t.m). Yet the importance of the understanding cannot be downplayed since Kant claims that 'the synthetic unity of apperception is the highest point to which one must affix all use of the understanding' (CPR B134). Using the categories, the understanding synthetically organizes sensible content, thereby legislating over it, but the possibility of the understanding itself is found in the more primordial transcendental unity of apperception. This is a contested area of Kant scholarship[42] and there are many perspectives we could take, but at the very least we get a sketch of a relationship between the faculty of understanding and transcendental apperception, that they are bound up with each other.

Another important element is Kant's emphasis of the spontaneity of the transcendental unity of apperception: 'this representation is an act of *spontaneity*, that is, it cannot be regarded as belonging to sensibility.' (CPR B132). But what is spontaneous about transcendental apperception if all it does is unify sensible content? That is, although 'we can represent nothing

[42] See Gardner, (1999, 145 and 158-9) and Martin (1974, 192-3).

as bound in the object (*Object*) without having previously bound it ourselves' (CPR B130), we still need content to bind without which there could not be transcendental apperception in the first place. To table an answer, it seems obvious to return to the understanding as binding, which 'is an act (*Actus*) of [the subject's] self-activity' (CPR B130), but this would water down the much stronger thesis that spontaneity involves the production of such content.[43] We see this attribution of production to spontaneity emerge at the beginning of the Transcendental Logic, where Kant uses the term '*hervorzubringen*' to enunciate the spontaneity of understanding, which is translated 'bringing forth' but can also be rendered, 'producing' (CPR A51/B75).[44] This productive aspect of spontaneity is not at stake in the transcendental deductions, however, since both transcendental apperception and the understanding remain unificatory. This means that something tacitly precedes even the transcendental unity of apperception, something that is productive of content that only gets bound by apperception afterwards. It is exactly at this juncture that fascicle VII's discussions of a primordial act of self-positing come into play.

Interestingly, fascicle VII initially echoes the transcendental deductions. For example, Kant says, 'The faculty of representation proceeds from the *consciousness* of myself (*apperceptio*), and this is a merely logical act, an act of thought, through which no object (*Gegenstand*) is yet given by me' (OP 22:79, 187), which is to say, self-consciousness (apperception) is a pure '*ens rationis*' or concept without an object, a thought object or act of binding disparate content together. Yet in a deleted passage from the same page Kant hints at where and why self-positing arises: 'The thinkable (*cogitabile*) requires an object (*Gegenstand*) (*dabile*) for the purposes of knowledge, namely, something which corresponds as *intuition* to a concept' (OP 22:79, 187, t.m). Determining the giveable (*dabile*) object corresponding to the thinkable (*cogitabile*) is the work of self-positing, which is what must precede transcendental unity of apperception for the subject to be giveable as an object. In this connection, it tries 'to

[43] See Ellis (2017, 139).
[44] Note the use of the term in the *First Introduction* to the third *Critique* and its translation, 'producing' (FI 20:231).

show how the I as mere object of thought (*cogitabile*) can become an empirical object given in space and time (*dabile*).' (Förster 2000, 103).

Yet it can still be argued that this goes no further than the first *Critique*, as Edwards suggests: 'one could, it seems, justifiably maintain that the description of theoretical self-positing does nothing more than refine the presentation of the *a priori* anticipation of the form of possible experience already offered in the first *Critique*.' (Edwards 2000, 168-9). Although the ambition is similar to the deductions, self-positing is different because it is premised on the primacy of the understanding, not only as a faculty of formal unification but as the motor behind making oneself into a contentful object. Where transcendental unity of apperception precedes both understanding and sensibility in the first *Critique*, it is the spontaneity of self-positing – instigated by the understanding – which precedes all other subjective operations, acting as the condition of possibility for all proceeding knowledge. In contrast to the transcendental deductions, what this brings to light is the need to make a transition from a primordial concept to intuition, the *reverse* of the *Critique of Pure Reason*, which goes from intuition (Transcendental Aesthetic) to concept (Transcendental Analytic). This takes full advantage of the liberation of the understanding in fascicles X and XI, rendering it productive of content essential for the possibility not only of knowledge of the object, but of the object itself. That is, it allows for a new meeting point between self-consciousness and the object, namely, to be self-conscious or to think conceptually *is* to posit oneself as an object: '*Consciousness* of itself (*apperceptio*) is an act through which the subject makes itself in general into an object (*Objecte*)' (OP 22:413, 180);

> Consciousness of myself (*apperceptio*) is the act of the subject making itself into an object (*Object*) and [is] merely logical (*Sum*) without determination of the object (*Gegenstandes*) (*apprehension simplex*). Thinking the representation of myself with consciousness precedes all judgement (*Urtheil*) (OP 22:89, m.t).

Though subtle, Kant picks up on the problem left in the transcendental deductions and twists it to render apperception as the act by which the subject becomes 'the bearer (*Inhaber*) and author (*Urheber*) of its own representations.' (OP 22:82-3, 189, t.m). In short, to think is to posit oneself and to posit oneself is to become an object: 'the subject posits itself and makes itself into an object (*Object*) of the senses, but not as *thing in itself* (*Ding an sich*) (*ens per se*), only [as] an appearance =X' (OP 22:25, m.t).

We also see how the possibility of the subject as object is indexed in the spontaneous act of self-production; no longer is the understanding equiprimordial with sensibility, nor is it reliant on sensibility, nor does transcendental apperception precede it, rather, the understanding produces the very fabric of subjectivity itself, which is then transformed into objectivity: 'The understanding begins with the consciousness of itself (*apperceptio*) and carries out (*übt* [...] *aus*) thereby a logical act. To this the manifold of outer and inner intuition aligns itself, and the subject makes (*machen*) itself into an object (*Gegenstand*) in an unbounded (*grenzenloser*) sequence.' (OP 22:82, 189, t.m). But in tracing the experience of objects back to the spontaneity of the understanding, what happens to the receptivity of sensibility and intuition?

In the transcendental deductions, receptivity is defined in opposition to the act of spontaneity, but this is changed in fascicle VII, where receptivity is also transformed into an act:

> The representation of apperception which makes itself into an object (*Gegenstande*) of intuition contains a twofold act: first, that of positing itself (the act of spontaneity); and [second], that of being affected by objects (*Gegenständen*) and interconnecting (*zusammen*) the manifold in representation to *a priori* unity (the act of receptivity). (OP 22:31, 173, t.m).

What seems to have occurred in this passage is a swap between transcendental apperception and intuition, between an act of spontaneity and an act of receptivity. That is, Kant pinpoints the act of self-positing as a more primordial spontaneity, whereupon the unifying function of transcendental apperception is transferred to the receptive act of intuition. The logic is that if the understanding precedes sensibility and makes experience possible via self-positing, then receptivity, previously defined as the reception of sensible content, must also be made into an act. What is odd, however, is that Kant makes it into an act of unification; does this active conception of receptivity abolish what Hall calls 'genuine receptivity' (Hall 2017, 188) and is the relation between spontaneity and receptivity not undermined here? As Tieftrunk states in the November 5, 1797 letter, the question is, if the subject posits itself as object, 'from where does the manifold of sensation come, what in it is the *merely empirical* aspect of sensation? [...] what are these objects (*Objekte*) that affect sensibility? Are they things in themselves or – ' (C 12:215-6, t.m). There is a potential answer to this problem, although it may not be as exhaustive as one would hope. Unless by 'genuine' Hall means 'passive', the passage above does not abolish genuine receptivity.[45] Receptivity is still a feature of sensibility, but it is not premised on a 'black hole' conception where sensibility lies permanently open to an inaccessible outdoors, rather, it performs an act similar to opening and closing, except the opening is onto a content which is already inherently constituted by the understanding. In other words, receptivity and spontaneity have now transitioned into each other's realm; to be affected the subject must have previously posited itself as capable of being affected.

Another issue this relates to is how Kant now understands space. According to Tuschling's 'subjects at stake' (Tuschling 1993, 160), space, which is an *a priori* form of sensibility in the Transcendental Aesthetic, undergoes a revision in *Opus postumum* precisely

[45] Allison (2004, 282) reads the receptivity of sensibility as indicative of passivity, but I do not think this is quite so easy. In fact Kant seems to be quite opposed to aligning the two, as Caygill (2003, 180) notes: Kant was dissatisfied with 'simply bas[ing] the distinction between sensibility and understanding on that between passivity and activity' as early as the *Logic Blomberg* of the early 1770's. See L-Lo/Blomberg 24:16-301.

along the lines of the change made to the understanding and apperception in fascicle VII. Keeping with the theme of self-positing, Kant says space becomes a form 'which we ourselves make (*machen*)' (OP 22:76, 185), that is, if the first content is made by the subject endowed with understanding, then it must also make space, since it is in space that content is first encountered. Förster provides a way to make sense of the modification made to space here. First, he claims, 'Space must […] be represented, not merely as a form of intuition, but as something existing outside me, as something empirically given. It can be this only if it is filled with moving forces'. Second, 'for there to be experience of any particular object in space, the object's moving forces must affect the subject'. And last, 'The moving forces of matter cannot be given to the subject by being passively received. They are recognized only by the subject's reaction, as forces with which we interfere' (Förster 1989, 230).[46] Rather problematically, this suggests a naïve realism with regards to space, something which Kant argues against throughout *Opus postumum*, but it nonetheless shows how the possibility of being affected by forces through space is premised on the activity of the subject as an interference. For the subject to be experientially affected by forces it must interrupt the flow of force by itself emanating forces and it is this interruption which is identical to the experience of space. In this connection, the self-positing subject transforms space into an '*act* of the force of representation positing (*setzen*) itself' (OP 22:88, 193, t.m), or into a field of potential. To premise a subject which exists through self-positing, then, rejects Newtonian 'absolute space' by establishing a space which is identical to a variety of potential acts of interference. Hence when Kant says, 'the position (*position*) of something outside me, itself first commences from me in the forms of space and time, in which I myself posit (*setze*) the objects (*Gegenstände*) of outer and inner sense' (OP 22:97, 195), it comes preloaded with such a modification, space and time are ways of marking out potential action. Accordingly, to be affected is identical to the capacity to affect,

[46] Förster references a passage from fascicle IV in support of this reading: 'The concept of originally moving forces is not taken from experience, rather it must lie *a priori* in the activity of the mind (*Gemüths*), and of which we are conscious in moving.' (OP 21:490, m.t).

but the wider implication is that the whole structure is grounded in the originary act of the understanding, which can only be the case if it precedes sensibility.[47] Just as self-consciousness is identical to the self-positing of the subject as object, space becomes identical to the representation of this self-positing.

At this point we can easily grasp Kant's adoption of themes from early German idealism, perhaps owing to no less than Tieftrunk's adoption of such themes in his letter, in particular his appropriation of Gottlob Ernst Schulze's *Aenesidemus* (which Kant also references throughout fascicle VII).[48] Such lines as 'That there is something else outside me is my own product. I make myself.' (OP 22:82, 189),[49] and 'Experience is not empirical knowledge, rather [it is] itself only an idea of the construction of a concept' (OP 21:90, m.t) cannot help but strike a resonant tone with a stricter idealism than transcendental idealism allowed for since they seem to step beyond the 'bounds of sense' erected by the *Critique of Pure Reason*.[50] For the stakes of fascicle VII, that self-positing is Kant's way of striving for a new way of viewing the relationship between self-consciousness and the object, echo Schelling's 1797 pronouncement that 'nature shall be visible spirit, spirit [shall be] invisible nature' (Schelling 1857, 56, m.t). They are even closer to Schelling's 1800 development of transcendental idealism, where he says, 'self-consciousness is the act whereby thinking immediately becomes an object to itself, and conversely, this act and no other is self-consciousness' (Schelling 1858, 365, m.t).[51] Oddly, Kant is one of the first to move towards this form of post-Kantianism and since fascicle VII was written three years after the publication

[47] In a passage from fascicle X but written during Kant's writing of fascicle VII, he is clear: 'Our sensible intuition is, initially, not perception (empirical representation with consciousness), for a principle (*Princip*) of positing oneself and of becoming conscious of this position precedes it.' (OP 22:420, 184).
[48] See OP 22:4, 99, 72, 104, 107.
[49] In 'Reflection 6354' from 1797, Kant remarks, 'I am to myself both that which is observed and the observer' (R 18:680). Copleston's (1977, 385-6) reading fails to grasp this since it presupposes no change between *Critique of Pure Reason* and *Opus postumum* on self-positing and the thing in itself.
[50] See Strawson (2007, 11-2).
[51] Tuschling notes: 'Many details of the doctrine of self-positing (*Selbstsetzungslehre*) in the VIIth and Ist convolutes are in my opinion only comprehensible against the background of Schelling's *System of Transcendental Idealism* [...] A detailed proof of this would, however, require a separate treatise which I cannot carry out here' (Tuschling 1991, 140n61, m.t).

of Schelling's *Ideas for a Philosophy of Nature* and contemporaneously with *System of Transcendental Idealism*, it could be seen as containing an essentially Schellingian thesis, but to explore this in the depth it deserves would require a whole work devoted to it.

We will now move on to the doctrinal parts of the *Opus postumum*, where I will discuss the elementary system of the moving forces of matter, focusing on its transition from Kant's pre-Critical work, moving beyond the remit of the Critical philosophy.

Chapter 3. Transition of the Elementary System: An Ontology of Force

Introduction

Having explored the transition concept from an architectonic and epistemological perspective in chapters 1 and 2, my focus in this chapter shall be on the doctrinal 'elementary system of the moving forces of matter' (*Elementarsystem der bewegenden Kräfte der Materie*) and the drafts which precede it, what I call the 'early elementary system'.[1] From this chapter on I begin to expand beyond the frontier of the Critical philosophy to see how the concept of force in the elementary system constitutes a transition spanning Kant's early work to *Opus postumum*.

It is by now well known that Kant was concerned with force from the start of his career in 1747 until 1803, a year before his death. Whilst the Kant literature often investigates this in reference to *Metaphysical Foundations*, not much is said about the connections between *Physical Monadology, Metaphysical Foundations* and *Opus postumum*. In the following I investigate this constellation by homing in on the transition of the concept of force, which starts in *Physical Monadology* (*mutuo conflictu*), is reinscribed in *Metaphysical Foundations* (*entgegenwirken*) and reformulated in *Opus postumum* (*Spannkraft*). By proceeding in this way, we gain a perspective of a new relation of forces, their culmination in a tension of forces model and the implications this might have on thinking matter, body, motion, mechanism and dynamism in *Opus postumum*.

Exploring what is perhaps one of the least discussed parts of *Opus postumum* invites us to access a thinking of force we did not and could not officially receive from Kant. Whether correct or incorrect from a contemporary physics standpoint there is something compelling

[1] The 'El.Syst 1-9' drafts were written between October and December 1798 and are found in fascicle VIII (OP 22:135-201). The early elementary system drafts are comprised of the 'α-ε' drafts found in fascicle II, V, IX (OP 21:247-64; 21:495-504; 21:521-8; 22:205-15), the 'A-C' drafts found in fascicle III (OP 21:307-34) and the 'No.1-No.3η' drafts (OP 21:161-74; 21:294-307; 21:352-69; 21:528-35; 22:216-26; 22:246-67), all written between July 1797 and October 1798.

about the elementary system and I have hopefully begun to convey this in the present chapter. Moreover, my overarching concern is to continue to develop the transition concept and suggest its wider specification in Kant's corpus.

1. *Vorarbeit* of the Elementary System

In a tentative note from *The Philosophy of the Young Kant*, Martin Schönfeld proposes a transition in Kant's view of matter: 'In the course of his philosophical development, Kant possibly changed his view on the activity of matter twice. He argued for an active matter throughout the pre-Critical philosophy' whilst, 'in the Critical period, Kant rejects active matter' (Schönfeld 2000, 271 n.41). Whilst Schönfeld sees this as a discrete aspect of the shift between Kant's early and middle work, it also opens the possibility of a wider transition which does not end with the Critical philosophy.[2] That is to say, Kant's view of matter and its relation to force may extend beyond the Critical philosophy both chronologically and conceptually. Specifically, in the drafts of *Opus postumum* which attempt to construct an 'elementary system', the motif of force, matter and their relation returns with a vengeance. In this connection, I suggest we append a third moment to Schönfeld's note to accommodate another change in Kant's concept of matter and force. But because it is not used anywhere else in his corpus, we must first try to grasp the basics of what Kant means by 'elementary system' (*Elementarsystem*).

'Elementary system' first appears in fascicle V where two parts of a single work are outlined: '1. Part on the elementary system (*Elementarsystem*) of the moving forces of matter. 2. [Part] on the world system (*Weltsystem*) through the moving forces [of matter].' (OP 21:533, m.t).[3] The contours of the division are sketched in the surrounding drafts, signed 'α-ε', 'A-C'

[2] See Pecere (2014, 168-71).
[3] For more on the place of these terms see Berg (2014, 301-2) and Tuschling (1971, 142-51).

and 'No.3-No.3η'[4] but Kant does not give us reason to assume that he is in the midst of constructing the elementary system itself because he labels most of these drafts generically and does not point to a solid definition of what an elementary system is. In fact, we find Kant struggling to spark off the elementary system, with its layout being written and rewritten into ever more elaborate structures. In light of this I suggest we demark these drafts as part of an 'early elementary system' since it is only in October 1798, after a long year of attempts, that Kant finally labels his drafts 'El. Syst.' In this section, then, I lay out the context of the early elementary system.

Not much emphasis has been placed on the early elementary system and even the elementary system drafts themselves are often overshadowed by the infamous 'Übergang 1-14' drafts which succeed them. Owing to their similar subject matter the drafts often get lumped in with the *Oktaventwurf* sheets (OP 21:373-412).[5] It is not difficult to see why this might be since the early elementary system is extremely diffuse; a chaotic incompletion pervades the drafts making them difficult to read as a fluid whole.[6] But this incompletion provides fertile ground for reading Kant as a radical experimentalist. One of the few scholars to take the drafts seriously is Mathieu (1989, 73) who highlights the marginal and formal nature of the division between elementary and world system cautioning us that they only contain a blueprint outlining two parts of a future work but not the actual work itself. Whilst we must keep this caution in mind there are still some contentful comments we can decipher around the meaning of an elementary system and Kant's obsessive desire to construct one.

Returning to the division quoted above, there is a clear interplay between the elementary system which is 'of' (*der*) the moving forces and the world system which is 'through' (*durch*) the moving forces. What we glean from this miniscule difference is that the

[4] See Adickes (1920, 53-62) and Förster (2000, 13-8) for the structural place of these drafts.
[5] This is found in fascicle IV (OP 21:373-412) and constitutes the earliest part of *Opus postumum*.
[6] E.g., see Tuschling's (1971, 131-2) quite pessimistic prognosis.

elementary system and world system contain two different relations to force. Perhaps the elementary system is more like a doctrine of force, whilst the world system uses this doctrine of force. Or to put it another way, perhaps the elementary system doctrinally precedes the world system. Later in the same fascicle Kant rewrites the titles, bringing the physicality of the world system into the foreground: 'Part 1. On the elementary system of all moving forces of matter. [Part] 2. On the world system considered physically.' (OP 21:511, m.t). The elementary system will contain all moving forces, whilst the world system will consider forces only physically. By reformulating the titles in this way Kant echoes the Leibnizian distinction of primitive and derivative force[7] as well as several tendencies in the natural sciences of his day. 'World system' might refer to Nicolaus Copernicus' 'world machine' in *On the Revolutions of the Heavenly Spheres* (1543), Johannes Kepler's *Harmony of the Worlds* (1619), Galileo Galilei's *Dialogue Concerning the Two Chief World Systems* (1632), Newton's Book III of *The Principia* ('The System of the World') or even Pierre-Simon Laplace's *The System of the World* (1796). Each work considers force as a physical phenomenon primarily observed through effects, which may be what is indicated in Kant's expression of the term. Furthermore, each of these works takes place at a cosmological scale, discussing planets, moons, systems of planets, galaxies etc., referencing a further difference between elementary and world system, this time at the level of scale.[8]

We might therefore think of the elementary system as a microscopical ontological doctrine which focuses on forces at a terrestrial scale. In this connection, it could be understood as an analogue to the Aristotelian doctrine of '"simple" bodies (fire, air, water, earth)' (Aristotle 2001, 511) although it could equally pertain to later anti-Aristotelian theories such as Bernardino Telesio's delineation of two active forces (heat and cold).[9] In the *Metaphysics*

[7] See Leibniz (1989, 119-20).
[8] That the world system pertains to a cosmological scale will be explored further in chapter four.
[9] See Bacon (1882, 343-99). For the Aristotelian roots of 'hotness' and 'wetness' see Heilbron (1982, 14). Also see Caygill's (2007b, 231) framing of Campanella's fourfold physiology into, (1) matter, body and forces; (2)

Dohna lecture given a few years before the early elementary system in 1792-3 there is certainly an anti-Aristotelian sentiment at work:

> for the world has no simple parts. Would we thus have no first elements? Considered as noumenon, the world certainly consists of simples, for composition (*Zusammensetzung*) is just mere relation (*Relation*). But in the world of appearances there are no simple parts. Only the intelligible world – *mundus noumenon* – is *monadatum*, but we do not know it at all. (L-Met/Dohna 28:663-4, t.m).

And Kant continues: 'An element [is] a simple part. Is water [an] element? No, for it can still be decomposed, it consists of life air (*Lebensluft*) and combustible air, and we name something that contains no species (*Species*) elementary.' (L-Met/Dohna 28:664, t.m). In this passage, the term 'species' indicates a plurality which when rarefied becomes simple and can therefore be named 'elementary'. Kant finds it impossible to accept such simple parts in an Aristotelean sense, however, since they could only be noumenal thus impossible to account for empirically. Consequently, the succeeding elementary system could constitute an attempt to replace the Aristotelian ontology of divisible elements with an ontology of irreducible, indivisible forces.[10] The elementary system would then merely inscribe the outer-most ontological frontier of the moving forces. Yet we must remain cautious because the exact meaning of the terms are obscure, which drives us back to ask a more general question: what is meant by force? Or in Kant's own words: 'What is called force here? (*Was heißt hier Kraft?*)' (OP 21:507, m.t). What does force mean and what does a relation of forces entail? The question helps to frame Kant as

mechanical and dynamical forces; (3) organized and organizing matter and, (4) will power. As we will see in this chapter, this outline is certainly maintained by Kant, especially in relation to (1) and (2).

[10] It is also worth noting the significant link to Antoine Lavoisier's *Elements of Chemistry* here, which defines 'element' and 'elemental' as 'the last point at which analysis is capable of reaching' (Lavoisier 1965, xxiv) against the Aristotelian image of a select number of simple ontological matters. For more on the conjunction of Lavoisier and *Opus postumum* see Freidman (1994, 293) and Adickes (1920, 406-7n2) although it must be noted that Kant does not directly mention Lavoisier in *Opus postumum*.

a thinker who always had this problem on his mind, from the start of his career to its culmination. Whilst Kant was concerned with the relation of forces in his first text from 1747 we will push off from the later 1756 account.

2. First Relation of Force: *Mutuo Conflictu*

Physical Monadology is a text filled with metaphysical descriptions of force despite its call for a unification between Leibnizian-Wolffian monadology and Newtonian mechanics. At the start of the Introduction Kant outlines a metaphysical regime for understanding force, matter and body:

> Since the principle of all internal actions, in other words, the force which is inherent in the elements, must be a moving force, and one, indeed, which operates in an outward direction (*extrinsicus*), since it is present to what is external; and since we are unable to conceive of any other force for moving that which is co-present than one which endeavours to repel or attract; and since, furthermore, if we posit only the repulsive force, we shall not be able to conceive of the conjunction of elements so that they form compound bodies, but only their diffusion, whereas if we posit only an attractive force we shall only be able to understand their conjunction, but not their determinate (*definita*) extension in space – since all this is the case, we can already in a way understand that anyone who is able to deduce these two principles from the very nature of the elements and their primary affections (*affectionibus*) will have made a substantial contribution towards explaining the inner nature of bodies. (PM 1:476, t.m).

The initial focus of the passage is on a repulsive force which is intrinsic to the elements that constitute bodies and acts outward from the centre to the periphery. But if repulsion were alone in the elements, they would expand infinitely outward since there would be no limitation to their action. Therefore, says Kant's logic, there must also be another force which keeps

repulsive force in check so that the elements are stable enough to form compound bodies. The purpose of the *Physical Monadology* is to show how both forces are bound up with the essential properties of elements and that without them composite bodies could not exist. Kant calls this model a 'mutual conflict' (*mutuo conflictu*) of attractive and repulsive force (PM 1:475, t.m). The first instance of this model is tabled in *Universal Natural History* where a 'conflict' (*Streit*) between attractive and repulsive force is expressed through which 'matter is dissolved into fine particles (*Theilchen*)' (UNH 1:264, t.m). But this picture is quite different in that it operates at a cosmological scale whilst in *Physical Monadology* the landscape is elemental and essentialist which lends itself much more readily to the ontological trajectory culminating in an elementary system.

The decidedly metaphysical aspect of this model, however, is its reliance on the notion that bodies and elements both have inner natures which can, to some degree, be understood. This is reflected in the partition of the text into two sections, one which attempts to prove the existence of the inner constitution of elements and one which looks at how elements are the inner constituents of bodies. Each section indexes a peculiar expression of force, the first explores the forces which sustain elements in existence and the second looks at the forces which sustain bodies in existence or in Pollok's words, 'The transition from *Sectio I* to *Sectio II* of *Physical Monadology* forms a transition from monadology to a doctrine of actual bodies' (Pollok 2002, 73).

The insistence on exploring the inner constituents of elements and bodies is derived from the rationalist metaphysics of Baumgarten's *Metaphysica* whose §211 discusses the difference between 'influences' (*inflvit*) or the action of a substance on another outside of it, and an 'action' (*actio*) which is internal to the substance. Furthermore, in §213 Baumgarten considers 'conflict' (*conflitvs*) as the 'mutual (*mutua*) act and reaction (*actio et reactio*)' of two substances (Baumgarten 2017, 139). This chapter appears under the more general division of universal and disjunctive internal predicates, the former of which claims a coincidence between

the idea that there are internal predicates of a thing and the fact that it has an essence. Baumgarten says in §40, 'The collection (*complexus*) of the essential determinations in a possible thing, or its internal possibility, is essence (*essentia*)' (Baumgarten 2017, 108). Whilst *Physical Monadology* follows Baumgarten in working with a graspable essence of elements and bodies, what Kant modifies along Newtonian lines is the pairing of force with action.[11] It is not only that force constitutes the essence of elements, but that this essence is premised on activity. I will spell this view out by staging three moments in the text.

The first moment occurs in Proposition VII of the first section where Kant glosses monads as point-like basic elements analogous to Newton's image of matter in *Opticks*.[12] In contrast to Newton's image, however, Kant says that the monad 'has a certain extensive quantity' which is its sphere of activity (*sphaera activitatis*) and is synonymous with presence (PM 1:481). This accounts for the elements in so far as they extend into space. But in keeping with the metaphysical view, Kant argues that extensive quantities rely on 'internal determinations' which 'are not in space' (PM 1:481). That is to say, elements have an inner core which is inexplicable if we stay at the level of extensive quantity alone. For Kant, the internal determinations of an element are vital to understanding what its essence is since without it we could only describe its position in space instead of the fact of its being. Accordingly, internal determination is the focal point in the first section of *Physical Monadology* and it is the task of good metaphysics to investigate what these internal determinations are (PM 1:484).

The second moment occurs in Proposition IX of the second section where Kant proposes that repulsion be paired with impenetrability by drawing on the theory of contact. Kant says:

[11] See Edwards (2000, 119) and Polonoff (1973, 147).
[12] See Book Three, Query 31 in Newton (2012, 375-6).

> Undoubtedly, bodies act by moving each other. But the moving force, which is exerted from a given point, either repels other bodies from that point, or attracts them to it. It is obvious which of the two actions is to be understood as involved in contact. For, in moving one body closer and closer to another, we say that they are touching each other when the force of impenetrability, that is to say, of repulsion, is felt. (PM 1:483).

The picture Kant presents is of two bodies drawing closer to one another. To Kant's budding Newtonianism this suggests that another force must push back against the attracting force causing the bodies to touch rather than dissolve into one another.[13] It is just this phenomena that is identified as two forces mutually conflicting with one another. Contra Newton, however, is the metaphysical moment in which extended bodies are considered to have forces omnipresent within them. For this reason, repulsion does not arise but is 'felt' emanating outward from each body in contacting other bodies. A symmetry is formed, therefore, between the first moment where the elements were said to have an internality synonymous with their essence and the second moment where bodies are considered to have an internality synonymous with repulsive force.

The third moment, which brings us full circle to the initial discussion of the Introduction occurs in Proposition X of the second section. Kant tells us that the force of repulsion cannot possibly be the only force internal to bodies since if this were the case they would instantly disband outward in all directions, leaving only empty space. There must be another force 'inherent' (*insita*) in bodies which regulates the force of repulsion through mutual conflict, without this 'bodies of nature would have no determinate volume' (PM 1:484). Attractive force is thereby transmuted into the interior of bodies alongside repulsive force so that both forces

[13] See especially the relation this formulation has to Newton's third definition and third law of motion (Newton 1999, 63 and 50). Also recall Newton's famous example: 'If anyone presses a stone with a finger, the finger is also pressed by the stone.' (Newton 1999, 63).

operate on the same plane. In the young Kant's words: 'every element needs another force, that of attraction.' (PM 1:484). It is precisely at this point that the conflict model must also be extended metaphysically to the elements so that on the one hand attraction and repulsion conflict with one another at the level of (ontological) body but this in turn is grounded in the more fundamental and essential conflict at the level of (metaphysical) element.

The moments we have considered verse an active model of both element and body which never entirely leaves Kant's corpus, often returning in problematic ways. One way to articulate this problematic is that force considered through the aperture of motion lies on the periphery of *Physical Monadology*, arguably making an appearance in the term 'external relation (*externa referentur*)' (PM 1:481). But even here it is apparent that the concern is not motion through space but the filling of space or, once again, the essence of the element as activity rather than linear motion. Friedman pinpoints this when he interprets the text as developing an 'atomism of discrete force-centres' (Friedman 2015, 138 and 149); the forces at stake in *Physical Monadology* are centralized in each element and the action they instigate pertains strictly to metaphysical essence. The dissonance between force as an essence and force as the cause of motion etches a chasmic divide in *Physical Monadology* as many other commentators have noted.[14] That being said, as we saw in his Introduction, Kant's aim in writing *Physical Monadology* is to contribute a theory of elements to the discipline of metaphysics not to natural science. His theory of elements, then, appropriates the language of Newtonian forces, strips away their motive character and applies them to a landscape of Leibnizian internality and essence. This represents an early desire to go beyond traditional Newtonian causality to investigate the root of causes divorced from their motive effects, although the analysis of effects still occupies a significant place in Kant's early work.[15] For

[14] E.g., see Watkins (2003, 25), Polonoff (1973, 150) and Pollok (2002, 63).
[15] E.g., see NT 2:15-25.

involved in *Physical Monadology* is a speculative conflict model of forces beyond the pale of the natural science of Kant's own day.

To sum up this foray, the conflict model asks us to speculate on the *a priori* content of the elements and bodies by resorting to forces which, whilst ultimately stemming from Newton's mechanics, have not been inferred from phenomena and are inward facing.[16] In this way Kant goes before and beyond Newtonian causality.[17] The transition I trace in the following is concerned with the destruction of the symmetry in the conflict model as well as the dismantling of forces considered through the prism of essence.

3. Second Relation of Force: *Gegenwirkung*

Kant's Critical account of force is given in *Metaphysical Foundations*, written some 30 years after *Physical Monadology*. Despite the age gap between the two works there are certainly echoes of the conflict model in the Critical account. For example, in the Dynamics chapter the necessity of both attractive and repulsive force is reiterated, the picture of the two forces engaging in battle pervades and expressions drawn from Newton are always knocking at the door. But beyond these similarities, in the details of the work is a very different account of force such that bridging the two works or reading them side by side reveals a transition.

From the outset *Metaphysical Foundations* reads matter through the lens of motion, so much so that natural science is narrowed down to either pure or applied 'doctrine of motion (*Bewegungslehre*)' (MF 4:477). Force is also subordinated to motion which is now expressed as the '*quality* of matter, under the name of an original (*ursprünglich*) moving force and is therefore called *dynamics*' (MF 4:477). What is the reason for the dominance of motion here? One *Akademie* page later, Kant gives us the answer: *Metaphysical Foundations* seeks to

[16] See Edwards (2000, 119-21), Pollok (2002, 64) and Friedman (2015, 99).
[17] See Ferrini (2018, 33-44) and Janiak (2013, 397-8).

analyse the concept of matter to give 'instances *in conreto*' (MF 4:478) of the categories and 'the basic determination of something that is to be an object (*Gegenstand*) of the outer senses must be motion, because only thereby can these senses be affected' (MF 4:476, t.m). It is no surprise, then, that the whole text is filtered through the initial division of phoronomy or observable motion. The desire to construct a doctrine of motion enacts a radical departure from the account of forces found in *Physical Monadology*, pulling it into Critical shape.

In place of the mutual conflict of forces is a new model found at the centre of the Dynamics chapter which has come to be known by scholars as the 'balancing argument'.[18] At the outset Kant provides two simple definitions of attractive and repulsive force which will constitute the new model:

> *Attractive force* is that moving force by which a matter can be the cause of the approach of others to it (or, what is the same, by which it resists the removal of others from it).
>
> *Repulsive force* is that by which a matter can be the cause of others removing themselves from it (or, what is the same, whereby it resists the approach of others to it). (MF 4:498).

We see that the frame is geared toward distinct 'matters' (*Materien*) moving toward or away from each other. Attractive force is the cause of approach of matters to one another and by placing the emphasis on 'moving' (*bewegende*), is located outside of matter, that is, it is a force acting at a distance (*Fernkraft*). Repulsive force is slightly more ambiguous in that it is said to cause other matters to distance themselves from it, signifying not only a force acting between matters but one which is aligned with impenetrability, or contact (*Kontaktkraft*).[19] Where

[18] E.g., see Warren (2010) and Smith (2013).
[19] As Kahn (2017, 198) also maintains. Also see Carrier (1991, 209-10) and Jammer (1957, 180).

attractive force occurs in the interstice between matters, repulsive force points to a landscape in which matter has a continuously radiating force protruding from it. Furthermore, a space is temporarily opened for alternative operations of both forces in so far as the definitions use the language of 'can be' (*sein kann*) rather than 'are' (*sind*) causes. It is appropriate, therefore, to suggest that the definitions given are not the only ones and that both forces have operational stakes other than motion rolled into them, especially in the case of repulsion. For if both forces only act between matters what could explain resistance or rigidity? Yet Kant glances over this issue, leaving it tacit as he once again shrinks back into a picture where both forces are subordinated to motion, a view which persists throughout the rest of the text:

> Only these two moving forces (*bewegende Kräfte*) of matter can be thought. For all motion that one matter can impress (*eindrücken*) on another, since in this regard each of them is considered only as a point, must always be viewed as imparted in the straight line between two points. (MF 4:498).[20]

Aside from the reference to an atomist theory of matter, the forces at stake in *Physical Monadology* have entirely slipped away in favour of effects of force derived from the motion of matter. The geometric scenario of the passage is also important. Kant indirectly asks us to imagine two points on a line connecting them. A point is only able to make two serial movements: toward the other point or away from it. The move towards the other point is called attraction and the move away is called repulsion. This 'reduction' (*Zurückführung*) (MF 4:499) of force is a far-cry from the metaphysical conflict model of Kant's yesteryear: force has

[20] Also see the proof of 'Proposition 1' in 'Dynamics' which is foundational for this view: 'the cause of a motion is called a moving force (*bewegende Kraft*)' (MF 4:497). Carrier (2001, 119 and 128) attempts separating motive force from moving force for this reason. Carrier's discussion inflects Freidman's (1986, 45-6) cosmological analysis of force in *Metaphysical Foundations*, which homes in on Kant's desire to account for a Newtonian-style attraction.

nothing to do with essence, it plays no role in the constitution of elements and bodies, and if it did it is impossible for us to know. The glaring reason for this transition is Kant's intervening discussion of 'inner determination' (*innere Bestimmung*) in the Amphiboly of the first *Critique*.

In the Amphiboly, Kant curiously paraphrases two passages from Albrecht von Haller's poem *The Falseness of Human Virtue* when he claims '*That we have no insight into the inner in things*' (CPR A277/B333). The passages from the poem are worth quoting; the first reads, 'Into the inner of nature no created spirit protrudes/What Luck! When at the outer shell (*Schale*) one merely alludes' (Haller 1828, 78, m.t) and the second reads, 'The rabble knows not, it will never learn/The shell (*Schale*) that stops them; the core it cannot discern/It knows of the world only what moves on the external/And not the inner force which secretly innervates all.' (Haller 1828, 69, m.t). It is worth taking this reference to task since the stakes of the argument in the Amphiboly concern the impossibility of knowing the internal constitution of substance with certainty. Echoing the words of Haller, we are barred by a shell surrounding matter and in the words of the first *Critique* more generally, we only have access to an outer layer of appearances, not their inner determinations. Inner determination of matter can thus only be known comparatively, not absolutely. But in binding knowledge to a comparative understanding, what Kant means is that matter can only be known in so far as it stands in 'outer relations' (CPR A277/B333) to other matters.[21] This is carried over to the Dynamics chapter of *Metaphysical Foundations* where forces, although meant to be functions of the category of quality, are actually founded upon the category of relation, or cause and effect (MF 4:496).[22] The configuration we plotted in *Metaphysical Foundations* is therefore an application *in concreto* of what Theodore Adorno calls the 'Kantian block' (Adorno 2001, 18 and 66).

[21] This discussion coincides with the knowability of the thing in itself in the first *Critique*, which I shall not be explicitly raising here. See Westphal (2009b, 142-4) and especially Warren (2014, 70-3) and Mathieu (1989, 190). For a reading which proposes that forces are only ever relations see Hoppe (1969, 89).
[22] See Warren (2014, 50-1) and Pecere (2014, 172).

Indeed, in *Metaphysical Foundations* Kant grapples with this block by shifting to a relation of observable activity with the caveat that the forces which constitute matter may exist but are concealed from our knowledge. Kant is careful at the beginning of the Dynamics chapter for this reason when he discusses matter only as 'the movable insofar as it fills a space' yet still 'through a particular moving force' (MF 4:496-7). Matter is experiential because it expands to fill or have presence in a space, which is in turn a function of repulsive force, or what is once again identical to impenetrability (MF 4:508). We must be careful to read Kant properly here: it is not that matter *contains* repulsive force but that its filling of space is identical to its expansion which is a product of repulsion. How the so-called balancing argument fits into this perspective is the next question we must ask.

The balancing argument is said to take place in Proposition 5 and 6 of the Dynamics chapter. But in these propositions the term Kant uses to describe the relationship between the forces is 'counteracting' (*entgegenwirken*) not balancing. Although only a minor detail, it offers a different slant on how we should understand the relation between the forces. The argument runs somewhat parallel to the conflict model although with some interesting changes: for matter to be empirically viable it requires a 'second' (*zweite*) force acting against repulsion, which is allotted to attraction (MF 4:508). Without the two forces counteracting or meeting, matter would either expand infinitely or condense infinitely leaving empty space in its wake, a contradiction in terms for Kant since *Physical Monadology*.[23] If we are to take the need for forces seriously there must be a mid-way point between the two forces where they balance each other out so that the stable state of matter can be explained.

The difficulty of this argument consists in pairing it with the centralization of motion such that it is impossible to read Proposition 5 and 6 as situated within a simple motive framework. This shows up most clearly where Kant avidly sticks to the alignment of repulsion

[23] See Carrier (1991, 209).

with impenetrability, implying an inexplicable essence of matter. Repulsion is, after all, 'an essential (*wesentliche*) moving force' (MF 4:508) and Kant thinks of it as identical to the brute fact of the existence of matter. Furthermore, because this takes place at the level of matter and not body it is suggestive of a view more in tune with the conflict model than might be expected. But a difficulty which arises here is how Kant accounts for the counteracting of forces when they are distributed along two different planes. To put it bluntly, in so far as repulsion is considered essential to matter how can we account for its interaction with attraction which is not essential to matter but only moves it? This problem did not arise in *Physical Monadology* because *both* forces were considered from the metaphysical perspective of the essence of matter; they were mapped out on a single plane. In this connection, we pick up a deliberation in Proposition 6:

> Attractive force is that moving force of matter whereby it drives another to approach it; consequently, if it is found between all parts of matter, matter thereby strives to diminish the distance of its parts from one another, and thus the space that they occupy together. (MF 4:510-1).

Attraction operates between two distinct matters, pulling each one towards the other and is in this connection a restatement of Newton's gravitation. But Kant adds the speculative line that attractive force might also operate between *parts* of matter so that there are no internal empty spaces. This is clearly heading out of the frame of motion and Kant hesitates by using the all-important conditional subordinating conjunction, 'if' (*wenn*). There is, then, a small opening in overcoming the gulf between essential repulsive force and extramundane attractive force. By introducing a slither of uncertainty into the account of attraction, that it might also constitute the bare existence of matter, Kant indicates an a-symmetry built into the counteracting model of forces when viewed from a purely motive angle.

Although it considers the relation of matters to each other via the communication of motion, the Mechanics chapter gives us some further insight into the problem:

> The merely dynamical concept could consider matter also as at rest; for the moving force there dealt with had merely to do with the filling of a certain space, without the matter filling it needing to be seen as itself moved. (MF 4:536).

Here we see Kant once again laying a non-motive tint onto the counteracting model. The dynamical concept only describes forces as they pertain to matter filling space and thereby does not attempt to view matter in motion. Attractive force from this perspective must certainly be constitutive of matter, not only the cause of its motion but essential to its very existence. But what difference would there then be between the *Physical Monadology* account of force and the Critical dynamics of *Metaphysical Foundations* if both operate at the level of essence? If both forces were considered from an internal perspective, it would certainly eradicate the need for explaining how two different forces on two different planes balance one another out. But then would Kant not be engaging in metaphysical speculation beyond the Critical block? In Proposition 5 of the Dynamics chapter Kant recognizes the peculiarity:

> If attractive force is originally required even for the possibility of matter, why do we not use it, just as much as impenetrability? Why is the latter immediately given with the concept of a matter, whereas the former is not thought in the concept, but only adjoined to it through inferences? (MF 4:509).

Although no sufficient answer is given to this question it confirms that a counteracting between two different planes or orders of force *is* at stake. We can view this alongside Friedman's

interpretation, where he maps the forces onto the analytic/synthetic divide. Repulsion is an analytic predicate of matter in so far as without it matter would not exist; it is identical to the existence of matter. On the other hand, attraction is a synthetic predicate of matter in so far as it is attributed only after particular matters have become distinct. This is because attraction must be inferred from the observation of matters acting upon one another at a distance (Friedman 2006, 56).[24] The counteraction, then, occurs between the essence of matter (its repulsion) and the movement of matter (its attraction). Another way of thinking this is to picture a magnet attracting iron filings. For the iron filings to be attracted to the magnet there first must be a distinction between the filings and the magnet, and it is precisely repulsion which creates this distinction. Before both have even been introduced to one another repulsion stops the iron filings from melting into the magnet, or the magnet into the table, or the table into the room. The attraction of the filings to the magnet, on the other hand, occurs only after this analytic fact when it is observed that the two distinct things move toward one another. The counteraction occurs between the fact of the existence of the iron filings and the magnet, and the movement they engage in.

If this analysis is correct it brings into focus an alternative branch to the balancing argument as outlined by Daniel Warren (2010) and Smith (2013) which eschews harmonic equilibrium in favour of a radical dissonance between the forces.[25] Indeed, owing to its symmetry the conflict model is better suited to being described as an equilibrium whereas, owing to its a-symmetry, the counteractive model contains a profound instability. Although Kant tries to tacitly remedy this issue, if we were to take him at his word then *Metaphysical Foundations* would no more contain a 'doctrine of motion' than would *Physical Monadology*.

[24] Friedman unwittingly echoes Hegel's (2010, 146-7) reading of *Metaphysical Foundations* here. This point becomes one of the main thrusts of Hegel's critique of Kant's concept of matter. Also see Smith (1978, 150) for the original lining up of the forces with the analytic/synthetic divide.

[25] As Friedman puts it: there is a 'crucial asymmetry between attraction and repulsion' (Freidman 2015, 174). Tuschling (1971, 60) also notes this asymmetry, claiming that there is an 'incongruent opposition' (*inkongruenten Gegenstücken*) at play in *Metaphysical Foundations*, as does Hesse (1961, 177) and McCall (1983, 144-5).

Far from describing a balance between two specifically *moving* forces, the counteractive model contains an imbalance of forces smashed together from two entirely different domains: a domain of essence (metaphysics) and a domain of motion (physics). For this reason, the transition from the conflict model to the counteractive model is also that between a symmetrical and an a-symmetrical relation of forces. The shift between the two, that the latter seems less metaphysically appropriate, feeds into the assertion that Kant was unhappy with *Metaphysical Foundations*. Duque puts it best when, following Tuschling (1971, 37-9), he bases the genesis of *Opus postumum* on Kant's unease with *Metaphysical Foundations*: 'we can affirm that Kant was dissatisfied with *Metaphysical Foundations* nearly from the instant of its appearance' (Duque 1974, 61, m.t). Both Duque and Tuschling follow Adickes' footnote to Reflection 42 (R 14:183-4) where he signals that *Metaphysical Foundations* 'did not fully satisfy' Kant. This dissatisfaction leads directly to the early elementary system where a new relation of force is developed.

4. A New Relation of Force: *Spannkraft*

In a passage from the 'El.Syst' drafts, Kant provides a retrospective programme of what he was doing in the early elementary system: 'The relation (*Relation*) not of matters to matters but of the moving forces to them.' (OP 22:147, m.t). What he means is a refocusing away from the primacy of a doctrine of motion (matter acting on matter) towards the primacy of force. In this connection the drafts which make up the early elementary system present a series of sketches in which various configurations are tested out. Moreover, what is striking in these sketches is the desire to think interforcefully rather than causally, that is, to think in terms of forces interacting with one another in ways beyond the remit of the category of relation.[26] This

[26] See Rueger (1995, 33) and Pecere (2006, 258).

development highlights the transition at stake between the two previous models of force and their apex in *Opus postumum*.

In draft 'A' of fascicle III under subheading §3 we find a significant, albeit problematic paragraph devoted to the quantity of matter. Kant delineates forces *between* matters and *within* matter[27] which are placed under two familiar headings: repulsion and attraction, respectively. He then couples each heading to a more detailed external and internal operation so that repulsion is 'expansive' and is thereby a 'surface force (*Flachenkraft*)' whilst attraction 'does not just affect the surface but also the inside (*nicht auf die Obenfläche sondern auch auf das Innere derselben wirkt*)' and so is a 'penetrative force (*durchdringende Kraft*)' (OP 21:308, 23-4). That repulsion should be a surface force is curious since the paragraph is set up from the perspective of 'parts of matter' which suggests a more inherent activity. The word '*Flachenkraft*' helps to uncover what Kant means here since the literal translation of *Flachen* is 'flat'. *Flachen-kraft* – 'flat-force' – therefore, can be envisaged as denoting a force whittled down to a single plane. Repulsive force kicks in by stopping matters from making contact when they approach one another, but otherwise it remains analytically identical to a matter's boundary or extension in space. In this sense it operates flatly at the surface as opposed to unequally both at the surface and below the surface. On the other hand, attractive force operates unequally both at the surface and below the surface. Attraction is a force which acts upon matter (gravity) or it is constitutive of the binding together of parts of matter (cohesion). Stemming from Newton's *Principia* this distinction no doubt cuts into a prominent debate in eighteenth-century natural science about 'action at a distance' and 'action in contact'. Kant's insightful

[27] As Friedman has convincingly shown, this strategy for analysing force can be applied to *Metaphysical Foundations*. Friedman states that the dominant mode of analysis in the Dynamics is the '*within'* matter, whilst the Mechanics studies the '*between'* (Friedman 2015, 154). I agree with Friedman on this point. However, I would add that there are problems with the 'between' leaking into the 'within' of the Dynamics chapter as we have seen. Friedman (1994, 290) further aligns Kant's move here with an earlier passage of *Opus postumum* in which Kant asks, 'What is chemistry?' to which he seemingly gives the answer right away: 'The science of the inner forces of matter.' (OP 21:453, 5).

addition to this debate in the passage we are considering is to say that attractive force can act at a distance *and* in contact, whilst repulsive force can only act at a distance on the surface.[28]

In this way, Kant starts out with two angles from which to think forces which differs from both the conflict and counteractive model. As we have seen, in the conflict model both forces constitute the essence of matter and thereby stand in a symmetrical relation. In the counteractive model the forces stand in two separate domains, where repulsion is thought analytically as impenetrability, whilst attraction is thought synthetically as motion between matters, meaning that the forces stand in an a-symmetrical relation. In the paragraph we are looking at in the early elementary system the forces have taken on an even greater a-symmetry where repulsion can only operate at the surface of matter whilst attraction operates both at the surface and below the surface. Yet Kant further complicates this position in a 'remark' (*Anmerkung*) from the same draft:

> Expansion (*Ausspannung*) – as surface force (*Flächenkraft*) – cannot be uniformly accelerating, for its moment wanes with increased expansion. On the other hand, attraction (e.g., by the force of gravity) can very well be [uniformly accelerating] because it acts *immediately* on the inside (*Innere*) of matter. By contrast, [expansion] acts immediately only on the surface (*oberflächlich*) of matter in contact; it has internal influence only through mutually cancelling action (*Wirkung*) and reaction (*Gegenwirkung*). (OP 21:308, 24, t.m).

Whilst the kernel of the passage is a relatively straightforward repetition of the inverse square ratio, the last part curiously suggests that repulsion can also have an internal influence on matter beyond its apparent flatness or superficiality. Kant frames this as an action and reaction relation where repulsion is continuously cancelled out; a matter moves toward another causing

[28] For Kant's relation to this debate in an historical context see Ducheyne (2011b), Janiak (2013, 398-404) and Kahn (2017, 207). For a more general overview of the meaning of action at a distance see Hesse (1961, 157-88).

repulsion to momentarily escape, followed by its diminution.[29] We might recall the familiar image of the negative poles of magnets here: when they are introduced to one another repulsion acts by pushing outward, moving the magnets away. For Kant this is a momentary influence on the interior of the magnet or an action and reaction, but more pertinently this signals the beginning of an unexpected transition which returns to a view of force akin to the conflict model.

Kant had already experimented with considering both forces as acting at the surface and below it in the *Oktaventwurf*: 'Attraction and repulsion, both as surface force (*Flachenkraft*) (*cohaesio et expansio*). Attraction and repulsion, both as penetrative (*durchdringende*) bodily force (*gravitatio et caloricum*)' (OP 21:387, 13, t.m). As is glimpsed here, both the conflict and counteractive model would thereby be inscribed into a new, symmetrical relation of forces. If this can be achieved, then a philosophical account which presents both the metaphysical and motive elements of force might be possible. But finding the adequate vocabulary for doing so in a way which does not contravene the previous forbidding of knowing inner determinations of matter with certainty is a task Kant struggles with. For this reason, instead of directly carrying out the projected programme in the *Oktaventwurf*, Kant gets stuck at the beginning of the early elementary system where the only resolution open to him is to admit the possibility of the internal influence of repulsion although with the caveat that it is a mutually cancelling action and reaction.[30]

Later in the early elementary system, however, Kant allows for repulsion to operate more freely as an internal force: 'All matter must have repulsive forces, since otherwise it

[29] It is also worth noting the parallel this has with the feeling of the sublime in the third *Critique*, where it is rooted in a 'momentary inhibition (*Hemmung*) of life forces (*Lebenskräfte*)' followed by an 'even stronger outpouring (*Ergießung*) of them' (CJ 5:245, t.m). As Caygill notes, this pulsatory movement 'gives increase, since the overcoming of an inhibition provokes a greater discharge' (Caygill 2007, 217).

[30] This is a point of contention in the literature, especially in Tuschling's (1971, 70) reading, where he considers repulsion as *only* a superficial force in *Metaphysical Foundations*. Friedman (1994, 226-8) argues against Tuschling's view here by highlighting the difference between 'physiological' and 'dynamical' forces. Also see Hall's (2017, 10) suggestion of a reversal of *Metaphysical Foundations*.

would fill no space; but attractive force must also be attributed (*zugestanden*) to it, since otherwise it would disperse itself into the infinity of space – in both cases space would be empty (*leer*).' (OP 21:310, 25). Recalled here is the conflict model, which is indicated in Kant's description of matter 'having' (*haben*) repulsive as well as attractive force. Moreover, the necessity of an attractive force which is not merely motive is pointed up in the left margin, where we find something of a reminder: 'but also simultaneously attractive in itself (*in sich selbst*)'.[31] But *contra* this reminder, matter still does not *have* attractive force but must be attributed it, which raises the question of whether Kant is actually returning to the counteractive model where attractive force is synthetically predicated to matter.

I claim that neither model is straightforwardly returned to in the early elementary system. Instead, Kant congruently mirrors the forces onto one another, something he did not do in *Physical Monadology* or *Metaphysical Foundations*: 'for one cannot make [objects of nature] understandable – even in empirical representation (e.g., the concept of a stone) – without the concept of moving forces, namely: repulsion and attraction, *both internally or externally*' (OP 21:162, m.t and my italics) and hence, 'The moving forces of matter are of two kinds (*Arten*), each of which have two species (*Species*).' (OP 21:293, m.t). Although Kant had previously mentioned 'two kinds of forces (*zwei Arten von Kraften*)' (MF 5:499) in *Metaphysical Foundations*, in the sentences from the early elementary system a different quadratic form is implied whereby the 'two kinds' (*zwei Arten*) are attractive and repulsive force which have subordinated beneath them 'two species' (*zwei Species*), which are internal and external.[32] For the sake of clarity, this quadratic form is plotted in the following diagram, although we must remain cautious as to its eventual transformation or even total abandonment:

[31] This marginal note is not transcribed in the *Akademieausgabe* or the English translation. It is found in fascicle III, sheet VI, page 2. Alternatively, it is fascicle III, page 26 in the digitized version of the *Opus postumum* on the *Berlin-Brandenburgische Akademie der Wissenschaft* website.

[32] Tuschling points out that 'two different models of the conflict of the moving forces lay at the basis of this presentation: firstly, the opposition of penetrating repulsion and attraction as 'living' forces (*lebendinge Krafte*), and on the other hand [...] the old model constructed from 'dead' (*toter*) surface repulsion and gravitation.' (Tuschling 1971, 70, m.t). Closer to my interpretation, Basile notes, 'Matter is furnished with outer and inner

Kant attempts to resurrect the symmetry of *Physical Monadology* to resolve the asymmetry of forces in *Metaphysical Foundations*. By incorporating both models into this configuration the new relation of forces goes beyond its predecessors. Moreover, emerging from this is a much more metaphysically oriented view of matter not only as the movable in space but as essentially constituted by moving forces which stand in profoundly knotted ontological relations with one another. It is the early elementary system's task to trace these ontological knots by considering force in isolation from its relation to matter, as Mathieu hints:

> The moving forces were added as an *external* structure [to] matter as the "movable in space", which consequently could only be depicted mathematically. To capture the *connections* (*Verknüpfungen*) of the actual world, the moving forces must be accounted for as *internal* properties of matter itself. This is the task that the *Opus postumum* attempts to solve through a new approach to the problem by viewing the concept of force from another perspective. (Mathieu 1989, 44-5, m.t).

But in being isolated from that which makes it an actuality, does this not push the new relation of forces into a purely metaphysical doctrine? To table an answer to this question we need to delve deeper into the specificities of force in *Opus postumum*. This is because we still do not

forces – attraction and repulsion, or cohesion and elasticity.' (Basile 2013, 400, m.t). Also see Mathieu (1989, 86-8) and Adickes (1920, 164).

know what these forces are in their peculiarity, whether they are compounds in need of splitting open, how they are specifically knotted up with each other or how they will lock into an elementary and world system. We can still only claim that there are two orders of force which have been carried over, modified and stretched from two earlier models of force. In this connection Kant's repeated discussion of the 'topics' (*Topik*) proves fruitful.

Whilst the notion of a topic stems from the first *Critique*,[33] it takes on a wider role in *Opus postumum*, approaching something of a topology. Indeed, one of the many aims of the transition concept is to find a topology of the forces and for this reason the topic is discussed in numerous places.[34] Adickes holds the pursuit of a topic so high that 'the *Transition* is even the science of these "common places" or "common locations of natural research"' (Adickes 1920, 165, m.t). In a passage from fascicle IV in a draft letter to Garve, Kant says,

> Insofar as the sum (*Summe*) of these forces permits of classification *a priori*, founded on *a priori* concepts, there must be given a *topic* (*Topik*) of the moving forces of matter in which each of these forces is assigned its place (*locus communis*) in the system (OP 21:483, 44, t.m).

The new relation of forces plotted out above is arranged according to *a priori* classifications since there can be no empirical observation of a distribution of forces in this particular order, only their effects. Yet it also opens the possibility for more decidedly empirical correlates to be investigated by physics which is indexed in the topic or the place. In this respect, finding a suitable ordering of forces is reminiscent of Linnaeus' taxonomy where no specifically

[33] In the Remark to the Amphiboly of the first *Critique* Kant tells us that determining the position of a concept with respect to sensibility and understanding necessitates defining a 'transcendental place'. When many transcendental places are defined, a 'transcendental topic' is called upon to determine the place of all the concepts with respect to each other (CPR A268-9/B324-5). Furthermore, this is related to the need of a title, best described in the *Hechsel Logic* as a '*locus*' which is 'nothing other than a universal kind of knowledge under which a given part of knowledge can be brought.' (Kant 1992, 414, t.m). The title relates to the topic in so far as it outlines a general place for a universal concept to come into contact with empirical content.
[34] E.g., OP 21:179; 21:288; 21:475, 40; 21:485, 22:299, 103; 22:308.

empirical discoveries are put forward, but the very act of organization opens up further empirical discoveries.

With this in mind, we find ourselves in the middle of a transition where Kant is not adhering to strict metaphysical or physical boundaries but is trying to find the passage from one to the other which requires 'a special argument belonging to the topic *(Topik*) of the connection (*Verknupfung*) [between] specific/various concepts.' (OP 21:179, m.t). As Adickes suggests, we hit on the nerve of the transition concept in searching out a topic of the moving forces, that the classificatory task is to discover what the *a priori* topic is but that this also aids in identifying what each concept of force is and what it does in its empirical specificity. Kant gives us a few more hints to work with later on in the early elementary system:

> The logical place (*Ort*) requires a more rigorous investigation of topics (*Topik*) – that is, it needs to find the class of things (*Dinge*) to which something belongs – and in this context is also a requirement for physics and the moving forces that are to be contained in it. This topic (*Topik*) consists of the *a priori* principles (*Principien*) of the division of these forces which precedes physics and through which alone [a] system can be brought forth. (OP 21:485, m.t).

The focus shifts from the logical place (*Ort*) of things (*Dinge*) to how the topic maps out the principles undergirding the division of forces as well as underlying the impetus for their investigation by physics. But how would these forces interact with each other in such a way that physics could know them empirically? Kant answers this question by returning to the categorial methodology prevalent in *Metaphysical Foundations*. Each chapter of that text adds a slightly different angle to the exposition of matter: Phoronomy quantifies matter via its movability through space, Dynamics qualifies matter via moving forces etc.[35] Whilst

[35] See MF 4:476-7 and 473. For more on the operation of the categories in this context see McNulty and Stan (2017, 507).

Metaphysical Foundations shines the categorial limelight on matter, the early elementary system shines it on force itself. The categories are thereby put to an entirely different use, acting like lenses to bring into focus the interactions of force. In this connection, the categories do not only ground force, they provide the manual (*Leitfaden*) for uncovering their deeper ontological characteristics (OP 21:311, 25).[36]

The categories crop up throughout *Opus postumum*, often accompanied by programmatic alignments with empirical characteristics of matter: 'A given matter is, of its quantity: ponderable or imponderable. Of its quality: coercive or uncoercive. Of its relation: cohesive (*coalescibel*) or incohesible (*incoalescibel*). Of its modality: exhaustible or inexhaustible.' (OP 21:531, m.t). Although this only seems like a comment on matter, underlying it is the doctrine that each category is composed of a bundle of forces. Quantity as weighable or not weighable is a relation of gravitational forces, quality as movable or not movable is a relation of expansive forces, relation as coalescing or not coalescing is a relation of cohesive forces and modality as finite or infinite is a relation of elastic forces. In short, Kant opens the multiform interaction of forces to physics by viewing them as identical to the states of observed matter.[37] But in doing so he also discovers a more specific way of describing the forces other than the entirely general determinations of internal and external, he figures out a more precise topology:

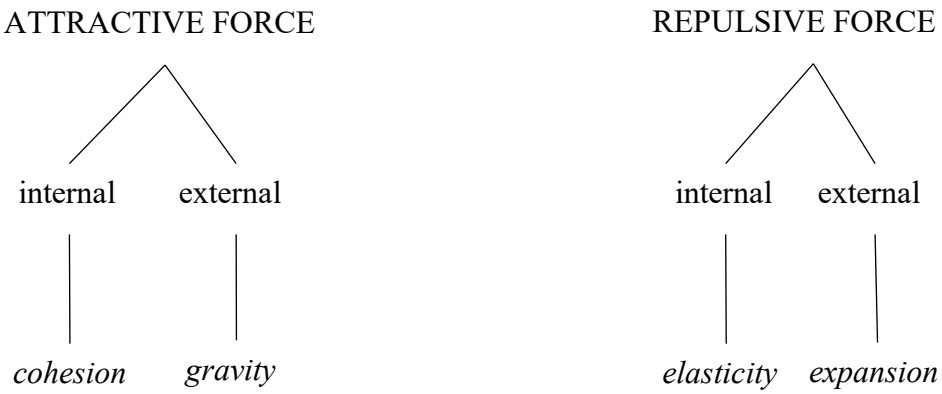
> (a) External attraction (gravity). (b) Internal fluidity and solidity. (c) External repulsion as superficial force and internal (elasticity and the living force of vibration).

[36] Collins (1943, 272) misunderstands Kant in the early elementary system here. He claims that Kant's intention to 'ground [...] physics as a certain science on the categories' is an 'impossibility' since we 'cannot determine beforehand the function and extent of the forces which the ego is supposed to produce.' But Kant is not only trying to 'ground' the forces on the categories. For in the early elementary system the categories act more as prisms of observation.

[37] As Caygill (2005, 37) observes: 'For that which makes space into an object of the senses – matter – is itself *force*.'

> The moving forces of *repulsion*: both the internal of matter and its parts, and the external (filling of space).
>
> The moving forces of *attraction*: the external of gravity, or the internal of cohesion. (OP 21:476, 40).

We can therefore provisionally add the following to our diagram:



A few further points of note on the categories are necessitated here before moving on. In the Critical philosophy the categories relate to each other in terms of logical opposition, which results in a threefold order: the clash of reality and negation equals limitation, for example (CPR B111 and P 4:326n). This takes the form: A + non-A = B, which leads Martin to claim that the categories are 'rigid' and in need of being 'made dynamic and living.' (Martin 1974, 82). In contrast, the early elementary system shifts perspective: 'the opposites, which one thinks of in relation to each of [the categories] are not to be thought of as *logical* (as between A + non-A), but as *real* (as between A + -A)' (OP 21:311, 25). Each category must be thought of in an ontologically binary way as either 'A' or 'not A'; 'is' or 'is not'.[38] This has the result that whatever may be discussed under the banner of the categories oscillates between two

[38] See NM 2:173-4 for more on Kant's distinction between real and logical opposition and their relation to negativity.

dynamically alternating on/off states: 'The categories have only two concepts here because they are opposed to each other only as 'a' and '-a', and [so] are all dynamic, that is, they result in the existence (*Existenz*) of things (*Dinge*)' (OP 21:179, m.t). Hence, Kant pictures a vibration between two polar points which stand in tension with one another, evident in the further specification of the forces. E.g., gravity and expansion alternate, whilst one is switched on the other is off, oscillating continuously back and forth without stopping. Whilst this clearly echoes Kant's 1763 conceptualization of negative magnitudes, especially where it is concerned with the relationship between forces (NM 2:175-6), the polarity at stake in the early elementary system brings into focus the function and meaning of '*Spannkraft*'.

There are two senses of the term *Spannkraft* in *Opus postumum*, both departing from different angles but with fundamentally close ties to one another: (1) a tension between forces or (2) a tensional force. The first describes how each force stands in relation to another, whilst the second describes all the forces and their relations understood in symphony. Instead of a conflict or a counteracting there is a tension between each concept of force: they are constant, pertain to a singular plane yet dynamically switch on and off with respect to each other. Expressed here is a primitive field conception of force[39] and although this would not fully emerge in the natural sciences until Michael Faraday's 'lines of force' reading of magnetism, the outcome is nonetheless similar. Because a continuity is at stake in the tension model, the traditional view of causality can no longer apply. Instead of cause and effect, there are simply disturbances (*Erschütterungen*), tensional points, changes in interaction.[40] It is worth quoting a passage Kant drafts about fluidity (*Flüßigkeit*) and heat (*Wärme*) to illustrate this:

[39] I agree with Wong (1995, 407) on this point. Hall (2017, 90n44) also discusses the proximity of Kant's forces to the lines of force conception of Faraday as well as its similarity to Boscovich's conception of forces. Also see Werkmeister (1975b, 122-4 and 1980, 183n80) for a discussion of Maxwell's field theory of force and *Opus postumum*.

[40] This anticipates Schelling's description of the 'inhibition' (*hemmung*) of nature in quite a startling way. An inhibition is the bundling up of infinite activity such that finite 'products' (*Produkte*) or appearances arise (Schelling 1858, 16). On Schelling's potential role in *Opus postumum* (Kant mentions him a couple of times, e.g., OP 21:87 and 21:97) see Onnasch's close and insightful reading and reconstruction (Onnasch 2009, 321-45).

> All fluids contain a quantum of heat (*Wärme*), therein a degree of disturbance (*Erschütterung*), which communicates with the vessel (*Gefäße*) containing it. But this contains either greater or lesser impacts of oscillation depending on the greater or lesser tensional force (*Spannkraft*) it has with respect to the contained fluid. (OP 21:259, m.t).

Kant uses the experimental observations of a disruption of surface tension to extract a topological relation between liquid, heat (*Wärme*) and container. Viewing these through the tension model necessitates a shift away from the strict division of internal and external. There are no longer rigid divisions between the cohesion of the liquid, the elasticity of the heat or the gravity of the container since each merely indicates a tensed point of disturbance or interruption localized on a continuum of force. Relation then becomes merely a pointer to the more fundamental distribution of various tensities of force on a manifold.

From a more contextual perspective, what *Spannkraft* tells us is that Kant is beginning to think interforcefully which marks a radical departure from the two previous relations of force, indeed to the point where there are not plural relations of force but a singular tension of forces.[41] In another passage from the early elementary system Kant confirms this in his considerations on a 'degree of tension (*Spannung*)' with a 'distinct tone (*Ton*) of oscillation (*Zitterung*)' (OP 21:322, m.t). Each degree of tension expresses a distinct oscillation which is localized as a specific force. Furthermore, this links to the centrality of *tonos* in Kant's thinking of force, which refers to the Ancient Greek conception of *pneuma* and the Biblical concept of *nishma*, subjects I cover in the next chapter on aether.

[41] McCall (2005, 308) goes so far as to say that a construction and de-construction of 'one particular kind of inorganic body' is at stake in which the 'distinctive tensions' of 'various *Stoffe*' come to the fore.

There is also a role allotted the tension model in one of Kant's favourite subjects of discussion in *Opus postumum*, the lever-arm or scale (*Hebelarm*/*Waagbalken*). In a passage from fascicle IV, we read,

> 1. that the lever-arm (*Waagbalken*) is not buckled or broken by the attached weights, or that the thread is not ripped off by the weight. 2. That the scale (*Schaale*) upon which the weight presses (*druckt*) is not permeable by the matter to be weighed. If the opposite were the case, all matter would be imponderable, [for] Ponderab[ility] presupposes that the balance (*Waagen*) constitutes a cohesive body whose scales (*Schaale*) are not permeable. (OP 21:363, m.t).[42]

The relationship between the equipment for weighing and what is weighed is reflected into a tension between ponderability and permeability, which in turn keeps the equipment in a tensed spatial position. The lever-arm itself depends upon and is grounded by a fundamental tension of forces. But there are two peculiarities with extreme consequences in this passage. The first is Kant's use of the term '*Schaale*', which is an antiquated term whose English cognate is 'scale'. Just as in modern English, 'scale' can mean both instrument for weighing and part of a fish's skin; the modern German '*Schale*' can mean 'dish' as in one of the dishes at the end of the lever-arm and 'skin' or 'shell' (as we saw in Haller's poem above). This peculiarity is worth bearing in mind since it intimates that the rigidity of the lever-arm stems from the interaction between a hard body of mass approaching a body which is constituted by cohesive rigidity and that both are tensed up with regard to one another as a kind of skin or surface tension. The second peculiarity is deeply related to the first. Kant shifts from talking about the forceful constitution of matter to the forceful constitution of bodies. In another passage worth quoting, the peculiarity arises in relation to the tension model:

[42] Also see OP 21:294; 22:225 and 22:259.

> Consequently, one can think of such alternating impacts and counterimpacts [as existing] from the beginning of the world, and [one can think of] a trembling (oscillating, vibrating) motion which fills the whole (*ganzen*) cosmic space (*Weltraum*) and includes within itself all bodies (*alle Körper in sich*), but is simultaneously elastic and attractive in itself (*in sich Selbst*) (OP 21:310, 25, t.m).

The activity of forces now pertains to the interior of bodies[43] meaning that Kant is automatically pressed to reintroduce motion into the model.[44] Indeed, a little while before this passage a discussion is tabled whereby moving bodies are said to ossify into 'crystal' (*Cristalls*) structures, and that oscillations of a fundamentally fluid matter 'rigidify into a determinate figure' (*einer bestimmten Figur erstarren*) (OP 21:262, m.t).[45] The crystal is of interest because it freezes the exact colliding point between forces, the formation of bodies and motion. It rigidifies, preserving the tensions which constitute the material's very existence, but in its figuration it also preserves the motion of a primarily liquid matter, which the tension of forces brought about. It seems, then, that motion has once again inflected the discussion of force, this time to account for body formation. But this is at odds with the desire to develop a pure 'doctrine of forces' (*Kräftenlehre*) (OP 22:137, m.t) as opposed to a 'doctrine of motion' and it comes centre stage in the 'elementary system' drafts.

[43] McCall (1983, 92 and 2005, 294) bases his reading of forces in *Opus postumum* around the notion of the 'formation of bodies' for this reason. For him, it is the lack of a clear exposition of body-formation in *Metaphysical Foundations* that necessitates Kant to develop such a theory in *Opus postumum*. Also see Werkmeister (1980, 120-1) for a centralization of body in the reading of moving forces.

[44] The oscillating motion which fills space, however, will later transform into caloric (when Kant discusses the elastic/expansive properties of heat), light material (when Kant tries to account for light): 'The pulsations (*Pulsus*) are of two kinds (*Art*): 1. that which always [propagates] in a straight line; 2. that which propagates in all directions. Heat and light' (OP 21:503, m.t), and aether. See Edwards (2000, 152-8), Hall (2017, 94-122) and Friedman (1994, 292).

[45] Kant also discusses crystals in reference to the distinction between organic and inorganic matter in the third *Critique* (FI 20:217-8). For more on Kant's concept of the crystal see Ferrini (2004, 284-95), Fritscher (2009) and McCall (1983, 96-7).

Returning to the opening of this section, whilst Kant has certainly developed a new model of force, namely *Spannkraft*, the applicability of these forces to bodies arises and motion must be preserved for the sake of empirical affirmation, for example in crystals. Overall, this represents an indecision in the general arc of the early elementary system, revealing a much more profound transition between Kant's conception of mechanics and dynamics.

5. Dynamism and Mechanism in the Elementary System: Fascicle VIII

There are two sets of drafts Kant labelled 'elementary system', one set in fascicle VIII and a second set in fascicles II, IX and XII. I concentrate on the former since they comprise Kant's initial attempt at formulating the detailed workings of the elementary system and unlike the latter drafts are less likely to overlap with the succeeding 'Übergang 1-14' drafts. When Kant begins heading the drafts 'El.Syst' in October 1798, the tension model is sewn into a wider philosophical frame with significant repercussions for how we understand what the elementary system is as well as its decidedly ontological undertones.

The drafts present us with a bundle of reflections on how this new model of force changes Kant's understanding of the phase transitions of matter.[46] Nestled in these reflections is a tacit battle between dynamism and mechanism, expressed in the force/motion and matter/body divisions. Basile provides a useful overview of dynamism and mechanism to push off from: 'Dynamism and mechanism express the dominant theories of force in the natural philosophy of the seventeenth and eighteenth-centuries. Mechanism conceived of matter as an irreducible given and forces as its properties. Dynamism dissolved matter into relations of original forces.' (Basile 2013, 397, m.t).[47] Mechanism interprets matter as a collection of

[46] See OP 22:135-7; 22:140-2; 22:145; 22:148; 22:150 and 22:173. In relation to the complex role of the phase transitions of matter earlier in *Opus postumum* see McCall (1983, 80-7).
[47] For other theoretical and historical descriptions see Mathieu (1989, 52) and McNulty (2019).

atomistic points to which forces are applied whilst dynamism considers matter in so far as it is nothing other than force itself.

Two figures in this history are integral to Kant's understanding of the terms: Leibniz and Laplace. In *A Specimen of Dynamics* (1695) Leibniz distinguishes two different ways of viewing force: either as '*primitive*, which is inherent in every corporeal substance *per se*' or as '*derivative*, which, result[s] from a limitation of primitive force through the collision of bodies with one another' (Leibniz 1989, 119). Leibniz then goes on to align derivative force with motion since from this view we only observe bodies 'act[ing] on one another or [...] acted upon by one another' (Leibniz 1989, 120). Leibniz's intention is to construct a metaphysics of nature which considers primitive force as the essence of bodies. From these definitions Leibniz also derives the terms 'dead' and 'living' force, prompting the '*vis viva* controversy', a topic close to Kant's heart, although I will not discuss it here.[48] Most important for us is that Leibniz seeks images other than motion to construct a metaphysics of nature since something beyond the simple machines, 'the lever, the pulley, the inclined plane' and 'the equilibrium of bodies' (Leibniz 1989, 122), is needed to account for essence. As a doctrine of force, dynamism is supposed to fulfil this need.[49] We will see in the following how Kant's theorization of dynamism in the elementary system utilizes this basic definition.

Written some 101 years after Leibniz's text, the *System of the World* (1796) by Laplace envisions matter as a collection of irreducible particles. The reason for proceeding in this way is because the fundamental essence and causes of matter are unknowable according to the natural sciences of Laplace's day:

[48] For more on this see Howard (2017, 47-51), Schönfeld (2000, 34-52 and 2006, 41-4) and Polonoff (1973, 39-61).
[49] See Edwards (2000, 65-8).

> The nature of this singular modification by virtue of which a body is transported from one place to another is, and always will be, to us unknown. It has been designated by the name of *force*; its effects and the law of its action is all that we can possibly determine. (Laplace 1809, vol. 1, 291).

We can only determine effects according to Newton's second law, meaning that force can only be inferred through bodies in motion. Following this logic Laplace introduces a 'material point' to account for the mass of bodies (Laplace 1809, vol. 1, 331), aligning its constitution with motion through space thus dispensing with the need for an intersection of force and matter, going so far as to dispense with dynamics altogether. For this reason, Laplace's thought is considered a bastion of mechanism, serving as a progressive addendum to Newton in both an elemental and cosmological context.

Kant's reception of Laplace in *Opus postumum* can be summed up in an unequivocally negative light:

> Laplace's talk of material *points* (which were to be regarded as parts of matter) would, understood literally, contain a contradiction; it should only signify a position from which a part of matter repels or attracts another which is external to it. (OP 22:205, 27).[50]

Kant's accusation of contradiction homes in on Laplace's self-restriction to a doctrine of motion in so far as the material points can only occupy fixed spatial positions. Material points cannot further our understanding of the ontological constitution of matter because they cannot elucidate its fundamental entanglement with force. Hence, the reason why the positing of the

[50] For more on Kant's connection to Laplace see OP 21:406, 18; 22:207, 28 and Adickes (1920, 80). It is also worth noting that according to Warda's (1922) inventory, Kant did not own any books by Laplace and perhaps gained knowledge of his theories via reviews.

material point coupled with its restriction to motion presents a contradiction for Kant in so far as they do not go beyond efficient causation.[51] We must note, however, that Kant is not simply sticking to a standard reading of Laplace's theory but dramatizing its limitation as a theory which goes no further than Newton's abstention from discussing the causes of force. In *Opus postumum* Laplace's name symbolizes an entrenched theory of mechanism rather than the actual work of the person, Laplace.[52] Tuschling also recognizes this trait: '"Laplace" is only a code such as "the monadist"' (Tuschling 1971, 57, m.t), an exemplar for referencing all purely mechanist theories of matter. Moreover, by referring to Laplace in this way Kant negatively outlines the kind of dynamism he wants to construct for the elementary system.

The motif of dynamism and mechanism is in no way unique to the elementary system, however, appearing in some form or other in most of Kant's work on natural science such that a dialogue spanning his entire corpus is inescapable. One of the clearest expressions of the distinction is found in *Metaphysical Foundations* where a 'dynamical' and 'mechanical' path (*Weg*) (MF 4:532) are put forward. Kant conceives of these paths in roughly the same terms as was broadly accepted in eighteenth-century natural science: the mechanical path assumes indivisible, discrete particles percolated with empty space as the constitution of matter whilst the dynamical path considers continuous forces as the constitution of matter. Already in Kant's first text *True Estimation of Living Forces* he laments that 'we do not have any dynamic principles at present from which we could justifiably proceed' (LF 1:117), proceeding to develop such dynamic principles.

Whilst both mechanism and dynamism hold within them a possible ontological marker which delineates the being of matter, the mechanical theory goes no further than considering

[51] Kant's problematization of the *materiality* of the point can also be gleaned from the first *Critique*, where 'points and instants are only boundaries, i.e., mere places of their limitation' (CPR A169/B211). By treating the point as a material entity one falls into a position akin to the Second Antinomy where the simple parts of a 'composite substance' become problematic to either affirm or deny and so fall into contradiction. To avoid this, the point cannot be an actual material, it must, rather, be merely a marker pointing out a boundary-line or limit.

[52] We see a similar sentiment in the famous, no Newton 'of a blade of grass' passage of the third *Critique* (CJ 5:400) where Newton symbolizes the impossibility of all mechanistic theory to grasp organic life.

an aggregate of discreet particles as cogs in a machine. Kant also subscribes to a familiar alignment of external forces with mechanism and internal forces with dynamism in this regard. The picture at stake inadvertently recalls Francis Bacon's division between 'latent processes' which are concerned with efficient or material causes and 'latent schematism' which is concerned with the constitution of 'bodies at rest' (Bacon 1996, 133).[53] But recall the ambiguity in *Metaphysical Foundations* encountered in section three of this chapter where matter is considered only as the movable through space thereby thwarting a true picture of force or dynamism.[54] Later in the 1792-3 *Metaphysics Dohna* lectures Kant, as though attempting to overcome this difficulty, recodifies dynamics into a decidedly philosophical activity: 'To philosophize dynamically means to assign forces (*Kräfte*) to motions' (L-Met/Dohna 28:665, t.m). We are therefore left with a daunting question: in the elementary system does dynamism remain identical to its problematic role in *Metaphysical Foundations* or is Kant attempting to draft a different version of dynamism altogether?

Throughout the 'elementary system' drafts this question is tackled from many perspectives. Most prominent are the discussions of ponderability where the fact that matter is weighable is explained with the tension model in mind. What would have traditionally been rendered according to a mechanical understanding of particles and empty space is thus superseded by a dynamical and ontological plenitude: 'The mechanics of moving forces is thinkable only under the presupposition (*Voraussetzung*) of dynamics – objective ponderability preceding subjective' (OP 22:138, 46). A few *Akademie* pages later, this morphs into a

[53] Also see Bacon's critique of 'merely popular' discussions of motion which stop short of explaining nature (Bacon 1996, 73-5).

[54] Tuschling devises his (in)famous interpretation based on this observation, that *Metaphysical Foundations* 'does not contain […] a presentation of moving forces' and 'therefore at its ground it has not achieved its aim, supplying overall merely a phoronomy and not a dynamics' (Tuschling 1971, 93, m.t). For Tuschling, when Kant talks about *Metaphysical Foundations* in *Opus postumum* it stops referring to the actual work from 1786 for this reason. Hall (2017, 67n51, 59-60 and 100) also, I think correctly, subscribes to a view wherein matter is only locomotive in *Metaphysical Foundations* as does Pollok (2006, 565). McCall (2005, 286) whilst arguing for a fundamentally motive reading of matter in *Metaphysical Foundations* also sees a bridge from phoronomy to 'a dynamic of fundamental forces' rolled into it.

reduction of *Metaphysical Foundations* in so far as moving force must be dealt with in a way which is more essential to matter:

> the transition from the *Metaphysical Foundations* to physics occurs through progression (*Fortschreiten*) in the concept of matter. In the *Metaphysical Foundations* matter was the movable in space: progress (*Fortschritt*) adds a new concept to the purpose of physics, and now matter is the movable in space so far as it has moving force (OP 22:149, m.t).

Passages such as this lead Tuschling to argue that a radical self-critique (*Selbstkritik*) is at stake in *Opus postumum* (Tuschling 1971, 46-56 and 187), a position I have a lot of sympathy for. For Tuschling, Kant came to see his previous attempt at formulating a dynamical theory of force as collapsing into mechanism, necessitating a 'phoronomy critique' or a correction (*Korrektur*) (Tuschling 1971, 57). Interestingly, all the instances of phoronomy critique in the second volume of *Opus postumum* take place in the elementary system according to Tuschling. This is phrased in the above passage as a progression from the concept of a singularly phoronomical matter to a matter which is phoronomical only *because* it is grounded – made possible – by more fundamental forces. Moreover, as Tuschling notes, 'the dynamical model of conflict from 1786 implies the existence of material points' (Tuschling 1971, 60, m.t), the very mechanism Kant ends up rallying against. Because it worked from within the bounds of Newtonian laws of motion, the dynamism at stake in *Metaphysical Foundations* could not account for the causes of force or anything approaching the tension model. Furthermore, because the theory of material points is premised on the being of percolated empty space, which is ontologically impossible for Kant, *Metaphysical Foundations* becomes synonymous with

Laplace's mechanism.[55] In answer to whether the elementary system attempts to establish a new dynamics the answer must inevitably be 'yes'.

But there is more at stake than a simple 'yes'. In a deleted fragment at the beginning of 'El.Syst 1' Kant states: 'Moving force is of two kinds (*Art*): either the locomotion (*Ortbewegung*) of a body (*vis locomotiua*) which forces another to leave its place, or internal motion (*innere Bewegung*).' (OP 22:135, 45).[56] This suggests that the doctrine of motion and the mechanism it implies should not simply be shrugged off but actually embedded into the new dynamical view. There are now two kinds of motion which run alongside the two kinds of force, one which is responsible for changing the location of bodies and one which accounts for motion occurring inside bodies. There are many instances of such an alignment in the elementary system of which I shall quote two:

> That is, either that which has an internally (*inerlich*) or externally moving force of attraction, repulsion or oscillation. Inner (*innerhalb*) moving force – *vis interne motiua* – is distinguished from [locomotive force] – *vis locomotiua* – since the parts act simultaneously or in fluid (*fluidum*) succession and yet in one moment at the same time. (OP 22:161, m.t).

> The internal (*Innere*) moving force of matter (*vis interne motiua*) is that wherein the parts themselves change their positions in relation to one another. The external moving force (*vis*

[55] This is also Hegel's view of *Metaphysical Foundations* where he says that it cannot 'allow any insight into the possibility of basic forces; and in the second, a science of nature of this kind, a science for which nature is matter – i.e., something absolutely opposite, something that does not determine itself – can only construct a mechanics' (Hegel 1977a, 164).

[56] Kant also makes this alignment in a later passage: 'The moving forces are either mechanical as bodies or dynamical as mere matter (*Materie*) (material [*Stoff*]) which forms movable (*beweglich*) and moving (*bewegend*) bodies. The former are *locomotive* (*Ortverändernd*) (*vis locomotiua*), the latter, moving one another in their parts within the space occupied by matter (*vis interne motiua*) [...] *Mechanical moving* forces are those through which matter merely *communicates* its own motion to another. Dynamical moving [forces] are those through which this motion is immediately *conferred* to another.' (OP 22:555, m.t). Yet another place to find such an arrangement is in the lose pages found in Leipzig (*Loses Blatt Leipzig 1*), where on page 3 Kant says: 'The moving force of matter is either a locomotive (*Ortverandernde*) (*vis locomotiua*) or moving force [which acts] in the same place (*an demselben Ort bewegende Kraft*) (*vis interne motiua*).' (Kant 1991, 150, m.t). This last line translates literally as 'in-the-same-place moving force.'

> *locomotiua*) [is] that whereby the whole (*Ganze*) [of matter] changes. [...] Thus internal (*Innere*) moving force of matter (*vis interne motiua*) is to be distinguished from the external moving (*vis locomotiua*). (OP 22:163-4, m.t).

Although these passages are difficult to distinguish from Kant's thoughts on force, I would like to suggest that we read the Latin glosses (*vis interne motiua* and *vis locomotiua*) as significations of a different level of conjunction with the tension model. My reason for arguing this is primarily one of scale, for when Kant discusses *vis locomotiua* he is referring to a body or a 'whole' imparting motion to another. At stake is a reinstatement of motion viewed from the Newtonian causal frame: body A causes body B to be moved in X way. It is also worth noting the etymological stakes of locomotion (*Ortsveränderung*) in this regard. The German term literally translates to 'place-shift', a directness which is lost in the Latinate English term 'locomotion'. But we do well to restore, perhaps crudely, the literal meaning of locomotion: location motion, or change of location. In this connection, the term indicates a relation between shifting parts, and is carried over to *interne motiua*, which is also defined according to the changing relational positions of parts of matter.

It might be tempting at this juncture to interpret *interne motiua* as dynamism and *vis locomotiua* as mechanism as Mathieu (1989, 84) and Hall (2017, 101) do but I think a contrasting procedure is taking place which demands a different hermeneutical approach. We must make a more decisive alignment and say that both fall under mechanism, whilst the forces as they were construed in the previous section constitute dynamism.[57] The logic behind reading it in this way becomes clear when Kant starts experimenting with the sequencing of force and motion:

[57] This edges into an active debate in the *Opus postumum* literature as to whether the distinction between motion and force corresponds to that between mechanism and dynamism. Whilst McNulty (2019, 1612 and n25) argues with Friedman (1994, 226-9) that there is such an alignment, Tuschling (1971, 90-122), Edwards (2000, 235-7 and 239) and Westphal (1995b, 409-15) disagree.

> One can think (*denken*) of moving forces as given in two kinds (*Art*): either that motion must be prior and the moving force is the effect of it, or conversely the moving force is first put at the ground (*Grunde*) and motion is derived from it (OP 22:164, m.t),

which in turn underpins the sequencing of the matter/body, dynamism/mechanism problematics:

> Each physical body is to be regarded as a system of mechanical-moving forces (that is, as a machine); the matter, however, from which it is composed, presupposes dynamic moving [forces], which do not depend on figure (e.g., in a lever, or a wedge). (OP 22:194n, 53).

And even more clearly: 'of the *dynamical* foundations of natural science which precede and are the grounds (*Gründe*) of mechanics.' (OP 21:354, m.t). I believe Kant's objective here is to reinstate symmetry into dynamism and mechanism but also to distinguish them from their presentation in *Metaphysical Foundations* by introducing a continuity between them.[58] The elementary system would therefore constitute a continuity between motion and force, body and matter, mechanism and dynamism. Thus, when McCall comments in response to Tuschling that 'the dynamic manifold and the phoronomic manifold are aspects of the mechanical manifold' (McCall 1988, 62) he picks up on the continuity whilst glossing over the core aim of the elementary system, which is to construct an ontology of force with dynamism laying at the ground of mechanism.

Right at the end of the elementary system in 'El.Syst 9' Kant collates all of these elements into an ultimate expression of continuity: 'The elementary system [is] prior to the

[58] See McCall (1983, 145).

world system' (OP 22:200, 55, t.m). It is not a leap to see that the elementary system lay at the foundation of the world system but that the world system also inflects the elementary system, as Emundts notes: 'elementary system logically precedes the world system, but the world system grounds the elementary system' (Emundts 2004, 147, m.t), but this continuity also indexes the relation between dynamism and mechanism.[59] In this connection, I agree with Mathieu when he says that this 'grounds the new dynamism of the *Nachlaßwerkes*, which neither coincides with the *ontological* dynamism of the Leibnizians, nor with the *regulative* dynamism of the *Metaphysical Foundations*.' (Mathieu 1989, 88, m.t). I believe that whilst it departs from the dynamism of *Metaphysical Foundations*, the elementary system does attempt to provide an ontology of force in so far as it brings the *being* of force to the fore as that which is absolutely primary but without falling back into the Leibnizian frame.

As Förster (2000, 18-9) and Norman Kemp Smith (1992, 618n1) have noted, Kant stutters to a halt in these drafts but there is still philosophical merit to them. We can envision what the elementary system looks like and what stakes are tied up with it at least in outline. At its heart the elementary system is Kant's attempt to unravel a new ontology of dynamical force. It is to this end that Kant redraws his definitions and stitches them into a baroque tapestry in which matter is identified with force and the elementary system stands in continuity with the world system. In Kant's words, the elementary system is aimed at 'the moving forces of matter according to their assignment in various kinds (*Arten*) (*singulis*)' whilst the world system is aimed at 'all matter unified (*vereinigt*) in a whole (*Ganzen*) (*vniversis*)' (OP 21:510-1, m.t). The continuity between them is the move from an ontological picture of matter to a cosmological picture of body. In a passage from fascicle X written after the 'elementary system' drafts, Kant neatly summarizes: 'In this transition from the metaphysical foundations

[59] Curiously, Kant heads toward such a view as early as the 1782-3 *Metaphysics Mrongovius* lectures, where he says: 'Thus to explain something mechanically means to explain something according to the laws of motion, dynamically from the forces (*Kraften*) of bodies. [...] The correct mode of explanation is dynamical physics (*physico*), which includes both.' (L-Met/Mron 29:935-6). Also see McNulty (2019, 1616).

of natural science to physics there is [also] that from matter to the formulation of bodies' (OP 22:282, 100). Accordingly, I now move on to discuss the world system.

Chapter 4. Transition of the World System: Cosmology and Aether

Introduction

Anyone who has delved into *Opus postumum* and its secondary literature will notice a glaring *Lücke* in my study so far: a lack of an account of aether (*Äther*) or caloric (*Wärmestoff*). This has been purposeful, as has my wish not to entirely centralize them. The reason for this is that without a firm grasp of the various elements leading up to Kant's discussions of aether we have no ground on which to base the necessity of its emergence as well as all the stakes bound up with it. In this chapter, I will interpret the aether under the rubric of the transition in the 'Übergang 1-14' drafts,[1] which involves the development of a world system.

I seek to develop an alternative theory of the reason, place and origin of aether in Kant's thinking as stemming from the 1755 work, *Universal Natural History and Theory of the Heavens*. As I will argue, this early cosmological work is a central yet entirely overlooked part of the 'Übergang 1-14' drafts to the degree that I suggest the drafts fill a gap originally left over in this text. Whilst this is perhaps not 'the' gap *Opus postumum* scholars continue to disagree on, it is 'a' gap both literally (a hole in Kant's corpus) and conceptually (the problem of empty space) which is resolved in the 1799 'Übergang' drafts. But far from a simple return to the pre-Critical work, I argue the drafts constitute a transition from temporary elementary primary material (*elementarischen Grundstoff*) to a permanent aether which fills cosmic space.

Aether is a complex concept in Kant's hands. As I will argue in the following, it is not identical to the luminiferous aether disproved in 1887 by the Michaelson-Morley experiment but is rather much more nebulous and negative. It is simultaneously concept, material, matter and force as well as the ground of universal community (*Gemeinschaft*). In reading these characterizations as first arising from the problem of empty space left in *Universal Natural*

[1] 'Übergang 1-6' are found in fascicle II (OP 21:206-47); 'Übergang 7-13' are found in fascicle V (OP 21:535-612); and 'Übergang 14' is found in fascicle V (OP 21:512-20) all written between May and June 1799.

History, I propose a thesis which to my knowledge has not been proposed in any depth in the *Opus postumum* literature.

1. Genesis of the Problematic

On 19th April 1791, Kant sent a letter to Johann Friedrich Gensischen (C 11:252-3) permitting him to republish an abridged version of *Universal Natural History* which was to be appended to the German translation of William Herschel's *On the Construction of the Heavens* (*Über den Bau des Himmels*). Whilst the original letter is lost[2] we still glean much from the supposed directions for the essay's republication. Bullet point four of the letter is particularly helpful in that Kant outlines a 'prime matter, dispersed throughout the universe in vaporous form' which constitutes cosmic bodies (planets and suns) via a distribution into 'various substances' (C 11:253). This serves as an outline of elementary primary material, a major part of Kant's early cosmology. Kant was eager to emphasize the theory that bodies form out of a chemically active 'elementary matter [...] of exceptional fineness' (Ferrini 2004, 279) in the 1791 edition, or that they emerge from a subtle matter which lies at the base of the cosmos as a 'primordial material' (*Urstoff*).[3]

It is curious that Kant gave permission to republish a text containing such a theory since attaining certain knowledge of the origin of the cosmos is impossible according to the *Critique of Pure Reason*'s First Antinomy of Pure Reason (CPR A426-34/B454-62). *Universal Natural History* was, however, published a further four times during Kant's lifetime, twice in 1797, once in 1798 and once in 1799, although he had little or nothing to do with these later editions.[4] That being said, it remains the first early text that Kant gave permission to republish after the

[2] The *Akademieausgabe* includes an English translation of the original from Waterman (1897, 104) of which the Cambridge translation is a reworking.
[3] See Jaki (1981, 43-5) for a comprehensive itinerary of the changes between the editions.
[4] See Kant (1968, 180-1) and Hamel (2009, 168).

Critical work.[5] But why start with an overview of *Universal Natural History*? With the republication of the text throughout the 1790's and Kant's eagerness to emphasize a dispersed subtle matter, it seems reasonable to argue that this may have unconsciously or consciously prompted Kant to revisit some of its themes in *Opus postumum*.[6]

We should keep in mind the breadth of the early work, indeed to the point that, as Adickes claims, 'Kant's services to natural science lie [...] primarily in his cosmogony' (Adickes 1922, 367, m.t) and in the other cosmological texts of the 1750's. Tuschling claims – albeit in relation to Kant's supposed revitalization of physical influx – that in *Opus postumum* 'Kant has [...] returned to the starting point of his metaphysics' (Tuschling 1989, 209) an assertion I agree with in so far as he also returns to his cosmology for the sake of providing a new metaphysics of nature. Involved in this return, however, is not a simple repetition but an attempted solution to the problem of empty space which *Universal Natural History* was largely based on (owing to the temporality of elementary primary material, as we will see). In this connection, a transition can be plotted between elementary primary material, which is chaotically dispersed and then funnelled into cosmic bodies, leaving them bobbing up and down in empty space, and aether as a universal, permanent (yet negative) cosmic space-filler. I echo Silvia de Bianchi's view here: 'a satisfactory interpretation of the manuscripts of the *Opus postumum* should consider Kant's theory of aether within the context of his cosmology' (de Bianchi 2013, 42).[7] It is in the 'Übergang 1-14' drafts that the necessity in thinking the aether cosmologically is most obvious.

[5] I disagree with Förster (2000, 94) on this point, who claims that *The Only Possible Basis* was the first early work Kant gave permission to republish in 1794.
[6] It is also important to note along with Tuschling (1971, 41) that *Universal Natural History* appears three times in Johann Samuel Traugott Gehler's *Physikalisches Wörterbuch*, a text Kant refers to throughout *Opus postumum*.
[7] Also see Pecere (2006, 264-5) where he explicitly identifies the aether with a return to the cosmology of *Universal Natural History* perhaps following a comment made by Mathieu that, 'What Kant was able to achieve in this territory [of the 'Übergang' drafts and the world system], he had already presented in the *Universal Natural History*.' (Mathieu 1989, 126, m.t). Also see Werkmeister (1975, 19) where he suggests reading *Opus postumum* through the lens of *Universal Natural History* but goes no further in this endeavour. Another key commentator who suggests that *Universal Natural History* provides a 'rudimentary' version of what is at stake in *Opus postumum* is Waschkies (1991, 187-8).

The limited use of the term 'aether' (*Äther*) and the extensive use of the term 'heat material' or 'caloric' (*Wärmestoff*) is pronounced in the 'Übergang' drafts. Many *Opus postumum* scholars use these terms synonymously, a point I generally agree with. As the 'Übergang' drafts progress Kant even prefaces his use of the term 'caloric' with a reminder that it 'is called caloric (*Wärmestoff*) although the function of its activity is not warmth' (OP 21:228, 76), and so it should be understood in a wider sense: 'for the latter [the feeling of warmth/heat] concerns only what is subjective in a representation, as perception' (OP 22:550, 86). Aether will go beyond what is only subjective in representation. Furthermore, caloric is aligned directly with aether which allows for us to switch between the terms.[8] I have stuck to the term 'aether' in my analysis of the 'Übergang' drafts because I think there is less chance of it being confused with the historical use of 'caloric' in natural science and because it has the scope for better representing the unique position Kant ends up attributing to it.

Perhaps a more difficult terminological task, however, is to align 'cosmic material' (*Weltstoff*) in 'Übergang 1' (OP 21:210, 64)[9] and 'elementary material' (*Elementarstoff*) in 'Übergang 12' (OP 21:602, 95) with aether and elementary primary material. Yet we cannot fail to note that when the terms 'cosmic material' and 'elementary material' are used they are usually bracketed with aether via characteristics such as 'space-filling' and 'universally distributed' as well as with the aether's negative characteristics. It is worthwhile preliminarily considering these terms in the same vein as aether or at least as markers of its transition. But we must also be open to their divergence in the unfolding of this chapter, since the terms may not be entirely divorced from the context in which they arise, which lends them a deeper metaphysical nuance in need of unpacking.

[8] See OP 21:218, 69; 21:221, 71; 21:226, 74. See McCall (1983, 69-70). We must bear in mind, however, that there are complications in equating the terms when considering *Opus postumum* as a totality. E.g., in fascicle IX from the early elementary system Kant hints at a technical distinction: caloric 'would be only one of the names for a material which permeates all bodies universally; a material which, in one case, would be called heat-material (*Wärmestoff*), but, when represented according to another quality, light-material (*Lichtstoff*) – in both cases, aether (*Äther*).' (OP 22:214, 33).

[9] I follow Adickes (1920, 139) and Rollman (2015, 41n36) in attaching an Arabic '1' to the first draft for the sake of systematic unity, consistency and clarity for the reader.

A methodological note. I part from Förster's (2000, 86-8) reading of the 'Übergang' drafts in so far as he sees them as constituting a 'proof' without first distinguishing what is proof-like about them. As Henrich (1989, 35) has shown, the proof and the deduction in Kant's hands are conceived of in a juridical setting; the deduction is a participant in 'the court of reason' (Henrich 1989, 38) and is designed to unify two otherwise separate things. Despite Kant's explicit labelling of a deduction of aether (e.g., OP 21:586, 93), it is not so much put on trial or pushed through the procedure of unification as repeatedly turned around and examined, specifically through the prism of negativity and thus I have a suspicion about whether we can make the claim that a true proof or new deduction is really at stake here. I agree with Wong when he says,

> despite the fact that Übergang 1-14 have been generally labelled as "ether deductions" by almost all commentators, it is without doubt in my mind, that the proofs do not constitute a deduction at all [...] Kant is un-mistakenly *theorizing* about the ether. (Wong 1994, 90).

Perhaps it is, then, more appropriate to think of the drafts as an attempted theorization which gradually attributes different, often contradictory aspects to aether. Nevertheless, this does not stop aether from being programmed specifically to plug the gap left by empty space. To fully grasp how the issue of empty space arises in Kant's corpus we must start with *Universal Natural History*.

2. From Element to *Welt*: the 1755 Cosmology and Empty Space

The general aim of *Universal Natural History* is to present a picture of cosmic bodies from the perspective of the temporal and the spatial. A great many subjects are touched upon within these perspectives. In particular, Kant locates two antagonistic poles at play in the temporal: the 'theological' and the 'mechanical' (UNH 1:222), which can be traced back to a tension at

work in Newton's mechanical world system.[10] Kant's overarching question is: if Newtonian mechanics is correct, and at this point Kant is steadfast in thinking that it is,[11] what can save nature from 'blind mechanism' (*blinde Mechanik*) or, what is the same, a mere playing out of efficient causality? Moreover, the cosmology seeks to clarify whether a rejection of blind mechanism automatically necessitates the concept of miraculous 'creation' (*Schöpfung*) or whether they can be mutually affirmed.[12] This struck Kant as a difficult and treacherous pathway both in terms of finding a logically consistent solution and in terms of challenging theological doctrine. Indeed, he mentions at the beginning of *Universal Natural History* that he encountered many hidden 'monsters' (*Ungeheuer*) (UNH 1:222) in this regard. This is both quite a timely and untimely metaphor to use, for the text at first glance would surely have struck its contemporary reader as an atheistic monstrosity had it not been for Kant's repeated emphasis on God.[13] But it strikes the reader of today as monstrous in a different sense: ambitious, vast, *ungeheuer groß*.

Newton claimed that we can account for effects of gravity, but we have no clue as to the causes of gravity itself; this remains mysterious. If causes are proposed for gravity we risk falling back into 'feigned hypotheses'.[14] For this reason Newton does not extend his mechanics to encompass the genesis of cosmic bodies, he seeks only to show the causes of motion contemporaneously through mathematics. As Schönfeld puts it, 'Newton did not challenge the creationist account; the *Principia* is celestial mechanics at present, which is mute on "causes

[10] See Schönfeld (2000, 96-127) who makes Newton a central point of interpretation of the text. Shea (1986, 95-120) is more critical of this idea, concluding that whilst Kant claimed to be operating within a Newtonian framework, he allowed too many metaphysical assumptions to enter the fray to call *Universal Natural History* a purely Newtonian work. More recently, Massimi (2011, 525-43) has questioned the source of Kant's Newtonianism, arguing that the Newton Kant adheres to is not that of the *Principia* but of the *Opticks*. Much closer to my own hunch is that of Polonoff who argues that Kant took 'the first two books [of *Principia*] for granted' and wanted 'to encompass the results of Newton's system of the world in a wider scheme' (Polonoff 1973, 116).
[11] See Schönfeld (2000, 267n10).
[12] See Falkenburg (2013, 48).
[13] Ferrini (2000, 301) interprets this dichotomy as that between a deterministic Christian 'hand of God' and the more ancient contingency of 'a mechanical aggregate' owing to cosmological chance. Others have contrasted the theological miracle with Kant's reference to the Epicurean *clinamen* to illustrate this cosmological chance, e.g., Shell (1996, 48).
[14] See the General Scholium to the *Principia* (Newton 1999, 589).

of gravity" – on the issue of how things did get to this point, Newton did not feign any hypotheses.' (Schönfeld 2006b, 55). Newton's mechanics allows for a theistic creator-God, a '*Pantokrator*' who, through forceful will periodically reanimates the universe to bar it from falling into rest (Newton 1999, 586). In Query 31 of *Opticks* Newton explains that at a certain point the planetary system 'wants a reformation' (Newton 2012, 402) which is enacted according to a decision made by God

> who being in all places, is more able by his will to move the bodies within his boundless sensorium, and thereby to form and reform the parts of the universe, than we are by our will to move the parts of our own bodies. (Newton 2012, 403).[15]

To overcome this problem, the young Kant conceives of the cosmos as having a determinate beginning, starting with a God who, as prime mover, distributes matter into a state of primordial chaos. But after this point, God is expended and no longer acts within the frame of nature, having planted the mechanical tendency to develop toward structure into matter. To describe this conflation Kant uses the term 'world structure' (*Weltgebäude*), a term whose nuance is often lost when it is translated simply as 'universe', a word which is better suited to the German '*Weltall*' or even to Kant's own Latin gloss '*Universo*'. Although the two are entangled, world structure is different from universe in so far as it earmarks interconnection, order and a 'something' which has set the cosmic stage in motion.[16]

[15] In his 'Second Letter' to Samuel Clarke, Leibniz reads this passage as indicating Newton's belief that God has a body since 'sensorium' is connected with an 'organ of sensation' (Leibniz and Clarke 2000, 8). Also see Koyré (1968, 239-41).

[16] The Cambridge University translation of *Universal Natural History* is lamentable in this regard. This has a particularly jarring effect in the Preface where the play between *Weltbau* and *Weltgebäude* is abandoned since both are conflated into 'universe' (e.g., see UNH 1:222). Kant is playing between the constructional undertones of '*Bau*', and the structuring of '*Gebäude*' to bring out the synthesis of mechanical and theological elements. Although it is generally accepted that Jaki's (Kant 1981) translation of the text is antagonistic towards Kant – see Palmquist (1987) – he translates *Weltgebäude* as 'world-edifice', certainly a better choice for preserving some of the nuances Kant wanted to bring out. Jaki even states his reasons for strictly avoiding the term 'universe' in the translator's introduction (Kant 1981, 74).

Chapter seven which is entitled On Creation in the Entire Scope of its Infinity Both in Space and in Time (UNH 1:306, t.m) is immensely important for exploring the meaning of world structure and the role of temporal development. Halfway through the chapter Kant says,

> even though from the place of our sojourn (*Aufenthalts*) in the universe (*Universo*) we have a view into what seems to be an entirely completed world and, so to speak, into an infinite host of world orders (*Weltordnungen*) that are systematically bound (*verbunden*), we still actually find ourselves only in proximity to the middle-point of the whole (*ganzen*) of nature (UNH 1:313, t.m).

Our temporary stay in the universe provides an insight into a world which appears to be complete due to its binding with an infinity of other worlds. All these worlds are connected in a constellation of world orders (a galaxy) which orbits around a middle-point of nature that can only be approximated. The image of the universe having an unobtainable middle-point is a motif taken over from Thomas Wright. In his 'Ninth Letter' Wright introduces the middle-point as a 'primitive fountain, perpetually overflowing with divine grace, from whence all the laws of nature have their origin, and this I think would reduce the whole universe into regular order and just harmony' (Wright 2014, 79). In some respects, this approximation is the birth pang of the regulative idea of reason whilst the inability to directly get to the precise middle-point is indicative of the future theorization of aether. But for now, it is enough to note that this view is problematic from a different angle:

> Now if the creation is infinite according to space, or at least has been [infinite] from the beginning according to matter (*Materie*) but is also prepared to become [infinite] with respect to form or development (*Ausbildung*), then cosmic space (*Weltraum*) will be enlivened with worlds without number or end. Will now that systematic binding (*Verbindung*) which we have pondered before in all [its] particular parts also extend to the whole (*Ganzen*) and the entire universe (*Universum*) – the totality (*All*) of nature – to hold together (*zusammen fassen*) a unified

> system through the binding (*Verbindung*) of attractive and repulsive (*fliehenden*) force? (UNH 1:310, t.m).

The creation is ongoing, the universe is infinitely productive of cosmic bodies in time, but if this were straight forwardly the case the universe would be gradually filled up by bodies until eventually the possibility of new bodies would be barred since all space would be filled. It is at this juncture that Kant programs building up *and* breaking down into his cosmos. Hence, whilst certainly resonant with a 'cosmogony' in the ancient Greek sense of 'the birth of structure', Kant's early cosmology also has a tendency to decay (*verfallen*) or a principle of entropy built into it. Considering this, can we still say that Kant's cosmology conforms to Newtonian mechanics or does Kant undermine it here?

Whilst Kant's desire to extend Newtonian mechanics is apparent at the surface, by tabling a cosmological genesis he already caches his project as pre-Newtonian. Far from considering himself 'another Newton' (Jaki 1981, 12), Kant goes beyond the pale of classical Newtonian mechanics by attempting to construct cosmic genesis in the first place.[17] This difference is important because it allows Kant to extricate the need for an omnipresent God. In Kant's eyes ascribing all things to a corporeal 'god in the machine' (UNH 1:333) is simply an unacceptable way of accounting for the genesis of cosmic bodies. Whilst clearly Kant ascribes primordial chaos to God as a prime mover, he seeks to imbue a self-sustainability into his cosmology via the mechanical unfolding of matter left to its own devices, thereby negating the omnipresence of God. He places the movement of this logic into the world structure:

> The inevitable tendency which every perfected world structure (*Weltgebäude*) has towards its destruction (*Untergange*) can be reckoned among the grounds (*Gründe*) which can prove that

[17] I agree with Palmquist (1987, 259). Also see Cassirer (1981, 49) for a reading of this precipice as essentially a continuation of Descartes' *The World*.

> the universe (*Universum*), in contrast, will be fruitful of worlds (*Welten*) in other regions to supplant the lack (*Mangel*) it has suffered in one place. (UNH 1:316-7, t.m).

A world structure, therefore, has its own death written into its life. New worlds are produced elsewhere out of the pieces of this breakdown by the productive tendency instilled in the universe. If the oft-quoted 'Phoenix of nature (*Phönix der Natur*), which burns itself only to regenerate again, rejuvenated out of its ashes throughout all the infinity of time and space' (UNH 1:321, t.m) means anything, it is this dance from primordial element to world and from world to element. In a passage from chapter five Kant says that such a reciprocity between these two factors is composed of 'glorious relationships' (*herrlichen Beziehungen*), which as a 'result of their communal (*gemeinschaftlichen*) dependence, arranges itself into an entire harmony (*Harmonie*).' (UNH 1:293, t.m). In this connection, Kant tries to account both for worlds 'bursting forth' (*hervorbrechen*) and 'going under' (*Untergang*), not in spite of the cosmos but as a constitutive part of its very existence. Kant calls this circularity the 'sublime representation [...] of the plan of creation' (UNH 1:253).

Particularly relevant to this plan is the first appearance in Kant's corpus of the term 'world system'[18] which he primarily views under the rubric of the spatial. At first glance a world system is synonymous with 'planetary system' or even 'solar system' as when Kant claims that world systems have 'flaming bodies' (*flammende Körper*) at their middle-points (UNH 1:328). But instead of interpreting this as a simple reference to the sun and the world system as a simple reference to the planetary system, we would do well to note that there is a more subterranean metaphysics at stake. Fire, for example, is treated like an organizing

[18] Veit Justus Rollman believes Kant first introduces this term in *Opus postumum*, but this is simply not the case since it appears throughout *Universal Natural History*. Furthermore, Rollman says that 'one only finds this new concept in the title' (Rollman 2014, 99, m.t) which is a reference to a title from 'Übergang 2' which says, '*Of an all Penetrating Matter* (Materie) *filling the Whole* (*ganzen*) *of Cosmic Space as a Non-Hypothetical but* a priori *Given Material* (Stoff) *to a World System*' (OP 21:222, 71, t.m). I think the issue with Rollman's reading is that he does not pay sufficient attention to the development of the world system in *Universal Natural History* so its key themes do not shine through in the 'Übergang' drafts for him. Also see Willaschek *et al.* (2015, 2628) for a contextualization of world system in Kant's corpus.

principle in a similar vein to Heraclitus' alignment of fire with *logos*. This more metaphysical alignment of fire is marked out in the Supplement (*Zugabe*) to chapter seven on the Universal Theory and History of the Sun in General (UNH 1:323-31) and especially the third part of *Universal Natural History* on inhabitants of other planets (UNH 1:357-8).[19] Furthermore, the organizational (rather than phenomenal) view of fire contrasts with its appearance in later texts where it is the mechanism of physical compression and decompression, identified with 'heat material' or 'caloric' (*Wärmestoff*) and 'light material' (*Lichtstoff*), as we will see in the next section.[20]

Returning to the world system, it also contains a metaphysical content specifically tied to universal community. The world system earmarks the relationships between worlds as if on a chain of being, a conceptual regime Kant extracts from Alexander Pope and which he relies on so heavily that it leads Werkmeister to claim that *Universal Natural History* 'is in all essentials but a prose version of Pope's *Essay on Man*.' (Werkmeister 1980, 10). As it was understood in the eighteenth-century the concept marks out a hierarchical order linking different beings on a ladder (*Leiter*) from the lowest to the highest, from the being of minerals, plants and animals, up through the being of humans and angels, and eventually the being of God which sits at the top of the ladder.[21] It presents a picture in which all things are connected, where worlds are bound up and sandwiched together, ultimately inspiring early German idealist ideas such as Schelling's 'dynamic sequence of steps' conception of development (Schelling 1858, 68), as well as the young Kant.[22]

Kant seeks to demonstrate that a world system contains a similar movement from a relatively small scale (the planet) to an immensely large scale (clusters of galaxies), so that

[19] See Munitz (1986, 33).
[20] See Schaffer (1978, 180-200).
[21] In *An Attempt at Some Reflections on Optimism* Kant resorts to a definition of the world which mirrors this: 'And the world, which finds itself on that rung of the ladder of beings which marks the start of the gap (*Kluft*) containing immeasurable degrees of perfection' (AO 2:33, t.m). For an historical overview of the chain of being concept in Kant see Lovejoy (1964, 265-8) and for a different interpretation of the chain of being in general see Toulmin and Goodfield (1967, 116-22).
[22] For more on this relationship see Thomson (2022).

'everything in the whole scope (*Umfang*) of nature is interconnected (*hängt* [...] *zusammen*) in an uninterrupted sequence of degrees by the eternal harmony (*Harmonie*) which makes all the links (*Glieder*) refer to one another.' (UNH 1:365, t.m). Kant follows this with a revealing quote from Pope, who's original reads: 'Vast chain of being, which from God began/ Natures ethereal, human, angel, man/ Beast, bird, fish, insect! what no eye can see/ no glass can reach! from infinite to thee/ from thee to nothing!' (Pope 2008, 279). At stake in these quotations is an extraordinary scoping through vast realms of existence as if through different spaces. Indeed, Pope even hints at the image of a telescope to further highlight this: no individual glass (no ordinary telescope) can see the whole chain of being in one go. For Kant, this means that what occurs on a small scale is an iteration of what occurs on a large scale, although we may not be able to physically observe such an iteration in its whole magnitude. This movement is made apparent in Kant's chapter on the rings of Saturn, which for him are an iteration of the larger spatial structure of the universe (UNH 1:297). Perhaps even clearer is a passage from *The Only Possible Argument* where Kant says, this 'provides a very large [good] ground (*Grund*) for supposing: that these suns, of which our own is one, constitute a world system (*Weltsystem*) which is ordered on the large scale according to similar laws as our planetary world (*Planetenwelt*) is ordered on the small scale.' (OPA 2:140, t.m).[23]

Situated between the two extremes of the world structure (production and decay), the main concern of the world system is relationship and community. Whereas the world structure points up an infinite temporal development, the world system points up an infinite spatial

[23] We can already see the buds of the infamous last lines of the *Critique of Practical Reason* here, where a similar scoping occurs from 'the place I occupy in the external sensory world (*Sinnenwelt*)' towards the 'immensely large, with worlds upon worlds and systems upon systems' (CPrR 5:162, t.m). For more on this see Caygill (2007b, 218). It is also echoed in *Critique of the Power of Judgement* where an ever-expanding point of reference is attributed to the sublime: the man is to the tree as the tree is to the mountain; the mountain is to the Earth as the Earth is to the solar system; the solar system is to the Milky Way as the Milky Way is to clusters of galaxies (CJ 5:256). It also worth quoting Wright's very similar scenario, which Kant had second-hand knowledge of: 'Suns crowding upon suns, to our weak sense, indefinitely distant from each other; and miriads or miriads of mansions, like our own, peopling infinity, all subject to the same creator's will; a universe of worlds, all deck'd with mountains, lakes, and seas, herbs, animals, and rivers, rocks, caves, and trees; and all the produce of indulgent wisdom, to chear infinity with endless beings, to whom his omnipotence may give a variegated eternal life.' (Wright 2014, 46).

relation. In other words, the relationships between worlds are situated on 'spheres' within which various constellations of cosmic bodies can relate to one another. But the spatial relationships also pinpoint a moment in the temporal development such that the world structure and world system, temporal development and spatial relation, are bound up with each other. This follows a trend to temporalize the chain of being in the early eighteenth-century.[24] Natural philosophers began to excise the chain from eternal existence, nestling it into cosmic histories which gradually unfold. It is, therefore, no surprise that Kant explicitly plugs this into his own formulation:

> For if a world system (*Weltsystem*) in the long course of its duration has exhausted all the manifold that its facilities can hold – when it becomes only a superfluous link in the chain of being (*Wesen*) – then nothing is more fitting than that it should play the final role in the theatre (*Schauspiele*) of ongoing changes of the *universe* (*Universi*), which befits every finite thing, namely that impermanence takes its toll (UNH 1:319, t.m).

The world system is how Kant thinks the coming into being and dissipation of community according to effects of force (e.g., planets attract moons, suns attract planets, galaxies attract suns and so on). But the emphasis is on the fact that these relationships are not eternal, for they are but a temporary flash on the stage of a cosmic drama and it is this which brings us to the prompts for reading *Universal Natural History* as a central part of the 'Übergang' drafts.

One of the most fundamental concepts which arises from thinking this type of temporalization is 'elementary primary material' (*elementarischen Grundstoff*) (UNH 1:263, t.m), which signals the material constituting cosmic bodies bound up in a world system. In the first chapter of part two, entitled Concerning the Origin of the World Construct (*Weltbaues*) as such and the Causes of its Motions, Kant sets the scene by claiming that 'all matter (*Materien*), of which the spheres belonging to our solar system (*Sonnenwelt*) consist [...] was dissolved in

[24] See Lovejoy (1964, 244).

the beginning of all things (*Dinge*) into its elementary primary material (*elementarischen Grundstoff*).' (UNH 1:263, t.m). Kant considers this material as exactly what was chaotically dispersed in cosmic space at the beginning of cosmic genesis. It was then gradually distributed into networks via forces and banded together into 'clumps' (*Klumpen*) (UNH 1:267n, t.m) on 'general plane[s] of reference' (UNH 1:267), that is, it was funnelled into galaxies percolated with empty cosmic space both within and between them. We can see the cogs of this formulation if we read it through Kant's earlier conception of 'subtle matter' (*subtile Materie*) in the 1754 essay, *The Question, Whether the Earth is Ageing*:

> Those who assume a universal world spirit (*allgemeinen Weltgeist*) in this sense understand by it neither an immaterial force nor a soul of the world or plastic natures, the creations of a bold imagination, rather, [they understand it to be] a subtle (*subtile*) though everywhere active matter (*Materie*) which constitutes the active principle in the formations (*Bildungen*) of nature, and as a true Proteus is able to assume all shapes and forms. (WA 1:211, t.m).

This subtle, malleable matter is the clay with which creation enlivens itself, synonymous with universal world spirit. We can think of the plasticity of elementary primary material in a similar way: it forms a vast array of shapes, from comets to planets, from moons to suns and from nebulae to galaxies. What the elementary primary material is pointing out is a scenario in which a type of matter was once dispersed throughout cosmic space but then formed cosmic bodies leaving empty space in its wake, a problem which haunts the rest of Kant's corpus.[25] Empty space temporally forecloses full space, where the former goes no further than the contemporaneous observing subject and the latter assumes a prior, originary (and chaotic) state. We can see this in distilled form in *The Only Possible Argument*:

[25] [25] Lovejoy (1910, 547) also points out the importance of understanding this in the context of Kant's cosmology.

> the space of the planetary construct (*Planetenbaues*), which is now empty, was previously filled so as to prompt a community of moving forces through all regions of this area [the solar system] in which the attraction of our sun dominates. (OPA 2:144-5, t.m).

The original intention of *Universal Natural History* was, after all, to provide a 'natural history of the heavens' where 'the first condition of nature, the generation of cosmic bodies (*Weltkörper*) and the causes of their systematic relationships (*systematischen Beziehungen*)' are to be 'determined from the features which display the relations (*Verhältnisse*) of the world construct (*Weltbaues*) in itself.' (AR 1:190, t.m). But despite *Universal Natural History* striving for harmony, interaction and systematic relationships, it cannot tell us anything at all about the actual community between cosmic bodies. This is because Kant operates his cosmology on the premise of empty space, barring it from actually pinpointing that which holds the cosmos together. Because the elementary primary material is funnelled into the constitution of cosmic bodies it cannot be the glue of community proposed at the conceptual heart of the world system. This is, then, a gap Kant leaves open in his cosmology both in literal and conceptual terms. In chapter one of part two Kant even points this out: 'if we consider the space in which the planets of our system orbit, it is completely empty and deprived of all matter which could cause a community (*Gemeinschaft*) of influence on these celestial bodies and bring about harmony (*Übereinstimmung*) among their movements.' (UNH 1:262, t.m). The problem of empty space will be a key for unlocking Kant's later works in the philosophy of nature, as well as an issue that he did not properly solve until the 'Übergang' drafts written in 1799. As Wolfgang Ritzel notes, beginning from *Universal Natural History* Kant was 'troubled by the problem of *emptiness*' and he 'repeatedly tried to exorcise this spectre through a doctrine of aether.' (Ritzel 1980, 287-8, m.t).[26]

[26] For more on Ritzel's project see Basile (2013, 357-8).

Before heading to the 'Übergang' drafts, however, I would like to supplement my reading by delving into a few more moments in earlier work.

3. From *Elementarischen Grundstoff* to Aether: *Meditations on Fire*, Reflection 46 and 50

In this section I explore some further thoughts on the above through Proposition VIII of *Succinct Exposition of Some Meditations on Fire*, and Reflection 46 and 50 from Kant's copy of Baumgarten's *Metaphysica* (R 14:418-30; 443-4). I aim to supplement the previous section by showing how these themes did not stop troubling Kant, especially the issue of empty space.

Kant's doctoral thesis, *Meditations on Fire* takes a different standpoint from the earlier cosmology in two senses: first, it does not stake out a cosmic thesis, but an elemental one; second, it does not discuss 'elementary primary material' but instead introduces the term 'aether' (*äther*). Indeed, when we turn to Proposition VIII (F 1:377-8), which can be thought of as an important point of departure for Kant's aether concept, we find an itinerary of differences between *Meditations on Fire* and *Universal Natural History*. Aether is not viewed as a cosmic matter as was elementary primary material but is instead considered synonymously with 'heat material' (*materia caloris*/*Wärmestoff*) and 'light material' (*lucis materia*/*Lichstoff*). The proposition itself reads: '*materia caloris* is nothing but the aether (*äther*) (*lucis materia*) compressed (*compressus*) by a strong attractive (adhesive) force of bodies into their interstices.' (F 1:377, t.m). The mechanics of Proposition VIII involve an action of 'compression' (*compressio*), whose German correlate in many of Kant's other texts is '*Zusammendrückung*' (literally, 'press together') or even simply '*Druck*' (pressure).[27] The aether is compressed into the interstices of bodies by a 'strong attractive force' named 'adhesion', an early nod to what is later called 'cohesion'. Because it fills the interstices of bodies the aether is fundamentally elastic:[28] it is malleable, can be bent, shaped, or diverted in

[27] E.g., MF 4:563-4, which sees Kant returning to the subject of pressure.
[28] See Howard (2018, 196-8) and Adickes (1925, vol.2, 41).

the same way that Newton conceived of the refraction and reflection of light in *Opticks*. It is after all Newton who is explicitly recalled in this proposition, yet the malleability of the aether is more like a de-universalized, elemental 'Protean world spirit' and it is on this basis that Kant's conception of aether begins to diverge from Newton's. Furthermore, unlike Newton's aether, Kant's aether is directly identified as a continuum of light and heat. As Edmund Whittaker describes it, in Newton's view 'The vibrations of the aether cannot [...] be supposed in themselves to constitute light' because aether is supposed by him not to be 'necessarily a single uniform substance' (Whittaker 1910, 18) or as Koyré says, 'Newtonian ether does not possess a continuous structure. It is composed of exceedingly small particles between which, of course, there is a vacuum.' (Koyré 1968, 172).

Light and heat might also be thought in the Cartesian-Spinozist sense of modifications of substance in so far as they express aether in two different ways.[29] With this characteristic in mind Kant says, 'if one considers the origin of the transparency of glass, one will readily concede the connection or rather the identity of the aether with the matter of fire' (F 1:378). He goes on to describe the process of the formation of glass from a hot, molten state to a cold, hardened state, attributing this change to the matter of fire, whose action is captured in the crystalline transparency of the solidified glass. According to Kant, the transparency of the glass is a demonstration of how fire compresses in between bodies, forming a continuous surface, and because fire expresses light and heat, it is also identified with aether. In this connection, the process described by the constitution of glass is an ossification, a rigidification of a fluid, aethereal matter.

From a general perspective, what we see in this proposition is Kant's willingness to introduce a parallel between aether and a matter which operates in a similar way to elementary primary material from the earlier cosmology. There are, however, many differences between

[29] See Descartes (1992, 211). This is also the vein in which Adickes (1925, vol.2, 3-4) describes the enterprise of the entire second part of *Meditations on Fire*. Also see Adickes (1925, vol.2, 43n2 and 44) in which he summarizes that the proposition contains insurmountable issues in its handling of 'light material' and 'heat material' for this reason.

elementary primary material in *Universal Natural History* and aether in *Meditations on Fire* to the point where they seem unbridgeable. Aether is elastic matter compressed into the interstices of bodies, identified with heat, light and fire. It is therefore not a matter which cosmologically once existed but is now gone leaving empty space where it once was. For in the frame of *Meditations on Fire* if we subtract aether, bodies will collapse in on themselves due to the overcoming of adhesion, but the world might still be able to exist. In contrast, in the frame of *Universal Natural History*, if we subtract elementary primary material nothing could have come into existence in the first place, existence itself would be negated. We can, therefore, reiterate Edward's reading of the essay: Kant 'leaves it undecided whether the aether is present in all of physical space [...] Even where he is occupied with describing the role of the aether as *materia lucis*, his interest is limited to the explanation of certain commonly occurring terrestrial phenomena' (Edwards 2000, 118), that is, whilst *Universal Natural History* theorizes an historical cosmic genesis beyond appearances, *Meditations on Fire* explains terrestrial phenomena as they appear. The difference is perhaps best brought out in the Introduction to *Physical Geography* which proposes a distinction between 'world knowledge' (*Weltkenntniß*) and 'Earth description' (*Erdbeschreibung*) (PG 9:157, t.m). The former can be understood as a set of cosmic concerns whilst the latter can be understood as a set of planetary explanations. The role of *Physical Geography* is to provide an Earth description, whereas a cosmological theory provides world knowledge.[30] This is a perspective that Kant generally maintains in *Opus postumum*, especially where he is concerned with the explication of a 'world observer' (*Weltbeschauer*) or *cosmotheoros*, the beholder of the world, a term appropriated from Christiaan Huygens' 1698 work, *The Celestial Worlds Discover'd*, to reference a planetary inhabitant 'who himself creates the elements of world knowledge (*Welterkentniß*) *a priori*' (OP 21:31, 235, t.m) and who proposes a cosmic unification of the moving forces of matter (OP

[30] For an alternative interpretation of these terms see de Bianchi (2018, 58) and Kaplama (2014, 17).

21:553, 82).[31] Proposition VIII of *Meditations on Fire* embodies one side of this division by describing aether from a terrestrial perspective as that which fills the interstices of phenomena as they appear on Earth, as the internal fire filling the pores and causing the ossification of objects.

In Reflection 46 (R 14:418-28) we see a change in Kant's treatment of the aether and a shift towards its cosmological orientation, which provides a more explicit platform from which to jump into the 'Übergang' drafts. The handwritten note, a reflection appearing in Kant's teaching copy of Baumgarten's *Metaphysica* on the interspersed blank pages of §398-400, is dated by Adickes to between 1776 and 1778. It is worth briefly introducing some of the themes from these sections of *Metaphysica* since they inflect the subject matter of Kant's reflection to some degree.

§398 of *Metaphysica* is concerned with the impenetrability of substances or solids since a 'finite monad [...] cannot be in wholly the same place as any other' (Baumgarten 2017, 174). Inherited from Leibniz's 'identity of indiscernibles' and expressed in its modern scientific form as 'Pauli's exclusion principle', this familiar principle is already set out in a cosmological context, entitled 'The Parts of the Universe (*Partes Vniversi*)', a chapter which attempts to grasp the simplest constituents of the universe. Indeed, before dealing with impenetrability Baumgarten divides the study of cosmology into two branches based on the assumption of monads: 'universal materialist' (*materialista vniversalis*) for those who affirm the existence of monads and 'cosmological materialist' (*materialista cosmologicvs*) for those who do not (Baumgarten 2017, 174). Furthermore, monads form a 'universal nexus' (*vniversali nexu*) which can be thought of as a kind of skin in which all the monads cohere with one another: they are 'either the ground or consequence, or both, of every other single monad' (Baumgarten 2017, 175) since they form a coherent network.

[31] See Ferrarin (2015, 86n77) and Adickes (1920, 140).

It is no wonder, then, that Kant starts Reflection 46 with a discussion on the peculiarity of cohesion (*Zusammenhang*)[32] and its mechanical-physical rather than metaphysical operation (R 14:418). He considers the aether to be the cause of cohesion, seeing it as 'dispersed through the whole (*gantzen*) of cosmic space (*Weltraum*)' and that it 'is compressed (*zusammengedrükt*) by the attractive force of all matter [into] the whole (*ganzen*) world structure (*Weltgebäudes*)' (R 14:419, m.t). Here, then, we have a slight unpicking of the empty space left in *Universal Natural History* and a glimpse of the aether as a decidedly cosmic matter dispersed through space, although it retains the corporeal mode of action it had in *Meditations on Fire*, namely, of compression (*Zusammendrückung*). This time it is not into the interstices of bodies that it presses, however, but the interstices of all matter in the world structure. Whilst it is still considered a purely physical matter, it also seems to occupy the position of a medium through which the reciprocal moves between element and world are made, that is, as a principle of transition and cosmological continuity. The relationship this has to cohesion is interesting. Kant gives a description of how the main activities of aether ground the cohesion of matter through vibration (*Erschütterung*) and tremor (*Zitterung*) and how these are closely associated with the differences in tension (*Spannung*) of clavichord strings (*Sayten*) which change frequencies or *Bebung* (vibrato) when different weights are hung from them (R 14:422).[33] These musical references should not be taken too lightly here, for they also appear throughout *Opus postumum* in relation to aether. At one point Kant even uses tone and sound in music as an analogy for light and heat in cosmic space: 'Just as light and heat (*objectively* and *subjectively*) [as well as] tone and sound (music) are not intuitions of objects (*Objecte*) outside

[32] Kant's use of this term depends on context. Sometimes it refers to what I have laid out in chapter one: a methodological paradigm of 'interconnection'. If it is in the context of natural science, it means 'cohesion'. The editorial notes in the *Akademieausgabe* by Adickes are helpful in this regard. They state that 'in the following reflections Kant used the term "interconnection" (*Zusammenhang*) not in the usual sense, rather it is used to designate "cohesion" (*Zusammenhaltes*) between material parts in general' (R 14:412, m.t). In this context, then, it indicates an alternative though equivalent term to Kant's use of the Latin word '*cohaesion*'.

[33] Pecere (2006, 264) argues this point against Friedman who claims that 'in these earlier speculations [...] Kant neither deploys the caloric theory of the states of aggregation nor identifies the universally distributed aether with the matter of heat.' (Friedman 1994, 296n121). As we will see in the following pages, Kant *does* pair the expansion of heat with that of the aether, or at least hints at such a pairing through the instantiation of vibration, tremor, tension and *Bebung*. On this subject also see Emundts (2004, 81n96).

me, so is the celestial host not that which determines space.' (OP 21:150, m.t).[34] In the same way that tone and sound are not two objects of music but are rather its two tensions, so too are light and heat not two (subjective or objective) objects, but tensions. Just as the interval stitches the tones and sounds into a piece of music, it also stiches the stars into the community of a cosmos. It will be the aether which takes on the role of the interval as a universal space-filler. This is also what Kant is aiming at in Reflection 46 by conjecturing the tensional meeting point of aether and cohesion, and although not a fully formed theoretical thought, it nonetheless constitutes an important transitional bud which only fully blossoms in the 'Übergang' drafts.

Another important element in Reflection 46 is Kant's striving for a connection between a 'subtle matter', which through heat expansion is dispersed throughout an otherwise empty space, and cohesion. Kant wonders, 'why the entirety of heat (*Hitze*) and also all bodies should not rest upon the pressure (*Druke*) of a subtle matter which works against [it] (*entgegen wirkt*) [?]' and then this is seen as 'the cause (*Ursache*) which tenses (*spannt*) elasticity and thus is indeed the ground (*Grund*) of cohesion (*Zusammenhanges*)' (R 14:423, m.t).[35] Before this point in the same Reflection, all bodies are said to have their genesis in heat although construing bodies in this way could not account for cohesion, since these bodies would 'remain aether-less – that is, without vibration'. Instead, Kant proposes a different thinking around how aether gets into bodies and how bodies cohere: 'When [bodies] are heated, inner tremors arise (*heben* [...] *an*) and either aether penetrates or the inner tremor resists the outer pressure [of the aether] and even lifts (*hebt*) the cohesion [so high] that parts fly off under the name "vapour"' (R

[34] See McCall (1983, 25-6).

[35] Tuschling centralizes this in his reading of the notes by emphasizing the reduction of force: 'cohesion is not [...] reduced to matter's own forces but to the pressure or to the vibrations of the aether.' Also: 'It is not really the forces of attraction and repulsion that constitute matter, rather the structure-determining elements are aether, heat and gravitation.' (Tuschling 1971, 33, m.t). Edwards (2000, 127) disagrees with this reading, stating that 'By the 1770's, Kant is thus willing to set out from the assumption that the whole of physical space is determined by (or as) a continuum of forces.' Whilst I am sympathetic to Edwards' inkling, I think it would be difficult to argue for this since in the reflections we are reading Kant considers aether a strain of matter which is *in* space, not constitutive *of* it as a plenum of force. In this regard Tuschling is correct in emphasizing the role of pressure in these reflections, for it is the pressure of aether as a matter which forms the central hub around which the 'Reflection' turns. I also join Tuschling in noting 'the astonishing harmony in the details between Kant's reflections of the 1770's on the one side and the early *Opus postumum* on the other.' (Tuschling 1971, 33, m.t).

14:419, m.t). Whilst on the surface this seems to repeat Kant's image of the ossification of glass, at a deeper level the cosmological thematic is quite striking. For what Kant is essentially describing is the burning up of comets. A similar description is put forward in *On the Rotation of the Earth on its Axis*, where Kant says that 'celestial space (*Himmelsraum*) which permits free and unimpeded motion even to the light cometary vapours (*leichten Kometischen Dünsten*), is filled with a matter (*Materie*) of infinitely little resistance.' (AR 1:186, t.m). Both this quotation and the fundamental thought expressed in Reflection 46 draw our attention back to *Universal Natural History* where 'cometary vapour' (*kometischen Dünste*) is compared with the light from *aurora borealis* which involves a 'vapour circle' (*Dunstkreis*), or an atmosphere composed of 'the finest and most fleeting particles' (UNH 1:283). What we can take from this is the following: the internal vibrations of bodies caused by heat are actualizations of resistance to the pressure of a cosmically dispersed subtle matter, such that when these two counteract, parts fling off from the body causing a vapour trail. Returning to the quotation from Reflection 46 with these connections in mind, we can see Kant beginning to extend aether to encompass the ground for the cohesion of all bodies. But this stops short of setting the aether in a fully cosmological frame since it is still utilized as a prism through which to understand the observation of various phenomena from Earth. Moreover, it does not develop a convincing answer to the problem of empty space left open in *Universal Natural History* since it still operates as a discreet matter.

Be that as it may, the beginning of Reflection 50 sheds more light on the direction Kant wanted to travel. It says, 'No space can be empty of aether because the cohesion (*Zusammenhang*) of bodies arises from this aether, for then [if this were so], cohesion (*Zusammenhang*) would cease where the emptiness (*das Leere*) of the aether would be.' (R 14:443, m.t). The logic behind this statement is analogous to that throughout Kant's corpus when he argues for the necessity of attractive and repulsive force. Since aether is now placed at the root of the cohesion of bodies, if it were suddenly subtracted the cohesion keeping the

body together would vanish, subjecting it to an unchecked repulsive force resulting in the pulling apart of the body, leaving an empty space, a vacated emptiness where the body once was, an impossible situation in Kant's view. This provides some strong grounds for suspecting that Kant wanted to develop a universal, necessary account of aether which describes the filling of all cosmic space. In fact, all the discussions of aether from this period are ultimately attempts to answer the problem of empty space, an indication of Kant's growing anti-atomism. As Eric Watkins (2006, 75-6) suggests, Kant's problem with empty space is even elevated to a principle (of no gaps), which typifies the need for developing a new principle of continuity or discipline of transition. Indeed, the problem of empty space continues to be a source of strife for the metaphysics of nature Kant wants to construct.

Sticking with Reflection 50, it is also important to note that it is written on the blank page opposite §404-5 of Baumgarten's *Metaphysica*, both of which set out the conflation of substance and spirit: 'Every spirit is a substance' (*Omnis spiritus est substantia*) (Baumgarten 2017, 176), and spirits are 'forces for representing their own world' (*vires repraesentatiuae mundi sui*), spirits are 'indivisible, finite' (*indiuisibles, finiti*) (Baumgarten 2017, 176, t.m). Indeed, according to §403 finite spirits clump together to form a colossal 'universal pneumatic nexus' (*nexus pneumaticus vniuersalis*) (Baumgarten 2017, 176). '*Pneuma*' is the Stoic term for 'breath of life' or 'life-giving air' akin to the Hebrew '*nishma*' which is the breath of life God breathed into Adam's nostrils (Genesis 2:7). For the Stoics, *pneuma* was the essential property of a thing's existence, that which makes it specifically *that* thing (in medieval scholasticism this was transmuted into the concept of 'haecceity') and was responsible for its animation and its life. One element of the Stoical conception relates particularly well to tone and sound. *Pneuma* is associated with variations in 'tension' (*tonos*) and informs the order of the whole universe via radical continuity as though the universe were a colossal instrument

iterating various compositions.[36] This is reflected in Baumgarten's universal pneumatic nexus which we might think of alongside the previous Baumgarten term, 'universal nexus' as a skin, but this time it is a pneumatic skin, an essential, continuous, living and spiritual skin which we must read alongside pneumatology, or the Christian study of the logic of Holy Spirit. It is therefore not surprising that Kant ported many aspects of *pneuma* into the aether concept in Reflection 50, emphasizing its universal and continuous characteristics whilst paying special attention to the life contained in variations of tension and how this might be used to tackle the problem of empty space. Whilst aether approaches synonymity with life, empty space approaches synonymity with death.

At the end of Reflection 50 Kant says: 'the sphere of aether (*aethersphäre*) between the Earth and the Moon may have equally determined their distance (*Abstand*) as an electric force' (R 14:444, m.t), which is to say, the Earth and the Moon might not be separated by empty, dead space but by a space filled by an electric 'sphere of aether' (*aethersphäre*) or a tensed, living field. Whatever substantial weight we place on this Reflection it is clear that an experiment is being advanced as to whether the aether can function as that which, despite vast physical distances between them, pulls cosmic bodies into a single, living world system via the filling of cosmic space with different tensions.

Finally, to launch us into the 'Übergang' drafts we must also consider how Kant thought about this prospect in general or what name was given to this whole enterprise. If we turn to the lectures on metaphysics from around the same period in which the two reflections were written (*Metaphysics L_1*), we find just such a term which repeats the same desire as *Universal Natural History*. The world is outlined in terms of a community (*Gemeinschaft*/*commercium*) and cosmic space is rationalized as a taut network (*nexus*) of interconnected bodies (L-Met-L1/Pölitz 28:196). It will, then, be the concept of community which acts as the shorthand for

[36] See Caygill (2007, 22). For a parallel reading of metaphysical pneumatology see Howard (2019). For a more general overview of *pneuma* in Stoic philosophy see White (2003, 134-5), Toulmin and Goodfield (1962, 93-8) and Sambursky (1959, 5).

the filling of cosmic space by aether and the last answer to the problem left open in *Universal Natural History* and the initial motor fuelling the transition to aether in the 'Übergang' drafts.

4. Proteus Unbound: The 'Übergang' Drafts

Throughout the 'Übergang' drafts there are instances of terminology and motifs which directly echo *Universal Natural History*. Immediately apparent are Kant's discussions of aether as a concept of community. Indeed, the issue of community in Kant's corpus is pronounced. Whilst Payne and Thorpe (2011, 2-3) define six different forms community takes in Kant's work (category, scientific notion, metaphysical idea, moral idea, political ideal and theological ideal), I claim that the kind of community at stake in the aether does not fit neatly into any one of these and calls for a seventh form: cosmological community. This will be the starting point of my reading of the 'Übergang' drafts.

In 'Übergang 3' Kant discusses an 'elementary material' (*Elementarstoff*) distributed everywhere in cosmic space (*Weltraum*)' (OP 21:225, 73) which allows for a community of cosmic bodies. This indicates, in distilled form, a transition from the elementary primary material of the early cosmology, which works on the basis of cosmic bodies moving through empty space, to a material which blots out empty space to form a homogenous whole.[37] In 'Übergang 8' Kant tells us: 'empty space (and likewise contentless (*sachleere*) time) are not objects (*Gegenstände*) of possible experience; non-being (*Nichtseyn*) cannot be perceived' (OP 21:546, m.t), that is to say, experience of empty space would be experience of an '*Unding*' an un-thing, a non-entity.[38] Before this draft, in 'Übergang 6' a definition of cosmic space is given

[37] For more on the relevance of the cosmic whole in the 'Übergang' drafts see Tuschling (1989, 200-3) where he indexes the rationale of aether in the need for a 'single cosmic, dynamic system' for the sake of a 'cosmological system of forces or primordial matter'.

[38] This represents a continuation of the line of thought found in the first *Critique*'s antithesis of the cosmological antinomy where, 'A space, therefore (whether it is full or empty), may well be bounded by appearances, but appearances cannot be bounded *by an empty space* outside themselves. The same also holds for time. Admitting all this, it is nevertheless uncontroversial that one surely would have to assume these two non-entities (*Undinge*), empty space outside the world and empty time before it' (CPR A431-3/B459-61). It also represents a continuation of Kant's refutation of Newton's assumption of empty space in *Metaphysical Foundations* (MF 4:559-60).

in which this logic is already embedded into its possibility: 'cosmic space (*Weltraum*) is the sum (*Inbegriff*) of the whole (*Ganzen*) of all possible outer experience in so far as it is filled.' (OP 21:247, m.t). For cosmic space not to be an *Unding* it must be filled with something universal networking everything together. The filling of empty space for the purposes of a cosmic community is the primary criteria of the 'Übergang' drafts and Kant gives us two ways to think about it:

> 1. The occupation of space (*Raumeseinnehmung*) (*occupatio spatii*) concerns only the existence of something (*etwas*) spatial. 2. The filling of space (*Raumeserfüllung*) (*repletio spatii*) [concerns] the moving force of attraction and repulsion of matter in space for the prevention (*verhindern*) of emptiness (*Leere*). (OP 21:550, 80, t.m).

Cosmic space can be temporarily occupied/blocked in (*Raumeseinnehmung*) or more permanently filled (*Raumeserfüllung*).[39] This tells us a lot about how Kant was thinking the aether.

As we have seen, in *Universal Natural History* elementary primary material was described as that which gradually clumps together to form cosmic bodies, leaving an emptiness through which these bodies move. From the perspective of the 'Übergang' drafts, elementary primary material only occupies space, failing to explain precisely how cosmic bodies act on one another through vast distances. It tells us how cosmic bodies came to be but nothing about the constellations in which they are interconnected with one another. An analogy of this would be to try and understand the Moon's role in tidal changes on Earth without factoring in its gravitational pull (AR 1:187). To do away with inexplicable action at a distance what is needed is a space-filling something, a 'necessary, that is, *permanent*' (OP 21:584, 92) conception of aether.

[39] See McCall (1983, 164) for more on this distinction.

Kant outlines the function of the aether in 'Übergang 10': '[…] in the simultaneity of all parts it posits all corporeal things (*Dinge*) – even the most distant – in community (*Gemeinschaft*) [...] e.g., that it makes cosmic bodies perceptible to the senses and [makes] the objects (*Gegenstande*) of experience possible.' (OP 21:562, m.t). The aether pulls all cosmic bodies ('even the most distant') into a community by filling empty space. For Kant, no space is ever entirely empty, meaning that the filling of a literal gap between cosmic bodies is at stake: 'to be an object (*Gegenstand*) of possible experience, that gap (*Abstand*) [between] perceptions of the senses can only be presented by means of a matter lying in-between (*dazwischen*) [them], since absolutely (*absolut*) empty space is absolutely (*schlechterdings*) no object (*Object*).' (OP 21:563, m.t). That is, the '*abstand*' (literally, the 'standing away') we perceive between e.g., the Earth and the Moon is only a relative gap which is dependent on an intermediary matter that makes it the '*Gegenstand*' (literally, the 'standing against'). The 'standing away' between two cosmic bodies is not indicative of absolute empty space but is rather premised on an intermediary matter which fills this space. Slightly more in keeping with the twist Kant presents here, the possibility of the gap ('standing away') is found in the initial possibility of the object ('standing against'), which is in turn found in the impossibility of empty space. This is not only an epistemological statement, however, but a cosmological statement suggesting the necessity of a universally filled space.

'Übergang 1' gives us a programmatic division to understand this. Under a heading entitled, '*Of the material concepts (of the object* (*Objects*)*) of natural science* (*Naturwissenschaft*)' (OP 21:209, 64, t.m) Kant tarries with the characteristics the aether would need so as to bar the possibility of empty space. He begins by distinguishing matter in general (*Materie überhaupt*) from body, where the former is considered 'a universally distributed matter, occupying cosmic space (*Weltraum*)' (OP 21:209, 64) and the latter a concentration of matter condensed into one point in space. Matter in general is a way for Kant to discuss the

primary characteristic of the aether, which is universality.[40] Kant then departs into a long section which distinguishes 'organic' from 'inorganic', but the relation this has to the universality of aether is not immediately apparent. It is one of the many anacoluthic moments of *Opus postumum* whereby the connection only becomes clear after unpacking the murky thematic thread Kant is working with. I argue that the conversation on the organic and inorganic stakes of aether contribute to its universalization, away from a local inorganic matter of body-formation towards a much more philosophically (and cosmologically) instantiated element.

In a marginal note of this section Kant states that, 'An organic (articulated) body is one in which each part, with its moving force, necessarily relates to the whole (*Ganze*) – to each part in its composition (*Zusammensetzung*). The productive force of this unity is life.' (OP 21:211, 64, t.m). The order of organic bodies goes from parts to wholes, which are collectively stitched together through the productive unity of 'life'. How this maps onto a cosmic frame requires us to think in terms similar to Kant's early cosmology. Thinking the organism involves a movement from part to whole, e.g., from hand to endoskeleton, from bicep to muscular system, from brain to nervous system. A foot is not considered to have a mind of its own because it moves, but rather it moves only because it is bound to a body; likewise, the body moves only because it is bound to a larger environment. In the following sentence we are shown how this image relates to a wider community: 'This life principle (*Lebensprinzip*) can be applied *a priori* from plants to animals – and their relationship to one another – to the whole (*Ganzen*) [in which they are] bound (*Verbunden*) and also to the whole (*Ganzen*) of our world through their reciprocal (*wechselseitig*) needs.' (OP 21:211, 64, t.m). Scoping from the individual needs of plants and animals (water, sunlight, food) towards their relationships with one another understood in an interconnected whole (environment), contributes to a more

[40] One of the few commentators on this division is Pecere (2006, 264 and 265n38) who makes the link between 'matter in general' and aether. In discussing 'Übergang 2' Rollman also makes the claim that '"matter in general" is also a presupposition of body formation (*Körperbildung*) in time (not only [in the] causal), thus temporality must be assumed as existing at the beginning of the formation of physical bodies' (Rollman 2014, 78, m.t) although he does not explicitly connect this thought with the elementary primary material and its fundamental temporality in *Universal Natural History*.

universal view of the world. All the stages from plants up to worlds must be drawn out in a chain of being.[41] In this connection, Kant uses the part/whole relationship in and between organic bodies to map out the community between inorganic (cosmic) bodies. The material of this community is marked out by aether. Just as blood brings life to the body by hooking up the organs, the aether brings life to the cosmos by hooking up the cosmic bodies.[42]

From a more general perspective, which will come to dominate the 'Übergang' drafts, the discussion of the organic and inorganic projects the aether beyond a discrete inorganic matter. As we shall see, Kant experiments on the aether to such a degree that it becomes more than a simple substance, more than a simple matter. This already places the aether beyond only playing a role in body-formation, extending it to something more akin to David Bohm's conception of space, which is filled by 'an immense background of energy' (Bohm 1007, 242). Bohm also unknowingly expresses the complexity of Kant's aether: 'This plenum is, however, no longer to be conceived through the idea of a simple material medium, such as [traditional] ether, which would be regarded as existing and moving only in a three-dimensional space.' (Bohm 2007, 243). A conceptual reorientation is called upon here, which echoes Kant's thinking in the 'Übergang' drafts.

The role of organism in understanding the aether and the fact that Kant repeatedly remoulds it into something more complex than a simple matter becomes obvious when we explicitly factor in the chain of being. In a marginal note of 'Übergang 1' Kant says: 'One must also conceive of a world-organization in a unified body, in which no forms perish without having brought forth (*hervorgebracht*) other better ones.' (OP 21:212, 65). We must consider

[41] See the note Kant attaches to these comments where the possibility is opened that we could imagine 'classes of organic bodies, organized for the sake of one another, but specifically different: e.g., the vegetable kingdom for the sake of the animal kingdom, and the latter for mankind' (OP 21:211, 65). To see how Kant thinks this in terms of a cosmological relation we only need to read the next sentence which claims that human beings reside at the top of these classes (a thesis that includes a whole swathe of problems which I will not explore here) and may have got there via 'revolutions of the Earth, many times' and through which we are barred from knowing the future of 'our globe and its inhabitants.' (OP 21:212, 65). This centralizes the thinking of evolution through cosmological time which is beyond the comprehension of our perspective but nonetheless remains the case.

[42] On this point I disagree with Mathieu when he claims that 'organism and aether run parallel next to one another as two "systems" without intersecting' (Mathieu 1989, 213, m.t). Also see Förster (2000, 85) and Beiser (2008, 190).

the unity of an organic body as an iteration of a 'world-organization', a term which can be read synonymously with world system.[43] This calls upon the configuration of *Universal Natural History* where no cosmic body can die without causing another to emerge, returning Kant to a view in which negativity rushes to the fore, echoing the view he developed in 1763 that '*every passing away is a negative coming to be*' (NM 2:190). The death of a body is the negative pointing away towards the life of another body. Moreover, as organic parts are interconnected in the body through a similar pointing away (the skeleton supports the nervous system, the nervous system supports the organs etc) so too should cosmic bodies be interconnected through the tendency to point away, to look outwards, to be interconnected in a chain. The importance of this view, and particularly the core meaning of the chain of being, is restated in an amanuensis copy bundled with the 'Übergang' drafts (OP 22:543-55, 82-90).[44] At stake in this draft is an 'organizing force' (*organisirende Kraft*) which arranges all things in nature into a series like 'links in a chain' (*Gliede einer Kette*) which 'form a circle (*Kries*)' (OP 22:549, 86, t.m). Quite clearly, the terms of the chain of being are back on the scene as is the circularity inscribed in the life and death of the Phoenix. But a major revision is also tabled, namely, that the aether must now be factored in to connect cosmic bodies into a 'community of reciprocity (*Wechselwirkung*)' (OP 22:554, 89), a community *Universal Natural History* lacked owing to its dependence on empty space.

In 'Übergang 10' in the section entitled, '*Principles of Transition from the System of Nature to the World System*' (OP 21:568, m.t) the stakes are overtly signposted wherein an avenue is opened onto the question of plant life and what it can tell us about the universality of aether. The reason why Kant discusses plant life so extensively here is to document the move

[43] See Rosales (2005, 228n39).

[44] Although the drafts are not actually labelled 'Übergang', because they were found amongst the 'Übergang' drafts and because there is so much doctrinal overlap between these amanuensis copies and the 'Übergang' drafts, they are usually considered to be a condensation of the so-called 'aether deduction'. See Rollman (2015, 38n84), Hall (2017, 94) and Mathieu (1989, 59-60). Furthermore, that such a view appears in an amanuensis copy suggests that it may have been close to publication, although as Förster notes '[Kant] subsequently crossed out the passages containing the ether proofs' (Förster 2000, 88), so we must contend that at some level Kant was unhappy with this copy. But perhaps we should pay attention to them precisely because he crossed them out.

from a natural system of nature in which plants are considered individuals existing for themselves, to an artificial system of the world in which plants are considered in a community as parts in a larger whole. In a rather obscure paragraph, plant life (*Pflanzenlebens*) is distinguished from the 'living' (*lebenden*) such as animals in so far as in the latter 'the whole (*Ganze*) will not regrow (*nicht wieder hergestellt wird*) a lost limb (*Gliedmaßes*)' (OP 21:568, m.t). The whole could be considered the body here and the lost limb an appendage; e.g., an arm will not regrow if it is lost, whereas the branch of a tree or the leaf of a plant will. But there is another layer of meaning to this passage which indicates the movement of Kant's thinking. The passage can be read like this: 'the whole (*Ganzen*) will not restore (*night wieder hergestellt wird*) a lost member (*Gliedmaßes*).' (OP 21:568, m.t). Here, then, a higher order frame is introduced where the difference between the plant-world and the animal-world hinges on the observation that the latter does not replace an individual when it dies nor will an individual reproduce all other animals. Essentially what is seen here is the conflation of two levels of existence: the body considered as a whole, and the totality of bodies considered as a whole. To take the first of these frames, the loss of a limb (e.g., an appendage) will not be regrown by the organism. But if we zoom out to the other, higher order frame, to see what relation the lost member has to the whole thought of as its environment we find that in the process of rotting away it provides a multiplicity of elementary material for a plethora of other organisms to thrive, from fungi (which are the biological motor of the process) to insects, from insects to mice, from mice to birds and so on.[45] This higher order frame departs from what at first seemed like a contradiction, repeating the view at the level of organism that cosmic bodies die out, but that new cosmic bodies arise negatively, from out of the ashes of these dead links. But where does aether fit in here?

[45] This is taken up again in a later passage from fascicle XI: 'But there can also be an organization of a system of organized beings (*Wesen*), e.g., the deer for the wolf, the moss for the tree, the soil (*Dammerde*) for the grain and humans themselves for the various races according to the given climates, and thus the whole (*Ganze*) of the round Earth (*Erdglobs*) can be organized.' (OP 22:505, m.t). Also see Mathieu's (1989, 237-8) discussion of this passage and its related elements.

The aether points out the cross-over between organic bodies such as plant and animal life, and inorganic cosmic bodies such as planets and suns since it now 'fills everything' (OP 21:568, m.t). It is how Kant accesses the continuity between these two levels of existence. All the elements which have been put into play come to a head a few *Akademie* pages later:

> Nature organizes the very manifold of matter not merely according to kind (*Art*) but also according to steps (*Stufen*). One need not think that the specimens of extinct animals and plants in layers of the Earth and rock mountains are revelations of former products of our animated, life-giving globe, rather that its organizing force (*organisirende Kraft*) has also organized the whole (*Ganze*) of plant and animal species – man not excluded – [in such a way that they] are created for one another as links in a chain (*Glieder einer Kette*) forming a circle (*Kries*) not merely according to their nominal character (of analogy) but according to their real character (of causality) and as such they require each other for their existence. [It is to this] world-organization (towards an unknown end) that the star system/galaxy (*Sternsystems*) itself points toward. (OP 21:570, m.t).[46]

In this passage Kant urges us to think topologically in terms of degree instead of kind; plant and animal life are bound up together just as they are bound up with the cosmos. Kant paints a picture which will play into the core of the aether: everything points away from itself in reciprocity with something else. The death of an animal or plant gives up space for and is material for the emergence of another; the dissipation of a molecule gives rise to another; stars dissolve back into elementary matter which becomes raw material for other stars. The most important emphasis, however, is the move from 'analogy' to 'real', from the nominal conceptual to the causal material. It is precisely the meeting of these antagonistic sides that the aether marks out as a seam; it is simultaneously concept *and* material, a true *Mittelbegriff*. The

[46] See Werkmeister (1993, 180-1) for an analysis of this note. For a related Critical picture see CJ 5:428.

aether, then, is not Kant's way of (re)introducing a naïve physical realism into his thinking,[47] but a way of introducing a more layered position which straddles both realism and idealism. This barring of a one-sided naïve realism runs through all of Kant's discussions of aether in the 'Übergang' drafts and plays out along various dichotomies.

Many *Opus postumum* scholars often start from the question of whether aether is hypothetical or non-hypothetical, one of the more prominent dichotomies at stake in the drafts.[48] Indeed, whether 'such a material as the basis of all moving forces of matter *is* or *is not*', whether it is 'assumed by physicists as a merely hypothetical material only for the explanation of certain appearances' or is actual (OP 21:572, m.t) is an important problem for Kant. We are told that aether is an 'all-dispersing, all-penetrating (*alldurchdringenden*) and all-moving matter (*Materie*) which fills cosmic space (*Weltraum*)' but owing to this universality, it must remain 'a hypothesis which indeed is established through no experience' (OP 21:576, m.t). Not only does this tint the aether with a Critical transcendental hue (perhaps recalling the Third Analogy as some argue),[49] it is also an innovative anticipation of contemporary methods of modelling the cosmos. We could think of it in terms of dark energy or the cosmological constant (λ) which are factored into the system but have no positive attributes, a kind of transcendental 'substrate'. But if aether is merely hypothetical in this way – named for the convenience of physicists – does this not dismantle the actuality of aether, allowing for action at a distance and empty space to necessarily creep back in?[50] And from the opposite side, if aether is actual, would this not go beyond the Critical limit on making true knowledge claims

[47] McCall (1983) often comes extremely close to interpreting aether this way. Edwards (2000, 155-6) also comes close to defining aether as a purely physical reality. And Wong (1994, 85) interprets the aether as an object, which aligns it with physical realism.
[48] One of the most convincing trajectories is put forward by Mathieu (1989, 75; 81-2) who bases the aether on his reconstructed plan of the entire *Opus postumum* including the world system as it is found in 'Übergang 9' and 'Übergang 6'. Mathieu also frames Kant's position on the aether as a 'turn' (*Wende*) away from a hypothetical material to a categorically '*a priori* given material.' (Mathieu 1989, 113, m.t). He bases this move specifically on a passage in 'Übergang 8' where Kant says that 'caloric cannot be *directly* proved', that it can only be proved '*indirectly*' and thus only exists categorically. (OP 21:548, 79). For the varying views of this move, see Friedman (1994, 220-2), Emundts (2004, 17-8), Hoppe (1969, 98-100), Tuschling (1971, 30; 99-100), Hall (2017, 85-7) and Förster (2000, 82-101).
[49] See Edwards (2000, 152-8), Hall (2017, 101-2) and Wong (1994, 123-4).
[50] See Lord (2008, 160-1).

about universality? It seems that where aether is concerned Kant is caught between two opposed directions: a Critical theory of action at a distance and empty space (mechanical-atomist) or a pre-Critical theory of contact and universally filled space (dynamical-plenist).

The dichotomy reaches its clearest expression in a review of the apparent defiance of light when considering aether:

> the universally dispersed and thoroughly penetrating caloric (*Wärmestoff*) – [which forms] the community (*Gemeinschaft*) of cosmic bodies (*Weltkörper*) among one another – can completely fill space and is nearly infinitely large compared with weighable (*Wägbaren*) matter such that light can travel through (*durchgeht*) it, not [as though] through substance, but [as though] through vibration (*Erschütterung*). (OP 21:575, m.t).[51]

The problem recounted in this passage is that of Robert Boyle, who struggled to account for the trajectory of light in the Torricelli vacuum based on his corpuscular theory. Where there is a vacuum 'beams of light [...] are able to traverse that vacuum' (Boyle 2001, 124) indicating that light demonstrates the impossibility of absolutely empty space.[52] It is this problem that Kant dials in: that light travels or 'gets through' (*durchgeht*) as though sliding across an oscillating surface rather than being tangled up in its substantive materiality suggests that the aether not only harbours the dichotomy between material and concept, but also matter and force. That is, although aether is characterized as an 'all pervasive matter (*Materie*)' (OP 21:545, m.t), because light passes through it in a straight line without reflecting or refracting, it must also be characterized as a plenum of vibratory forces.[53] Hence, the aether is also the 'basis for all moving forces of matter' and 'presupposes (*setzt* [...] *voraus*) a continuum [of forces]' (OP 21:226, 74, t.m), or a contraction of all the forces of the elementary system into a

[51] Also see 'Übergang 12': 'Caloric is given another name when it is called *light material* (*Lichtstoffe*), of which it is also true that it penetrates certain bodies, and, that it produces community (*Gemeinschaft*) in the moving forces of the matter of cosmic bodies.' (OP 21:585, 92).
[52] See Hesse (1961, 117-8).
[53] See Caygill (2007b, 225).

single tension.[54] In this connection, the aether occupies a contradictory position, which sees Kant formulating some quite dense sentences where the different oppositions (concept/material; matter/force) are mingled together, e.g., 'It is to be acknowledged as a primordially moving material (*Stoff*) – not hypothetically versified, but [as a] material (*Stoff*) whose forces are real and which underlie all motion of matter (*Materie*).' (OP 21:223, 72, t.m).[55]

Thinking aether as occupying a place of contradiction also contributes to the question of whether it is hypothetical or actual, and whether it is 'the agreed upon object (*Object*) pertaining to the transition from metaphysics to physics' (OP 21:545-6, m.t). Rather interestingly, this quote appears under a heading entitled '*On the Amphiboly of Concepts of Reflection in the Transition from Metaphysical Foundations of Natural Science to Physics*' (OP 21:545, m.t) suggesting that aether might be the shared object between metaphysics and physics, and that Kant may be exploring how to avoid amphibolizing it.[56] Whilst it seems as if Kant lacks the proper criteria for avoiding amphibolizing the aether in so far as it is rendered both concept and material, variety of matter and plenum of forces, I claim that it is by sustaining contradiction that aether circumvents the question of whether it is hypothetical or non-hypothetical[57] and becomes the shared object between metaphysics and physics, in the discipline of transition. To further unravel how this is so it is worth meditating on the negativity Kant attributes to the aether in greater depth.

Typical of all the 'Übergang' drafts, 'Übergang 4' lays out a description in the following terms: aether is, (1) Imponderable (*unwägbar*); (2) Incoercible (*unsperrbar*); (3)

[54] I disagree with Edwards (2000, 155) on this point.
[55] Emundts (2004, 170) also picks up on the contradiction contained in aether here
[56] This is somewhat in line with Wong when he urges us to bear in mind the 'shift from the concept-talk to the object-talk of the ether as a space-time filler' (Wong 1994, 108). Whilst I think this approach has merit and is certainly well argued, my own position is that the duality of aether hinges on its force-like and its matter-like characteristics. Also see Beiser (2008, 207-8) for a different reading of how this amphiboly plays into the meaning of aether.
[57] It is this lack which prompts Friedman (1994, 294n117) to read the aether as turning from pressure to vibration and oscillation so as to explain cohesion. This lack is also at the root of Friedman's (1994, 311) argument that aether involves a dual conception of analytic and synthetic universality. My issue with this reading is that it leaves out the other side of the problem: the explicit materiality of the aether.

Incohesible (*unzusammenhangend*); (4) Inexhaustible (*unausleerbar*) (OP 21:231-2, 77-8). Whilst aether is conceived of as universal, it is always expressed negatively: it cannot be weighed, or coerced, or made to cohere, or exhausted. Why should it be the case that we can only define the aether through what it is not? This question gives us plenty of food for thought.

Perhaps a partial answer can be found in Kant's delineation of an 'indirect' and 'direct' mode of judgement (OP 21:230-1, 77). Such a division appears in much of Kant's work, e.g., in relation to the Moon[58] as well as in an epistemological context,[59] but here it is presented in a particularly stark light. It involves a kind of Aristotelian 'this' (Aristotle 2001, 761) or a pointing out, something approximating Friedrich Hölderlin's 'there' (*Dort*).[60] Direct judgement points out the connection between representations and objects, thereby viewing aether positively as a hypothetical matter (it tells us something about the way a subject connects a representation and an object). Indirect judgement points out 'the possibility of knowledge which the subject can have' (OP 21:230, 77) of the object, thereby viewing aether non-hypothetically as a condition of possibility, but one which cannot be directly referenced or pointed to. In other words, the aether is a condition of possibility but is outlined according to its lack to show that it is not an experiential, particular object but has negative reality as a universal. Hence, any direct answer to what this reality is will be obscured by the fact that it is not experiential, that it is negative, meaning that whether we can say that the aether exists is formally suspended.[61] All we can say is that to bar the possibility of empty space and thereby account for universal community between cosmic bodies there must be a 'something' which allows for this, a transcendental or to put it in Schelling's terms an 'unconditioned' substrate

[58] E.g., see VM 8:74 and IM 8:323-3

[59] E.g., see CPR A20/B34, A670/B698 and CJ 5:244-5.

[60] ee Hölderlin's poem *Andenken* for two instances of this (Hölderlin 1998, 250-3). My thanks go to Howard Caygill for first making me aware of this poem and for his insightful reading of the '*Dort*'.

[61] See Mathieu's (1989, 116-7) canvassing of this tactic and its bearing on Kant's use of the terms 'existence' (*Dasein*) and 'to exist' (*existieren*). Mathieu argues that with Kant's discussion of hypothetical material, the aether presents a paradox in that it cannot be said to fully 'be-there' (*da-sein*) or 'to exist' (*existieren*). It is for this reason that he reads the aether as an intermediary concept (*Mittelbegriff*). Also see Mathieu's claims about a '*deduction of a new concept of existence*' which is: 'existence is thoroughgoing determination (*existencia est omnimoda determinatio*)' (Mathieu 1989, 135-6, m.t). For more on this concept see Friedman (1994, 300-3), Hall (2017, 100) and Edwards (2018).

(Schelling 1858, 21). We cannot say that it positively exists or does not exist, we can only define it negatively and give it necessity such that if taken away, empty space would be permitted and the actual community at stake in the cosmos dissolved.

Another way of thinking the negativity of the aether is Kant's vacillation between matter and material, which up to this point have been used somewhat synonymously. When matter (*Materie*) is directly pointed out or judged it is made into an object of experience or a representation of an object, that is, 'we make it' into an object in the sense of the first *Critique*. Material (*Stoff*), on the other hand, denotes a continuous fabric, which when directly pointed out or judged is transformed into discreet matter (*Materie*). This means that pointing out a material directly without transforming it instantly into matter is impossible and hence for material to remain universal it must also be indirectly alluded to and indeterminate. This perhaps also explains the otherwise rather baffling statement that, 'the *hypothesis* of a [matter] (*Materie*) [...] is only a thought-thing (*Gedankending*) (*ens rationis*), but not, for that reason, a merely *hypothetical* material (*Stoff*).' (OP 21:230-1, 77, t.m). A universal matter (*Materie*) is hypothetical since it tries to conceive of discreet, atomistic parts pointed out directly as constituting a universal landscape. On the other hand, a universal material (*Stoff*) is not hypothetical since it eschews direct judgement, remaining universal by means of its negativity.[62] That being said, Kant is by no means systematic with the difference between matter and material in the 'Übergang' drafts', often switching seamlessly from rigid distinction to none at all.

Returning to the notion that aether harbours a sustaining of two antagonistic poles, we see the more profound philosophical necessity for pointing it out negatively. In so far as aether is thought as universal it cannot be put through the standard axioms of analysis which measure matter; it cannot be weighed or coerced, it cannot be made to cohere or be emptied. But neither can it be measured in the way that a force is measured; it cannot be derived from physical

[62] See Friedman (1994, 312-3) for an alternative reading.

interactions with a spring, it cannot be attributed an SI unit. In this regard we might think of the aether as the intermediary concept (*Mittelbegriff*) *par excellence*. Lodged halfway between concept, material, matter and force it is sustained only because of its indeterminate, contradictory oscillations between them. It is Schrödinger's cat before the lid has been lifted, simultaneously in two antagonistic states. It is also for this reason that it appears impossible to align Kant's aether with the type of aether disproved in the Michaelson-Morley experiment.[63] It is not something we will someday positively 'discover' but is rather a constant negative – although entirely constitutive – horizon which cannot be rationally 'plugged in' to the system, it is Coleridge's dictum that 'Thy being's being is contradiction!' (Coleridge 1996, 213).

In this connection, Tuschling concludes his study of *Opus postumum* by stating that it results in 'seemingly unavoidable contradictions' (Tuschling 1971, 188, m.t) which is equated to 'an insoluble antinomy of reason reflecting on nature' (Tuschling 1971, 189, m.t). McCall disagrees with this view, not in light of the contradictory status of aether independent of the subject or Tuschling's skirting over its negativity, but rather because he sees it as an active participant in the formation of bodies (McCall 1983, 131-3). On the contrary, my thesis is that it cannot wholly be explained as an antinomy of reason since it is considered the condition of possibility for the community of cosmic bodies. But neither can it be explained only as a body-forming matter since it is unweighable, incoercible etc. Rather, it must be viewed as a real and constitutive contradiction in nature which negatively escapes predication, and this perhaps goes some way in explaining Kant's struggle to fully develop it. It is the frontier between the limited epistemology in the Critical philosophy and the unbounded cosmology in the pre-Critical philosophy. Aether is just the name Kant gives to this zone of cosmological thinking, a way of reintroducing the cosmos: 'Since, in space, everything can change position (*alles Ortbewegbar ist*), except for space itself, and no space, as empty, is an object (*Gegenstand*) of experience, it

[63] See Hesse (1961, 226-7).

follows that this matter is extended through the whole (*gantze*) world structure (*Weltgebäude*) and its existence is necessary' (OP 21:224, 73, t.m).

This has consequences for thinking the relation between motion and aether, for it cannot be a *thing* moving through space – 'it is not itself movable' (OP 21:584, 92);[64] 'This composite is not locomotive (*ortveränderndn*) and nor is it a body.' (OP 21:224, 72). Friedman picks up on this when he says that aether cannot be an 'actually existing object', but far from this contributing to the 'failure' (Friedman 1994, 328) of the aether, we must recognize that Kant also does not view it as an actual object. Rather, in relation to motion he considers it more like an oscillating grid or configuration space as Mathieu has it when he says that collected appearances are 'bound up in an infinitely fine net of action and reaction' (Mathieu 1989, 225, m.t).[65] Where Kant distinguishes between different types of motion in the aether, he is clearer as to its peculiarity as well as its transition from elementary primary material. In 'Übergang 1' he says, we

> must assume a first (*Erste*) motion of matter (*Materie*), in which the latter is primordially (*uranfänglich*) self-moving, and which for precisely this reason continues uniformly to infinity, and is not superficial, but all-penetrative. For the first (*Erste*), considered as absolute, is simultaneously that whose motion contains necessity. (OP 21:208, 63, t.m).

There are two elements to take stock of in this quotation. First, the emphasis on the necessity and self-moving character of the first (*Erste*) motion of matter. Because it is a self-movement and all-penetrative it does not align well with classical causality but is rather framed as a sort of persisting ground of all possible motion, a motion which contains all other motions within it. The type of motion at stake is more like one which is curved and bent in on itself, through which an eternal self-causation takes place: 'The beginning of its motion is its own eternity'

[64] As Mathieu puts it: 'the body (*Leib*) can live only as an *individual body* (*Körper*), [whilst] aether can only be considered as unified – but *not body forming* (*körperbildende*) – matter' (Mathieu 1989, 213-4, m.t).
[65] Also see McCall (1983, 122) and Wong (1994, 130-1).

(OP 21:224, 72). In short, this is Kant's way of reintroducing the absolute into his work. Second, the shift from the 1755 cosmology. This first, absolute motion does not denote body formation as did elementary primary material, but rather a network which is contemporaneously held together. It is in this vein that Kant describes the aether as 'continual' rather than 'progressive' agitation:

> [This] totality (*All*) of matter (*Materie*) cannot, for this reason, be *locomotive* (*ortveränderndnd*) (*materia locomotiva*) – that is, it moves in place but cannot be displaced from it. Its motion, as that of a universally distributed cosmic material (*Weltstoffs*), is internally active and unceasing, and keeps all matter in continual (*continuirlicher*) – not progressive (*progressiver*) – agitation (*Agitation*), by attraction and repulsion. (OP 21:210, 64, t.m).

In light of this often confusing array of definitions, Paul Guyer (2005, 76) pairs the aether down to four essential functions, as does Hall (2017, 95). Whilst this is useful for rationalizing the aether in analytical terms it fails to account for the multiple contradictions and dichotomies at its heart and the territory it inhabits, ultimately doing a great disservice to the complexity Kant was attempting to think through it, one which cannot be simplified or reduced.

It is worth considering Hall's (2017, 24 and 93-122) interpretation of aether in more detail. He explores aether as Kant's attempt to solve a problem in the Analogies of Experience of the first *Critique*.[66] He reads a problematic into the Third Analogy in so far as it tacitly hints at two conceptions of substance: one which is 'sempiternal and omnipresent' and one which is 'relatively persistent and spatially discrete' (Hall 2017, 95-6). This poses a problem in so far as the two different concepts are not bridged by Kant, thereby opening a 'gap' in the Critical philosophy. Hall claims that by developing a sempiternal aether in the 'Übergang' drafts, Kant

[66] Others have also supposed this to be the case such as Westphal (2009b, 147-66 and 223-7), Edwards (2000, 152-7) and Werkmeister (1980, 80)

was filling the gap with a transcendental material condition of all experience or an all-encompassing material substance.

Although this reading is noteworthy and the alignment of the permanent with the transcendental is insightful, there are two main reasons preventing me from lining up the implicit duality of substance in the Third Analogy with the aether: (1) Kant allowed light the character of travelling through the aether unperturbed signalling that we must think of the aether as a vibratory plenum of forces rather than one which is made up of substantial and discrete parts, synonymous with matter. Yet, as we have seen, aether is also to be considered a variety of substantial matter, dispersed throughout cosmic space. Aether is thereby not only indicative of a duality but of a sustained contradiction: unlike the rational substance(s) in the first *Critique*, aether is irrational. Against this rendering, Hall sees aether as an entirely determinate resolution which he calls 'Substance' with a capital 'S', expelling all Kant's recourse to the indeterminate aspects of the aether. Because the frame he operates in does not allow for contradictory elements, the contradictions contained in aether are entirely missed.

(2) Whilst my reading of aether does line up with the Third Analogy in so far as I also emphasize its relation to community and empty space, basing a reading of aether solely on the Third Analogy would epistemologize it far too much and would miss its wider, decidedly cosmological orbit. Whilst I agree with Hall on many points and our theses surely cross paths here, downplaying the crucial role of the early cosmological work (especially the elementary primary material and its relation to empty cosmic space) is a misstep with the consequence of reading aether only through the aperture of the subject instead of seeing it as Kant's revitalization of cosmological thinking in an objective metaphysics of nature.

Whilst aether certainly is Kant's way of filling a gap both literally and conceptually as that which provides cosmological community, he also runs it through some radical contortions. He conceives of it as composed of dichotomous oscillations, as material, *and* concept, *and*

matter, *and* force. Kant's aether, in the last instance, approximates the proverbial 'and'[67] as well as Schelling's 'neither the one nor the other' (Schelling 1859, 252, m.t), always pointing away from itself. It is this which opens the path for Kant's return to a position in which he can once again discuss the cosmos as he did in his younger days as well as open a potential dialogue with early German idealism based on the possibility of grasping the absolute.

5. Kant's Revitalized Cosmology?

One of the startling outcomes of Kant's return to the cosmos is the transition from a cosmology which utilizes a temporal elementary primary material, to one which is premised on permanence. The gradual erosion of temporality resulting from the permanence of the aether is at stake since the preoccupation of the 'Übergang' drafts is with the contemporaneous relationships of cosmic bodies but not their history. Consequently, Kant sticks to and even maps out the prohibition of the First Antinomy: 'Eventually, our all-producing globe itself (as an organic body which has emerged from chaos), completed this purpose in the mechanism of nature. To set a beginning or end to this process, however, wholly exceeds the bounds of human reason.' (OP 21:213, 66).[68] The Earth has certainly emerged from the Phoenix's ashes here, but we are no longer able to orient ourselves historically, we cannot determine the absolute beginning or end of the cosmos, only its current state as it appears to us. And it appears to us as an 'all-producing globe', for now the Earth must be considered an organic body, hooked up to all the other cosmic bodies through aether. It is in this frame that we should also understand Kant when he says in fascicle I: 'the world is an animal: but its soul is not God' (OP 21:137, m.t);[69] its soul, the blood of its timeless interconnections, is the aether.

In one sense, then, in Kant's hands the aether returns to its roots, back to the archaic breath of life or *pneuma* of the Stoics, back to the biblical *nishma* God breathed into Adam's

[67] See Deleuze and Guattari (2011, 108-9).
[68] See Hoppe (1969, 101) who draws a parallel between the cosmological antinomy and *Opus postumum*.
[69] Also see Rosales (2005, 236) for an analysis of this passage.

nostrils; in Kant's revitalized cosmology the aether breathes life into cosmic bodies by filling the empty space between them, connecting them and orienting us in a cosmos without a discernible genesis. We must be careful not to conflate aether with an idea of reason, however, since it is not a *tendency* towards an absolute, it does not unfold, it contains no temporal elements, in fact it rids cosmology of all cosmic genesis. After all, it is cosmo*gony* and not cosmo*logy* that the First Antinomy prohibits by way of barring knowledge of the *genesis* of the world. Aether, on the other hand, reinstates a cosmological and universal absolute, but it does so by sustaining negativity and contradiction, by pointing away from itself, by being the irrational motor and interconnection of the absolute itself.[70] It therefore resists being neatly equated with a regulative idea of reason unless we understand the regulative idea as always already containing the constitutive or, to align it with Friedrich Schlegel's rendering, as 'a concept perfected to the point of irony, an absolute synthesis of absolute antitheses, the continual self-generating alternation (*Wechsel*) of two conflicting thoughts.' (Schlegel 1971, 176, t.m). Aether – as typifying the discipline of transition – could, however, be suggestive of a desire to dynamize reason itself, to elevate it from the stagnation of a Critical faculty to the dignity of a constitutive idea of nature.

The aether indexes the transition from the temporal in *Universal Natural History* to the permanent in the 'Übergang' drafts, from a circular yet empty conception of the cosmos to one which is always filled. But there is a strange continuity in this revitalization of cosmology which Kant explicitly remarks on in the 'Übergang' drafts. At the very end of the last 'Übergang' draft Kant writes out a '*Concluding Remark*' (*Schlusanmerkung*) under which appear '*Doctrinal Cosmological Remarks*' which seek to contextualize his revitalization of cosmology. Here we see the more profound battle Kant has been engaged in. His concern all along has been that 'from all these analogies one sees not one ground (*Grund*), and yet still all of this seems not to be a contingent play but a *necessity*.' (OP 21:520, m.t). Through all the

[70] As Lord (2008, 161) points out, albeit within the confines of subjectivity.

variations on aether found in the 'Übergang' drafts, Kant is still unable to find a thorough ground or principle whilst the cosmic drama continues to unfold as though there is one. The question of how to account for this *aporia* is therefore identical to that of *Universal Natural History*: how to make sense of a cosmos which allows for necessity, mechanism and structure but also simultaneously gives rise to gaps through which appear the glimmers of freedom, dynamism and chaos. It is a question Kant begun to reoccupy himself with in the second part of the third *Critique* but its foundational root is in *Universal Natural History*: how does the cosmos exhibit both necessity and freedom? Cassirer's description of the overarching project in *Universal Natural History* equally applies to the 'Übergang' drafts in this instance: 'causal and teleological considerations are directly intertwined here' and Kant 'tries to reconcile the two with each other, striving to discover in the universal mechanical lawfulness of the cosmos itself the proof of its divine origin.' (Cassirer 1981, 50). In short, Kant has affected a transitional orbit through the perigees of his own work stretching between 1755 and 1799. As one of Kant's first biographers Ludwig Ernst Borowski noted, 'philosophy, mathematics, and especially astronomy, in which [Kant's] hypotheses, already proposed in 1755 – which were later confirmed by the observations made by Herschel – were all his life always very close to his heart' (Borowski 1804, 164, t.m),[71] a fact we should not overlook.

Whilst some *Opus postumum* scholars centralize Kant's anticipation of quantum mechanics here,[72] my impulse is to read it within the strictures of Kant's own discipline. Owing to the return of the rubric set up in 1755, Kant's revitalized 1799 cosmology both contributes to the configuration of a metaphysics of nature and opens onto an account of theology. For theology has deep roots in Kant's work and it comes to significantly reoccupy his thinking in the last fascicle of *Opus postumum*. With a firm grip on the new emphasis on cosmology in the

[71] I have used Jaki's (1981, 28) translation of this passage, with slight modifications.
[72] E.g., Werkmeister (1974b, 109-35), McCall (1983) and Wong (1995).

‘Übergang’ drafts we now visit Kant in his last days and his last attempt to conceive of a theological orientation, his last transition.

Chapter 5. Fascicle I: A Leap into Theology and Philosophy

Introduction

For all its statements against 'leaps' (*Sprünge*/*saltus*) in favour of 'steps' (*Schritte*/*passus*), in the final fascicle *Opus postumum* offers up a theology which requires a Kierkegaardian type leap. Whilst 'nature makes no leaps' (*Natura non facit saltus*), the problematic of God requires one, and in fascicle I[1] this becomes the driving force of an altogether different aspect of the transition concept.

In the few interpretations concentrating solely on fascicle I, Kant's practical concerns take pole position for obvious reasons. However, reducing fascicle I solely to practical or even technical reason, well-grounded though it may seem, misses the many theoretical elements which require exploration. Whilst it is widely agreed that Kant reduces theology to morality and ethics in his practical work, I argue that more is at stake in fascicle I with regards to the expression of totality, the role of organism and the meaning of incarnation which coalesce around the tripartite division of God, the world and the human being. In the following, I argue that this triad should be considered a theoretical anticipation of practical human reason, or the fact of the human being's freedom from mechanical laws of nature. In short, before the leap comes the transition, and it is this transition that we will investigate in the present chapter.

There are also complicated lines which jut out from Kant's earlier discussions of theology in *Lectures on the Philosophical Doctrine of Religion* and striking transitions from themes in the third *Critique* such as the role of the organic. But the transitions of these previous works are compressed in fascicle I, so much so that many interpreters give up on trying to ascertain its meaning in constellation with Kant's other work. With this in mind, the structure

[1] Fascicle I was written between December 1800 and February 1803 (OP 21:3-158) and contains loose signatures denoting separate drafts from '1' to '10' although many numbers are missed out.

of this chapter differs from the previous ones. I do not plot a single course through earlier works, culminating in *Opus postumum*, but rather unfold individual aspects starting from fascicle I, working back through the third *Critique* and the *Lectures on the Philosophical Doctrine of Religion*. I summarize my study in *Opus postumum* by arguing that the lines of transition at stake in fascicle I directly confront the meaning of philosophy itself, and it is this confrontation which marks out a zone beyond the transition concept, a metaphysical leap into the unknown. Whilst epistemology dissolves into an ontology of force, ontology of force into cosmology and cosmology into theology, all of them are dissolved into the act of philosophizing in the last instance. I conclude with the observation that the nexus which keeps Kant's corpus together is the centrality of this act.

1. Fascicle I: The End of the Beginning

The drafts making up fascicle I are notoriously hostile to systematic interpretation. This is for two main reasons: first, they were written in Kant's last days and second, they are busy, frenetic and contain many diverse elements, often appearing in short fragmentary bursts.

In relation to the first reason, fascicle I is where most commentators find evidence of Kant's 'senility' and this is perhaps for good reason.[2] Indeed, it is in fascicle I that we find the famous shopping lists interspliced with philosophical discussions and perhaps most (in)famously, the note on cats: 'The electrical air (*Luftelectricität*) has floored my nervous system; still, I hope for a *contra revolution* given the biannual [period] of cat mortality.' (OP 21:89-90, m.t).[3] The strange thing about this note is not that we see a great thinker not making much sense, but that in the context of fascicle I it does not seem all that strange at all. Whilst it

[2] As Edwards states, 'Eckart Förster's introduction to the Cambridge translations of selections' from *Opus postumum* 'contains everything necessary to debunk factually the "mental debilitation" thesis, as applied to textual materials composed before the second half of 1801' (Edwards 2000, 253). When leafing through fascicle I, however, this is certainly a harder position to justify.
[3] Also see Kant's letter to Johann Benjamin Erhard from December 1799 (C 12:296).

would be naïve to claim that Kant does not show signs of at least mental exhaustion and at most senility, it would also be misleading to read all of fascicle I through this lens. The shopping lists etc., are certainly bizarre, but there is much in fascicle I which is quite typical of Kant's process of thinking as well as some significant conceptual constellations worth unpacking. As I have been trying to show in this study, Kant's thinking progresses through transition, and even in fascicle I the reliance on thinking transitionally is still on display.

However, in relation to the second reason given above, owing to the many areas covered in and the almost aphoristic style of fascicle I, there often seems to be a disconnect between positions as well as with the wider trajectory of *Opus postumum*. For this reason, as mentioned in chapter one, some scholars believe fascicle I to be the start of a new work altogether. I do not entirely discount this view, especially seeing as a scholar as noteworthy as Werkmeister subscribes to it,[4] but I am sceptical of it since we only need to widen the domain of the transition concept as well as the desire to construct an overarching system to see that Kant is attempting to bring it to a logical conclusion. As Adickes claims,

> The plan of the new science of "transition" etc., [which was] drafted and brought to partial completion in the previous convolutes is severely reshaped in convolute I. What was earlier presented as an independent and intrinsically closed work is now merely a part of a larger whole: a system of transcendental philosophy. (Adickes 1920, 722, m.t).

The concept and discipline of transition get tied into a much wider landscape with a broader philosophical import. This is apparent in passages where Kant still attempts to order the work around the transition concept, but clearly stretches how it operates:

[4] See Werkmeister (1980, 112).

> 1) Transition from metaphysical foundations of natural science to transcendental philosophy. 2) From the latter to the universal doctrine of experience (*Erfahrungslehre*), physics in general according to its formal conditions. 3) From nature to the doctrine of freedom (*Freyheitslehre*). Human freedom presupposes the concept of duty, categorical imperative. 4) Progress to physics as a system. God, the *world* and the *human*, subject to the command of duty (*Pflichtgebot*). (OP 21:61, 245, t.m).

Kant is still wrestling with how to move through various territories according to steps, except now the original motivation of the transition concept has become the underlying thread tying the system of philosophy together.

On the other hand, it is difficult to shake off Mathieu's contention that there is a very different transition concept at play: 'in this case it certainly looks like the location of something different as opposed to the "Transition from Metaphysics to Physics." Here, it is no longer about two territories which must be bound through a bridge' (Mathieu 1989, 253, m.t). Whilst previously the transition concept acted as a bridge between two disciplinary territories such as metaphysics and physics, sensibility and understanding, matter and force, elementary primary material and aether, it now functions as a sustaining of two ideas in a single unity. We can tell this is the case by looking at Kant's experimentation with new titles: 'God and the World, the Totality (*All*) of Beings (*Wesen*) presented (*vorgestellt*) in a System of the Highest Standpoint of Transcendental Philosophy' (OP 21:52, 243); 'The Highest Standpoint of Transcendental Philosophy in the System of Ideas: *God,* the *World* and the *Human* in the World, Restricting Itself Through Laws of Duty.' (OP 21:59, 244, t.m); 'The Highest Standpoint of Transcendental Philosophy in the System of Ideas. *God*, the *World* and that which is adequate to duty, the *Human* in the world.' (OP 21:54, m.t); '*The Highest Standpoint of Transcendental Philosophy in the System of the Two Ideas* [...] God, the World and the Subject – the thinking being (*Wesen*)

in the world – which connects both objects (*Objecte*).' (OP 21:34, 237, t.m). According to these potential titles it appears justifiable to drop the transition concept altogether in favour of a holding together or sustaining, or perhaps even a leap.

The irony of framing the culmination of the transition concept as a leap is not lost on me, but it is appropriate on two fronts: first, there is no transition to the idea of God, it simply erupts towards the end of fascicle VII and then continues throughout fascicle I. Second, Kant does not discuss a transition between the terms 'God', 'world' and 'human' but rather launches all three in an attempt to reconfigure transcendental philosophy.[5] What both amount to is a jump first into a theological orientation and second into a confrontation with the meaning of philosophy itself, derived from the ambiguity at stake in the human being as the unificatory site of two opposing expressions of totality. The human expresses a series of intersections: she is both subjected to intractable laws of nature and to her own laws, she is both inorganic and organic, she cuts across both the mechanism of the cosmos and the dynamism of life. As per Mathieu's comment, this is less a transition from one territory to another and more a unification of separate territories through leaps. For above all else, fascicle I provides evidence, even in the suggested titles, for an over-coming of seriality and traditional Newtonian causality, a pinching together of two disparate ideas into the life of the human being, an overcoming of the transition concept itself.

That being said, from a methodological angle the transition concept is still very much alive in fascicle I, it has simply gone wild, it has been 'let off the leash' so to speak. It is just that the movements between contrary moments are so rapid as to be disorientating, that the marginal notes contradict each other quite quickly and that there is a general overdrive in the production of conceptual formulation. To take two marginal notes as examples: 'The world: the consciousness of being (*Wesen*) in space and time outside me and inside me [and] which

[5] Incidentally, Werkmeister notes that there are 'at least seventy-five definitions of transcendental philosophy' in fascicle I (Werkmeister 1980, 198) which indicates Kant's desire to reconfigure it.

are two forms of intuition' (OP 21:66, m.t) and a few lines down: 'Space and time are not special beings (*Wesen*) outside me or inside me, [they are] only the forms of intuition of objects (*Gegenstände*)' (OP 21:66, m.t). On first glance, it appears as though Kant makes a leap from one pole to the other (space and time *are* 'X', space and time *are not* 'X'), but upon second glance it is clear that he is experimentally searching for a properly executed concept and as such tables a reframing of the terms via a transition. Let's reconstruct the notes to see what is at stake. In the first, space and time are both outside me and in me, and they constitute the world in so far as I am conscious of things in them as represented in the forms of intuition. In the second, space and time do not constitute a special being outside me or in me and the emphasis gets placed more heavily on the notion that they are forms of intuition. When we factor in the role of transition, it is simply that a step has occurred from space and time as constitutive of the world to space and time as not constitutive of a special *being* outside me or inside me, just as constitutive of the forms of intuition. Obviously, this does not always apply in fascicle I but it does point to the fact that Kant is still actively thinking through the aperture of transition.[6]

Whilst some earlier commentaries frame fascicle I as a sparsely populated landscape,[7] my retort is that it is filled with an accelerated thinking which is unmatched in the rest of *Opus postumum*. One gets the impression that Kant was frantically trying to get all the contents of his still active mind onto the page before being interrupted by death, for as he says, perhaps intimating at his own position: 'Death is the permanent condition.' (OP 21:118, m.t).[8] The implication being that life is the condition of impermanence, of continual flux, of rapid dynamism. Judged according to this criteria, fascicle I is teeming with life. In this connection,

[6] See Förster (2000, 141).
[7] E.g., see Collins (1943, 273-4).
[8] This is not to be confused with the permanence of the aether, however, which does not have 'states' but is rather more like the unconditioned or absolute in its permanence.

presenting an exhaustive study of fascicle I will not be a goal I can achieve in this chapter, but I certainly hope my interpretation will help open more study on this underexplored marvel.

As for the existing literature on fascicle I, there are a handful of interpretations.[9] One of the most noteworthy is that of Förster, who makes a compelling argument for viewing fascicle I as Kant's attempt to bring the theoretical and practical sides of his philosophy together. Förster argues that in fascicle I the moral law acts as a 'principle of unification' (Förster 2000, 140) in so far as all rational beings stand in a unified 'ethical commonwealth' via their relation to the categorical imperative. Furthermore, God is said to be an idea brought forth by practical reason (Förster 2000, 144) and that only through the unification of the idea of God and the divinely commanded categorical imperative can God become a practical reality. Yet, Förster contends, for this unification to exemplify a 'real relation', 'a third idea is required' to unify them (Förster 2000, 145), which is the human being who puts forward itself, God and the world in a single, unified system of theoretical and practical reason.[10] For Förster *Opus postumum* is not only Kant's final synthesis but his ultimate synthesis.

My problem with Förster's reading is twofold: first, it concentrates solely on Kant's alignment of God with the categorical imperative in fascicle I, ignoring the other predications of God which are at stake such as when Kant considers God as the being of all being (*ens entium*). Second, it considers the human being as the principle of unification only in so far as the human is a practical subject with the moral law. The problem is that Kant often situates the unison of the two ideas in the very fact of the being of human existence, not solely practical, moral existence but the partaking of organic life, the fact that human existence is driven by a life-principle. In short, Kant advances a more anthropically oriented position than Förster allows. Whilst these alternative options are more problematic than Förster's reading, they indicate an alternative route through fascicle I which we should not shun.

[9] See Basile (2013, 425-31) for an excellent overview of this literature.
[10] Guyer (2005, 277-81 and 305-13) advances a similar reading on this point.

Another noteworthy interpretation is that of Tuschling who reads fascicle I as a return 'to fundamentally metaphysical, if not speculative, approaches to philosophical problems' (Tuschling 1993, 165) rather than as a set of concepts bearing solely on practical philosophy. According to Tuschling, this is because ultimately Kant fails to pull the theoretical and the practical sides together. Tuschling uses the third *Critique* (CJ 5:175-6) to justify the claim that Kant was 'completely convinced that there was no chance for transcendental idealism to unify theoretical and practical philosophy' (Tuschling 1993, 163) and that in fascicle I the two poles are actually unified by the human being. Tuschling traces out a trajectory in which this move becomes 'more and more daring, if not revolutionary' (Tuschling 1993, 164) resulting in a radically new formulation of transcendental philosophy itself.

Whilst I am receptive to Tuschling's thesis of a return to metaphysics, the problem is that he goes on to claim that the new formulation of transcendental philosophy is a version of Spinozism, that Kant places the totality of being(s), or the world, in God. This is clearly at odds with the thesis that God and world are unified in human existence since it locates both human and the world *in* God. As England shows, it is more accurate to say that fascicle I consists of a fluctuation between God as an idea and God as 'an actual external reality' (England 1968, 199) and it is this thought that I work with in this chapter against Tuschling, although I ultimately agree that Kant returns to a more metaphysical approach.

Whilst the question of whether Kant attempts to unify practical and theoretical philosophy in fascicle I is the kernel around which much of its interpretation unfolds and one which certainly lurks ever-present in the background of this chapter, I would like to clear a more general pathway which diverges from the practical towards Kant's theoretical engagement with theology.

2. The Idea of God and the World: A Difficult Relationship

In his short commentary on *Opus postumum*, Smith proposes a threefold division at stake in fascicle I.[11] The first claims that God's existence is a matter of 'practical belief, not of theoretical demonstration' (Smith 1992, 639). This is based on passages where Kant identifies the categorical imperative and practical reason with divine command, e.g., 'In moral-practical reason there lies the categorical imperative to regard all human duties *as* divine commands.' (OP 21:09, 220). At stake in this first division is a reduction of the existence of God to concerns of practical philosophy, which echoes Kant's own tendency in previous work to accept God's existence only in the moral realm,[12] synonymous with the 'room' (*Platz*) made for faith (CPR Bxxx). The second part of Smith's division homes in on discussions of God as an idea of reason, which he conflates with duty (Smith 1992, 639). He bases this on passages where Kant proposes the existence of God as an idea but then goes on to claim that the categorical imperative prompts the requirement for such an idea: 'The imperative duty (*Pflichtimperativ*) for humans proves their freedom and is at the same time an allusion to the idea of God.' (OP 21:41, m.t). Smith reduces this to the practical by means of Kant's reference to freedom, which 'alludes' to the idea of God or the divine. In the third part of Smith's division, he reads a series of passages which suggest a more immanent God, or a 'trans-subjective Being' (Smith 1992, 639). He quotes passages where Kant notes that 'God is not a being (*Wesen*) outside me, but merely a thought in me.' (OP 21:145, m.t). Since Smith does not and cannot reduce this to the practical and therefore cannot square it with the Critical distribution of God to practical faith, he focuses on the other two divisions.

At first glance Smith's threefold division captures the movement at work in the thinking of God in fascicle I quite well, but when we look more specifically at the drafts themselves, (giving Smith the benefit of the doubt for only having Adickes' quotations in front of him and

[11] Smith follows Adickes (1920, 802) extremely closely although he eventually disagrees with Adickes. For more on the disagreement between Smith and Adickes see Palmquist (2019, 107-8).
[12] For a discussion of this tendency in Kant's corpus see Wood (2009, 23-4).

not the *Akademieausgabe*) a lot more is at stake. Whilst the practical idea of God is certainly a central motif, Kant struggles to account for God in this way alone. Adickes picks up on this struggle when he claims that Kant gets rid of the moral proof for God's existence, and in its place erects a 'new proof of God (*Gottesbeweis*)' which 'only brings to expression a subjective experience (*Erleben*) of transcendent God in the categorical imperative, thus a purely personal belief.' (Adickes 1920, 846, m.t).[13] Although Adickes still reads the categorical imperative into the 'new proof of God' and although his reading of a repudiation of the moral argument rests on tacit assumptions about the place of morality in the Critical philosophy, what he notices in broad strokes is the shift away from the stance on God maintained in the Critical philosophy. Even in Smith's threefold division we get a glimpse of some of these elements, e.g., God is merely a thought in the subject. Yet what Smith and Adickes do not lay much emphasis on is that the fact of all being is inscribed in the idea of God and that this stands in relationship with the totality of being(s) inscribed by the world:

> The *totality* (*All*) of being (*Wesen*) (*vniuersum*) is God and the world. Both are not objects (*Gegenstände*) of possible experience, but ideas, self-created *a priori* thought-things (*Gedankendinge*) (*entia rationis*) [which contain] principles for the systematic unity (*Einheit*) of thought and objects (*Gegenständen*). (OP 21:43, m.t).

This passage is worth pausing over to launch into fascicle I more thoroughly. God and the world make up the whole of being which is marked by the Latin, '*vniuersum*', the universe. Whether we are supposed to consider God and world as contained in the universe, however, is not disclosed at this point, but we may assume that this is not the case since both are not objects of experience. This rehearses the thinking behind the System of the Transcendental Ideas in the first *Critique* which marks out three transcendental ideas: the soul, the world and God,

[13] For a refutation of Adickes' position see Shrader (1951, 228-41) and Wood (1970, 11-3).

under three negative 'classes' (*Klassen*): psychological, cosmological and theological (CPR A334-5/B391-2). But in contradistinction to the way they are set out in the first *Critique* these ideas are also to be used for thinking the absolute unity of objects or their conditions of possibility. In more formal terms, God and the world are not merely regulative but constitutive ideas or principles of reason.[14]

The connection of God with the totality of being is by no means original with Kant in fascicle I but is drawn from a rich medieval scholastic thinking as well as early modern philosophy. Although Kant had previously critiqued these theories, it should be clear by now that he does not reject positions outright but takes from them, adapts them, modifies them, beds them into his own framework. In fascicle I Kant appropriates the aspect of the Anselm-Descartes ontological proof which sees the concept of God as necessarily containing perfection or highest reality. It follows that God must therefore exist since it subsumes every predicate in its essence. As Descartes puts it in §14 of the *Principles of Philosophy*: 'The mind next considers the various ideas which it has within itself, and finds that there is one idea – the idea of a supremely intelligent, supremely powerful and supremely perfect being – which stands out from all the others' and he concludes that because this being has 'supremely perfect' as a predicate it 'is, or exists'. (Descartes 1992, 197).[15] But Kant departs from this strict ontological proof in so far as God is only one expression of totality; the world forms a corresponding half and it is only when they are thought together that the whole of being (*vniuersum*) can be posited.[16]

[14] This is of course deeply connected to the role played by practical reason, which transforms ideas from transcendent and regulative into '*immanent* and *constitutive*' (CPrR 5:135). See Palmquist (2019, 95) and England (1968, 180) for more on this. My problem with this reading in relation to fascicle I is that Kant still calls God an idea of reason, a 'thought-thing', whereas if he were referencing a practical idea it would be postulated and considered *as if* it were an actual object.

[15] Also see Descartes (1999, 105-10). For Anselm's proof see Anselm (1998, 87-8). Leibniz puts the argument most succinctly in *Meditations on Knowledge, Truth, and Ideas* (Leibniz 1989, 25).

[16] For an overview of how Kant interprets the three proofs of God (ontological, cosmological and physicotheological) see LPR 28:1004-10. For Kant's critique of the three proofs see the Ideal of Pure Reason, CPR A592-630/B620-58.

To unpack these themes further and give them specificity I concentrate on one part of fascicle I, namely sheet XI, page 1 (OP 21:139-42)[17] which I return to throughout this chapter. This page represents something of a more systematic layout nestled into the complex rhythm of the wider action of the drafts, but this should not fool us, for there are some extremely fragile and non-systematic lines of thought at play here which will need working through. What the page gives us is a tool with which to unravel some of the terms at play in Kant's previous work, as well as a device for unlocking the broader problematic of fascicle I.

In a note at the bottom of this page we find a methodological opening onto the location of God and the world:

> But world wisdom (*Weltweisheit*) seems to contain an opposition (*Gegensatz*) of *God* and the *world*, but which division brings into play the concept of the *theology of God* (*Theologie Gottes*) = *scholarship* (*Gelahrtheit*). It seems that there should be a counterpart to the scholarship of God (*Gottesgelahrthiet*). The correlation (*correlatum*) of the world is God. (OP 21:140, m.t).

Although this passage is rather obscure in its intended meaning it begins the work of puzzling out a picture in which God and the world can co-exist as 'counterparts' equal to one another yet irreducible. Wisdom of the world (*Weltweisheit*) harbours a deep antagonism between the two terms which are indexed in two fields of study: the scholarship of the world, presumably in rational cosmology, and the scholarship of God, presumably in rational theology.[18] We have arrived back at Kant's architectonic division of the metaphysics of nature laid out in chapter one only we now find ourselves in the branch dealing with cosmology and theology, the

[17] This sheet is dated to 1802 by Förster (1999, xxviii).
[18] In a similar passage from the second *Critique* Kant is more vivid about the meaning of the relationship between scholarship and theology: 'natural scholars of God (*Gottesgelehrte*), (an odd name)' and Kant adds a note to this, explaining, 'Scholarship (*Gelehrsamkeit*) is actually only the sum (*Inbegriff*) of the historical sciences. Consequently, only the teacher of revealed theology can be called a scholar of God (*Gottesgelahrte*).' (CPrR 5:138-9, t.m).

'transcendent' arm of the division.[19] We have already encountered the attempt to think a revitalized cosmology which includes the aether, it follows that a revitalized theology will correspond to this. Each locks into the other in an antagonism so that not only is God the correlation of the world but the world is also the correlation of God, and both are transformed into immanently sustained poles. In claiming this interconnection, however, Kant opens himself to several difficulties which clearly underpin much of the frustration in fascicle I.

One such difficulty comes to the fore in the sub-section 'C' of page 1, where Kant breaks out of a strictly methodological-disciplinary frame to concentrate on content, claiming the need to think 'the existence (*Existenz*) of a being (*Wesens*),' namely, 'the unity of being (*Wesens*) (subsuming one and all in itself) [and] is indeed only an idea, which must be subjectively *thought* as the rule of the highest perfection of being (*Wesens*)' (OP 21:140, m.t). The first move Kant makes is to align existence (*Existenz*) with unity via a being which is an idea of perfection. Seemingly against his previously held position that 'being (*Sein*) is [...] not a real predicate' (CPR A598/B626)[20] this is followed by the revealing statement that God must be thought of 'as *ens a priori omnimodo determinatum*' (OP 21:140) or as a being which is thoroughly determined *a priori* or yet again in the language of the first *Critique*, a being which contains the totality of '*all possible* predicates' (CPR A571/B599). The first question we must ask here is what does it mean to claim God as a being which contains thoroughgoing determination? The second is, where does this leave the relationship between God and world?

Thoroughgoing determination has a deep seat in Kant's corpus, but its use in the *Lectures on the Philosophical Doctrine of Religion* is revealing. The *Lectures*, thought to have been delivered between 1783 and 1784, unpack some candid reflections on theological themes aside from the Critical assessment of rational theology in the first *Critique*. For the most part they provide a snapshot into Kant's commentary on and sculpting of ideas from Baumgarten's

[19] Also see Plaas (1994, 210) who claims that fascicle I is the beginning of Kant's work on rational theology.
[20] That this passage refers not to '*Wesen*' but instead to '*Sein*' will be delt with in the coming pages.

Metaphysica, specifically §§800-1000, which contain a theoretical tarrying with the idea of God.[21] Specifically, what we should keep in mind whilst looking at the *Lectures* is §§806-7 of *Metaphysica* which state that 'the most perfect being is the most real being' and 'the totality of realities (*omnimodo realitatum*) belongs to the most perfect being.' (Baumgarten 2017, 281). On the first page of the introduction to the *Lectures* Kant compares the 'idea of a most perfect republic' with the quest of human reason to seek out 'an idea of highest perfection (*Vollkomenheit*)' (LPR 28:993). One of the requirements for such an idea is 'Completeness (*Vollständigkeit*) of community (*Gemeinschaft*), or the thoroughgoing determination of community and connection of the whole (*Ganzen*).' (LPR 28:993). Whilst Kant repeats Leibniz's *Discourse on Metaphysics* in so far as God is considered 'the absolute monarch of the most perfect city or republic' (Leibniz 1989, 66-7), it is also the first encounter with the term 'thoroughgoing determination' in the *Lectures*. The term demarks a concept which contains all determinations in itself, or what is the same, all connections to all things in the very being of its existence. Later in the lectures, in a section entitled Ontotheology and in a paragraph detailing the cosmological proof, Kant unveils the only means through which a being can be thoroughly determined:

> A necessary being (*Wesen*) can be determined in only one way: that is, with respect to all possible contradictorily opposed predicates (*praedicatorum contradictorie oppositorum*), [it can be determined] always only by one of these opposed predicates, consequently it must be thoroughly determined by its concept. But there is only one possible concept of a thing which determines it thoroughly *a priori*, namely, that of the most real being (*entis realissimi*), since in every possible pair of contradictorily opposing predicates (*praedicatis contradictorie oppositis*) only the real (*Reale*) always belongs to it (LPR 28:1029, t.m).

[21] See Lehmann's introduction to volume 28 of the *Akademieausgabe* (28:1360).

The operation of proving the existence of God unravels according to the necessity of thoroughgoing determination but this in turn is possible only in so far as a concept with the predicate 'most real being' (*ens realissimum*) is thought. This is because if a being is to be thoroughly determined, that is, contain the totality of all possible predicates in its existence, then it must involve an overcoming of the predicate 'not real' through the fact of its being. For Kant, when God is thought of as *ens realissimum* it is the same as saying 'God contains no negations.'[22] Indeed, Kant bases the whole section of Ontotheology on the necessity to think God as the most real being and it is this concept which forms the basis for the ontological proof (LPR 28:1027). Along with §§806-7 of *Metaphysica*, then, Kant defines the most real being as 'one which contains all realities in itself' and that because existence must be considered a reality, the most real being 'must necessarily exist (*existiren*)' (LPR 28:1027). Departing from this definition, Kant goes on to critique the proof by showing how '*Being* (*Sein*) is [...] not a real predicate' (LPR 28:1027) a thought which, as quoted above, is echoed in/taken from the first *Critique*. At the end of the section Kant accepts a working definition of the most real being '*as an undoubted hypothesis* for our speculative reason' (LPR 28:1046), hence it is accepted as thoroughly determined in so far as it is used only as a regulative device for the study of the world and to think the possibility of a unified totality.[23]

As tempting as it may be and as Tuschling and Edwards do, we must not conflate Kant's reading in the *Lectures* or fascicle I with Spinoza's immanent 'God or, nature' as put forth in *Ethics* Part IV (Spinoza 2006, 103).[24] For Kant, God and world are to be kept separate, so much so that he describes God as 'an extramundane being (*ens extramundanum*), that is, he does not belong to the world at all, but is entirely external to it.' (LPR 28:1042).[25] Kant appropriates

[22] See Wood (2009, 103).
[23] See Wood (2009, 73-8 and 141-2).
[24] See Tuschling (1993, 165) and Edwards (2000, 191). Although Kant mentions Spinoza many times in fascicle I, I believe it is to distinguish his own thinking of the relationship between God and world. I agree with Webb (1926, 179-80), Werkmeister (1980, 201), Guyer (2005, 278) and Lord (2011, 176) here. Also see Kant's disagreements with Spinoza in the third *Critique* (CJ 5:393-4).
[25] Also see Kant's explicit opposition to Spinoza's God in LPR 28:1041-2.

§388 of *Metaphysica* in which Baumgarten also considers God an 'extramundane being' or a being entirely external to the world (Baumgarten 2017, 172). Glancing at Kant's notes in his copy of *Metaphysica* written in the 1780's he unpacks this thinking in greater depth. He notes how if God were thought of as a causality belonging to the world then 'like everything that belongs with the world in a whole (*Ganzen*), God would be contingent.' (R 18:401, t.m). This is a nod toward a much deeper problematic, for God must be kept separate from the nexus of causes, effects and contingency which make up the totality of the world so as to maintain the predicate of necessity.[26] The important move to note both in the *Lectures* and the Reflection is that God and world are distinct in so far as they cannot affect one another nor can one 'appear' inside the other or dominate the other; they are not involved in a topological relationship as are forces. If we were to place one inside the other then the other would be automatically reduced out of existence, which strikes Kant as a Spinozist 'arbitrary definition of substance' (LPR 28:1041) where we falsely identify substance with God and God with nature or the world.

Returning to fascicle I, Kant repeats this notion when he attempts to think God and the world as two different levels pertaining to being, but he subtly changes the alignment: '(1) The totality (*All*) of being[s] (*Wesen*) as [the] *sum* (*Inbegriff*) of the world. (2) The being (*Wesen*) of all being (*Wesen*) as the *primordial ground* (*Urgrund*), of *God* outside the world.' (OP 21:145, m.t). Where God was aligned with *ens realissimum* in the *Lectures* (albeit in a merely speculative manner) at stake in this passage is a more straightforward alignment of God with the being of all being (*ens entium*). In an earlier passage Kant makes this explicit: 'Not the highest being (*Wesen*) (*ens summum*), rather the being (*Wesen*) of all being (*Wesen*) (*ens*

[26] This is, however, complicated by a result of the Postulates of Empirical Thinking in General in the first *Critique*, where Kant shows how the flow between the sub-categories of modality (possibility, existence/actuality, necessity) gives rise to the notion that everything existing is 'hypothetically necessary' (CPR A228/B280). What this means is that by thinking everything included in the world as contingent (in the Reflection quoted above) Kant is taking extremely seriously the meaning of 'hypothetical', that whilst '"nothing happens through a mere accident"' (CPR A228/B280) this does not mean that all things really are necessary, just that what arises in existence becomes retrospectively necessary. Whether or not something is actualizable is itself premised on a contingency and remains so until the 'hypothetical' necessity is also actualized, or becomes possible.

entium).' (OP 21:24, m.t).[27] On the other hand, the world is the totality (*All*) of being(s). We might think of this subtle division in the following way: the fact of the being of all being, that being *is*, is primordially grounded in the idea of God, whilst the totality of being(s) constitutes the idea of the world. This is reflected in Kant's description of God and the world as two different standpoints on or expressions of totality: 'the one [God] according to degree (*qualitative*), the other [the world] according to volume [or] space (*quantitative*).' (OP 21:11, 219). And so as the quality of the being of all being, the fact that all being *is*, the idea of God 'belong[s] to the philosophical' and as the quantity of beings, the world comes after (OP 21:142, m.t).[28] As Kant warns us in a previous passage, however, '*God and the world* are not only two different individual beings (*Wesen*) each of which contains an absolute unity, rather they also contain absolute individuality.' (OP 21:140, m.t). Just because God and the world express two different aspects of totality, this does not mean that they stand entirely unrelated to one another, rather they are related in that both are standpoints of being.[29]

The emphasis on individuality is at its height where Kant considers God and the world as two maximums: 'Each of the two contains a maximum (*Maximum*) and there can only be one of each. "*There is one God and one world*."' (OP 21:20, 226); 'the maximum (*Maximum*) can only be one (*vnicum*)' (OP 21:46, m.t); 'The maximum (*Maximum*) of every kind, if it signifies a *totality* (*All*), can only be one' (OP 21:33, 236). It will be remembered that Kant uses the term 'maximum' in both the first and third *Critique* in a similar way, although related to ideas in general (CPR A317/B373-4 and A327/B384), their relation to beauty (CJ 5:232) and more significantly the maximum as 'the aesthetically greatest basic measure for the

[27] Also see the third 'constitutive concept of God' in Kant's discussion of transcendental theology (LPR 28:1013) as well as the alignment of *ens entium* with grounds (LPR 28:1019).
[28] Kant's idea of God is relatively stable throughout his corpus in this regard, as Vossenkuhl (1988, 180) argues, Kant's God is not the revealed God of Christian scripture but a specifically philosophical notion. It is also worth pointing to the relation this has to the phenomena/noumena divide as Collins (1943, 278-80) suggests. I will not, however, be explicitly discussing this connection here.
[29] See R 18:631-2 for Kant's layout of this thought in 1790. The theme of finding the point of relation between God and the world is one of the central aims of fascicle I as Palmquist (2019, 95-6) argues.

estimation of magnitude.' (CJ 5:252).[30] Describing the two ideas of God and world as maximums indicates a theoretical bent endemic to the terms, strengthening the argument that fascicle I does not only operate in a practical key.[31] Furthermore, because each maximum is an individual they must be tied into one another through our own system of reason: 'We can think of the chaining (*Verkettung*) of things (*Dinge*) as causes and effects – and the world ordered according to them – in no other way than through such a system which we ourselves constitute through our own reason.' (OP 21:146, m.t). These two maximums are constituted as ideas by reason, informing how we link things together and order the world according to quality and quantity. Related to this are Kant's many thoughts on measurability and immeasurability, whose centrality are apparent throughout *Opus postumum* in relation to matter, motion and aether, as we have seen, but are more obscure in relation to God and the world. For this reason, it is worth bringing the relation to bear on the concept of the sublime, which gives us a further tool for analysing fascicle I.

In §25 of the third *Critique*'s Analytic of the Sublime Kant immediately equates the mathematical sublime with 'that which is *absolutely great* (*schlechthin Groß*)' (CJ 5:248). He enters a terminological discussion on the meaning of a quantity seen as absolutely great, which signifies a 'beyond measurement' in that it cannot be compared with anything; to be absolutely great is to be beyond comparison. And in so far as this simply cannot be a mathematical determination (it is uncountable) it must say something about our own judgement, that this magnitude is *not* in the object since it cannot be limited. In Kant's words

> If, however, we name something not only great, but simply, absolutely (*schlechthin*) great in all respects (*Absicht*) (beyond all comparison), that is, sublime, one soon sees that we do not allow

[30] For a much earlier use of the term in relation to §136 of *Metaphysica* (Baumgarten 2017, 124) see R 17:328.
[31] See England (1968, 199) for more on the role of a maximum in relation to the idea of God.

> an appropriate scale (*Maßstab*) for it to be sought outside itself, but merely within it. It is a magnitude which is equal only to itself. (CJ 5:250, t.m).

The sublime goes beyond any scale (*Maßstab*) so that there is no appropriate measurement to quantify it, – which is bound to the very definition of the sublime itself – it is that which is equal only to itself. As an example, we might recall Borges' story 'On Rigour in Science' (*Del Rigor en la Ciencia*) about a map which is plotted at the same scale as the ground it maps so that it is equal only to itself. At this juncture measure cannot be applied, which indicates the sublime[32] or a realm in which scale is no longer useful: 'the generations after [those who created the map] understood that this dilated map was useless' (Borges 2012, 73, m.t).[33] But rather than exploring the cartographical and geographical aspects of the sublime, Kant curiously discusses the telescope and observations of cosmic bodies, showing how this is not the site for encountering the sublime, that our ability to grasp what the telescope sensibly gives us makes it measurable, whether through cosmography or through variations of movement, it is situated on a scale. Rather, the sublime is the opposite: it issues forth from the failure to properly account for something on a scale, it is the precise moment when the map becomes (con)fused with the ground. The breaking down of our capacity to judge is the genetical root of the sublime and this gives way to the entrance of the 'supersensible' (*Übersinnlichen*), or that which lies beyond the immediately given:

> nothing that can be [an] object (*Gegenstand*) of the senses is, considered on this footing, to be named sublime. But precisely because in our imagination there is a striving to progress (*Fortschritte*) to infinity, while in our reason there lies a demand for absolute totality (*Totalität*), as to a real idea: the very inadequacy of our faculty for estimating the magnitude of the things

[32] See Deleuze (2008, 43) for a compelling expression of the sublime as that which shows the inadequacy of the maximum.
[33] Also see Baudrillard's (1983, 1-4) use of the story to describe the simulacrum.

> of the sensory world (*Sinnenwelt*) for this idea awakens the feeling of a supersensible (*Übersinnlichen*) faculty in us (CJ 5:250, t.m).

The sublime is that which is not directly representable in sensible experience and gives rise to the effect of a *going beyond*, an *überschreiten*, the crossing over into an unexplored, supersensible domain. It is for this reason that Kant sees the sublime as related to ideas (CJ 5:256).[34]

Porting this back into fascicle I and the problem of the relation between God and the world, it can be argued that the idea of God exists as that which goes beyond qualitative magnitude and the world exists as that which goes beyond quantitative magnitude. Or perhaps put differently, they are ideas because they go beyond our capacity to place them on an adequate scale of measure in the same manner that the sublime is the inadequacy to measure the immeasurable. The ideas of God and the world are possible only in so far as they go beyond all measure and because their existence as objects marks out the limit of human thought. Whilst this is clearly a premise drawn from the first *Critique*, the innovation is that instead of merely regulative ideas, God and world must now be thought of as constitutive, that is, the task is to locate what is constitutive in the regulative itself.[35] This gives rise to the need for a reformation of transcendental idealism, which Kant never successfully achieves but repeatedly earmarks as the 'highest standpoint of transcendental philosophy' (OP 21:46, m.t).

In a more decidedly theological vein, the *Lectures* also link God to magnitude. We are presented with an argument in which infinity 'expresses only a relationship to our incapacity to determine the concept of magnitude, because the magnitude in question is greater than every number I can think of' (LPR 28:1017). In other words, the magnitude of God is infinite, it

[34] It is also important to note §26 of the third *Critique* in which Kant discusses magnitude from two perspectives: numbers and measure, and the beyond of magnitude. Furthermore, Kant discusses the idea of a whole as going beyond the 'maximum' (*Maximum*) of imagination. (CJ 5:251-2).
[35] As was discussed in chapter 1.

cannot be quantified according to mathematical calculation and is therefore an idea which goes beyond our ability to theoretically count. Involved in the very definition of thinking God as the being of all being (*ens entium*) is, then, a concept of 'all of reality' (*omnitudo realitatis*) and it is this which 'is the fundamental measure by which I can determine the absolute greatness of God.' (LPR 28:1019). By demarking God as an idea bearing on magnitude and the going beyond of countable measurement, Kant effectively describes God in terms that he later ascribes to the sublime.

This problematic plays out in debates on fascicle I, especially the relation between thoroughgoing determination, existence and being. Because Kant portrays God as the being of an idea of being, rather than the being of *a* being, Guyer assumes the purely practical necessity of the idea of God in fascicle I 'as an ideal in our self-legislation and its execution' (Guyer 2005, 311) which arises from 'our consciousness of our duty and our freedom to perform it' (Guyer 2005, 307). Such a perspective is certainly justified when claims are made such as: 'The principle (*Satz*) "there is a God" is a necessary hypothesis of pure practical reason' (OP 21:151, m.t). The benefit of emphasizing this type of passage is that it binds Kant's late thinking into the Critical prohibition of claiming the existence of God with certainty, whilst leaving open the possibility for faith in God from a practical standpoint. In contrast, Edwards argues that in *Opus postumum* Kant 'consistently considers the connection between the notions of *omnimoda determinatio* and *existentia* in ways that seem radically opposed to his long-familiar view that existence is not a real predicate, but instead the absolute position of a thing together with all its predicates.' (Edwards 2018, 182).[36] On this reading, by examining the idea of God through the lens of thoroughgoing determination, Kant ascribes *ideal* existence to God which is not strictly

[36] Related to Edwards' reading, Hall (2017, 100) quite accurately claims that it is the aether which we must read as containing thoroughgoing determination via Kant's dictum that '*existentia est omnimoda determinatio*' (OP 21:577). I agree with Hall that (through universal community) the aether represents a thoroughgoing determination, but the concept itself is more appropriate to the discussion of God in fascicle I.

categorial. The divide between these two perspectives is endemic to fascicle I, fluctuating between God as a necessary practical hypothesis and God as a theoretical idea.

But there is a seminal terminological observation to bear in mind which may help us. It may have been noted that Kant does not use the term *'Sein'* to describe God in fascicle I, rather, he uses the term '*Wesen*' which is quite a straightforward translation into 'being', but it also has the connotation of 'essence' or even 'creature' or perhaps more generally, 'something present'. Furthermore, Kant opts for describing God's existence (*Dasein*/*Existenz*) rather than God's being (*Sein*) so that existence can be ascribed to God but not being, which implies that Kant is thinking of God not as a living being, but as an existing idea. That is, quality of the being of all being rather than a particular being. This lights a pathway out of strict adherence to Guyer's and Edwards' interpretations so that both can be asserted. It is difficult to fully affirm Vaihinger's radical thesis that at stake is a pure 'heuristic fiction' (Vaihinger 1952, 313 and 318), for Kant is no more saying that God exists in actuality than unicorns exist in actuality, rather, he is claiming the existence of the idea. Nonetheless, there is still somewhat of a discontinuity with the first *Critique*, which as Caygill points out, maintains that 'the being of [God, the world and the soul] cannot be spoken of in terms of existence' (Caygill 1993, 184). It is within this problem that I claim we can locate fascicle I and it leads to the logic behind Kant's many characterizations of how best to relate God and world: '*God* is the only supremely active principle (*Princip*) of all ends (*Zwecke*)' (OP 21:150, m.t) and, 'The totality (*All*) of being (*Wesen*) is God and the world' (OP 21:150, m.t) etc.

Whilst the *Lectures* do not attempt to provide an answer to the question of the relation between God and world in an obvious way, fascicle I provides an intriguing attempt to connect them. It is clear from the start that they are connected through a third term as Förster argues and this is the existence of human beings not only considered as moral being but as partaking in organic life.

3. *Vereinigung*: Human Being as Site of Hypostatic Union

One of the proposed titles quoted in section one, namely, 'God, the World and the Subject – the thinking being (*Wesen*) in the world – which connects both objects (*Objecte*)' (OP 21:34, 237, t.m) tells us a lot about how the human being is configured in this new '*Highest Standpoint of Transcendental Philosophy*' (OP 21:34, 237). The 'thinking being in the world' (*das denkende Wesen in der Welt*), the human being, is what 'connects' (*verknüpfende*) the two ideas together. The theme of connection or even union (*Vereinigung*)[37] of the two ideas of totality opens up at least two routes for understanding what Kant has in mind when discussing the human being in fascicle I: (1) an engagement with the theological concept of incarnation and hypostatic union, and (2) an unpacking of the biological concept of organism and the struggle to grasp the genesis of life within a purely mechanical framework. The former I unravel from a passage in *The Conflict of The Faculties* to see if this has any correlation to Kant's position in fascicle I. The latter and perhaps wider reaching route I explore alongside the second part of the third *Critique*, which reveals the issue of situating human beings in a predominantly mechanical framework, ultimately seeing Kant adopt a problematic theory of physicotheology or argument from design.

In the Appendix to *The Conflict of the Faculties* Kant discusses the trinity as an example of a '*theoretical* doctrine' (*theoretische* [...] *Lehren*) which 'can only serve the interests of practical reason' (CF 7:38, t.m). Whilst Kant obviously reduces the trinitarian conception of the father, the son and the holy spirit to serve a moral purpose, he offers an interesting take on the meaning of incarnation. He says of Jesus:

[37] Also see the proposed title: 'God, the world and that which unites (*vereinigt*) both into a system, the thinking, indwelling principle (*Princip*) of humans (*mens*) in the world.' (OP 21:34, 237, t.m).

> if we present this Godman (*Gottmensch*) not as the idea of humanity in its whole (*ganzen*) moral perfection, lying in God from eternity and pleasing to him [...] but as the deity 'dwelling incarnate' (*leibhaftig wohnende*) in an actual (*wirklichen*) human being and working (*wirkende*) as a second nature in him, then nothing practical can be made for us from this mystery (*Geheimisse*). (CF 7:39, t.m).

Kant draws attention to a different way of thinking incarnation here. Instead of viewing Jesus as the 'exemplar' given by God as the being with the highest moral perfection, Kant wants to view Christ as a real 'flesh and bones' human being to bring the contradiction wrought by the story of the incarnation to the surface. When the practical-moral element of this story is stripped away we are left with an incarnation of God as idea in a biologically existent being, but also the question as to why incarnation should not extend to all human beings. He says, 'why, if such a union (*Vereinigung*) is possible in one case [Jesus], God has not let all human beings participate in it, so that everyone would necessarily be pleasing to him.' (CF 7:39). Kant goes no further with this line of questioning, instead critiquing the story of Christ's resurrection, but we do not need any more from Kant since what interests us here is merely that he experiments with the thought that *all* human beings might be sites of union between the idea and biological being. The problem of incarnation – that it may be applied to all humans – has significant roots in the history of Christological thinking and informs the moves made in fascicle I.

According to the Athanasian creed, thought to have been written by Athanasius of Alexandria in the sixth-century AD (and taken up in Luther's *Concordia* of 1580), Jesus is at the same time man and God 'yet he is not two' (*non duo tamen*). Christ partakes of both the substance of the father (God) and the mother (world): 'God, of the substance (*substantia*) of the father, begotten before the worlds; and man of the substance (*substantia*) of his mother;

born into the world.'[38] Christ unifies two substances into a singular point which the creed identifies not as 'confusion of substance, but by unity of person' (*non confusione substantiae, sed unitate personae*). But this is distinguished from the usual conception of person in an analogy which follows directly after. Just as 'the reasonable soul and flesh is one man, so God and man is one Christ.' (*Nam sicut anima rationalis et caro unus est homo: ita Deus et homo unus est Christus*). Christ is a person because he embodies unity, whereas the 'reasonable soul' or the regular human being, is *merely* human. This type of thinking has come to be known as 'hypostatic union' and it originates in a line from the much earlier Nicene creed (also taken up in Luther's *Concordia*), which states that Jesus is 'the being of one substance (*consubstantiálem*) with the father.'[39] The original Greek term to denote single substance is '*homoousion*' which literally means 'same being' or 'being at the same time'. We have, then, a retrospective move from Christ as the unification of the being of two substances to Christ as the being of one substance with the father. What is important to note for our purposes is that both creeds suggest that only Christ can be predicated with substance or with the simultaneous holding together of two disparate poles (father and mother, God and world).

Returning to Kant's question in *Conflict* with this in mind, it is hard to ignore the implications this might have on the role of the human being. I claim that at the end of his life Kant took this theme up once again only much more violently than in *Conflict*. We can summarize the human being in fascicle I in line with Guyer when he says: 'We ourselves are the substratum from which both God and nature are projected unities' (Guyer 2005, 307). But

[38] It is worth noting Kant's references to maternal imagery in describing the Earth in the third *Critique*. He talks of the archaeologist who has 'the womb (*Mutterschooß*) of the Earth, which has just emerged from a condition of chaos'. This lets Kant put forward a proto-evolutionist theory wherein the Earth 'initially bear[s] creatures of less purposive form, which in turn bear others that are formed more suitably for their place of origin and their relationships to one another, until this uterus (*Gebärmutter*) herself, rigidified and ossified, has restricted her birth (*Geburten*) to definite species that will degenerate no further'; the process is the product of a 'universal mother' (*allgemeinen Mutter*) (CJ 5:419, t.m). Furthermore, a few pages on Kant describes the environment of the Earth in maternal terms: 'the mother soil (*Mutterboden*) (the land) and the womb (*Mutterschoß*) (the sea)' (CJ 5:428, t.m). And then is his reference to the veil of Isis which he brackets as 'Mother Nature' (*Mutter Natur*) (CJ 5:316).

[39] For a more comprehensive study of hypostatic union as it appears in the Nicene creed see Torrance (1997, 1-21).

the Christological elements are stripped away in Guyer's reading, which should not be ignored in the frame of fascicle I,[40] although it is true that Kant never directly mentions 'incarnation' (*Menschwerdung*/*Verkörperung*/*leibhaftig*) in fascicle I, nor does he table discussions about Jesus or the Nicene or Athanasian creeds. What he does repeatedly discuss is the human being as the union of the idea of God and world, which we can read as a playing out of the question opened in the passage from *Conflict*, which is a critique of the incarnation accounts of the Athanasian and Nicene creeds. The vantage point of fascicle I, then, is the thought of a theology which contains a doctrine in which every human being is an incarnation, or site of unificatory hypostasis between God and world, that the human being is the location of this unification. And Kant is clear that this results in the 'highest standpoint of transcendental philosophy' or the location of the 'sum' (*Inbegriff*) which, through consideration of the possibility of human life, unites the two expressions of totality.[41] We might observe that *Inbegriff* can also be understood as 'incarnation' although in this instance it is transcendental philosophy which provides the aperture through which to enact the unification of the ideas. The relationship between the human being and transcendental philosophy is even more striking in this regard: 'God and the world are the two objects (*Objecte*) of transcendental philosophy; [the] thinking *human* is the subject, predicate and copula. The subject who binds them in one proposition.' (OP 21:37, 239, t.m). It is by virtue of the thinking being that the two poles of transcendental philosophy are united. They are unified in the very existence of a thinking being. This leads us to ask what a human being is in the context of fascicle I, a topic which we can unpack with the help of the second part of the third *Critique*.[42]

[40] See Webb (1926, 188-9).
[41] Tuschling argues a similar point here, claiming that one 'intuits oneself – and all moral beings or free subjects – as a person in God, that is, as an incarnation (*Verkörperung*) of the highest law giver' (Tuschling 1991, 130, m.t).
[42] I agree with Werkmeister, who notes that, 'Kant defines an organism, as he had defined it in the *Critique of Judgement*' (Werkmeister 1980, 186).

As is well known, the Critique of the Teleological Power of Judgement in the third *Critique* is concerned with teleology and aims to gain a greater understanding of the organism's place in a causally mechanical universe. Human beings present Kant with a striking difficulty in the early stages of the third *Critique* in so far as they harbour an inexplicable 'feeling of life' (*Lebensgefühl*) (CJ 5:204 and 277).[43] This morphs in the second part of the text, where human beings are considered the ultimate or final ends of nature. This is the case because they have a unique tendency to go beyond the mechanistic laws of nature into a realm of ideas, which Kant equates with the capacity to be 'the condition of its own possibility' (CJ 5:434). According to §82, human beings are able to conceptualize the very theory of ends within which they stand and in doing so transcend the otherwise aggregated collection of natural beings:

> For the human being, of the manifold uses which his understanding teaches him to make of all these creatures; and he is the final end (*Zweck*) of creation here on earth because he is the only being (*Wesen*) on earth which can make a concept of ends for himself and, by his reason, make a system of ends out of an aggregate of purposively formed things (*Dingen*). (CJ 5:426-7, t.m).

This harks back to Kant's attempt to find a plan which has its own cause built into it. In §65 Kant searches for an instance of what we might describe as a 'self-fulfilling prophecy' which he finds in the human being considered as, on the one hand, participating in and bound by the mechanical laws of nature (e.g., the body is structured according to the force of gravity and cannot transgress this law without dire consequences),[44] but on the other hand as participating in an organic world which is animated by a 'something' which is not logically explicable by the mechanical model. We have already seen this 'something' arise in *Opus postumum*; in the third *Critique* it is called '*formative* force' (*bildende Kraft*) and then an '*analogue of life*'

[43] Also see CJ 5:274, where Kant frames 'life forces' (*Lebenskräfte*) in a similar way.
[44] E.g., see Kant's discussion of 'malformations in growth' found in nature (CJ 5:372).

(*Analogon des Lebens*) (CJ 5:374, t.m). Kant thinks of this inner formative force as involving a different kind of causality; it is teleological rather than mechanical and does not proceed through motion alone but also through relations of means to ends. Furthermore, human beings ascribe this different type of causality to nature and in doing so place themselves as the being which enacts its own end, the plan which includes its own enactment.[45]

In §84 Kant says that the human being's 'existence (*Dasein*) contains the highest end itself, to which, as far as he is capable, he can subject the whole (*ganzen*) of nature, or against which at least he need not hold himself to be subjected by any influence from nature.' (CJ 5:435). It is by virtue of the inexplicable concept of life, the fact of the human being's existence, that this is the case for Kant and it follows that the remainder of *Critique of the Power of Judgement* (§§85-91) is devoted to a theological thematic. Essentially, what Kant attempts is an explication of what he calls in fascicle I a '*principle* (*Princip*) *of life*' (OP 21:66, m.t), which is where I place one of the most significant connections between the third *Critique* and *Opus postumum*.

Throughout fascicle I there are many reflections on the human being considered as an organic body nestled into more elaborate theological motifs. Human beings are, once again, considered as they were in the third *Critique*, at once subject to mechanical laws of nature and yet somehow able to go beyond them altogether. Hence, 'the human being is itself a world being (*Weltwesen*) which constitutes itself into a link (*Gliede*)' (OP 21:81, 248, t.m), which can be read as Kant placing the human subjected to laws of nature as a member of the order of creatures and things in a chain of being. Then in contrast to this: 'a living being (*Wesen*) which is conscious of itself contains an *immaterial* principle (*Princip*) and is [a] *person*.' (OP 21:66,

[45] The analogy can be made with the concept of autopoiesis in biology, pioneered by Humberto Maturana and Francisco Varela. The kernel of the concept is to describe systems of life as self-producing, self-demarcating structures, e.g., biological cells as distinguishing themselves from a background by producing their own outline. See Maturana and Varela (1980).

m.t),[46] that is, human beings are not only members subjected to the mechanism of nature but contain an immaterial principle analogous to the principle of life[47] which allows for the expression of freedom from nature. According to fascicle I, then, the human being is the site upon which these two otherwise divergent expressions are incarnated, bound up with the terms 'world' and 'God', respectively:

> God, the world and the personality of humans in the world. This *complexus* of ideas contains the principle of transcendental philosophy. Freedom is the personality of humans and yet the human itself [is] a world being (*Weltwesen*) [standing] under mechanical laws of nature. (OP 21:70, m.t).

We can read the notion that freedom is the personality of human beings in the following way. Freedom is the primary characteristic of human beings for Kant, yet it jostles with and springs from a tension of forces. Freedom in this context is freedom *from* the forces of nature, yet the harbourer of freedom is the human, a being which is simultaneously bound to those very same laws of nature. As Förster's factual note in the English translation of *Opus postumum* points out, it is in this respect that Kant references Zoroastrian doctrine (Förster 1999, 284n147). For Kant, Zoroaster is a symbol of the human being as the unifier of nature and morality.[48] When focusing on fascicle I, then, Kant is driven forward by the impulse to locate the human in a mechanical cosmos, and the result is to incarnate two conflicting expressions in that very location.[49]

[46] Also see an earlier formulation by Kant in fascicle VII where the terms are aligned with soul and spirit: 'Not only is [the human] animated by a soul (thus *animans*) but there dwells in him a spirit (*Geist*) (*spiritus intus alt. Mens*).' (OP 22:56, 214, t.m).
[47] For a pairing of the 'immaterial something' with life see Werkmeister (1980, 190).
[48] See OP 21:78, 245; 21:156, 255; 21:135; 21:96.
[49] For more on this see Lord (2011, 176).

From a more general perspective, we might think of the two ideas incarnated in the human being as a Borromean knot where the three terms (God, world, human) interlink, forming an inexplicable centre space which is the (negative) unity of the three rings. Kant's human cannot be fully enunciated within the mechanical unfolding of nature (world) nor fully within the spiritual unfolding of freedom from nature (God). In other words, the human being cannot be reduced to purely material principles, nor to purely immaterial principles but enigmatically balances on the cusp of both.[50] The human being exists as a mysterious intermediary whose function is to recognize the incarnation of ideas which are otherwise disconnected. It is for this reason that Kant considers the human being as subject, predicate *and* copula; the human being is the intermediary concept (*Mittelbegriff*) which enables a transition between God, the world and human beings. But this transition is no longer serial, it is no longer a move from one territory to another but is rather a holding together through existence. Just as in hypostatic union, Jesus represents a point in time at which God and the human are pinched together, so does the human in fascicle I represent a sustained pinching together of God and world, and according to fascicle I it is only a reconfigured transcendental idealism which allows us to grasp this incarnation. On this footing it is easy to understand why a conversation around the meaning of philosophy itself proliferates in these drafts. This meaning is how Kant (unofficially) ends his corpus and it is also how this chapter and this study ends.

4. The Leap into Philosophy

In 1800 Kant wrote a preface for Reinhold Bernhard Jachmann's text, *Examination of the Kantian Philosophy of Religion*. Rather interestingly, despite the topic of the book, the central theme of Kant's preface is not religion but philosophy and its intersection with the 'doctrine of wisdom' (*Weisheitslehre*). The vital question informing this cross-over for Kant is 'whether

[50] See Malabou 2016, 168-9.

wisdom (*Weisheit*) is *infused* (*eingegossen*) into a person from above (by inspiration)' or whether 'its height is *scaled* (*erklimmt*) from below through the inner force of his practical reason.' (PR 8:441, t.m). There is in fact a brief draft of this preface spliced into *Opus postumum*, which also emphasizes Kant's concern with distinguishing a doctrine of wisdom from philosophy, highlighting the 'doctrine (*Doctrin*) of the *final end* (*Endzwek*) of human reason' (OP 22:370, m.t). Henrich brings out the philosophical import in this preface by detailing how it outlines a concept of philosophy as 'ascent' rather than 'mysticism'; or 'work' (*Arbeit*) rather than 'alchemy' (*Alchemie*). He shows how, for the late Kant, philosophy is to be considered an active labour or striving upwards, that this is the 'true critical philosophy' (Henrich 2008, 61).[51] Nine years earlier Kant pens a note entitled *On the Miscarriage of all Philosophical Trials in Theodicy* which explicitly coincides with this concern:

> Although the proper concept of *wisdom* (*Weisheit*) represents only a will's property of agreeing with the highest good as the *final end* of all things (*Dinge*), whereas *art* represents only competence in the use of the suitable means toward *optional ends*, yet, when art proves itself adequate to ideas the possibility of which surpasses every insight of human reason (e.g., when means and ends reciprocally produce one another, as in organic bodies), as a *divine art*, it can, also, not incorrectly, be given the name of wisdom (*Weisheit*) – or rather, not to mix up concepts, the name of an *artistic wisdom* (*Kunstweisheit*) of the author of the world, in distinction from his *moral wisdom* (*moralischen Weisheit*). (MPT 8:256, t.m).

At this point, wisdom is an art involving the reciprocal production of means and ends, that is, it is the continual production of the organic body, whose parts are reciprocal. At the very least,

[51] For more on Henrich's discussion of the Jachmann 'Preface' and his transcription of another draft of it see Henrich (1966).

it is safe to say that the meaning of wisdom and philosophy, their distinction from and their cross-pollination with theological themes was on Kant's mind.

Now that we have these two elements for context, we can return to fascicle I to see how Kant develops his thinking around these themes. On the sheet I have been focusing on above, namely sheet IX, page 1, Kant gives us a definition under the sub-heading 'A', once again not of theology but of the philosophical, which is 'rational knowledge (*Vernunfterkentnis*) from systematically represented concepts.' (OP 21:139, m.t). Furthermore, transcendental philosophy is now said to be the transition 'from philosophemes to philosophy' (OP 21:139, m.t). What Kant means by philosopheme is ambiguous, but it might be something akin to a syllogistic rationalization in an argument, the classic example being the Aristotelian conditional syllogism: if A then B. In this passage from fascicle I the syllogism is a point from which to transition into a wider notion of philosophy that is more than a collection of statements and strives to capture rational knowledge in the form of systematic concepts or complexes of distinct connections.

In the next sub-heading, 'B', he describes 'philosophy in general' as a 'root' (*Wurzel*) from which 'springs a branch under the name of *transcendental philosophy*, which consists in the philosophical [use] of *mathematics*, that is, to be used as the *medium* (*Mittel*) for progress to another class, namely, to philosophy.' (OP 21:139, m.t). Without making too much of Kant's reference to mathematics here (he means the synthetic geometrical construction of figures and its methodological transmutation into a philosophy of the synthetic *a priori*), what he has in mind is a springing up of disciplines from a tree of philosophy in general, of which one branch is transcendental philosophy. In other words, this is an image of philosophy as a growing, organic entity, sprawling out across various disciplines, gathering up different concepts, making transitions between different banks of knowledge, for all intents and purposes, a *living* discipline. This is a theme which occupies Kant a great deal throughout fascicle I, especially in the way it differs from 'wisdom' (*Weisheit*) and 'world wisdom' (*Weltweisheit*). In a note at

the bottom of the page Kant puts forward a discussion of the nuances involved in wisdom: '*World wisdom* (*Weltweisheit*) is not *philosophy* in the proper translation of the word. *Love of wisdom* (*Weisheit*) would be the more proper concept.' (OP 21:140, m.t). What Kant tries to show is that philosophy is distinct from obtaining wisdom of the world through something like fact-gathering. Philosophy must be an enterprise which does not rest content with obtaining anything, rather it must be an active doing which maintains philosophizing. For example, in an early passage he notes: 'Division of philosophizing (*Philosophirens*) and philosophy (*Philosophie*).' (OP 21:68, m.t), and later: 'Philosophy literally means: not so much the doctrine of wisdom (*Weisheitslehre*) as the striving towards it.' (OP 21:127, m.t). We can immediately see how Kant comes to openly acknowledge the need for a distinction between philosophy and philosoph*izing*, a distinction I pointed up in the introduction to this work and which has helped guide the method of investigation throughout. It is a dynamical process, a transition which perhaps turns into a leap, an open project with old age still ahead of it. In many ways Kant takes the concept of philosophy as the dialogical *movement* of the love of wisdom back to its origin in this regard (analogous to how he takes the aether back to its root). Philosophizing is not something we read *about* in *Opus postumum*, rather, it arises only by jumping into the drafts. Just as Heidegger says about swimming: 'we shall never learn what "is called" swimming, for example, or what it "calls for," by reading a treatise on swimming. Only the leap into the river tells us what is called swimming.' (Heidegger 2004, 21).[52]

The last fragments of fascicle I tell us about the direction in which Kant was heading and help guide us in how we might characterize *Opus postumum* as a whole. In the last instance, Kant wants to develop a notion of philosophy which is not set in stone but open ended, fluid, transitional, not a doctrine of wisdom but the process of its attainment. But for this to occur there must be a space left open to the act of authentic philosophizing itself, a space where

[52] This is itself a reiteration of Hegel's reiteration of a scholastic refrain which he uses to critique Kant: 'But to want to know *before* one knows is as incoherent as the Scholastic's wise resolution to learn to *swim*, *before he ventured into the water*' (Hegel 2015, 38).

opposing polarities nestle into one another, where developments of concepts and motifs are allowed to chaotically transpire along sometimes awkward and difficult pathways. By leaving the work that would become the *Transition* open, Kant inadvertently provides us with exactly this space, the landscape of active philosophizing rather than that of frozen philosophy, and this is ultimately what I think *Opus postumum* would have become if Kant were to have finished it; a way of attaining a metaphysics of nature through philosophizing.

The prompt for thinkers after the *Transition* then becomes synonymous with Kant's famous repetition of Horace's refrain, '*sapere aude!*': how do we learn to philosophize instead of merely repeating the history of philosophy, how do we think for ourselves, how do we develop the 'courage to operate [our] own understanding' (WE 8:35, t.m)? And it is this question that *Opus postumum* is applied to as one of the great unacknowledged documents of authentic philosophizing, to the point that it should be considered the true beginning of a canon obsessed with capturing the dynamism of philosophizing rather than the mechanism of philosophy. *Opus postumum* presents us, finally, with a leap into the unknown and it is at the edge of the unknown that the act of philosophizing is called upon.

Conclusion

I have tried to show that traversing *Opus postumum* is not only possible but also an essential tool for understanding Kant's corpus, especially in light of the transition concept. Indeed, pushing off from the architectonic stakes of transition in chapter one allowed me to ground the other chapters in a methodological way, starting out with an early work and tracing through the transitions it goes through until it reaches its apex in *Opus postumum*. In short, where the transition concept is usually understood only as an answer to a specific doctrinal problem (the move from metaphysics to physics) I have found that it can also be used as a *Leitfaden* for navigating Kant's whole philosophy. This unearths a view of Kant's corpus as open and always in motion. Moreover, I proposed a route through *Opus postumum* which views the transition concept as a constitutive part of Kant's working up of a metaphysics of nature which, I claim, is a contender for the 'gap' the drafts in *Opus postumum* seek to fill.

The important finding of chapter two is that there is a transition between the faculties from how they are oriented in the first *Critique* to fascicles X and XI. The understanding takes on the role of a productive faculty, capable of non-categorially inserting (*hineinlegen*) content into sensibility to such an extent that even the very meaning of 'phenomenon' becomes charged with productive activity. This leads to a broader finding, that in fascicle VII's 'self-posting', a transition occurs not only between the fascicles but also between the epistemological and the ontological. The subject (which is now premised solely on the activity of the understanding) conceptually posits itself as an ontological object composed of forces through the very act of self-consciousness.

Although I would never claim my chapters are exhaustive, I have shown that the doctrinal aspects of *Opus postumum* can also be drawn out with respect to the transition concept, providing us a view of how a reorientation of Kant's thinking about force and nature was taking place. This is explored in chapters three and four, which conduct investigations into

the doctrinal elements of *Opus postumum*. In chapter three I found that an ontology of force was at stake in the 'early elementary system' and 'elementary system' drafts. This was traced out from the atomistic theory in *Physical Monadology* to the dynamic forces of *Metaphysical Foundations*. But I also sketch out a problem internal to *Metaphysical Foundations* involving its limitation to observable motion (phoronomy), which Kant seeks to rectify in *Opus postumum*. In this connection, the relationship between forces transitions from a counteractive model in the Dynamics of *Metaphysical Foundations* to a tensional model in the early elementary system of *Opus postumum*. Kant is no longer content with simply positing attraction and repulsion, he now requires a more specific topology of force – cohesion, elasticity, gravity, expansion – to account for a wider array of relationships. But this is only the elementary side of the relationship between forces; the other side requires a 'world system', which is to be grounded by the elementary system. This occurs in a transition from the ontological aspect of forces to their cosmological aspect.

The world system in *Opus postumum* is largely undetermined, appearing mostly in the form of a proposed section of the completed *Transition* project. But it is clear from the references to a world system in Kant's earlier work as well as the discussions of aether in the 'Übergang' drafts that it is bound up with a cosmological variation. In chapter four I propose a reading of aether through its transition from the 'gap' left by empty space in Kant's pre-Critical cosmology. My finding here was that far from a simple material substance or matter akin to the Michaelson-Morley experiment, aether for Kant is a philosophical 'something' required for the filling of space. In this connection, its predication in the 'Übergang' drafts is often negative, characterized as, for example, incohesive yet the condition of possibility for all cohesiveness or imponderable yet the condition of possibility for all ponderability etc. I found that it is, owing to its ambiguous situation, a *Mittelbegriff*, lodged halfway between and sustaining the polarities of material, concept, matter and force. Ultimately, the aether is a way for Kant to reintroduce a cosmological absolute into his thinking.

The final chapter of the thesis seeks to explore fascicle I, particularly focusing on its engagement with theological themes and its resolution into the broadest view we can have of *Opus postumum*, its emphasis on philosophizing. Whilst the world system is to do with aether and filling the gap left in the pre-Critical cosmology, fascicle I beds this engagement into a duality between world and God. These sides indicate two ways of rendering totality: the totality of beings and the being of all being (*ens entium*). Whilst this is not particularly new in Kant's corpus (he had already discussed this type of relation in *Lectures on the Philosophical Doctrine of Religion*), the innovation is in the status of the human being. The human being is the meeting point between these two poles, which are also encountered in other, more localized distinctions such as the inorganic/organic, freedom/nature etc. This signals the return to metaphysics for Kant, hinted at in his repeated attempts to divorce the role of philosophizing from that of *Weltweisheit*. World wisdom becomes, in the end, just one note in the fugal unravelling involved in philosophizing; the aim is to keep it open and to learn to philosophize for ourselves, to end the system only in anacolutha, which is a departure from the static picture of a closed system often associated with Kant.

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There is also a much broader conclusion to be drawn from this thesis which points to future work. These variations help view Kant as heading toward threads picked up in early German Idealism, especially the young Schelling's *Naturphilosophie*. The move from the epistemology of the faculties to an ontology of force, the method of philosophizing, of thinking transitionally, of premising the subject on absolute activity, the tensional model of force as ground of the phase-transitions of matter; all these subjects constitute shared ground between *Opus postumum* and Schelling's early *Naturphilosophie*. But the most significant aspect of the relationship which would need further inquiry is that Kant was seeking to construct a metaphysics of nature in *Opus postumum*, a task shared by Schelling.

In the Critical philosophy, Kant anticipates a metaphysics of nature as objectively constitutive and ontological. But this requires thinking nature as it is outside of its limitation to/by the subject, or in other words, it involves transgressing the limit of the Critical philosophy itself. Accordingly, Kant did not write a metaphysics of nature, but it can be argued via my thesis that the variations on transition are attempts to build a bridge toward such a metaphysics and indeed that the metaphysics of nature would contain a transition. Now, if we follow the thesis that Schelling was a post-Kantian but that he unknowingly parallels *Opus postumum* both methodologically and doctrinally, we must concede that either Schelling is more in tune with Kant than previously thought or that Kant was moving towards a post-Kantian position. No longer can we sustain the image of Schelling going through the door to the absolute which Kant merely opened, for in *Opus postumum* Kant seems to be exploring precisely what is behind the door.

Whilst this conclusion must be rendered tentative, it indicates the possibility not only of further study but the need for a re-reading of Kant's relationship to the young Schelling's *Naturphilosophie* with *Opus postumum* in hand. Ultimately, it is this future work that my thesis makes possible and is a propaedeutic to.

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