

THE BIRTH OF MUSICOLOGY FROM THE
SPIRIT OF EVOLUTION: ERNST HAECKEL'S
ENTWICKLUNGSLEHRE AS CENTRAL
COMPONENT OF GUIDO ADLER'S
METHODOLOGY FOR MUSICOLOGY

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Submitted to the Graduate Faculty of
the Department of Music in partial fulfillment
of the requirements for the degree of

Doctor of Philosophy

University of Pittsburgh

2011

UNIVERSITY OF PITTSBURGH

DEPARTMENT OF MUSIC

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University of Pittsburgh, 2011

Between about 1860 and the first world war, musicology became an academic discipline, practiced by scholars and supported by the university infrastructure. The decisive methodological change that allowed for this transition from mostly private scholarship to “academization” was the declared adoption of the scientific method, especially in German-language music research. Among other “music scientists” like Hermann von Helmholtz and Friedrich Chrysander, the Viennese musicologist Guido Adler (1855-1941) is particularly important because, in 1885, he codified the research methods of this new academic discipline in the article “Umfang, Methode und Ziel der Musikwissenschaft” (The Scope, Method, and Aim of Music Science). Adler’s methodological proposals have shaped musicological research habits since, perhaps most famously by separating what he calls “historical” and “systematic” musicologies. While his painting musicology as a science—and therefore as worthy of inclusion in the academy—was successful, Adler’s scientific inspiration for this methodological move has been obscured, partly because the later incarnations of his methodology—like style criticism—drew heavily on contemporary art history rather than on any model from the natural sciences.

In this dissertation, I show that Adler’s initial methodological stimulus derived from biology, and in that discipline from a restructuring of research methods in the wake of Charles Darwin’s proposal of evolution by natural selection. Adler was aware of Darwin’s

achievements but his direct sources of biological information were popular and scholarly publications by the German biologist Ernst Haeckel (1834–1919). Copied passages from one of Haeckel’s early articles are preserved in Adler’s hand, he was friends with several of Haeckel’s students, and—most importantly—his early methodology resembles strongly Haeckel’s methodological suggestions for biology. Adler’s early musicology was conceived in the spirit of evolution, which promised natural scientists an empirically valid way of reconstructing history by comparative, systematic study. This dissertation demonstrates on what biographical grounds and through which methodical conceits Adler transformed Haeckel’s biology into a working model for musicological research.

Keywords: history of musicology, *Musikwissenschaft*, Guido Adler, evolution, historiography, Ernst Haeckel.

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PREFACE

A project like the current one—which extended over the better part of six years—has obviously incurred many more favors, and owes many more thanks, than I could reasonably hope to acknowledge in a small preface. And of course the interests that jelled in this dissertation extend farther back in time than just to the compilation of my dissertation prospectus. Let me thus etch something like a backward history of the dissertation, from the last stages of its completion in spring 2011 to its beginnings.

Finishing the final document in Germany necessitated that some errands in Pittsburgh that I should have taken care of had to be transferred to other people, and the Department of Music at Pitt rose to the task. *Prima inter pares*, the graduate secretary Joan McDonald made sure that I cleared all academic hurdles of the long process toward the doctorate easily, despite my sometime distraction. Besides Joan, I owe the whole community of the Music Department gratitude for support and instruction over what now becomes a decade.

During the last few years of writing the dissertation, I lived mostly in Frankfurt am Main, my German hometown, and could not have done so had it not been for support from Germany's formidable social security programs. In the same vein, the earlier parts of research on this dissertation, during the years 2006 through 2007, were supported by a fellowship from the Andrew S. Mellon Foundation administered through the University of Pittsburgh back in the United States. My frequent trips between the two countries relied on the good graces of the American immigration authorities, and the Office of International Studies at Pitt—in the last several years represented by Dariusz Baran—has done its best to maintain these graces.

Since 2006, when I realized that my interests in evolution's significance for musicology might have a historical foundation in Guido Adler's choices, the Hargrett Rare Book and

Manuscript Library at the University of Georgia became an essential and inviting place to visit when finances and traveling schedules allowed. Chuck Barber (as assistant director), Melissa Bush, Mary Linneman, and many others paved my way to interacting with Adler's papers, making countless copies and photographs that allowed me to decipher Adler's script on my own time. The University Archives and the Natural Sciences Library at the University of Vienna also opened their stacks to allow me a glimpse at late nineteenth-century Austrian academic bureaucracy and at the diversity of evolutionary views current then. A steadfast source of support and information has, of course, also been my "home" library at the University of Pittsburgh, represented by James Cassaro.

From the time when I had finalized my plans for the dissertation in late 2005—then little knowing that they were to change substantially in the future—until past its defense in late March 2011, my dissertation committee has been a constant source of encouragement, sagacity, and the enthusiasm that resurrected my sometimes sagging spirit. James Lennox has struggled admirably to keep my misperceptions about late nineteenth-century Darwinism to an absolute minimum. (Needless to say, all mistakes, over-interpretations, and broadly-wielded brushwork are my own.) Bell Yung—with his dual background in the sciences and music, his deep knowledge of the problems tackled by Charles Seeger, and his keen sense for the clear expression of thoughts—has made this dissertation, and my thinking on Adler, quite a bit more circumspect. Don Franklin, my Master's Thesis advisor and the alert reader of many of my papers, has gotten to know my scholarly quirks so well over the past decade that his advice and criticism are almost premonitory, steering me away from follies and toward good thinking. Yinz' support (to give the "Pittsburgh plural" its due) has sustained me in the past and will continue to exert its influence in the future.

During the past decade, most of which I spent in Pittsburgh, I found a network of friends, first in the Music Department, then in ever widening circles outside. All of them have rescued me (certainly struggled mightily to save me) from the solipsism and isolation to which work on an academic mammoth project like a dissertation can lead. Many were glad to pick up a musty, surly, jet-lagged long-distance traveler from the airport, feed and shelter him, and provide him with hours of stimulating conversation. Many also kept parts of my possessions in their basement during the time when I was re-establishing my household in Germany.

David, Heidi, Kim, Hille, Nawshin, John, Emilie, Nathan, Alyson, Rita, Fede, Brandi, Jen, Christo, Dorcinda, Mike, Agatha, Roger, . . . and so many others: thank you! While I am departing Pittsburgh as a student now, I will surely be back there; and wherever I may live in the future, there will be a bed for you and a bottle of wine to split for us.

German has the curious expression “Doktorvater” (doctoral father) to refer to the principal advisor of a dissertation, and I think little could be more apt than to refer to Mary Lewis as my “Doktormutter.” Of course she has steered the dissertation along on its path, yanked my attention back to the project when it wandered (in life or word), and read (almost) every page I wrote on the topic for the past six years. These tasks—herculean and sisyphusian at once—she mastered with aplomb. But the “motherly” aspect is proper in yet another way: Dr. Lewis taught the proseminar in historical musicology, and through her I was first alerted to the role that “evolution” as a concept had played in early musicology. Through my consistent chafing against this early idea of musicological evolution, the idea for a dissertation on the topic came up, and Dr. Lewis needed little convincing that such a study would be worth while (and worthy of our wiles). Without her impetus, her steadfast drive, and her wisdom, this document would not exist. Thank you!

Lastly, I am a child of my parents, not just in the trivial biological sense but in an intellectual one as well. One an experienced physician, the other a sociologist-by-training, both of them fascinated by the arts and nature in equal measure, they fostered my love and understanding of biology just as they supported my decision to turn a scholarly eye on music. Thus this dissertation really is a little bit a child of their brains, mediated through mine. I can only hope (and do my best to ensure) that this intellectual lineage will extend a bit further. I am glad to have you, and I can only hope that this state will continue for many more years to come.

Conventions for Source Treatment

German typesetting of the later nineteenth century used several means of emphasis. Often regularly emphasized text was printed in spaced letters (*g e s p e r r t*); this “normal” emphasis I have rendered in *Italics*, like one would in modern English printing. Personal names were often set in SMALL CAPITALS, a custom I follow where it applies. (Where personal names are spaced, I emphasize them with Italics, as usual.) Lastly foreign words often use Latin letters in a German-script main text. Here I use the regular means of emphasis by Italics since the foreign language (often French, Latin, or Greek) is obvious in its German and translated English context. Ancient Greek is printed in Greek letters when it is in the German sources, with a proximate transliteration and translation in brackets or a footnote following.

In all cases, I attempt to preserve the appearance of the original text both in quotations and in my translations. This implies that common features of manuscripts, such as ~~struck~~ passages are conserved. If longer passages of new text replace struck-out text, this new text is placed in curly brackets (“{” and “}”) after the originally intended text. Parentheses (“(” and “)”) in a quotation are original to that quotation unless otherwise noted. On the other hand, brackets (“[” and “]”) indicate my additions, which may include letters in German words that were usually abbreviated in handwriting, or clarifications of pronouns referencing words in the previous (unquoted) sentence. Textcritical commentary on longer quotations is set in footnotes to the words, places, or sentences referenced.

Quotations longer than two text lines are set apart from the body of the text in justified, single-spaced paragraphs. English translations are either enclosed in parentheses after the quotation or, for longer quotations, are parenthesized in a second paragraph of justified single-spaced text. Sometimes German (or other foreign-language) phrases are quoted within

a sentence, and the original wording supplied parenthetically, with quotation marks. Original footnotes are usually omitted, but sometimes quoted separately, or included in the body of the quotation in brackets. Unless otherwise noted, all translations are mine. To enable easy reference to the original expressions, I have attempted to preserve German sentence structure in the English translations unless it proved fatal (not just perilous) to the English sentence's clarity.

1.0 INTRODUCTION

Among late nineteenth-century music historians, the Viennese academic Guido Adler (1855–1941) had a uniquely broad and lasting influence on musicological methodologies, lasting well into the second half of the twentieth century. However, in the course of promoting Adler’s role as the field’s premier theorist, his heirs obscured the fundamentals and roots of his historiographical method. In this dissertation I argue that Adler’s oft-emulated philosophy of music history was inspired by and molded after the pre-eminent historical theory of nineteenth-century natural science: biological evolution. Adler recognized the potential of evolution to shape historical narratives about music, and brought this potential to fruition in his own historiographies as well as in his influential methodological works. Modern commentators on Adler’s ideas—including both critics and supporters of evolutionary approaches to music history—have often pointed to the occurrence of biological metaphors in his works. But thinking of evolution as a metaphor falls far short of the importance that this concept (and its attendant theories) held for Adler’s own theorizing. In his hands, a suite of concepts and explanatory models in nineteenth-century natural history became the centerpiece of an integrated scientific approach to music—*Musikwissenschaft*—and perhaps musicology’s entry ticket into the academy.

Later generations of musicologists were able largely to ignore Adler’s biological roots. Arguably this demonstrates the suitability of his chosen evolutionary model for our field, at least when conceived in nineteenth-century terms. Unfortunately our ignorance of this biological model also impedes our self-aware and unbiased engagement with evolutionary thinking today. In preparation for such enterprises, this dissertation exhumes Adler’s biological inspiration: I document the likely source of Adler’s knowledge about evolution, and the precise type of evolutionary theory that he subscribed to. The principal reward of this

sometimes taxing exercise is a variant view of Adler, not as antiquated ancestor of our own methods but as genuinely interesting musicological thinker whose scholarly desires and approaches, couched in terms of our experiences hence, still offer insights into how the study of music might be conducted.

Choosing Adler rather than the plenitude of other musicologists who use biological or organicist language is conditioned by several factors. First, he was (and still is) one of the more famous and widely read early musicologists; his methods were adopted in German-language musicology and beyond; and he thus serves as a good representative of music research conducted around the turn of the twentieth century. Second, Adler's alliance with the natural sciences is freely acknowledged, encapsulated in his sobriquet *Musikwissenschaft*—music science—for the mode of music research he shaped. Third, where several of his contemporaries applied evolutionary metaphors indiscriminately, Adler kept the purpose of his scholarship—representing music's history—in mind and jettisoned evolution as explanatory model when it contravened evidence or proved too constricting a historical metaphor; he is thus a moderate evolutionist, not enthralled by the possibilities of natural science beyond good scholarly and historiographical reason. Fourth, documentary evidence and Adler's close contacts to biologists lend credence to the idea that he had sufficient knowledge of the underlying science to estimate its usefulness—or at least had the means of checking on his preconceptions—and was not just parroting late nineteenth-century popular discussions of evolution. Fifth, although Adler's is not a wholly acceptable model for conducting music research any longer, his central position in the early years of academic musicology makes him still a relevant figure to us, one against whose proposals we measure our own methodologies.¹ This lends what might otherwise have been a purely descriptive inquiry into the history of musicology a prescriptive edge, a gentle but persistent imperative to evaluate

¹Musicologists in the United States, especially, benefited from a heavy dose of Adlerian musicology through the emigration of many of his students, collaborators, and admirers from Austria and Germany during the Third Reich. *In lieu* of the larger discussion that this topic deserves, let me just mention two of Adler's advisees that settled in the U. S.: Paul Pisk, musicologist and composer, joined the faculty at Redlands University in California, then served at the University of Texas in Austin and at Washington University in St. Louis. Karl Geiringer went first to England, then accepted positions at Boston University and the University of California in Santa Barbara; among his students were Frank D'Accone and H. C. Robbins Landon. / To my knowledge, a dissertation on the spread of Adler's thinking in American musicology is under way, pursued by Louis B. Hajosy III at the University of Georgia.

Adler’s methodology critically as much as to document its genesis objectively.

Unsurprisingly, an evaluative historical study like mine is beset by many challenges. Biology and musicology are two separate disciplines with different histories, concerns, terminologies, and subject matters. That they should converge in one historical instance—in Adler’s method—is unlikely, even if we allow for a certain evolutionary “spirit of the times” in the last third of the nineteenth century, thanks to the broad acceptance of evolution in biological academia after the publication of Charles Darwin’s *On the Origin of Species* in 1859. That Adler did not explicitly cite or reference biological works in his scholarly publications adds to my problems. Documentary evidence that allows us to see Adler, the evolutionary musicologist, *in flagrante delicto* exists, but is buried both by his language and by our remoteness from the issues that drove his thinking. Lastly, a good century of active musicological research and theorizing, of using—or disusing, or disabusing us of—Adler’s ideas has made us all but blind to the intellectual climate, to the ecosystem in which his works were conceived. To see their very real biological content, we need to peel away successive layers of our acquired preconceptions about musicology, about evolution, and about Guido Adler.

1.1 THIS DISSERTATION’S SETTING IN MUSICOLOGY

Arguably, Adler’s 1885 article on the “Umfang, Methode und Ziel der Musikwissenschaft” (the scope, method, and aim of music science) places him among the earliest musicologists to contemplate the methodological foundations of our field, and certainly among the earliest such reflective musicologists still routinely reviewed in courses on the history of musicology. His introduction—in this article—of a new field called “systematic musicology” makes him something of a father figure to current ethnomusicology, which derives from several research areas Adler counted under systematic musicology.² Likewise, today’s historical musicology

²Two articles chronicle the early steps of this development, from systematic musicology’s complementarity with its historical sister through to a consistent definition of the former field: Charles Seeger, “Systematic and Historical Orientations in Musicology,” *Acta Musicologica* 11/4 (1939) and Charles Seeger, “Systematic Musicology: Viewpoints, Orientations, Methods,” *Journal of the American Musicological Society* 4/3 (1951). Of course, ethnomusicology emancipated itself from the generalist worldview of early musicology in the

is the big counterpart to systematic musicology in an emblematic schema of musicology's research areas that Adler included in his article.³ Like their peers in ethnomusicology, current historical musicologists have set their sights on topics different from Adler's, but here, too, Adler's article is the reference point to occasional reflection, particularly on the sources of Adler's methodology.⁴

One curiosity that has aroused the attention of various commenters is Adler's insistence that musicology by his rules is scientific, that is, a *Wissenschaft*. His claim was not universally accepted as valid, or as relevant to musicology, even in his own day.⁵ Particularly, the scientific source or analogue of Adler's scientific musicology has always been something of a mystery. His close friendships with several Viennese physicists and Gestalt philosophers have led some to attribute Adler's claims to this source.⁶ Another serious possibility is his debt to the Viennese school of *Kulturwissenschaft* (cultural science), particularly because of his long friendship with the historian Friedrich Jodl, who proposed a systematic study of culture in the 1870s.⁷ Lastly, due to Adler's frequent references to the historical "development" (*Entwicklung*) of music and to its organic nature, several musicologists have attributed his rhetoric to the waxing of the life sciences in the late nineteenth century.⁸

1950s and 60s by adopting an explicitly anthropological stance. Adler has remained a common mirror for self-reflection, though; see for example Philip V. Bohlman, "The European Discovery of Music in the Islamic World and the 'Non-Western' in 19th-Century Music History," *Journal of Musicology* 10/2 (1987), particularly pp. 167–172. / Charles Seeger is one ethnomusicologist who referred to Adler's schema explicitly and used it as a methodological model in quite the same way as Adler did Quintilian and his biological sources; for this reference to and adaptation of Adler by Seeger, see Charles Seeger, "Towards a Unitary Field Theory for Musicology," pages 102–138 of *Studies in Musicology 1935–1975* (Berkeley and Los Angeles, Cal.: University of California Press, 1977), pp. 113–117. Seeger there complains about the negligence of systematic approaches by musicologists in the 1950s and 60s—a complaint surely borne of his own interests—but does not pick up on the principally biological inspiration for systematic musicology, and Adler's schema generally.

³Guido Adler, "Umfang, Methode und Ziel der Musikwissenschaft," *Vierteljahrsschrift für Musikwissenschaft* 1/1 (1885), pp. 16–17.

⁴Volker Kalisch, *Entwurf einer Wissenschaft von der Musik: Guido Adler* (Baden-Baden: Valentin Koerner, 1988) is by far the most detailed study of Adler's historiographical methodology.

⁵For an American perspective from the 1930s, see Louis Harap, "On the Nature of Musicology," *The Musical Quarterly* 23/1 (1937).

⁶Georg Knepler and Othmar Wessely, "Vom wissenschaftlichen Denken Guido Adlers," *Musicologica Austriaca* 6 (1986).

⁷This angle is explored by Barbara Boisits, "Kulturwissenschaftliche Ansätze in Guido Adlers Begriff von Musikwissenschaft," in Gernot Gruber and Theophil Antonicek (eds.), *Musikwissenschaft als Kunstwissenschaft. Damals und heute* (Tutzing, 2005).

⁸The most thoroughgoing such treatment is Werner Friedrich Kümmel, "Musik und Musikgeschichte in biologistischer Interpretation," in Gunter Mann (ed.), *Biologismus im 19. Jahrhundert* (Stuttgart: Ferdinand Enke Verlag, 1973).

Diffuse as the sense of *Entwicklung* may be in the musicological context, Adler's proximity to several musicologists who fashioned explicitly evolutionary accounts of music makes this branch of science worthy of pursuit.⁹ And as it turns out, Adler is heavily indebted to the evolutionary theory of one particular biologist: Ernst Haeckel (1834–1919). Haeckel was a major proponent of Darwin's evolutionary theory in the later nineteenth century but added methodological embroidery to the theory of evolution by natural selection. This dissertation documents and demonstrates the roots of Adler's musicological methodology in Haeckel's biology. In particular, Adler's schema for the disciplines of scientific musicology is a close variant of a schema by Haeckel, devised to organize biology according to Haeckel's peculiar methodological ideas. Moreover, Adler's reference to evolutionary biology explains his invention of "systematic musicology" since evolutionary inferences rely heavily on the mutual relationship between the historiography and the systematic description of biological species. Lastly, his claim to undertake a scientific musicology is validated, at least by the standards of nineteenth-century historical science as they were portrayed by Haeckel. Therefore my examination of Adler's musicology in light of Haeckel's evolutionary biology adds a crucial footnote to the history of musicology, one that—given Adler's continued relevance to musicologists' methodical reflection—should alter the way we think about the history of our field.

1.2 SURVEY OF SIGNIFICANT FINDINGS

The second chapter has a largely biographical focus that sets the stage for defining the relationship of Adler's methodology to early musicology as well as the biographical and intellectual interest that Adler showed in Haeckel's ideas. Adler emerges as a reasonable target for an inquiry into the relation between the natural sciences and music research, due

⁹Kümmel, *op. cit.*, and Ruth Solie, "Melody and the Historiography of Music," *Journal of the History of Ideas* 43/2 (1982), both refer to Robert Lach, Adler's successor as professor of musicology in Vienna, and Oswald Koller, co-editor with Adler of the Trent Codices. The former wrote an evolution-inspired history of melodic composition: Robert Lach, *Studien zur Entwicklungsgeschichte der ornamentalen Melopoë* (Leipzig: Breitkopf & Härtel, 1913). And the latter published Oswald Koller, "Die Musikgeschichte im Lichte der Darwinschen Theorie," *Jahrbuch der Musikbibliothek Peters* 7 (1901).

to his broad interests, methodological bent, central position in the turn-of-the-twentieth-century musicological community, and good contacts with scientists. Several assessments of his methods as explicitly evolutionary show that this feature of his thinking was recognized by at least a few of his peers and students. And Adler's quarrels with other musicologists' methods shine a spotlight on the gaps that he perceived in their methodologies, gaps that the adoption of an evolutionary stance helped close. Although this chapter does not include any groundbreaking research, I have assembled information from a large number of primary sources, mostly letters and personal memoranda by Adler, his family, and his interlocutors that have not been published yet.¹⁰ They illustrate his manifold interests and contacts, and paint—in very broad strokes—the life, interests, and convictions of a well-connected researcher living in late nineteenth- and early twentieth-century Vienna.

The third chapter approaches the topic of the dissertation—Adler's debt to Haeckel—from a different angle. Musicologists are often fuzzy in what they call “evolutionary” accounts of music, to the degree that evolution has become a cipher for all kinds of musicological approaches resulting in all kinds of problematic conclusions. This chapter attempts to condense and clarify what evolution is—to musicologists as well as biologists—and to assess Adler's potential allegiance to any particular evolutionary theory available in the later nineteenth century. In musicology, evolution is often connected to certain types of teleological historiography and to the idea that music is autonomous with respect to its social situation. These theses do not agree with all evolutionary theories. Thus our attention is directed to the features of particular evolutionary theories and the likelihood that Adler was aware of them. His choice of terms offers a reasonably good measure. Because of my interest in the 1885 article and its schema, and because Adler's musicology changed around 1900 through the addition of the style concept to his methodological arsenal, I focus on the language of the early articles, written in the 1880s. There we find many references to classificatory units like species or classes, suggesting that Adler was aware of the classification's historiographical usefulness. But the evolutionary theory allowing him to infer histories from such classifica-

¹⁰Here as anywhere in the dissertation, these personal documents are presented courtesy of the Hargrett Rare Book and Manuscript Library at the University of Georgia (Athens, Ga., United States). This applies to all sources in the Bibliography with cited location among the Guido Adler Papers (ms. 769, followed by box and folder number), and to Hargrett Library's ms. 1336, book lists associated with the acquisition of the Adler Papers.

tions is not immediately clear: Adler broadly refers to evolution, as with the German word *Entwicklung*, but he never cites any particular biological source for his adopted concept. And although he employs the “struggle for existence” to explain historical processes, his application of this explanatory mechanism is far removed from Darwin’s. A sidelong glance at a popular treatment of biology shows that Darwin’s stature (especially in Germany around the turn of the twentieth century) was eclipsed by Ernst Haeckel’s. Adler was thus a methodological emulator of Darwinism—this a concept discussed at some length in this third chapter—but applied a notion of selection different from Darwin’s.

The fourth chapter draws explicit biographical and methodical connections between Haeckel and Adler. A close biologist friend of Adler’s, Berthold Hatschek, studied with Haeckel. Adler’s excerpts of Haeckel’s lecture on the promises of *Entwicklungslehre* were likely prepared very early in his career, plausibly before his first—already evolution-influenced—publication in 1880. The lecture fits Adler’s religio-philosophical worldview, the excerpts portray evolution as unifier of the sciences and humanities, and (in the sections not copied but probably at least skimmed by Adler) Haeckel explains the basics of evolutionary biology and calls it a “historische Naturwissenschaft” (historical natural science). Evolutionary biology of Haeckel’s kind is thus perfectly suited to serve as model for the historical science of music that Adler had resolved to found in the early 1880s. For a model to the schema that anchored “Umfang, Methode und Ziel” in the collective musicological consciousness, Adler had to look no further than to a different presentation by Haeckel, reprinted in the same volume as the lecture he excerpted. There Adler would have found a symmetrical representation of biology’s subject areas, arranged in two halves with four sub-disciplines each; the same structure organizes Adler’s schema, of course. My inability to tie Adler’s gaze directly to Haeckel’s graphic (perhaps through a copy preserved in the *Nachlass* or Adler’s notebooks) necessitates a more thoroughgoing examination of the organizing principles of both schemata and the ways in which Adler reinterpreted Haeckel’s to fit musicology’s concerns. This examination shows that Adler had accepted evolution’s posited correspondence between systematics and historiography, but that he allowed the distinction between form and process (also a centerpiece of Haeckel’s biology) to supervene at certain junctures. Of course, such minor problems did not prevent musicologists from adopting Adler’s categories,

because these were solidly based in the musicological preconceptions and practices of his time. Thus Adler's schema was able to represent musicological science on its own, without constant reference to its evolutionary roots.

1.3 MOTIVATING THE THIRD CHAPTER: ADLER, MUSICOLOGY, AND EVOLUTION, TALKING TO AND PAST EACH OTHER

One pressing problem when pursuing my chosen direction of research is the comparative dearth of inquiries into Adler's concrete biological roots, but comparative wealth of discussion on evolution in musicology generally. Unfortunately both cannot be separated neatly since the success of Adler's model of scientific musicology engrained particular ways of evolutionary thinking deeply in musicology. To argue for the kind, depth, and persistence of these tropes in musicology since Adler cannot be the subject of this dissertation. They must nonetheless be addressed, and relativized when they would obscure our view of Adler's own biological debts. The third chapter pursues this clarification, starting with an etching of the connotative web in which the term evolution is suspended in musicology and proceeding to enrich this view with details from biological evolutionary thinking and from Adler's terminological choices.

To illustrate what the problems addressed in the third chapter are, let me take the reader on an extended detour. I will present three quotations: one by Adler, one by a recent musicologist translating and commenting on Adler, and one by a prominent evolutionary biologist. Each quotation can be related to the other two on the basis of common terms or concepts, or of professional commentary on a shared issue, but in a peculiar way the three quotations are also talking past each other, a situation I consider emblematic of musicology's relationship to its historiographical peer, evolutionary biology.

In "Umfang, Methode und Ziel," the article that put Adler on the musicological map as an original methodological thinker, he summarizes the "eigentliche[n] Kernpunkt aller musikhistorischen Arbeit" (the real core point of music-historical work) as researching the laws of different historical periods ("die Erforschung der *Kunstgesetze* verschiedener Zeiten").¹¹ In-

¹¹Adler, *Umfang, Methode und Ziel*, p. 9; emphasis original. / The great impact of Adler's article has even

stead of giving a clear-cut definition of these laws, Adler seems given to rhapsodizing:

Wie von den Anfängen der einfachen Melodie ausgehend der Bau der Kunstwerke allmählich wächst, wie von den einfachsten Thesen ausgehend die in den Tonproducten latenten Kunstnormen complicirt und complicirter werden, wie mit entschwindenden Culturen die Ton-systeme vergehen, wie an das Glied sich nach und nach eine Kette von Zellen anschließt und so organisch wächst, wie die außerhalb der fortschrittlichen Bewegung stehenden Elemente, weil nicht lebensfähig, untergehen—dies darzulegen und nachzuweisen ist die dankbarste Aufgabe des Kunstgelehrten.¹²

(How, departing from the origins of simple melody, the structure of artworks grows gradually; how, departing from the simplest theses, the artistic norms present in the musical products become more and more complicated; how musical systems wither with vanishing cultures; how step by step a chain of cells attaches to a limb and thus grows organically; how the elements placed outside the progressive motion perish because they are not fit to live—to present and to document this is the most gratifying task for the scholar of art.)¹³

If we are trying to extract evolutionary metaphors from Adler, this passage provides us with an embarrassment of riches: gradual, stepwise, and organic growth are issues that pop up in discussions about the rate of evolutionary change; progressive motion could conceivably refer to the fact that, unlike human historical reflection, evolution cannot return to a prior state, only to prior conditions of life; extinction of the non-progressing¹⁴ sounds suspiciously like a rendering of “survival of the fittest”; increasing complexity is of course one possible indicator for evolutionary change having happened. All the common cliches discussed in nineteenth-century tracts about natural history are referenced in one long German sentence, except that their subject matter is not biological objects like species but cultural, musical ones, like Adler’s *Kunstgesetze* (art laws). And biological research during the nineteenth century is rife with laws, foremost among them Darwin’s concept of natural selection, that explain how historical change in nature happens. What could be more “natural” or more “scientific,” in Adler’s day and age, than to draw the analogy and consider music as evolving?

led to a relatively recent English translation: Erica Mugglestone, “Guido Adler’s ‘The Scope, Method, and Aim of Musicology’ (1885): An English Translation with an Historico-Analytical Commentary,” *Yearbook for Traditional Music* 13 (1981), where the relevant passage may be found on p. 8.

¹²Adler, *Umfang, Methode und Ziel*, p. 9.

¹³Compare Mugglestone’s translation (also on p. 8 of her article): “The most satisfying task of the scholar of art is to demonstrate and establish how, proceeding from the beginnings of simple melody, the structure of works of art gradually grows; how, proceeding from the simplest thesis, the artistic norms latent in the tonal products become more and more complicated; how tonal systems pass away with disappearing cultures; how, little by little, a chain of cells attaches itself to a limb and so grows organically; how elements standing outside the mainstream of progressive development perish because they are not viable.”

¹⁴Mugglestone uses “mainstream” for the elements participating in the progressive motion.

Erica Mugglestone, Adler’s translator and commentator, agrees. In an explanatory note to exactly the above passage, she makes explicit the connection between Adler’s biological imagery, lawfulness in scientific descriptions of musical processes, and Darwin’s concept of selection:

Stylistic laws reveal a process of selection. As much of Adler’s metaphorical language suggests that he perceived history, and music as an art, in terms of a living organism, it is not unreasonable to speak of this process of selection as in some way ‘natural’. The essential originality in Darwin’s theory of evolution lay in his attributing to nature the process of selection by means of the concept of survival of the fittest, which is itself a metaphorical view of nature, conceiving of it as having some kind of mind. In speaking of the investigation of stylistic laws, Adler’s imagery is thoroughly Darwinian. It is not the composer who selects; the musical forms themselves grow, like chains on a cell, or die because they are not fit to survive.¹⁵

With respect to the question of how much Adler owes to the biologists of his time, and particularly to the evolutionists, Mugglestone seizes on selection, arguably Darwin’s third crucial contribution to evolutionary theory—his first being the plausible demonstration of evolution’s historical reality and his second proposing the tree-like pattern of species history called common descent. Selection has an undeniable intuitive appeal for scholars of art, given that creative agents (like composers) may very well be thought to pick between different versions of a musical piece in their preparation of the final, historically transmitted version. This selective process might (given certain conditions) be extended from the creative realm onto history, with a broader set of agents—concert agents, audiences, printers, princes, financiers, the arbitrators of public opinion—promoting or demoting certain types of music through a historical period, or from one period to another. This is an intuitively plausible step, based on the common-sense meaning of the word selection, as in “choosing something among alternatives according to one’s whim.”

But intuitive plausibility is not enough. And here Mugglestone makes a strange mistake—and possibly also Adler, although the cited passage is too noncommittal, either to support Mugglestone and thus also be wrong in terms of biology, or to suggest a different meaning of selection and thereby be putatively right. In her rendering, Darwin’s selection concept is in fact an extension of the common, “individual-choice” sense of the word onto a bigger

¹⁵Mugglestone, *op. cit.*, p. 19, note 7.

individual, Nature, which Darwin is supposed to have conceived of “as having some kind of mind.” According to Mugglestone, because nature acts as if it were mindful, a feature of human mindful action—selection—can be attributed to Nature (Darwin). And because art history is like a living organism, and has its organic qualities, including some selection capability, the selection concept can profitably be applied to music history (Adler, *pace* Mugglestone).

These two steps, part of Adler’s “thoroughly Darwinian” imagery, are unfortunately contravened by the biologist himself. Darwin had introduced his readers to natural selection through a digression into animal breeding, where humans and their biological needs for food, protection, etc. play the role of selective agent for cows, dogs, etc. Many readers of the *Origin*’s first edition jumped to the same intellectual conclusion as Mugglestone, supposing that Darwin had in mind a personified Nature as selective agent. He considered this a misunderstanding, however. His earliest comment on the issue (correspondences excepted) appears in the foreword of a publication on artificial (that is, breeder’s) selection:

The term “natural selection” is in some respects a bad one, as it seems to imply conscious choice; but this will be disregarded after a little familiarity. No one objects to chemists speaking of “elective affinity;” and certainly an acid has no more choice in combining with a base, than the conditions of life have in determining whether or not a new form be selected or preserved. [...] I have, also, often personified the word Nature; for I have found it difficult to avoid this ambiguity; but I mean by nature only the aggregate action and product of many natural laws,—and by laws only the ascertained sequence of events.¹⁶

Darwin’s statement reveals that his intentions are directly counter to Mugglestone’s reading of them: nature does not possess mind-like qualities, and natural selection is not a process of choice but one of sorting by fitness and, depending on the circumstances, of surviving (long enough to procreate) or not. Natural selection acts universally (according to Darwin) precisely because a biological organism does not have the chance to “opt out” or some super-individual Nature the choice to “spare” it. The latter would be a better analogy to the common definition of selection: one object is selected, the other not. In natural selection, all organisms are subject to the process. As a biologist one may argue about the relative importance of selection compared to other evolutionary mechanisms operating

¹⁶Charles Darwin, *The Variation of Plants and Animals under Domestication*, volume 1 (London: John Murray, 1868), p. 6.

in a specific historical situation, but selection must be taken into account as a possible hypothesis for any historical change in nature. But this universal applicability of selection as historical principle does not require a choice process in the regular, individual-centered sense. Mugglestone is thus wrong about Darwin's motivation in coining natural selection and its biological implications.

How about her analysis of evolutionary thinking in the passage cited from Adler? His language is quite vague. Adler seems more prone to metaphors of growth than anything resembling natural selection, the struggle for existence, or survival of the fittest. He gets closest to the latter when he says: "wie die außerhalb der fortschrittlichen Bewegung stehenden Elemente, weil nicht lebensfähig, untergehen" (how the elements placed outside the progressive motion perish because they are not fit to live). I understand this to be a crude rendering of survival of the fittest (as did Mugglestone). But we do not know what the "Elemente" are, or what they are elements of—of a genre or a piece, of a collective or an individual. Selection (in the biological sense) only happens to individuals as members of populations, not to the components—the organs—of individuals. If those elements had the option of being "fit to *live*" then one ought to assume that they were several individuals (since organs usually cannot live by themselves), and that Adler's expression hence applied to a group and its members as elements, rather than one organism and its components as elements. In this interpretation, Mugglestone's stance is correct, for this phrase in Adler's sentence. But if Adler thought of his "elements" as organs, the phrase would not refer to selection as commonly understood in biology, and Mugglestone's interpretation questionable.

Evolution and selection are concepts that have been melded since—and by—the publication of Darwin's *Origin*. But their relation and their respective definitions were different in Adler's time, and Mugglestone does not work out what these definitions were. Thus, while I think that Mugglestone's general contention—Adler is influenced by biological and evolutionary theories—is essentially correct, her pinpointing Darwinism as Adler's likely theoretical source cannot be argued on the grounds that she chooses. She correctly rates Adler's list in the quotation as biological metaphors, but does not successfully argue that Adler's metaphors are borne from a specific—neither a "thoroughly Darwinian" nor, much less, Darwin's—"metaphorical view of nature."

My third chapter takes upon itself the task to move from a musicological understanding of evolution to a biological one, and thus to lay the groundwork for identifying the theoretical elements that inspired the view of nature influencing Adler. As it turns out, this—Haeckel’s—view of nature *is* Darwinian by nineteenth-century standards but still different from Darwin’s.

1.4 BACKGROUND INFORMATION ON ERNST HAECKEL

The set-up of my arguments in this dissertation requires Haeckel’s grand entrance at stage left only at the beginning of the last, third act (if one deigns to view this introduction as a prologue). Particularly for readers who know little of Haeckel but who will see his name crop up occasionally in the next two chapters, such a long wait is probably frustrating. By the summary information below, I hope to provide these readers with some perspective on him, which might help evaluate one or another cryptic reference on my side.

Ernst Haeckel was born in 1834. Throughout his long life—he died in 1919—he devoted himself to the study and advancement of biology in all its aspects, sometimes expanding this discipline’s reach beyond what his contemporaries (or ours) considered proper.¹⁷ Haeckel was almost single-handedly responsible for making evolutionary biology a popular subject of discussion in German-speaking Europe during the latter decades of the nineteenth century. He also advanced anthropological hypotheses about the origins of human races that—after several reworkings—served to endow National Socialist racial thinking with a small measure of scientific clout.¹⁸ Haeckel’s premier philosophical project, monism, a worldview rooted

¹⁷The latest scientific biography of Haeckel (Robert J. Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought* (Chicago and London: University of Chicago Press, 2008)) summarizes Haeckel’s achievements and motivations in its first chapter.

¹⁸Haeckel believed, contrary to most of his contemporaries, that the distinct human races he identified arose separately from non-human, apelike ancestors. The majority hypothesis during the nineteenth century, and the most plausible one given current evidence, states that modern humans diverged from their hominid relatives only once. His position led Haeckel to instigate the search for proto-modern-human remains in East Asia, leading to the discovery of “Java Man” (*Homo erectus*) by his student Eugene Dubois. Like most of his contemporaries, Haeckel was racist in the sense that he believed that human races had historically conditioned qualitative differences. In his racial calculus, the “Caucasian” or “Mediterranean” race, which included all peoples speaking indo-european or semitic languages, and the “mongolian” race (broadly, East Asians) were the only ones truly capable of civilization. Two of the lectures in Ernst Haeckel, *Gesammelte*

in both materialism and (for lack of a better word) pan-spiritualism, was denounced by the Third Reich government (as “Darwinism”) and several of his more popular books were put on the index. In a modern context, Haeckel’s monism might be considered a mixture of humanism, secularism, and rational spirituality. This monistic worldview, which Haeckel was starting to popularize in the 1870s, is probably the issue that brought him to young Adler’s attention, with Haeckel’s biological views being a later additional interest.

As a biologist, Haeckel advocated the unification of biological research. His massive reaction to reading Darwin’s *Origin*, the *Generelle Morphologie der Organismen*,¹⁹ advances a program of progressive integration between the hitherto separate biological disciplines of physiology, anatomy, the systematic disciplines (like zoology), embryological studies, and the fledgling sciences of ecology and paleontology. Cornerstone of this integrated biology is the correspondence between biological processes—their history as much as their precise causal coherence—and the observable features of biological bodies, such as the form and function of their organs. Haeckel considered Darwin’s tree-like vision of biological history the paradigmatic expression of this correspondence, but his own extension onto most of biology owes much to the broader conception of science constructed in the early nineteenth century by philosophers like Hegel and naturalists like Humboldt or Goethe.²⁰ *Wissenschaft* as the rational, evidence-based inquiry into the natural world propelled Haeckel’s researches as well as his peculiar view of what constituted the soul or *Geist* (spirit/mind) of human beings. To pick Haeckel’s thinking as departure point for the reorganization of a *Geisteswissenschaft* (science of the mind)—as Adler did—required no great leap of methodological faith. Unfortunately, Haeckel (in his more theoretical publications) sometimes insisted on labyrinthine distinctions and differentiations, and these might trip up the scholar willing to follow him on his methodological path. (I construe Adler to be thus tripped up in one particular case that reflected on the set-up of his schema in “Umfang, Methode und Ziel der

Populäre Vorträge aus dem Gebiete der Entwicklungslehre, volume 1 (Bonn: Emil Strauss, 1878) outline his views on the matter in great detail: “Ueber die Entstehung des Menschengeschlechtes” (about the origin of the human genus; pp. 29–58) and “Ueber den Stammbaum des Menschengeschlechtes” (about the phyletic tree of the human genus; pp. 59–98). Adler’s own musicological chauvinisms seem less based on racial distinctions and more on cultural ones.

¹⁹Ernst Haeckel, *Generelle Morphologie der Organismen* (Berlin: Georg Reimer, 1866).

²⁰Haeckel’s reverence for the German poet is reflected in the Goethe quotations that head almost every chapter of his *Generelle Morphologie* and almost every published piece.

Musikwissenschaft.”) But these confusions notwithstanding, Haeckel’s tracing of all manners of possible consequences from evolutionary theory make his comprehensive publications fascinating reading.²¹

One last important background aspect to Haeckel’s promotion of Darwin’s ideas and to his public lectures in the 1860s and ‘70s in particular is the then-ongoing so-called *Kulturkampf* (cultural battle). After the Franco-German War of 1870 and the Prussian-led unification of most states of the old German Empire (excluding the seat of the old emperor, Austria) in a German nation-state, this state’s chancellor Otto Bismarck promoted a policy of cultural unification, including heavy polemicizing against religion in the Bismarck-supporting (and Bismarck-financed) press. Popular promoters of secularism presented this movement as one inspired by progressivism, as an answer to the call of *Fortschritt* (progress) which had pervaded European thought since the eighteenth century. Actually, Bismarck’s political motivations were less guided by secularism than by a desire to limit the influence of the Catholic church (and the powerful majority-Catholic states, like Bavaria) on the new Protestant-reigned and -led German Empire of 1871. (Rivalry with Austria, the nation that embodied imperial tradition in German-speaking Europe, played an important secondary role.) I see little reason to count Haeckel among the political fighters against Ultramontanism²² and I consider him more inspired by a—perhaps outsize—regard for the philosophical implications of evolutionary theory. But his advocacy and his arguments certainly suited an anti-Ultramontane agenda. Adler, as a largely secular Jew in a Catholic nation, did not engage in *Kulturkampf* explicitly—this was more of a German obsession—but he certainly looked at Haeckel’s sentiments with a kindred spirit.²³

²¹A reading of (or university course on) the *Generelle Morphologie* in light of the debates raging in evolutionary biology between (approximately) the Darwin sesquicentennial of 1959 and today would surely be a fascinating project.

²²This being the *Kulturkampf* name for factions drawing support from “beyond the mountains,” that is, from the Catholic hierarchy embodied by the Vatican. During the period considered here—roughly, the last three decades of the nineteenth and the first three of the twentieth century—the Vatican as seat of the Holy See was quite isolated politically. Its political influence was wielded through steadfastly Catholic governments, like that of the Austro-Hungarian Monarchy, and increasingly through newly founded Orders and lay organizations.

²³Examples are forthcoming in the second and fourth chapters. That Adler was not completely equanimous on the matter is demonstrated by side remarks in his scholarly articles. Every once in a while, the slower or lacking historical change in some genre is attributed to its “ecclesiastical” nature, without justification and in a mildly dismissive manner.

2.0 GUIDO ADLER'S LIFE, WORLDVIEW, REPUTATION, AND SELF-ASSESSMENT

Tantalizing as the general question of evolution employed in musicology may be, at heart this dissertation concerns itself with one musicologist only, Guido Adler. This chapter gives the necessary biographical background for my interpretation of Adler, including some insights on his character and the reputation he enjoyed with musicologists apart from his more scientific or methodological achievements. As a biographical frame to the chapter, I sketch Adler's career and professional relevance for the field of musicology and date the important publications to be dissected later in the dissertation. Within this frame, I treat several biographical topics in greater detail: Adler's political situation as a Jew in an increasingly ethnically divisive Austria; his religious convictions; the *Vierteljahrsschrift für Musikwissenschaft* and Adler's roles in this project; the scientists and philosophers Adler had close contact with; the reaction by musicologists to his "scientific" musicology once his fame began to spread; and Adler's assessment of one famous musicologist from the previous generation, A. W. Ambros. These topics circumscribe my core concern, Adler's evolutionary methodology as an effect of his biography.

They each offer some information to help us evaluate Adler's choices in matters musicological, which latter we must confront later on. Adler's position in academic politics was somewhat insecure initially, presumably putting greater pressure on him to produce a consistent and reputable methodology. His religious views tended towards (very) secular Judaism, which replaced the theological content and most religious practice of his family's faith with a reverence for Nature. Adler's *ethos* and his interests predisposed him to partake of the vibrant natural-scientific life of Vienna. The *Vierteljahrsschrift* provided a first stable organ for Adler's brand of musicology; Adler was instrumental in its founding and, like his

co-editors, he embraced the expertise of natural scientists as readers or contributing editors. But the editorial work also exposed differing agendas about what types of arguments “music science” was supposed to encompass. His assessment of Ambros offers us yet another glance at the methodical features of musicology Adler considered lacking; like other articles from the 1920s, his piece on Ambros also mentions what Adler considered his predecessor’s achievements but also the lacunas in Ambros’s musicological practice. Lastly, Adler’s students and peers responded positively to him and his work (despite evidence for a very prickly temper) and they did not consider his scientific approach opposed in principle to the emotional connection between the listener’s mind and music, which was considered essential to music aestheticians in the nineteenth century.

Obviously Adler’s autobiography *Wollen und Wirken* offers the most detailed survey of his life and motivations but it is also written from a subjective and summarizing point of view, not *in medias res*. Therefore I have consulted several other sources: Information on the first two special topics comes from unpublished reports by Adler’s son Hubert Joachim Adler, prepared after the Second World War in the United States and submitted to the University of Georgia when it purchased Adler’s library and *Nachlass*. The topics relating to the *Vierteljahrsschrift* are supported by excerpts from letters preserved in the *Nachlass*, especially by Philipp Spitta’s letters concerning the publication of the journal’s first few issues.¹ I have deliberately chosen to forgo a detailed discussion of Adler’s scientist friends’ convictions because this would explode the size of this chapter and requires a safe background in biology; for the one biologist I consider responsible for Adler’s contact with Ernst Haeckel, Berthold Hatschek, I offer a short biographical sketch at the beginning of the fourth chapter.

¹Copies of Adler’s responses are unfortunately not preserved, a few drafts—probably never sent—excepted.

2.1 EARLY LIFE AND STUDIES

Guido Adler was born in 1855 in the small town of Eibenschütz in Moravia (now Ivančice, Czech Republic).² After the early death of his father, a country physician, the family moved to another local urban center, Iglau (Jihlava). There Adler attended primary and early secondary school and gained the attention of the local priest, who recommended him for higher education. Upon resettling once again in 1864, now to the imperial capital Vienna, Adler went to the prestigious *Akademisches Gymnasium* (comparable to a preparatory high school) and the *Schottengymnasium* (a private monastic school). In 1868, he joined “without enthusiasm”—“ohne direktes Verlangen”³—the music conservatory, studying with Bruckner among others, getting involved in the Wagnerian “modern” movement, and finishing in 1874. He immatriculated at the University of Vienna’s law faculty and completed his course of studies in spring 1878. During his studies, Adler attended lectures by Franz Brentano, an influential mid-nineteenth century philosopher of mind; he considered Brentano his teacher.⁴ We can be sure of Adler’s interest in Brentano’s works and thoughts: in a letter from 10 August 1878, Alexius Meinong—Brentano’s student and Adler’s lifelong friend—invites “Discussion über die Ergebnisse Ihrer mit anerkennenswertem Fleiße betriebene Brentano-Lektüre” (discussion about your reading of Brentano, conducted with admirable zeal).⁵ (Possibly, Adler’s first formal exposure to Haeckel’s theories about evolution happened through Brentano or the Brentano circle, perhaps during the years 1877 through 1879 in one of the discussion groups (or seminars) led by the philosopher.)

After attaining a basic degree (equivalent to today’s Bachelor’s), Adler started work as a law office clerk but left the firm after three months. This must have been in early summer 1878. He returned to music studies, noting that his talents did not lie with composition but scholarship. Adler does not share all too much information on how he managed to stay alive, save mentioning that he sometimes had to live with a piece of bread for dinner. In 1880 he published “Die Grundclassen der christlich-abendländischen Musik vor 1600,” its acceptance

²Adler’s own summary of his early life is in Guido Adler, *Wollen und Wirken: Aus dem Leben eines Musikhistorikers* (Wien: Universal Edition, 1935), pp. 2-19.

³Adler’s curious way of putting it in Adler, *Wollen und Wirken*, p. 6.

⁴Adler, *Wollen und Wirken*, pp. 20 and 81.

⁵Alexius Meinong, Letter to Guido Adler, Ischl, 10 August 1878, p. 1.

as dissertation allowing him the opportunity to teach students for pay. Adler's publication seems to have attracted the attention of Eduard Hanslick, the Viennese professor of music history and aesthetics, who proceeded to advise Adler on his habilitation, or professorship thesis.⁶ After its formal defense on 25 April 1881 and publication one year later,⁷ Adler was appointed *Privatdozent* of music history (not *Musikwissenschaft* yet!) at the University of Vienna in 1883, receiving his promotion to extraordinary professor at the German University of Prague on 25 October 1885.⁸ Both major articles, as well as several smaller publications and public lectures, seem to have shown Adler in a sufficiently good light to make his appointment and promotion a reasonable option.

2.2 ACADEMIC POLITICS IN THE AUSTRIAN EMPIRE

Adler's son describes the politics behind such appointments, referencing both his father's accession in Prague and the eventual replacement of Hanslick in Vienna in the later 1890s. If we are to believe H. J. Adler, during his father's youth the climate was still relatively liberal, imbued with ideals of equality derived from the French revolution. During Adler's professional career, this consensus shifted inexorably towards ethnic and sectarian strife. The following excerpt exemplifies the impact of these struggles on Adler's academic life, the aura of especially the University of Vienna as academic center, and Adler's own political leanings in Prague and later in Vienna:⁹

⁶In this period's academic system, the completed dissertation enabled scholars to teach courses to students for pay (as university lecturer, that is, *Privatdozent*, or as teacher at a high school), while the habilitation formed the basis for being offered a research position, more stable, prestigious, and better paid. The usual "course of honor" was from lecturer (akin to a modern postdoctoral fellowship or assistant professorship) through extraordinary professor (an associate position with full rights to teach university students, pursue independent avenues of research, and weigh in on hiring decisions) to ordinary professor, the head of research in a discipline, who was his department's liaison to the university at large, procured funding sources, supervised most habilitations, and was usually the only full professor in his discipline or specialty.

⁷Guido Adler, *Studien zur Geschichte der Harmonie* (Wien: Bei Gerolds Sohn, 1882).

⁸This institutional information, including Hanslick's evaluation of Adler's habilitation, is preserved at the philosophical faculty's archives of the University of Vienna (*Siglum*: Phil PA 14 8P1).

⁹Hubert Joachim Adler, Guido Adler and Politics, pp. 3-4. (H. J. Adler writes in English. As with all manuscript sources in this dissertation, I have tried to maintain the appearance of the text as much as possible in my quotation, including struck-out words and grammatical errors. Footnotes contain additional information.)

[W]hen my father became an assistant professor (Privatdozent) at the University of Vienna, and also during his Associate Professorship in Prague the clashes (on religious-racist grounds) with his “Nordic” colleagues became worse and worse until they almost became intolerable during his tenure of full professorship in Vienna. It was a sad early sign of a cultural and moral decay. Sad to watch these avantgarde of Hitlerism—they called themselves “Deutschnationale”¹⁰ in those days destroy the very foundation of the old ancient center of culture—the University of Vienna. ~~This is~~ The names of the members of the college of full professors during the first 3/4 of the 19th Century read like a roster of ~~the~~ all the nationalities of the Austro-Hungarian Monarchy. Merit, and merit only had brought these men to the highest place of academic learning, teaching + research. Now politics was destroying the quality of the Universitas Litterarum Rudolphina.¹¹ ~~The~~ Already the struggle to have my father appointed to the poorly paid post of Professor Extraordinarius in Prague was considerable. Only the great influence of two colleagues there, Friedrich Jodl and . . . Mach,¹² enabled my father to get the appointment. In Prague, being a Professor of the German University, my father found himself in a political straightjacket: no intercourse between Czech and German-Austrian cultural circles was thinkable. It was for example quite impossible for a member of the German University to attend the excellent Czech Opera House performances. In order to hear works by Smetana, my father had to go to a dark corner in this place, so he would not be recognized. [footnote by H. J. Adler: “The acquaintance with Smetana’s works led my father to introduce the ‘Bartered Bride’ with the original cast at the ‘Wiener Musik + Theaterausstellung (1898?’¹³); there were many warnings against introducing the music of ‘such an inferior people’ but my father remained adamant. The bartered bride proved to be a tremendous success; Smetana’s art had been brought to the attention of the World.”] “The Germans in Prague were the masters and the Czechs were the servants”. But soon my fathers [*sic*] political belief became known in Czech circles. Strange things began to happen: Thomas Garrick [*sic*] Masaryk started to attend my father’s lectures. He happened to sit on the same bench with a young professor of Mathematics, Albert Einstein.¹⁴

¹⁰That is, “German-nationals,” as opposed to “Czech-nationals” or “Russian-nationals.” Nationality in the definition of that time and place was not tied to a nation state and more in line with the modern term “ethnie.” Hence the loyal citizens of a non-German nation state, the Austrian-Hungarian Monarchy, could be “German-nationals” if/because they were ethnic Germans in the Monarchy. Religious Jews could (potentially) be “Deutschnationale” as well, but the definition of “Jew” shifted between the late nineteenth century and the 1930s from a religious to an ethnic/“racial” one, such that—towards the end of this period—Jews would no longer have been considered “German-nationals” even if they were citizens of the German state. The eventual consequences of this shift toward an ethnic definition of “Jew” were the “racial laws” in the “German-national” Third Reich.

¹¹The more formal title for the University of Vienna, founded by Duke Rudolph IV of Austria in 1365.

¹²Hubert Joachim Adler leaves out the first name; presumably Ernst Mach. Mach was the prime exponent of empiricism in Vienna and Jodl a cultural historian and leader of the Monist league which promoted Ernst Haeckel’s philosophy.

¹³Actually in 1892.

¹⁴Here H. J. Adler seems to mix up periods, or he may not have differentiated between occasional public lectures that Adler gave and his university appointments: Adler *senior* was professor in Prague until 1898, during which time Tomas Garrigue Masaryk, himself a former student of Franz Brentano in the 1870s and professor at the Czech University of Prague after 1881, may well have visited Adler’s lectures. Einstein, on the other hand, was in his teens and living in Munich and Northern Italy during Adler’s time in Prague; he only became professor at the German University between 1911 and 1913, during which time Adler could conceivably have given guest lectures there.

Similar “inter-national” strife accompanied several other accession battles for Adler, less his elevation to full professorship in Prague on 04 February 1893 but definitely his appointment to Hanslick’s chair in Vienna on 15 June 1898, now as professor of musicology (*Musikwissenschaft*). This was only the second such appointment in the world after Gustav Jakobsthals in Straßburg one year prior. Adler’s success in 1898 was secured with some backing from high aristocrats and the Archbishop of Vienna, who was involved on Adler’s invitation in the massive edition project *Denkmäler der Tonkunst Österreichs*. Apparently the Archbishop’s good rapport with “His Imperial and Apostolic Majesty” Francis Joseph I—“by the Grace of God Emperor,” one of whose titular claims was still “King of Jerusalem”—overcame any concerns that the Crown might have had in appointing a Jew professor at the *Alma Mater Rudolphina*.

2.3 ADLER’S RELIGIOUS CONVICTIONS

These battles were of course political, and Adler on the bourgeois liberal side of the spectrum, but the fact that he was a Jew must have made a difference to his opponents even as early as the 1880s. His son reports that Adler bowed out of receiving a prestigious position at the Imperial Court because he would have had to take his oath of office on the cross.¹⁵ This is not to say that he belonged to the growing numbers of Eastern European Jews, often religiously conservative Haredim, that settled in the imperial capital in the decades before the First World War. Adler’s background, coming from a German-speaking middle-class family in Moravia, was different. For one, he seems to have traded the Jewish dietary laws for the Viennese ones, from a fondness for afternoon coffee and pastries to his choice of meats:

[H]e had what is called a ‘healthy appetite.’ He might make a concession and eat a fattened goose liver ‘Polish style’—deigning to commend the cuisine—but his favorite dishes were ‘national’, from boiled beef with horse-radish and *Kaiserschmarren* [puffy dough with raisins] to pigs-knuckles, and back again.¹⁶

¹⁵Hubert Joachim Adler, G. A. Attitude Towards Religion, p. 5.

¹⁶Carl Engel, “Guido Adler in Retrospect (1855–1941),” *The Musical Quarterly* 27/3 (1941), p. 397.

Thusly culinarily integrated into the cultural amalgam of the Empire, Adler dealt similarly with other directives of his native religion. He was brought up by a deeply devout mother and aunt, but did not worship in the synagogue in his later life. Some habits remained but they were filled with a different spiritual content, often borrowing from German Romantic views. H. J. Adler characterizes his father's faith thusly:

The contacts with other religions [such as Austria's dominant Catholicism] did not make my father a bad Jew; but it made him immune against narrowmindedness or bias from whatever quarter it was coming. Opposed to congregational worship he used to quote Jesus: whenever you want to pray, seclude yourself in your chamber. Convinced of the existence of a Supreme Being, he nevertheless had a profound understanding for ~~the feeling~~ need of the masses for something more elaborate than his simple creed.¹⁷ [...] Having married a Jewish girl from a with a very religious background was another reason for my father to keep in contact with Jewish life. He would never work on the Jewish High holydays or on a Saturday. The way he kept this days was holly untraditional, however. He would go on long hikes in the Vienna woods ~~or, on the H~~ on Saturdays or, during the High Holydays would stay home and read his favorite classics, mostly Schiller and Goethe. He did not see callers on those days or ~~wrote~~ even wrote any letters.¹⁸

Adler's regard for capital-n Nature as expression of the sublime was reinforced during multi-day hikes in the Austrian Alps, many of them meticulously planned in his notebooks. This reverence for Nature and for the German classics took the place of worship for many intellectuals of the time and was reinforced by books like Alexander von Humboldt's travel narratives or *Kosmos: Versuch einer physischen Weltbeschreibung* (Cosmos: an attempted physical description of the world) or, indeed, Ernst Haeckel's more popular-oriented expositions of natural history like his *Natürliche Schöpfungsgeschichte* (natural history of creation).¹⁹ Haeckel, especially, sprinkled his essays and books liberally with quotations by Goethe, whom he considered a crucial precursor to Darwin. In this naturalistic-spiritual mindset, which Adler shared, cultural products like *Faust*, scientific theories like evolution, the awe-inspiring scenery of Adler's favorite summer spot, Bad Gastein, and the comfort provided by a "glass of local wine in the courtyard of a simple country inn" mutually re-

¹⁷Adler, *op. cit.*, pp. 4–5.

¹⁸*Idem*, pp. 6–7.

¹⁹Humboldt's choice of the word "physical" implies his methodological-empirical naturalism, that is, willingness to forgo supernatural explanations for all observable features of the world; later in the nineteenth century, the word "natural" would take the place of "physical," as can be seen in Haeckel's title. According to the booklists of Adler's library at the University of Georgia (Hubert Joachim Adler and Anonymous, Two Summaries of Adler's Library), Adler, at the time of his death, owned one (or even two) copies of *Kosmos* but not this particular work by Haeckel.

inforced a religious sort of wonder disconnected from a specified organized faith.²⁰ On the basis of such a vague but comforting spirituality, applying scientific means of analysis to awe-inspiring products of culture became a mode of “worship” observed by many of Adler’s contemporaries. Certainly this mindset did not obstruct his acquaintance with science, and very likely it enabled Adler in his own research to cross the boundary between what C. P. Snow later called the “two cultures” of the sciences and the arts with ease.

2.4 EDITING THE *VIERTELJAHRSSCHRIFT*

Having just been appointed in Prague, Adler proceeded to collaborate with two of Germany’s most prominent musicologists, Philipp Spitta and Friedrich Chrysander, to create a journal for scholarly exchange on music. Previous musicological publications were less devoted to musicology as a (using the term critical for Adler) “scientific” enterprise. They were aiming for a mixture of historical research, music criticism, and speculative or psychological musical aesthetics.²¹ The *Vierteljahrsschrift* was an attempt to replace this pluralistic approach with a more integratedly scientific one. Chrysander had founded a *Jahrbuch für musikalische Wissenschaft* (Yearbook for Musical Science) in the early 1860s, but the project had fizzled after just two issues. The newly created journal, dubbed *Vierteljahrsschrift für Musikwissenschaft* (Music-Science Quarterly), first appeared in early 1885 and had a relatively longer run of approximately ten years.²² Adler was the driving force behind its foundation, as we

²⁰Indeed, Adler starts his autobiography with a short statement on “Meine Religion” and sets its scene after a hike with a panoramic view of the Danube, “bei einem Glase heimatlichen Weines in dem Hofe eines schlichten Landwirthshauses” (Adler, *Wollen und Wirken*, p. 1). In Vienna, the likely place of this contemplative moment might have been the Nußberg with the surrounding vintners’ villages of Grinzing, Heiligenstadt, and Nußdorf. / Adler’s statement on “my religion” has some titillating similarities to Haeckel’s statements in the essay excerpted by Adler; I discuss this nexus and its implications for dating Adler’s interest in evolution in the fourth chapter, section 4.2.2.2 on p. 136.

²¹I am thinking here of publications like the *Allgemeine Musikalische Zeitschrift*.

²²The difference of the two German titles is subtle but palpable: “musical science” is a subdivision of science, interested in things musical; *Musikwissenschaft* (music science) is a self-contained, defined scientific discipline. Science, as methodology, becomes adjectival to music, as subject matter of research; Adler promoted “scientific musicology.” Previously music had been adjectival to science, which in Chrysander’s case meant mostly acoustics and Helmholtz’s psychology; there knowledge about the world at large—science—had been pursued in one of its subordinate specialties, “musical science”. Chrysander’s musicology is thus (by name) optionally musical, Adler’s “scientific” by definition.

can see from Chrysander’s suggestion—discussed by Adler in a letter to Spitta—that Adler be the only “Herausgeber” (editor-in-chief) of the *Vierteljahrsschrift*.²³ Similarly in the last paragraph of another letter Spitta expresses “meinen Dank für Ihre Anstrengungen, das Unternehmen zu Stande zu bringen” (my gratitude for your efforts directed at bringing this enterprise to success).²⁴

Adler’s choice of editorial reviewers for the journal illustrates that his vision of “music science” did not shy away from the input of natural scientists. Among them are the psychologists Carl Stumpf and Wilhelm Wundt, the philosophers Ernst Mach and Alexius Meinong (both strongly associated with philosophy of science and the foundations of psychology), the physicist Max Planck (whose quantized explanation of thermal radiation initiated quantum theory), and the biologist William Thierry Preyer. Wundt, preeminent psychologist at the University of Leipzig, and Preyer, a colleague of Haeckel and professor at Jena, extricated themselves. Preyer at least kept the option of future collaboration open and suggested four other contacts more suited for Adler’s enterprise, among them Alexander J. Ellis, with whom Adler did indeed collaborate.²⁵ The *Vierteljahrsschrift* ended its run after about nine years, partly because of disagreements between the editors about its content, partly because Adler had started another big publication project (the *Denkmäler der Tonkunst in Österreich*) in the early 1890s, but it does leave us with a document of extraordinary importance for the field of musicology: Adler’s introduction to the journal’s first volume, the article “Umfang, Methode und Ziel der Musikwissenschaft.” Memorable because of the comprehensiveness with which it tries to define the scientific study of music and because it cast musicology’s method into a structured symmetrical picture, the article defined “music science” for the next half-century, at the least. Even now, more than a century after its publication, the article is used

²³Guido Adler, Letter to Philipp Spitta, Wien, 22 September 1884, p. 5: “Sie wissen, wie sehr ich mich dagegen gesträubt habe, allein als Herausgeber zu erscheinen, um mich nicht in den Vordergrund zu drängen” (you know how strongly I refused to appear being the only editor-in-chief such as not to push myself into the limelight). Adler seems not to have sent the letter (the last few pages contain many crossed-out sentences and revisions, and the letter does not end in the usual sign-off), perhaps because he was not really able to transcend at that moment the discrepancy between the respect and deference obviously due to senior figures like Spitta and Chrysander from a musicologist in his late 20s, and the equally obvious pride he must have taken in his conception both of the journal and of his definition for the field.

²⁴Philipp Spitta, Letter to Guido Adler, Berlin (?), 13 May 1885, p. 3.

²⁵Adler, *Wollen und Wirken*, p. 30 and the letters by Wundt (Wilhelm Wundt, Letter to Guido Adler, Leipzig, 20 April 1884), Preyer (William Thierry Preyer, Letter to Guido Adler, Wiesbaden, 21 April 1884), and Adler’s draft invitation to Ellis (Guido Adler, Letter Draft to Alexander J. Ellis, Wien, 13 June 1884).

to illustrate how early musicologists thought of their work, and even now its suggestions are fertile ground for methodological rumination. My dissertation revolves in large part around recovering the biological sources for Adler's view of musicology presented in this article.

The different pressures working on Adler's goal to establish a successful journal on scientific musicology are (to a degree) reflected in several snippets from letters surrounding the publication of the *Vierteljahrsschrift's* first few issues. In one letter, justifying the inclusion of many psychological minutiae in a review of Carl Stumpf's publications on music psychology, Alexius Meinong responds to (Stumpf's) suggestions to thin out the psychological sections of Meinong's review:

Aber die Zeitschrift will ja Wissenschaft bieten, nicht belletristische oder blosz popularisirende Zwecke verfolgen; und Musikwissenschaft ohne die nötige Psychologie, das geht eben nicht.²⁶

(But the journal intends to offer science, not pursue literary or merely popularizing ends; and music science without the necessary psychology, that is just not possible.)

The co-editor Phillip Spitta takes the necessarily more general view and ruminates on whether the editorial board of the *Vierteljahrsschrift* should not be amended with more scientists:

Dann müßte die Herausgeberschaft gebildet werden aus je einem Historiker, Philosophen u. Physiker, z. B. Chrysander, Stumpf, Oettingen (oder Preyer).²⁷

(Then the editorial council would have to be constituted by one historian, one philosopher, and one physicist each, for example, Chrysander, Stumpf, and Oettingen (or Preyer).)

Given that this letter dates from after the publication of the first issue, these types of discussions seem to have been ongoing among the three editors-in-chief Chrysander, Spitta, and Adler. What is interesting about Spitta's opinion here is his privileging of the physicists. If Chrysander is the historian and Carl Stumpf the philosopher (arguable, as Stumpf was educated in philosophy by Brentano before turning in a more psychological direction), then the physicist would be Oettingen, who published on acoustics and music psychology. These were subject areas comparable to Helmholtz's tone science (*Tonwissenschaft*), although Oettingen's more psychological outlook differs substantially from Helmholtz's which was more

²⁶Alexius Meinong, Letter to Guido Adler, Graz, 18 October 1884, p. 3.

²⁷Spitta, *Spitta to Adler, 13 May 1885*, p. 2.

acoustics-based. The less fitting name, Preyer, whom Spitta deigns to mention parenthetically, was of course a biologist with interests in developmental psychology and evolutionary embryology, employed at the Haeckelian fastness of Jena. From a strictly editorial point of view, Oettingen's expertise would have been better fit to the task of publishing musicological research. I wonder whether Preyer's name was added to this conversation on Adler's behalf. In any case, Preyer had earlier on excused himself and suggested other reviewers, so it seems unlikely that he would have taken on the more involving job of co-editor. With or without him, the *Vierteljahrsschrift* usually had solid contributions that fostered the fledgling field of music science, and its "publishing philosophy" was based on objectivity, high regard for music psychology, editorial independence, and scholarly self-sufficiency.

Several letters from Spitta to Adler in mid- to late 1884 give a better view of the worries and desires that both men had for the newly launched journal. Spitta has just read Adler's draft of the introductory article and responds cautiously. To him, it seems like Chrysander as the senior editor-in-chief should have formulated an introduction. Adler's sending him the draft of his methodological treatise seems to have taken the older musicologist a bit by surprise:

Die Gestalt des ersten Heftes hatte ich mir immer so vorgestellt, dass es durch ein kurzes, von uns dreien unterzeichnetes Vorwort eröffnet würde und dann mit Chrysanders Arbeit die Reihe der Abhandlungen u. s. w. beginne. Da jedoch nun Ihre Arbeit über die Ziele der Musikwissenschaft vorliegt, so würde es sich allerdings sonderbar ausnehmen, wenn diese an einer anderen als der ersten Stelle stände. [...] Der von Ihnen übersandte Entwurf war mehr noch eine geschäftliche Anzeige. Ich dünkte mir, dass unter Hinweis auf das, was die Jahrbücher u. zum Teil auch die Allgemeine mus. Zeitung unter Chrysanders Redaction erstrebt haben, der Zweck der Vierteljahrsschrift kurz angegeben [...] und der Leser auch darüber nicht im Zweifel gelassen würde. dass es sich in ihr nur um Wissenschaft handeln wird, dass sie also mit den landläufigen Musikzeitungen nichts gemeinsam haben will. Dann, glaube ich, ist es nicht nöthig vom Ausschluss der Parteilichkeit zu reden, denn dieses versteht sich bei der Wissenschaft von Selbst.²⁸

(I had always imagined the form of the first volume such that it would be introduced by a short preface, signed by the three of us, and would then start the series of papers with Chrysander's. But since your essay on the aims of music science is now at hand, it would seem strange if this piece were at any other position than the first one. [...] The draft you sent was still closer to a business advertisement. I thought to myself that, with an acknowledgment about what the *Jahrbücher* and in part also the *Allgemeine Musikalische Zeitung* under Chrysander's editorship had aimed for, the purpose of the Quarterly [could] be summarized and the reader not left in the dark that it [the *Vierteljahrsschrift*] only

²⁸Philipp Spitta, Letter to Guido Adler, Berlin (?), 25 October 1884, p. 3.

pertains to science; thus that it has nothing in common with the regular musical magazines. Then, I think that it will not be necessary to mention the exclusion of partisanship since this is self-evidently part of science.)

Since Adler seems to have already presented his version of musicology—even if in the style of an advertising abstract, as Spitta calls it—Spitta tells him to go ahead and revise his essay to what likely became “Umfang, Methode und Ziel der Musikwissenschaft.” Adler must have been intent on publishing this essay, and Spitta sufficiently convinced of Adler’s vision to encourage his revising it. His reactions are always laced with remarks that it ought to be Chrysander’s task to formulate such a prolegomenon. (Chrysander seems to have had no problems with either Adler publishing the introductory essay or with the contents of Adler’s work.) Nonetheless, Spitta also makes more substantial points about some of Adler’s thoughts in the draft introduction, for example in a letter sent a few days prior to the previously cited one:

In dem vorliegenden Entwurf stört es mich, dass Sie als Zweck der Vierteljahrsschrift neben der Förderung der Kunstwissenschaft auch die Förderung der Kunst bezeichnen. Ich meine, die Kunstwissenschaft wird niemals selbstständig werden, wenn sie sich stets der Kunst an die Fahne stellt und nicht den Muth findet, Selbstzweck sein zu wollen, wie alle anderen Wissenschaften, wie ich denn auch gestehe, dass es mir als Gelehrter völlig gleichgültig ist, ob der praktische Künstler aus meinen Arbeiten für sich Vortheil zieht oder nicht.²⁹
(In the present draft I am displeased that you put the support of art as purpose for the *Vierteljahrsschrift* next to the support of art science. I believe that art science will never become independent if it only hews closely to art and never masters the courage to work for its own sake, just as I admit, that as a scholar I am completely oblivious to whether a practical artist draws some advantages from my articles or not.)

As we can see, Spitta believes, even promotes, the self-sufficiency of science. Adler seems to have had different views and (from what one can judge in the last few pages of his article) his powerful appeal for interactions between scientists (of music) and musicians (including composers) could not be quelled.³⁰ Quite likely, this affinity to artists was induced by Adler’s training at the conservatory, while Spitta had come to musicology from a university degree in the less application-prone field of classical philology. Certainly Spitta’s criticism on this point would have forced Adler to make particularly sure that his scientific method was indeed able to operate, even when practically artistic (that is, compositional or performance) uses

²⁹Philipp Spitta, Letter to Guido Adler, Berlin (?), 21 October 1884, p. 5.

³⁰Adler, *Umfang, Methode und Ziel*, pp. 18–19.

for *Musikwissenschaft*'s scholarly findings were not immediately obvious.

Adler also seems to have stressed the independent judgment of the editorial council and expressed some desire for airing scientific debate or controversy in the journal, since Spitta continues:

Auch scheint es mir, dass in Ihrem Entwurf unsere Wissenschaftlichkeit und Objectivität etwas zu stark betheuert wird. Wer uns kennt, wird wissen was er zu erwarten hat, wer nicht, der mag uns kennen lernen. Was aber das Auskämpfen unterschiedlicher Meinungen betrifft, so denken Sie zu optimistisch über die meisten Gelehrten, wenn Sie glauben, es werde sich einer der Kämpfenden für besiegt erklären. Eine solche Erklärung und damit Endigung des Kampfes kann immer nur von der Leitung des Blattes ausgehen, u. es müsste in solchen Fällen jedesmal zuvor eine Einigung der drei Herausgeber herbeigeführt werden. Da dies sehr weitläufig wäre, würde es gut sein jede wissenschaftliche Polemik möglichst zu beschränken und jedenfalls nichts zu thun, was den Schein erweckt, als wüsche man dergleichen.³¹

(It also seems to me that your draft testifies to our scientific-ness and objectivity a mite too strongly. One [of the readers] who knows us, will know what to expect, one who does not, may get to know us. But as concerns the fighting out of different opinions, you are thinking too optimistically about most scholars if you believe that one of the combatants would concede defeat. Any such concession, and thus cessation of the controversy, can only be initiated by the leadership of the journal, and in each case one would have to produce an agreement between the three editors-in-chief. Since this [process] would become very involved, it would be good to limit all scientific polemics as much as possible and in any case do nothing to give the appearance that one desired this.)

Spitta's wise words—spoken no doubt from a position of editorial and scholarly experience—were well-addressed, as Adler and he would get into a controversy themselves over the admission of a paper to the *Vierteljahrsschrift*, and neither editor would easily back down from his position. But that conflict (sketched below) was about editorial standards. Here Adler seems to have intimated introducing controversial musicological topics into the journal. One wonders which controversies he might have been thinking about in the early 1880s. (And Haeckel's advocacy for evolution will give us one possible clue.) At any rate, objectivity seems to have been as close to Adler's heart as Spitta's, and he seems to have had the (somewhat naïve) view that once the evidence had been established, all scholars would agree on its interpretation. This view quite likely arose from his schooling in scientific thinking and the dispersal of empiricist philosophy through Ernst Mach, with whom Adler (we remember his son's recollections) enjoyed something of a patron-client relationship in getting his first

³¹Spitta, *Spitta to Adler, 21 October 1884*, pp. 5–6.

academic positions.

Spitta, at any rate, seems to have made his peace with his junior colleague's plans for the *Vierteljahrsschrift*; after the publication of the first issue, he replies:

Ihre Abhandlung im ersten Heft habe ich mit Interesse gelesen. Sie giebt ein vollständiges wohldurchdachtes Programm der von der Musikwissenschaft zu lösenden Aufgaben, und giebt ein Solches meines Wissens zum ersten Male. Vielleicht würde sie auf manchen noch eindringlicher wirken, wenn sie noch etwas gefälliger gegliedert wäre. Aber sie ist sehr gut geeignet, unseren Anspruch, dass die Musikwissenschaft eine selbstständige, den anderen ebenbürtige Wissenschaft ist, als begründet erscheinen zu lassen.³²

(I read your treatise in the first issue with great interest. It gives a complete, well-thought-through program for the tasks to be accomplished by music science, and it gives such [a program] to my knowledge for the first time. Perhaps [your treatise] would be more impressive to some if it were partitioned more pleasantly. But it is very useful for grounding our appeal that music science is an independent science on equal standing with the others.)

Spitta, as experienced musicologist, stressing the primacy of Adler's program (and not mentioning Chrysander again) shows us that Adler, in "Umfang, Methode und Ziel," had indeed accomplished something unusual, and—to Spitta's criteria at least—sufficiently scientific. Whatever misgivings Spitta may have had about the "Gliederung," which may refer as much to Adler's structuring of the essay as his structuring of musicology, Adler had met Spitta's general mark of a scientific methodology for music research.

2.5 EDITORIAL DISAGREEMENTS

Several exchanges between Adler and Spitta show that the co-editors did not always see eye to eye. Perhaps it is worthwhile to document one such disagreement between the established musicologist and the newcomer, particularly about what obtains as historiographically acceptable inference. In preparation for an issue of the 1887 *Vierteljahrsschrift*, Spitta seems to have supported an article by an author named Schöne about Carl Maria von Weber, which Adler vehemently criticized (if we can believe Spitta's letters, since Adler's part of the conversation is lost). Spitta writes to Adler, with a clearly reprimanding tone:

Überhaupt kann ich nicht umhin, Ihnen zu bemerken, dass dieses das letzte Mal ist, daß ich auf einen Brief von der Form Ihres vorliegenden reagiere. Ich werde ins Künftige jedes von

³²Philipp Spitta, Letter to Guido Adler, Berlin, 20 March 1885, p. 1.

Ihnen kommende Schreiben unbeantwortet lassen, in dem Sie sich nicht dazu bequemen, denjenigen Ton anzuschlagen, den ich von Ihnen verlangen kann.³³

(In general I cannot but mention to you that this will be the last time I react to a letter like your current one. In the future I will pass on answering any letter of yours in which you do not deign to use the proper tone that I can expect of you.)

Obviously, Adler seems to have overstepped the bounds of good collegial behavior. What could have been the reason for this spat between the two musicologists? Adler must have replied to Spitta, in a tone somewhat more conciliatory but in criticism of the Weber article no less sparing. Spitta replies, revealing some of the issues that seem to have ticked off Adler:

In Ihrem Briefe vom 18. Dezember halten Sie Ihr Urtheil über die Kritik Schönes der Sache nach aufrecht und schreiben, Sie könnten vollends keinen historisch begreifbaren Unterschied zwischen “voller Reife des Künstlers” und “vollendeter Festigung des künstlerischen Charakters” anerkennen. Ich muss Ihnen hierauf doch bemerken, dass Sie mir ein Wort imputieren, welches ich nicht geschrieben habe. Nicht um den “künstlerischen” Charakter handelt es sich auf S. 526, Zeile 30 ff., sondern um den moralischen.³⁴

(In your letter from 18 December you substantially maintain your judgment about Schöne’s critique and write that you could not accept any historically perceivable difference between ‘the artist’s complete maturity’ and ‘the artistic character’s completed maturation.’ In return I must mention that you introduce a word into my own ones that I did not write. It is not the ‘artistic’ character that is being discussed on p. 526, line 30 ff., but the moral [character].)

Spitta thus makes a clear difference between musical and biographical events in a composer’s (here Weber’s) life. A few lines later, he lists the chronology of moral, or biographical, data and artistic ones, and opines on the possibility of inferring historical continuity, and hence constructing a causal story, from these data types. Weber’s marriage to Caroline Brandt seems to have increased his social standing. Spitta sees the events thusly:

Um das Jahr 1814 mag man die vollendete Ausprägung seiner künstlerischen Individualität setzen, in das Jahr seiner Verheirathung (1817) die Vollendung seiner sittlichen Festigung, das Jahr 1821 mag man endlich mit Schönes gut gewähltem Ausdruck als das Jahr der vollen künstlerischen Weihe bezeichnen. Dergleichen Prozesse vollziehen sich allmählich und lassen sich daher eigentlich nicht fixieren. Will man es aber annähernd versuchen, dann geht es nur auf obige Weise, und ich wüsste nicht, wie und wo an dieser Ordnung irgend etwas zu ändern wäre.³⁵

(Round about 1814 one might posit the completed expression of his artistic individuality, in the year of his marriage (1817) the completion of his moral stabilization, finally 1821 one might describe—with Schöne’s well-chosen expression—as the year of complete artistic

³³Philipp Spitta, Letter to Guido Adler, Berlin, 04 December 1886, p. 2.

³⁴Philipp Spitta, Letter to Guido Adler, Berlin, 29 December 1886, p. 3.

³⁵*Idem.*

consecration. Such processes come to fruition gradually and are thus actually not fixable. But if one wished to try it approximately, then it would only be possible in the above manner, and I would not know how and where this order could in any way be changed.)

In Spitta's eyes, the events of Weber's biography and his development as an artist happen separately. Better put, the biographical and the musical can only be presented as discrete data points if they are separated from one another. In the historical presentation, Weber's life is analyzed (taken apart) and split into strands shaping his moral and his artistic selves. These selves experience different instances of completion ("Vollendung")—1814 for the artistic strand, 1817 for the biographical-moral one—and the artistic self is allowed to go a step further, into the metaphysical realm of "Weihe" which may be translated as "sanctification." Also, Spitta suggests by his word choice that the two processes are telic, that is, completion-oriented. In contrast, Adler—his slip criticized by Spitta in the previous quotation, replacing "moral" with "artistic," gives us a clue—must think of Weber's life and music as principally one and the same "artistic" process. To Adler, an article on Weber would likely always be an article on an artistic subject matter, and biographical events like the marriage not principally different from attaining some level of artistic ability. Artistic development and biography would not happen next to one another but ought to be combined.³⁶

The difference of opinion between the two "music scientists" shapes what types of content they deem acceptable in a scientific publication, like an article for the young *Vierteljahrschrift*. For Spitta, the publication of new biographical information only (here letters) is scientifically worthy and satisfying, as long as the publication proceeds with due care. He makes the point to Adler:

Über den Inhalt und die Form der Briefe, den aus ihnen hervorleuchtenden Charakter der Autoren, über ihre wissenschaftliche Verwendung u. die bei der Herausgabe angewendete philologische Technik—über alles das wird eingehend und mit vollkommener Sachkunde gesprochen.³⁷

(About the content and form of the letters, about their expression of the authors' character, about their [the letters'] scientific treatment and the philological technique employed for their edition—about all these matters [the article] speaks at length and with complete authority.)

³⁶Obviously, missing Adler's side of the argument, my comments here are speculative.

³⁷Spitta, *Spitta to Adler, 29 Dec 1886*, p. 4.

The new information adds to the “life”-part of the very common nineteenth-century scholarly genre of the “life-and-works” biography. However, from the point of view of someone—like Adler—interested in the history of music, rather than the history of composers, this would be a dissatisfying publication in a “music science” journal unless it put the biographical data presented into explicit relationships with musical data gathered by analysis. Schöne’s article, while dealing with and documenting an artistic process, left out the art, equally part of Weber’s life, except for vague assertions about artistic “Vollendung.” That Adler was indeed dissatisfied with Schöne’s work Spitta mentions outright:

Wo steckt denn nur das, was Sie veranlasst von dieser Arbeit als einer völlig unzulänglichen Leistung zu sprechen?³⁸

(Where is that [thing] which makes you talk of this paper as a completely unsatisfactory effort?)

It seems that Adler was less worried about something wrong present in the paper and more worried about the absence of music-scientific inferences, connections of the accumulated auxiliary information about Weber’s life to his music. (True to this way of reading Adler’s harsh words is his placement of musical biography among the auxiliary sciences—the *Hilfswissenschaften*—of historical musicology in his 1885 schema.) Therefore Spitta’s assurances about the author’s qualities as a scholar and the article’s careful philological arguments do not quite hit the mark of musicology as envisioned by Adler. To pass his scrutinizing gaze, Schöne should have *connected* life and work, biographical and musical data, not simply presented his data in an empirically correct fashion. It seems that, to Adler, plain objectivity about data was not quite enough to rise to the task of *Musikwissenschaft*.

Whatever the eventual editorial compromise (Schöne’s article was published), Spitta’s reprimand cited at the beginning was not out of bounds. Adler was a quite combative musicologist, as another letter to Spitta, written early in 1886, shows. We should remember that this was written by a barely thirty-year-old junior editor, and addressed to a well-established and well-regarded musicologist almost fifteen years his senior:

Es nimmt mich Wunder, dass Sie mit einer—nennen wir es—noblesse über alle in m. Re-script zurückgeschleuderten Vorwürfe u. Anklagen (v. Ihrer Seite) hinwegschleichen. Ich werde die Sache nicht beruhen lassen u. eventuell Sie zu einer Zusammenkunft bei H. Dr.

³⁸*Idem*, p. 3.

Chrys. einladen, damit Ihr Vorgehen von Angesicht zu Angesicht besprochen werde. Sie kennen mich wohl schlecht, wenn Sie wahnen, ich liesse einen mir angethanen Spott so ohneweiters [*sic*] auf mir sitzen. Ich verlange Beweisfuhrung Ihrer Verleumdungen, oder Zurucknahme derselben. Mein Gewissen sagt mir, wie die Sache einzig ausfallen kann.³⁹

(It astonishes me that you pussyfoot with such—let us call it—haughtiness around all the concerns and accusations (on your part) hurled back again in m[y] answer. I will not let this matter rest and possibly I will invite you to a meeting at Mr. Dr. Chrys[ander’s], such that your actions can be talked about face to face. You do not know the first thing about me if you think that I would let stand just like that any derision inflicted on me. I require evidence for your slanders, or your taking them back. My conscience tells me the sole [possible] outcome of this affair.)

Adler was not pleased with Spitta and not reluctant to express it openly. It is not entirely clear what prompted this eruption, perhaps disagreement about the publications in the 1886 volume of the journal, where Adler intended to present another one of his polyphony articles⁴⁰ to boost his publication record. Perhaps the letter was not even sent to Spitta. This would certainly have been wise, and resolves the question of why it still remains among Adler’s belongings, when most of his other letters to his co-editors are no longer among Adler’s papers. In any case, Adler’s temper is as evident here as his willingness to meet his opponent on neutral ground and let the evidence speak (for him, as he confidently assumes). Adler is passionate about his subject and quite willing to stand by his opinions, but not devoid of reason. This pugnacious character equipped him well to serve in the fraught situation of German-Czech-divided Prague and the difficult environment of Viennese academic politics. It also allowed him to follow through on the academic and scholarly goals he had set for himself, which were ambitious and which someone with less stubbornness might have abandoned for fear of alienating his colleagues. This latter is a fear that Adler obviously did not know.

³⁹Guido Adler, Letter to Philipp Spitta, Prag, 20 January 1886, p. 1.

⁴⁰Guido Adler, “Die Wiederholung und Nachahmung in der Mehrstimmigkeit,” *Vierteljahrsschrift fur Musikwissenschaft* 2/3 (1886): 2–78.

2.6 RISING REPUTATION AND LIFE IN VIENNA

After this peek into the inner workings of editing the *Vierteljahrsschrift* and the passions it aroused, let us return to the chronicle of Adler's life: Adler's methodical interests, his publications of the late 1880s (including a historical evaluation of an early Beethoven score⁴¹) and his organization of the musical component of the Viennese Theater and Music Exhibition of 1892 were sufficient to secure him the elevation to full (or "ordinary") professorship at Prague in 1893, thus making him eligible for the call to Vienna. As we have seen, his abilities and connections won over the political aspects and he replaced Hanslick in 1898, now as musicologist. Adler established himself in Vienna as befitted a member of the upper-middle class, occupying a sizeable house in one of Vienna's more fashionable quarters⁴² about halfway along the tramline between the university buildings at the Ringstraße and the vineyards of Grinzing.

At the university he procured funding for an *Institut für Musikwissenschaft* (institute of musicology), educating and advising many students, including several women (which was still a bit unusual in the first decade of the twentieth century). His work as chief editor of the *Denkmäler der Tonkunst Österreichs*, starting in 1893 with the backing of Brahms (among others), continued unabated, not even interrupted by the economic slump after the First World War. Adler's acquaintance with T. G. Masaryk, now president of the newly formed country of Czechoslovakia, helped secure high-quality paper for the *Denkmäler* from Czech mills. During his time as full professor, Adler also organized two large conferences, one at the centenary of Haydn's death in 1907, the other at that of Beethoven's in 1927. Both conferences brought the international musicological community together, a function that was to be sustained through the foundation first of the *Internationale Musikgesellschaft* (international music society), then—after the war—of the (extant) International Musicological Society. Adler was central to both endeavors, becoming honorary president of the latter society at its founding. Also during the 1910s and 20s, Adler proceeded to publish his widely

⁴¹Guido Adler, "Ein Satz eines unbekanntes Klavierkonzertes von Beethoven," *Vierteljahrsschrift für Musikwissenschaft* 4/4 (1888).

⁴²The nineteenth city district, Döbling, home to artists and academics who had "made it," like painter Gustav Klimt.

read treatises on style,⁴³ on musicological methodology,⁴⁴ and on periodized music history (in the *Handbuch*⁴⁵). By the time of his retirement from his university positions in 1927 (though not from the *Denkmäler*) Adler was one of the most influential and highly regarded musicologists in German-speaking Europe. A few of his shorter articles from that time had been translated into English (by Carl Engel, W. Oliver Strunk, and others) and published in the *Musical Quarterly*. Thus his fame spread in English-speaking countries as well, a fact aided by the dispersal of some of his Austrian students after the firm establishment in Vienna of a “German-national,” borderline fascist government and the subsequent annexation of the country by Germany in spring 1938.

2.7 ADLER’S MATURE METHODOLOGY

Now is as good a juncture as any to get a first grip on Adler’s methodology as it was transmitted to the broader musicological public. Thus I quote and dissect a consecutive passage from Adler’s *Methode der Musikgeschichte*, despite its late publication date of 1919. Then I characterize Adler’s methodology in such a way as to make a mapping of musicological methodology in general onto his own methods, of his later onto his earlier methodology, and of the earlier methodology onto evolutionary theory a bit easier for me.⁴⁶ Of course, all these mappings deserve critical scrutiny as to their validity and success.

The *Methode* is relevant and useful as a source here, because it was the main means of disseminating Adler’s theories in the 1920s and 30s, and hence an important fulcrum around which other musicologists’ opinions on Adler revolved. (“Umfang, Methode und Ziel” had

⁴³Guido Adler, *Der Stil in der Musik* (Leipzig: Breitkopf & Härtel, 1911).

⁴⁴Guido Adler, *Methode der Musikgeschichte* (Leipzig: Breitkopf & Härtel, 1919).

⁴⁵Guido Adler, *Handbuch der Musikgeschichte* (Frankfurt am Main: Frankfurter Verlagsanstalt, 1924).

⁴⁶My distinction between method and methodology is not consistently used but usually I consider method a subject-specific research approach and methodology either a combination of these or (and) the “meta-methodical,” that is, philosophical claims and arguments used to justify applying a particular method. Within musicology as a field, Adler’s methodology may be thought of as a method, next to others’ that were developed earlier (such as “life-and-works”) or later (such as “new criticism”) or for a different set of musics, and that are still applied in research on music today. In the more limited environs of historical musicology, Adler’s method probably deserves to be considered a methodology, given its comprehensiveness and coherence.

by then receded into publication history only to be revived in English-language literature by Mugglestone’s translation.) To assuage fears that Adler turned towards a new and distinct method here, different from the evolutionary one that I diagnose mainly in the 1885 article, let me assure the reader that at least a terminological continuity between 1885 and 1919 exists. (Suggestive evidence supporting this claim appears in the second section of the next chapter, where I clarify the roots of and response to Adler’s style concept.) That Adler did not disown his early work is clear from his starting the *Methode*’s first larger section, “Stoff und Aufgabe der Musikgeschichte,” with a condensed version from the schema in “Umfang, Methode und Ziel.”⁴⁷ Both reasons—Adler’s quotation of the schema and the *Methode*’s importance for musicology’s reception of Adler’s ideas—suggest that it makes sense to use the later work for the very general characterization I attempt here.

Adler refers only to *Musikgeschichte* (music history) in this bit, having abandoned the universalist intentions inherent in the term *Musikwissenschaft*, but from his arguments it is clear that he does not see this as a limitation of scope. The historical way of doing musicology is simply one of the two major ones, and even within this historical way there are variant approaches (he calls them “historical” and “essential” at the end of the whole excerpt) that allow a mapping of his distinction here onto the division he instituted in “Umfang, Methode und Ziel”:

Zusammenfassend sei hervorgehoben, daß die Aufgabe der Musikgeschichte nicht die Erkundung des Kunstschönen in der Tonkunst, sondern die Erkenntnis des Entwicklungsganges der Musik in Werken und Schaffenden ist.⁴⁸

(In summary one ought to stress that the task of music historiography lies not in exploring the Beautiful in art but in discovering the development process of music in works and creators.)

Adler’s turning away from the musically beautiful (“Kunstschönen”) may come as surprising from someone whose habilitation advisor had been Eduard Hanslick, the later-nineteenth-century Viennese champion of formal aesthetics.⁴⁹ But Adler is not an aestheticist of any stripe; his basic musicological allegiance is to empiricism, to looking at hard evidence, at “works and creators” (the latter term, in German, does not imply composers only but any-

⁴⁷Adler, *Methode der Musikgeschichte*, p. 7.

⁴⁸*Idem*, p. 13.

⁴⁹Elaborated on in his Eduard Hanslick, *Vom Musikalisch-Schönen: Ein Beitrag zur Revision der Ästhetik der Tonkunst* (Leipzig: Rudolph Weigel, 1854).

body involved in making music). The aim of this observation process is something quite a bit more controversial, the discovery of the “Entwicklungsgang” (development process) of music. This vocable is central to Adler’s conception of what musicology is supposed to do, and it is borrowed straight from evolutionary theory.⁵⁰ While the *Entwicklungsgang* is a decidedly historical process, as the next section of the quotation shows, calling it by that name raises certain expectations in the reader about what a musicological research project will find.

Sie [music history] hat, vom Einzelwerke ausgehend, die Zusammenhänge klarzulegen, die dieses nach rück- und vorwärts verbindet, die es als Produkt seiner Zeit, des Entstehungsortes, des bestimmten Autors, der zugehörigen Schule bestimmen lassen. Sie hat die Einflüsse, die sich von innen und außen geltend machen, aufzuweisen, sie hat die Eigenart jedes Kunstwerkes zu bestimmen. Erst im Zusammenhange läßt sich ein Musikwerk kunsthistorisch erkennen und erfassen.⁵¹

(Starting from the single work, [music history] should clarify the connections which relate it [the work] backward and forward, which enable us to classify it as a product of its time, of its place of origin, of the particular author, of the related school. [Music history] should show the influences impinging from the inside and the outside, it has to classify the uniqueness of each artwork. Only through its connectivity can we recognize and take stock of a musical work in an art-historical manner.)

Adler stresses the singularity of musical works as pieces of evidence (“Einzelwerke”) but this does not preclude the pieces’ suspension in a “Zusammenhang,” another central term for Adler, that sometimes simply means “relation” or “connection” but sometimes features as a kind of causative principle that sustains musicological arguments. “[R]ück- und vorwärts” (fore- and backward) refers to temporal processes, of course, but Adler allows for bi-directional “influences” beyond plain historical inferences, influences like composer A studying at time t with composer B and thus A’s works from then on exhibiting the features of B’s works. If music historiography were as easy (and as dull) as that, then the article by Schöne that Spitta and Adler sparred over might have found easier acceptance by the standards of our hero.

Another reason why Adler does not automatically trust the records left by artists and interpreted in excruciating detail in the favorite genre of nineteenth-century musicology, the

⁵⁰If it were not for complicated etymological reasons that are dissected in the next chapter, *Entwicklungsgang* could be translated into English as “evolution.” In many nineteenth-century contexts, this was indeed the fitting translation.

⁵¹Adler, *Methode der Musikgeschichte*, p. 13.

“life-and-works” (*Leben und Werk*) approach, is the limited perceptivity of artists respective to their historical relevance:

Dabei geht der Forscher über das dem Künstler selbst Bewußte hinaus und deckt Dinge auf, die dem Künstler gar nicht zum Bewußtsein kamen, denn der “Zeitgeist” (nach Hegels Bezeichnung) wirkt am Webstuhl der Geschichte, am Fortgang der Ereignisse, beeinflusst die Entstehung der Tatsachen und bringt auch den einzelnen, auch den Größten, auch das Genie in seine Hörigkeit. Kein Künstler, kein Kunstwerk steht außerhalb des organischen Entwicklungsganges. Auch die extremsten Experimente müssen sich ihm einordnen.⁵²

([Through this activity] the researcher transcends what the artist is conscious of and discovers things that did not occur to the artist because the “spirit of times” (following Hegels term) weaves on the frame of history, on the progress of events, influences the becoming of facts, and subdues into dependency even the singular, the greatest, the genius. No artist and no artwork is outside this organic development process. Even the most extreme experiments must find their rightful place in it.)

Adler’s reference to Hegel is noted, and his rhetoric here does owe a little to the Jena philosopher’s reception history. Yet again it is not history, or musical education, or influence, that encompasses all of music, but that strange beast “Entwicklungsgang,” now characterized as “organic.” This is not an aesthetically defined mainstream of good or beautiful music that lets many or most pieces drop by the wayside. “No artist, no artwork,” not even the “most extreme experiments” are outside it. Of course, the “müssen sich ihm einordnen” ([they] have to fall in order with it) has a faintly dictatorial whiff about it, but it remains more a challenge to the musicologist: one may not rest in one’s assessment of a music-historical question until all music of the chosen type can be conceived as the result of the same process, the same “Entwicklungsgang.” Read this way, and connected to his call for empiricism, Adler is challenging his colleagues to analyze the features of music and to devise ways to explain these features as products of history even if the practitioners of music—composers and musicians—show themselves unaware of these historical connections. Lastly, Adler offers a classification for these connections:

Die Zusammenhänge können sowohl zeitlich, chronologisch, wie rein essentiell, über der Zeiten Lauf bestehend, betrachtet werden. Das erstere ist das für die Musikgeschichte Bestimmende, Ausschlaggebende.⁵³

(The connections may be regarded both temporally, that is, chronologically, and purely essentially, as existing outside the passing of time. The former determines [and] directs music historiography.)

⁵² *Idem*, pp. 13–14.

⁵³ *Idem*, p. 14.

It is a bit difficult, at this stage, to interpret Adler’s differentiation here, although the “chronological” and the “essential” types of connections are the subject matters of historical and systematic musicology as he defined them in his 1885 article. The absolute distinction, too, bears in itself the possible dismantling of Adler’s evolutionary methodology, simply because a proper evolutionary assessment of any historical change process could not consider this process either purely historical or “purely essential.” But Adler’s basic statement, that the “connections” inherent and informing the “Entwicklungsgang” have a dual nature, rings through true and clear.

Let me now (as promised) define three features of Adler’s methodology that capture the essence of his methodical innovation, and that connect his early and late thinking, as well as that of musicologists emulating Adler—what one might call “Adlerian musicology.” My reduction does no justice to the whole of Adler’s methodology but it is a convenient heuristic tool to explain this methodology’s debt to evolutionary theory and thus allow us a historical explanation of his debts to it. The three features are:

- first, robust *empiricism* extended onto all evidential domains of musicology, thus allowing the introduction of musical evidence (filtered by music analysis) into any music-historical argument;
- second, a stress on *connectivity* (“Zusammenhang”) both among and between musical and non-musical elements of historical processes; and
- third, a *foundational distinction between forms and processes*, whose mutual dependence allows knowledge about either to be gained from evidence about the other. The consequence of this last feature in the framework of the first two is Adler’s methodologically *practical distinction between historical* arguments—which often hypothesize cause-effect relations—on the one hand, *and systematic* (analytical) descriptions of musical pieces and their cultural situations on the other.

Since all three features were separately introduced into musicology before Adler, and formed parts of various movements within nineteenth-century music research, it is important to realize that only their combination makes Adler’s evolutionary musicology what it is, and that only evolutionary theory—and specifically that of the Darwinian kind—allowed for this

combination of the three features without contorting them or violating scientific principles.

The more precise explication of this methodological scaffolding, particularly its differences from mid-nineteenth-century means of musicological narration, requires more space and would be out of place here. But since we are currently still moored in the stream of Adler's biographical narrative, his personal evaluation of other, earlier musicologists and their methods offer tantalizing clues to the methodological targets Adler had set himself or had thought he hit.

2.8 LOOKING INTO THE REAR-VIEW MIRROR: ADLER'S SELF-ASSESSMENT REFLECTED ON A. W. AMBROS

Born about forty years before Adler, August Wilhelm Ambros belonged to the generation of music researchers (like Adler's mentor Hanslick) that had just broached the gates of the academy but had not yet succeeded in making music research a methodologically stable enterprise within it. Adler's review of Ambros's achievements, written near the end of his own active musicological career, offers us his opinions on the earlier musicological era's shortcomings *vis-à-vis* his own perceived successes. Thus we can characterize what Adler viewed as critically missing in earlier music research, and surmise what he considered as successfully supplied by his own *Musikwissenschaft*, starting with the 1885 article in the *Vierteljahrschrift* and the founding of the *Denkmäler der Tonkunst Österreichs* in the mid-1890s. This closer characterization will help us cut through the thickets of Adler-evaluations that have sprung up around his work since his death, evaluations which judge him by standards closer to our own than to his. Adler looking at Ambros affords us a look at Adler's aspirations expressed by himself.

After an initial discussion of Ambros's life and activities, Adler offers a revealing remark on Ambros's ideology: his evaluation of musical pieces "from the point of view of eternity" ("Ewigkeitsstandpunkte") Adler deems questionable, even "dangerous."⁵⁴ Cutting to the

⁵⁴Guido Adler, "August Wilhelm Ambros, geb. 17. November 1816, gest. 28. Juni 1876," in *Österreichische Biographie* (1926), p. 36.

chase, Adler criticizes Ambros's view of history and the resulting hindrances to musicological practice:

Wissenschaftlich orientiert verliert sich Ambros vielfach in Details, hauptsächlich weil seine Problemstellungen unklar sind. Der Grundirrtum liegt darin, da nach seiner Ansicht die Tonkunst "fertige Stimmungen" [reference omitted] bringe, während ihr Wesen in Wirklichkeit im Werden und Wachsen, in Steigen und Senken, in unendlichen Strebungen des menschlichen Charakters, seines seelischen, geistigen Ringens besteht.⁵⁵

([Although] scientifically oriented Ambros often loses himself in details, mostly because his set-up of problems is imprecise. The major error is, that—by his opinion—music created "readymade moods," while its essence [actually] consists of becoming and growing, of rising and sinking, of the human character's infinite striving, its spiritual, intellectual struggle.)

According to Adler, musical pieces do not present "readymade moods," presumably eternally valid—hence his displeasure with the "Ewigkeitsstandpunkte" mentioned earlier—but are part and parcel of a continuous process of change mediated by human nature. This process is presumably the *Entwicklungsgang* of Adler's *Methode*.

How to assess this process as a researcher and gain insight into its workings and products? Adler's strongly critical reference to Ambros's "readymade moods" could convince us that the latter is an ally of the easy association between music and emotion, but in fact Adler places Ambros "auf der mittleren Linie zwischen Formal- und Ausdrucksästhetik" (on the middle line dividing formal and expression aesthetics), that is, between the positions of Hanslick and Friedrich von Hausegger, respectively. The two positions dominated the evaluation of music as an instantiation of beauty. Hanslick had reacted against easy one-to-one correspondences between melodic phrases and emotions, suggesting that those who sought the causes for impressions of musical beauty ought to consider music's forms and their actualization in each composition, rather than what he considered more or less arbitrary associations. Hausegger, who had published in the 1880s, returned to the model of expression aesthetics, but enriched it with recent conceptual advances in philosophy, mainly due to Franz Brentano. Essentially, Hausegger allowed for distinct emotional responses to be attached to melodic turns *and* to the formal processes Hanslick had focused on.

Ambros, writing in the 1860s and 70s, had to contend with Hanslickian aesthetics, and Adler suggests that Ambros and Hanslick agree on viewing musical form as something "be-

⁵⁵ *Idem.*

seelt” (animate, spiritual) but he chides Ambros on his insufficient regard for formal analysis:

Ambros unterschätzt im Widerspruch mit seinen obigen Aufstellungen den Wert und die Bedeutung der Formalanalyse als Grund- und Ausgangspunkt jeder wissenschaftlichen Behandlung der Tonkunst und ihrer Entwicklung, wie ich sie 60 Jahre später als Fundament der stilkritischen Methode hingestellt habe.⁵⁶

(Contradicting his above propositions, Ambros underestimates the value and importance of formal analysis as the basic and initial point of any scientific treatment of music and its development/evolution, as I, sixty years later, was to posit it as foundation of the style-critical methodology.)

According to Adler, then, Ambros underestimated the powers of formal analysis, especially when conducted within a scientific frame. We must remind ourselves that Adler here speaks from the position of authority, as already venerated founder of one of musicology’s most important schools: his style-critical method is of course that presented in *Der Stil* and *Methode*. The formal analysis he promotes in these books, and some of his earlier papers, is not elaborate when compared to other formal analytic methods developed in the early twentieth century, such as Schenker’s or Reti’s nearly contemporary methods: Adler simply divides the musical piece into sections, relates these to one another—by shared thematic material, for example—and observes how these relations vary for any formal model and across historical time.⁵⁷ As he says, Adler considers formal analysis the basis and beginning of a scientific assessment of music. Knowledge about music and musical process is essential to the practice of musical science. However, it constitutes musicology’s end as little as the bare-faced listing of biographical data on a composer’s life would.

What is the point of doing musicological research? Adler shies away from suggesting that an answer for an ultimate final cause, or purpose, of music-historical happenstances can ever be found. Where Ambros seeks to determine the reasons for the Renaissance injunction against parallel fifths (“Quintverbot”), Adler comments that “[d]as Warum’ ist ebenso unerforschlich wie bei den Naturgesetzen (der Physiologe Du Boys-Reymond hat diese These für letztere aufgestellt)”⁵⁸ (“the Why” is equally as unresearchable as for the natural laws, the physiologist Du Boys-Reymond having suggested this hypothesis for the

⁵⁶*Idem.*

⁵⁷Witness Adler’s analysis (in Adler, *Wiederholung und Nachahmung*, p. 31) of a discantus “auf dem Secirtische der Musikwissenschaft” (on the sectioning table of music science).

⁵⁸Adler, *August Wilhelm Ambros*, p. 39.

latter ones). In the realm of natural science, questions of “why” for ultimate purpose have been replaced with a why for proximate reason, or mechanism, in effect replacing the “why” by a “how.” Presumably the historian may still research this “how,” the ways in which the laws of music postulated by Adler in “Umfang, Methode und Ziel,” universals qualified by being “unique to each branch of music,”⁵⁹ impact historical happenstances.

Adler explains Ambros’s disregard for organum with his lack of comparative musicology and indicts this lack in the shortcomings of Ambros’s explanations for polyphony:

Diese Stellungnahme Ambros’ ist in seiner Zeit, da die vergleichende Musikwissenschaft mit ihren Detailuntersuchungen über musikalische Völkersitten und Volksgebräuche noch nicht entfaltet war, immerhin begreiflich. So blieb Ambros die ganze Entwicklung der Mehrstimmigkeit bis zum 14. Jahrhundert mehr oder weniger ein Buch mit sieben Siegeln.⁶⁰ (This Ambros’s position is at least understandable in his time, when comparative musicology with its detailed examinations of musical ethnic customs and ethnic practices had not been developed. Thus, the whole evolution of polyphony up to the fourteenth century remained (to Ambros) more or less a closed book.)

This shows the high importance that Adler ascribes to comparative studies, a point driven home in his statement that, in Ambros’s descriptions of musical styles,

fehlen die Prinzipien der einheitlichen Behandlung und der organischen Ausgestaltung des Gesamtstoffes und der streng wissenschaftlichen Erfassung der spezifischen Stilqualitäten und ihrer Unterschiede;⁶¹
(the principles of [1.] unified treatment and organic shaping of the whole subject matter and [2.] the strictly scientific collection of the specific qualities of styles and their differences are missing)

To define specific qualities or characteristics of styles, these styles need to be put in relief against other styles of course, and the only scientific way to do this is their organized comparison, piece by piece and style by style.

While comparisons within music, between musical works from different traditions and of different types, are missing from Ambros’s accounts, Adler commends his interdisciplinary comparisons, specifically those to his other research interest, architecture:

Eines der Hauptverdienste Ambros’ war der Anschluß an jene, die die Kunst als Teil der Gesamtkultur auffassen, begreifen und erklären wollten. Ambros wollte und konnte es, soweit es damals möglich war, denn alle Forschung beruht auf Relativität.⁶²

⁵⁹As he puts in in the schema from Adler, *Umfang, Methode und Ziel*.

⁶⁰Adler, *August Wilhelm Ambros*, p. 39.

⁶¹*Idem*, p. 42.

⁶²*Idem*, p. 41.

(One of Ambros's main achievements was the joining with those who wanted to perceive, understand, and explain art as a part of culture as a whole. Ambros desired and did this as much as was possible then, since all research relies on relativity.)

Adler speaks of Ambros's "analogies" and qualifies that he supports such comparisons as long as both are of the same period. On the other hand, Adler is uncomfortable with Ambros's lacking interest in music theory and his inability to connect musical practice to the pronouncements of theoretical treatises.⁶³

The above summary shows Adler's opinions about what the *data* of musicology are—musical information, primarily—and that the musicological method relies crucially on the careful, organized *comparison* of music, viewed within its proper cultural and (more importantly) musical context. To some degree, Ambros's musicology exhibits all these features. Alas, connections—"Zusammenhänge"—that form such a crucial part in Adler's own rhetoric in the *Methode* and elsewhere, seem to get short shrift by Ambros. Is Adler just being coy, or is Ambros missing crucial components of the musicological toolbox? According to Adler, Ambros lacked the necessary amount of evidence to make establishing such connections a general procedure. Such a connectivity among artworks can only be established once sufficient evidence has been collated. Adler delivers this criticism with a plug for his own lifelong edition project, the *Denkmäler der Tonkunst in Österreich*, a decisive step in the enfranchisement of musicology:

Erst in den "Denkmälern" schaffen wir es als Ergänzung zu den Gesamtausgaben der Heroen herbei (damals war mit Bach und Händel begonnen) und lernen, wie abhängig der Größte von seinen Vordermännern ist und wie mancherlei er seinen Geleitmännern zu danken hat.⁶⁴ (Only in the *Denkmäler* we add it [a global view of music] to the collected editions of the heroes (at that time [in the 1890s] these had started with Bach and Händel) and learn, how dependent the greatest one is on his predecessors and how he owes quite a bit to his contemporaries.)

This resonates with Adler's challenge from the *Methode* to look at music as a process of changing qualities—expressed in different composers and their works to different degrees—rather than consider them monolithic, culturally and compositionally independent geniuses.

⁶³*Idem*, p. 40: "doch konnte und mochte er nicht das Verhältnis von Theorie und Praxis in seinen Einzelercheinungen erfassen" (yet he could not and would not perceive the relationship between theory and practice in its separate occurrences).

⁶⁴Adler, *August Wilhelm Ambros*, p. 42.

The charge of the musicologist is to make the dependencies clear, to draw the connections between works of art, as well as between these and their environment, and Ambros lacked both sufficient data and the proper method to achieve this goal. Thus his histories are disconnected, mixed up, and often only right by chance, not by scientific exactness:

Ambros hat nicht hohläugig ästhetisiert wie so mancher andere seiner Zeitgenossen und Nachfolger, und erstaunlich ist, wie er trotz des methodischen Mangels in der Behandlung der Niederländer und der A-Cappella-Musik des 16. Jahrhunderts oft intuitiv, gleichsam improvisatorisch das Richtige getroffen hat. Aber auch da schiebt er unvermittelt Schulen unter-, über-, nebeneinander, [...]. Die rühmenswerte, hohe humanistische Bildung und Edelhaltung kann nicht Ersatz bieten für Untermischung unzusammenhängender Stilgruppen, Überspringen von Zeit- und Fehlen der Verbindungsglieder.⁶⁵

(Ambros did not empty-headedly aestheticize like several others of his contemporaries and successors, and it is surprising, how—often intuitively, almost improvisatory—he hit on the correct [interpretation] despite the methodical dearth in his treatment of the Netherlands musicians and sixteenth-century a-cappella music. But there, too, he places schools below, above, or next to each other without [argumentative] mediation [...]. The praiseworthy, elevated humanistic education and honorable comportment cannot substitute for the mixing of unconnected style groups, the skipping of temporal [sections] and missing of connective sections.)

How are we to summarize Adlers verdict on Ambros and his musicology? Good intention and intuition, but no overarching and reliable method. The results are spotty histories that do not necessarily render historical events wrongly—in the sense of being factually incorrect—but that neglect the manifold dependencies and influences—“Zusammenhänge”—which create the lawful connections between all branches of music. As a methodical to address these problems, Adler suggests comparative studies (which imply a systematization of the accumulated evidence).

2.9 ADLER IN THE SCOPE OF OTHER MUSICOLOGISTS IN HIS LIFETIME

Adler was not a lonely musicologist, and his ideas found both admirers and emulators. One example for the scholarly as well as practical impact of Adler’s thinking (though not his evolutionary ideas *per se*) emerges in correspondence with Albert Schweitzer. Schweitzer

⁶⁵*Idem*, pp. 42–43.

approaches Adler over the latter's first book-length publication, a compilation of essays on Wagner:

Ihr Aufsatz über Wagner gehört zum Wahrsten, was ich je in musikalischer Aesthetik gelesen habe, und ich habe gefunden, dass wir so viele gemeinsame Gedanken und Anschauungen haben, [...] also wäre ich sehr glücklich einen Dank abzutragen indem ich Ihnen meinen Bach—in der die Wagnersche Frage viel berührt wird—zukommen lasse.⁶⁶
(Your essay about Wagner ranks among the truest I have yet read in musical aesthetics, and I have found that we share so many thoughts and perspectives, [...] thus I would be glad to balance my gratitude by sending you my [book on] Bach, which treats the Wagnerian question a lot.)

What may have initially been a sly attempt on Schweitzer's side to introduce his work to Adler seems to have turned into more intensive scholarly contact. In 1909, Schweitzer and Adler collaborated on the "Internationales Regulativ für Orgelbau" (international guideline on organ building), a comprehensive set of instructions for the construction of modern organs capable of playing historical pieces in a sensitive way. This "Regulativ" seems to have been quite successful, at least with organists and organ builders in Schweitzer's circle. In 1913 he reports to Adler:

Es war furchtbare Arbeit damals 1909. Aber ... es hat was genützt. Die Principien der künstlerischen Arbeit haben sich durchgesetzt. Erst vor wenigen Tagen sagte mir ein Orgelbauer: Es geht voran mit unserer Kunst! Das gibt einem dann Mut zu neuer Arbeit. Widor und ich reden noch oft von den schönen Stunden mit Ihnen in München.⁶⁷
(It was a terrible ordeal that time in 1909. But ... it was useful. The principles of artistic craft have succeeded. Just a few days ago, an organ builder told me: Our craft progresses! That encourages one to take on new tasks. Widor and I often talk about the nice hours in Munich with you.)

Quite obviously, Adler was well connected in the European musicological set. These connections, wrought by common scholarly interests or approaches and fostered in conferences and collaborations, extended Adler's reach beyond his immediate Viennese and Imperial-Austrian sphere.

What kind of appeal Adler's writing might have had for the European musicological community is sketched—in a somewhat wordy and oblique fashion—in the following excerpt from a letter by Charles van den Borren, on reading Adler's "Festrede" (memorial speech) for the Haydn Centenary Conference, convened at Vienna in 1907:

⁶⁶Albert Schweitzer, Letter to Guido Adler, Strassburg, 01 January 1908, pp. 1–2.

⁶⁷Albert Schweitzer, Letter to Guido Adler, Strassburg, 18 January 1913, pp. 2–3.

J'ai lie le Festrede avec l'interêt le plus vif: j'amaï je n'ai vu caractairiser le génie d'Haydn avec autant de pénétration et dans une forme aussi élevée. J'ai toujours eu pour votre grand maître autrichien un amour profond, mais j'ai toujours eu aussi un certaine peïn [?⁶⁸] à m'expliquer la raison de cet amour: votre discours remplit [?] cette lacune et me dit d'un façon claire, précise et imagée, pourquoi mon esprit et mon coeur communient [?] directement avec les pensiers musicales de "papa Haydn". Et maintenant que je sais que je l'aime, mon amour pour lui me [?] fere qu'augmenter ... C'est une chose extrêmement précieuse que l'enthousiasme ne de perde pas lorsqu'on s'occupe de musique à le façon moderne, c'est-à-dire "scientifiquement." Et c'est là la raison pour ce quelle j'admire tout a que vous écrivez: historien armé de toutes les lumières de la musique moderne, vous si [?] en restez pas moins profondément artiste (vos conférence [?] du [?] Wagner en sont encore le preuve [?]) et capable de juger un musicien et son oeuvre à un point de vue esthétique qui, loin d'exclure l'emotion, la met au premier plan et l'ennoblit en lui enlevant [?] ce quelle pourrait avoci [?] de trop subjectif.⁶⁹

(I have read the Festrede with the most lively intent: I have not yet seen the genius of Haydn characterized with such penetration and equally elevated form [or presentation]. I have always had a profound affection for your great Austrian master, but I have also always had a certain pain to explain to myself the reason for this affection: your discourse [or discussion] fills this gap and tells me—in a clear, precise, and [easily] visualized way—why my spirit and my heart commune so directly with the musical thoughts of "Papa Haydn." And now that I know that I love him, my love for him seems to me as if increasing ... It is an extraordinarily precious thing that the enthusiasm does not get lost once one deals with music in the modern fashion, that is to say, "scientifically." And this there is the reason wherefore I admire all that you have written: a historian armed with all the light [or insight granted] of modern music, you are nonetheless staying profoundly art-oriented (your publications on Wagner are again proving the point) and capable of judging a musician and his work from an aesthetic point of view which, instead of excluding emotion, puts it center stage and ennobles it by removing that of him [the work and/or artist] which one could call excessively subjective.)

Van den Borren puts his fingers on some concerns that always get raised when one seeks to address art—be it painting, sculpture, music, poetry, or any other kind—with scientific means: often "art scientists" are charged with demystifying art and hence making it less appealing. If we choose to believe van den Borren, Adler's *Musikwissenschaft* circumvents this issue successfully by generalizing and "pruning" excessively subjective views and mannerisms of the artist, leaving the core of his work to be admired by a non-subjective public (including other scholars). Interesting, too, is van den Borren's subtle opposition of the historian (whose knowledge of modern music and its circumstances—here Wagner and

⁶⁸Bracketed question marks appear where I was incapable of deciphering van den Borren's handwriting, sometimes venturing to take guess at the word from the letters I could identify.

⁶⁹Charles van den Borren, Letter to Guido Adler, Uccle-Bruxelles, 13 July 1910, pp. 1–2; my transcription and translation. Van den Borren's handwriting is sometimes challenging to decipher, and my translation thus possibly imprecise. Still, I hope to have captured the salient points of his expressed views.

the Wagner circle—perhaps enables him to evaluate historical fads and factions) and the aesthetic point of view (which entails judgments about the quality of historical music independent of the historical circumstances). Van den Borren implies that Adler appeals to (or covers) both angles. Whether van den Borren understands Adler in the proper way we cannot resolve through looking at their correspondence. But that he considered Adler’s scientific musicology a success, and not objective to the degree of voiding itself of emotional impact, comes through quite clearly in this letter. In our disquisition into the precise “scientificness” of Adler’s thinking, we also ought to keep track of how his music science could render emotionally satisfying accounts of music, especially when viewed against the background of nineteenth-century scientific presentations of natural phenomena.

Both Schweitzer and van den Borren were contemporaries, but more importantly colleagues of Adler. We can see that his ideas were well liked and started to take hold among these peers. Another group of musicologists that should have been influenced even more strongly by Adler’s methodology were his students and immediate historical successors (that is, people about one to two generations younger than him). If we find evidence for their take-up of his scientific methodology, or even awareness of its evolutionary roots, this should strengthen my case for Adler’s importance in the history of musicology.

The numbers of Adler’s students rose during the first quarter of the twentieth century. Among them were important musicologists and composers like Egon Wellesz, Karl Geiringer, Rudolf von Ficker, Knud Jeppesen, and Anton Webern. Certainly they contributed to spreading his fame in Europe and abroad.⁷⁰ Most useful and revealing (for my purposes) are a few informal publications by less well-known Adler students, and here particularly one newspaper article from 1925. Its author was Adler’s former musicology student, Elsa Bienenfeld.⁷¹ Bienenfeld had imbibed Adler’s methods from the source and she was not silent about her application in a letter to her former professor: “Eben bin ich mit einer Untersuchung (familiengeschichtlich und biologisch) über Mozart beschäftigt” (I am currently

⁷⁰As mentioned in the introductory chapter of this dissertation, the reception history of Adler’s thought in the United States is a particularly fascinating topic, subject to a forthcoming dissertation by Louis B. Hajosy III at the University of Georgia.

⁷¹Bienenfeld was a well-known Viennese critic who had studied with Adler, Zemlinsky, and Schönberg and married the composer Karl Weigl. She died in a concentration camp.

occupied by a research project on Mozart—family-historical and biological).⁷² Her feature for the 01 November 1925 issue of the *Neues Wiener Journal* details Adlers achievements as a musicologist. Astonishing is her stress on the primacy of Adler’s methodology for the humanities as a whole:

Guido Adler hat sowohl das Ziel wie die Wege der modernen Musikwissenschaft erschlossen. Er stellte, ein Pionier unter den modernen Geisteswissenschaftlern, die entwicklungsgeschichtliche Darstellung, die Stilkritik als Ziel auf und zeigte den Weg, indem er die Denkmäler der Tonkunst vergangener Zeiten herausgab, als Bausteine, auf denen sich das Gebäude einer evolutionistischen Geschichtsdarstellung errichten läßt.⁷³

(Guido Adler has scouted both the end and the means of modern musicology. A pioneer among modern humanities scholars, he proposed the development-historical [entwicklungsgeschichtliche] presentation as end and demonstrated the means, by publishing the monuments of music of past times as building blocks to construct the edifice of an evolutionist historiography.)

Equally as astonishing as her assertion of Adler’s primacy is her insistence on calling his method “entwicklungsgeschichtlich” (development-historical), and more explicitly even, “evolutionist.” Regardless of what Bienenfeld considered “evolutionistisch,” the differences between what Adler’s proposed method did to music history and what evolutionary theory did to biology seem not to have been too great in her eyes.

Important for us, as Adler’s reluctant heirs, is Bienenfeld’s equaling the evolutionary presentation of history to style criticism, the method seen as Adler’s most pervasive legacy. She mentions Adler’s “bedeutsamen Werke über den Stil in der Musik und über die Methode der Musikwissenschaft” and continues:

Hier gestaltet Adler jene Idee der evolutionistischen Kunstdarstellung, die seither auch in den anderen Geisteswissenschaften sich Bahn gebrochen hat.⁷⁴

(In 1904, Adler started to reap the fruit of his work, ripening besides and because of the monuments editions, namely his book about Wagner as well as his important works about style in music and about the method of music history. Here Adler crafts that idea of the evolutionist presentation of art which has since also set the other humanities on its tracks.)

Nor is Bienenfeld alone among her contemporaries in seeing Adler as “apostle” of musicology’s special debt to evolutionary trains of thought. Carl Engel, librarian of at the Library

⁷²Elsa Bienenfeld, Letter to Adler, Vienna, 18 January 1932. One wonders whether her research might have been titled “Mozart: Man and Mammal.”

⁷³Elsa Bienenfeld, Guido Adler, first clipping.

⁷⁴*Idem*, third clipping; I translate the whole passage and therefore the translation appears longer than the quotation.

of Congress and a friend of Adler in later years, summarizes Adler’s life by saying that

real creatorship was necessary to work out the plan and method of music history and research which he evolved; and in his “style-critique” he fashioned a tool which made plan and method effective.⁷⁵

Where Engel here sees evolution as the process by which Adler arrived at his methodology, a process that seems to predate the development of style-criticism, in an earlier birthday address he characterizes this methodology in terms almost synonymous to Bienenfeld’s:

Every science is measured by the achievement of its leaders. Of Guido Adler it may truly be said that he is foremost among those who have raised the study of musical history to its present height. And he built almost from the bottom. In his “style-critique” he originated and perfected a new approach; he not merely identified, labelled, and classified changes in musical grammar and syntax, as would a philologist, but he applied a philosopher’s penetration to the forming of a link between these changes and their evolutionary significance.⁷⁶

After connecting Adler’s mature method back to the 1885 article—using the same “ripening fruit” metaphor also employed by Bienenfeld—Engel points to Adler’s collaboration with Spitta and Chrysander but maintains:

Neither of these two, however, possessed Adler’s methodical mind and scientific exactness. Adler was the first to draw a ground-plan for the structure of musical research; it has been universally adopted. His disciples, far and wide, are teaching his theories.⁷⁷

Engel’s last sentence rings an especially resonant bell in my inquiry because a letter by another Adler student and, additionally, a figure from this person’s major text book demonstrate the long reach of Adler—and of his evolutionary methodology—even unto the mid-1960s, when the classical, style-based historiography of music became the object of increased critique. Paul Pisk, musicologist and composer, was Adler’s student in the 1920s, fled Europe for the United States in the early 1930s, joined the faculty at Redlands University in California, then moved on to the University of Texas in Austin and eventually Washington University in St. Louis. Not too long after his arrival at Redlands, Pisk writes in an affectionate letter to his former professor:

⁷⁵Engel, *op. cit.*, p. 400.

⁷⁶Carl Engel, “Views and Reviews,” *The Musical Quarterly* 21/4 (1935), pp. 484–485.

⁷⁷*Idem*, p. 485.

Ich wurde an die Universität Redlands, Californien berufen und unterrichtete hier Formenlehre, Orchestration, Canon und Fuge und auch ein bisschen Musikwissenschaft. Sie können sich denken, wie oft ich den Hörern von Ihnen erzähle.⁷⁸

(I was called to the University of Redlands in California and teach theory of forms, orchestration, canon and fugue, and also a bit of music science. You can imagine how often I tell the students about you.)

What that “bissel Musikwissenschaft” consisted of and what he told his students of Adler we cannot know, but Pisk’s vision of music science, while never explicitly evolutionary, yielded diagrams with a powerful resemblance to evolutionary trees. Witness, for example, the inside back endpaper of his book, *A History of Music and Musical Style*.⁷⁹ What we see there is a cladogram, a genealogical evolutionary tree similar to any such figure we might find in the pages of the science journals *Nature*, *Evolution*, or *Paleobiology* in any given issue. If this figure is an outgrowth of Pisk emulating his professor’s *Musikwissenschaft*, then with high probability this *Wissenschaft* included means of presenting the history of music as diversifying tree, as an “evolutionistische Geschichtsdarstellung” (as Bienenfeld would have it). In this dissertation, it will be my task to identify what this evolutionary strand of Adler’s musicology was, where it actually issued from, and what its effects on Adler’s historiographical techniques were.

2.10 THE END

Let us return to the last, ignoble years of Adler’s biography. Like other successful innovators, he turned reflective after his retirement, publishing the book-length autobiography *Wollen und Wirken* in 1935.⁸⁰ Although he remained an active researcher, his publications ceased after his eightieth birthday, perhaps forced by beginning dementia. After the *Anschluss* (the unification of Germany and Austria in 1938), the Adlers—Guido and his daughter Melanie, Hubert Joachim having fled when the opportunity presented itself—had to accommodate a

⁷⁸Paul Pisk, Letter to Guido Adler, Redlands (California, U. S. A.), 23 October 1937.

⁷⁹Paul Pisk and Homer Ullrich, *A History of Music and Musical Style* (New York: Schirmer Books, 1963), back endpaper.

⁸⁰Many of the documents preserved at the University of Georgia carry markings by Adler, presumably in preparation for citing excerpts of articles or letters in this book.

local Nazi leader as “houseguest.” (Curiously, this man carried Adler home when finding him passed out on his daily walk in a nearby street.⁸¹) Both his old age and his status protected Adler from experiencing the greatest iniquities inflicted on the Viennese Jewry after 1938. H. J. Adler recalls:

One day a policeman appeared entered the house and said that he had orders to arrest Professor Adler. My father’s faithful housemaid explained that the Professor was 84 years old. The policeman, taken aback, left the house without further comment. He never returned. My father’s pension was never cancelled by the university.⁸²

Dementia and status were a blessing for Adler only. Carl Engel, fellow musicologist and American contact of Adler since the 1920s, had sought to arrange U. S. visas for Adler and his two children. Only Hubert Joachim took Engel up on the offer, thus surviving the war and settling in the United States, first in Phoenix and then in San Diego.⁸³ When a visa was made available to Adler, he let it lapse, because he got less concerned with the politics of the day and because the prospect of resettling in a foreign country, with the attendant economic uncertainties, must have seemed an overwhelming task for the octogenarian. His daughter too preferred to stay in the family home, caring for her father and ignoring the danger of the situation. Adler died at home in 1941; he was cremated and buried almost unnoticed, as no obituary was published in Austria and only a precious few outside the Nazi sphere of influence. After the war, in an act of acknowledging Adler’s importance by the new Austrian government, he was honored with a memorial burial (*Ehrengrab*) at the Viennese *Zentralfriedhof*, the necropolis of many other luminaries of recent Austrian history.

Melanie Adler attempted to save her father’s library from the prying hands of some musicologists, who had aligned themselves with the Nazis and were associated with the University of Vienna starting in the early 1940s. Her identity as a Jew did not help matters either, so she went underground. After some months, she was discovered and deported to Theresienstadt, a prison city and concentration camp located in today’s Terezín (Czechia). In 1944,

⁸¹Hubert Joachim Adler, *The Last Years (1938–1941)*, p. 2.

⁸²*Idem.*

⁸³This is evident from two remarks in the transfers for the library and the papers. H. J. Adler’s descendants still live in the San Diego region, including his son Tom Adler. Melanie Adler’s fate, as well as that of her father’s library, is described in a short article online: Renate Erhardt, “Melanie Karoline Adler (1888–1942),” in Doris Heidegger (ed.), *1938–2008: Vertriebene Wissenschaft* (Innsbruck: Medizinische Universität Innsbruck, 2004–2010), <http://www.i-med.ac.at/management/about/1938/> (accessed 20 April 2011).

she was transferred to the extermination camp Maly Trostinec near Mzensk (Belorussia) and killed there. Her brother survived the war and his family took up residence in San Diego (California). Through Hubert's insistence, Adler's library and *Nachlass* were released by the University of Vienna and found a new home at the University of Georgia. Erich Schenk, who had been instrumental in "appropriating" Adler's effects for the University of Vienna in 1941, became dean and rector (that is, president) of that institution in the 1950s and retired as emeritus professor from the *Alma Mater Rudolphina* in 1971, with all undue honors.

2.11 SUMMARY AND OUTLOOK

How might we summarize Adler's long life? Adler was the typical representative of a turn-of-the-twentieth-century Austrian academic, with a youth spent in the provinces, university education in Vienna, first professorial positions in one of the provincial capitals like Prague, Budapest, Brno, Lviv, Graz, or Trieste, and—if considered intellectually worthy and politically acceptable—a triumphant return to teach in the imperial capital. He was subject to some "politicking" (as his son recalls) but surpassed it thanks to his outstanding scholarship, support from colleagues in other disciplines, and the lingering tolerance then still inherent in the institutions of the multi-ethnic empire. Adler conformed to the paternalistically tolerant ideals of this state and, like many of his peers in the upper middle class, replaced strict religious observance with spirituality expressed through reverence for art and nature. His pugnacious personality and science-informed education enabled him to emulate the natural science of his day, to engage in it quite like his literary (and perhaps spiritual) idol Goethe did at the turn of the nineteenth century. These societal and personal features, probably unique to Adler's place and time, and terminated by the political success of fascism in the 1920s and 30s, form the substrate on which his peculiar approach to music research grew.

Glancing toward the remainder of the dissertation, several points raised here in a biographical context will make a re-appearance when my discussion gets more methodical and focused on Adler's works, rather than his life. His accession battles in Prague and Vienna certainly alerted Adler to the political nature of academic appointments and the need to

forge strategic alliances with already established academics even outside his personal specialty, music and music history. Mach and Jodl were both scientifically thinking people. Their assistance lent to Adler was surely based on some commonality of scientific approach, and perhaps Adler felt a subtle debt towards them and their peers. As we shall see, both stayed life-long reference points for Adler. Adler's religious convictions, which may have prevented some people from using the relatively recent—and theologically controversial—theory of evolution in musicology, were no serious restriction for him because his allegiance to his familial religion was tempered by reverence for classical literature and nature. This particular spiritual point of view may even have encouraged him to pursue nature-based explanations for (to him and many others) spiritually imbued cultural artifacts, like music. I will pick up on these speculative thoughts in my discussion of Haeckel's philosophy in chapter 4. The scientific approach to music that Adler championed in the *Vierteljahrsschrift* cherished strict objectivity and (idealistically) presumed to rely on empirical evidence only to resolve scientific conflicts. In addition (and this is closer to Spitta's expressed view but probably shared by Adler in a different manner) musicology was to remain self-sufficient, to dissociate itself both from the other sciences (like psychology) and from an ancillary position *vis-à-vis* composition. Whether musicology *is* a science still remains a matter of debate, given any particular definition of science. As this dissertation shows, the way in which Adler configured musicology in 1885 did fulfill the nineteenth-century requirements for historical science. From this perspective, Adler was justified to call his methodology *Musik-Wissenschaft*.

The very obviously different standard that Adler and Spitta applied to deciding whether an article ought to be published in the *Vierteljahrsschrift* raises issues that foreshadow both the peculiar evolutionary twist to Adler's methodology and the coordinate systems within which his ideas have been received hence. Spitta's satisfaction with the empirically flawless presentation of a composer's biography and Adler's discontent (evident through Spitta's reprimands) show us that Adler must have considered objectivity necessary for a satisfyingly scientific account, but not sufficient to provide one by itself. The missing ingredient is the connectivity between extramusical (such as biographical) and musical facts provided by a dedicated theory of historical causation, which—I argue—evolution of the later nineteenth century offered.

3.0 “EVOLUTION” AS A MUSICOLOGICAL CIPHER

The first chapter offered a short review of literature on Adler’s scientific bases, and the second chapter examined both his musicological opinions and his general reputation in some greater detail. The current chapter shifts our focus away from Adler—while still quoting him copiously—and puts different notions of evolution entertained by musicologists and biologists at center stage. The chapter’s six sections ought to be read like a series of essays, essays that widen the scope of my inquiry from musicology’s opinion on evolution generally to the biological concepts shaping nineteenth-century evolutionary thinking, and then narrow the scope again leading to assessments of Haeckel’s methods and Adler’s language in light of Darwin’s propositions. In this sense, the present chapter returns to the spirit of the section juxtaposing Adler’s, Mugglestone’s, and Darwin’s expressions in the first chapter. Respective of the main goal of the dissertation—Adler’s evolutionary allegiances—this chapter demonstrates that he employed biological concepts throughout his career, and did this with some sense of their biological significance. (“Evolution” was not purely a metaphor to him.) However, none of Adler’s parallels to Darwin’s ideas explain his methodological stance—his core methodology—completely. If Adler was really adopting evolutionary thinking, it must have come from a related but different source, identified in the next chapter as Ernst Haeckel.

3.1 FEATURES OF MUSICOLOGICAL EVOLUTIONISM

The relatively few references to evolution in Richard Taruskin’s magisterial *Oxford History of Western Music* allow a concentrated review of stylistic evolution’s role in music historio-

graphy from a historically recent perspective. To be fair, Taruskin is clearly aware of the discrepancy between Darwin's expressed views and music historiography that lays claim to Darwinian principles (understood in whichever way). Summarizing another musicologist's evaluation of Domenico Scarlatti as out of touch with the spirit of his times, Taruskin writes:

Such a view of Scarlatti, of course, reflects a general historical view that places the highest premium on teleological evolution, and on innovation, evolution's handmaiden. It is known as the "Darwinian" theory of history, after a fundamental misreading of the work of Charles Darwin, the biologist whose (entirely non-teleological) theory of evolution has dominated natural history since 1859, the year in which his masterwork, *The Origin of Species*, was published.¹

Unfortunately Taruskin does not elaborate on what constitutes the "misreading" of Darwin. Given the parenthetical remark, one must assume that the Darwinian view is teleological, while Darwin's is not. This invites our examination of Taruskin's opinion on teleological historiography, that is, the writing of music histories which portray historical processes as goal-directed, particularly over long spans of time. In a summary of views on the early history of Western music, Taruskin charges that old-fashioned historiography operated on the

premise that history is teleological—that it has purpose or an end (*telos* in Greek). This kind of thinking leads to determinism: the explanation of events in terms of inevitable movement toward the perceived goal, and the assignment of value to phenomena (or to artifacts, like works of art) depending on their nearness to it.²

Rendered thusly, teleology emerges as a major flaw of evolutionary historiography. Teleology conjoined with determinism leads to the isolation of the artistic process from its historical environs, and fosters an autonomous view of art and excessive historiographical stress on the composer and his works:

An autonomous entity is one that follows an independent course and a self-determined one. To regard art as autonomous is to regard its history as being determined solely by those who produce it.³

¹Richard Taruskin, *Oxford History of Western Music* (New York: Oxford University Press, 2004), volume 2, p. 396; on the following page, Taruskin criticizes such "Darwinian historical study" as resting on the "assumption that significant history is the creation of small elites." He notes that diachronic history, following the growth of such seeds of musical traditions through time, has yielded to comparative, synchronic history but laments that "an exclusively synchronic view may tend to overrate eccentricity and obscure the reality of 'trends and accomplishments'."

²Taruskin, *op. cit.*, volume 1, p. 144.

³*Idem.*

The perils of autonomy, in turn, connect back to Adler's late methodical contribution, style-criticism. Taruskin cites as the locus of autonomous historiography not just the individual musical work, or a particular composer's oeuvre, but the notion of style popularized by Adler:

The only model of change the autonomist view of art history can recognize is strictly linear stylistic evolution, often described using biological or otherwise "organic" metaphors (styles being born, reaching maturity, declining, dying). Art history is viewed as a procession of styles in a single file, along which different artists occupy positions either ahead or behind one another, depending on the style they employ.⁴

This is a fair summary of the evolutionary narratives in many early treatises on music history (some of Adler's among them). Besides the dangerous collusion of teleology (with an arbitrarily pre-defined goal), determinism (supplying logical necessity between historical states), and autonomy (which safeguards the research object's purity against contamination with undesirable connotations), this type of evolutionary historiography also extended its reach to ethnography, certainly in the late nineteenth and early twentieth century.

Philip Bohlman describes how the extension of music history's reach from Western Europe onto the musical cultures of the world (among others by A. W. Ambros) was justified by appeals to a Hegelian progress of reason through history (the current end of its path apparently often located where the musicologist was living).⁵ His discussion adds three other facets to our ever-increasing notion of what evolutionary musicology entails.

The essentially comparative nature of most nineteenth-century humanistic and social scientific fields provided ample soil to nurture the most profound influence on scientific thinking in the century, that of evolutionary theory in the natural sciences. History thereby acquired attributes according to an organismic metaphor; historical progress was marked by a response of complex and diverse parts, together constituting a whole. That elaborate schemes of classification in all scientific areas followed suit from the work of Charles Darwin and Herbert Spencer is, of course, well known. The specific contributions of evolutionary theory to the writing of more comprehensive music history may be more difficult to pinpoint, but I would submit that their entrance into musical scholarship was facilitated by the growing acceptance of non-Western music as inseparable from music history.⁶

⁴*Idem.*

⁵Bohlman, *op. cit.*, pp. 157–159.

⁶*Idem*, p. 160; footnotes omitted. My fourth chapter moves toward pinpointing these "specific contributions," at least in Adler's case. Later in his article, Bohlman references Adler's schema in "Umfang, Methode und Ziel," noting that Adler probably intended all musics to be researched in a historical and systematic manner, with the explicitly ethnographic field in the schema not a proto-ethnomusicology but simply a comparative means of study integrated into a principally historical approach (Bohlman, *op. cit.*,

The first facet is the important role played by comparison and classification for any and all accounts of evolutionary history. Although, strictly speaking, the narratives produced by such evolutionary histories only follow one strand, one lineage at a time, this lineage is often compared with and distinguished from other lineages (whether these lineages be musical cultures, genres of music, or kinds of musical practice). Classification of groups of music in hierarchically larger and more general groups becomes an issue when the focus of inquiry turns to the origin of the smaller groups. And indeed origins—of music as such or of particular practices—is the second facet raised by Bohlman. If history were organized like a tree, then any particular splitting episode would require narrative justification. And by a similar (if perhaps not the same) token: if musical pieces were organized equally hierarchically, then their coming-to-be should and could be explained by reference back to history.

This organismic metaphor is the last facet of evolutionary musicology mentioned by Bohlman from the point of view of historiography and ethnography. The supposition that musical process—the subject matter of music analysis—and music-historical process—the subject matter of music history—are mutually influencing each other, and that certain types of historiography could conceivably explain the constitution of musical pieces as parts integrated in a whole, has come in for a good amount of critique by some music historians. Joseph Kerman identifies it as a feature of German pre-Great-War musicology that infiltrated discussion about music in many other nascent musicological cultures.⁷ Janet Levy surveys the manifold ways in which organic and organicist metaphors shaped musicology’s thinking and writing even into the late 1970s.⁸ This transfection of history with analysis (and vice versa) shows that evolutionary musicology is not an exclusively historiographical issue. It affects attitudes toward the analysis and description of music as much as the comparison and evaluation of ethnic musical traditions. If I concentrate in this dissertation on historiographical methods, this is more by dictate of convenience and manageable scope than by lacking relevance.

pp. 161–162). Reading Adler through the conceptual spectacles of Haeckel’s Darwinian biology, I tend to agree with Bohlman’s evaluation of this *Nebengebiet*—Adler’s term in the article’s text—of his systematic branch; see section 4.3.2.2 (pp. 184ff.) of this dissertation.

⁷Joseph Kerman, “How We Got Into Analysis and How To Get Out,” *Critical Inquiry* 7/2 (1980), pp.314–316.

⁸Janet M. Levy, “Covert and Casual Values in Recent Writings About Music,” *Journal of Musicology* 5/1 (1987).

Let us thus return to history, and to Richard Taruskin. His *Oxford History* is propelled by a critique of historians who assume that music is indeed a type of *explanandum* autonomous with respect to its historical setting.⁹ Like Kerman, he fingers the German tradition of musicology as the origin of this assumption and consequently he directs his critique against a major example of this tradition from the 1970s, Carl Dahlhaus, and his methodological *opus summum*.¹⁰ Dahlhaus, in turn, wrestles with the philosophical and practical implications of what he (with Ernst Rothacker) calls the “organism model” of music history, that is, cyclical-teleological narratives of growth and subsequent decay.¹¹ Dahlhaus identifies the later publications of Guido Adler as origins of the model—which is essentially style-criticism—and is of two minds about the historiographical efficacy of this analogy between organisms and historical entities like a style. He calls it a “dubious historiographical theorem”¹² but at the same time acknowledges its importance to Adler’s (and more broadly music history’s) objective, the construction of historical narratives:

When viewed from the standpoint of its methodological function, however, this naïve metaphor [the organism model] proves to be anything but a mere chance deficiency that could be removed without substantially altering the notion of a history of style. On the contrary, the analogy is an integral part of the argument: to determine a style—whether of an individual piece, a composer’s life-work or the output of an entire period—we must first take a corpus of mutually incompatible, self-contained complexes and interlink them ‘from without’ by resorting to the organism model before they can even begin to appear as stages in an evolution.¹³

By connecting from without, Dahlhaus means placing “sub-styles” in the proper historical relation to one another (earlier, later, etc.), presumably based on evidence not drawn from the musical sound “within.” (This references Adler’s own use of “inner” and “outer” characteristics of styles, for example in *Der Stil in der Musik*.¹⁴) Dahlhaus’s allusion to “stages of evolution” suggests his own allegiance to the “organism model” of history, but does not conclusively prove this allegiance. Dahlhaus also charges Adler with “idealism”:

⁹Taruskin, *op. cit.*, volume 1, pp. xxixf.

¹⁰Carl Dahlhaus, *Foundations of Music History* (Cambridge: Cambridge University Press, 1983).

¹¹*Idem*, p. 14. The dual nature of this organism model, both cyclical and teleological, derives from organisms’ growth to maturity and eventually death (where either the life’s apex or its end are the *telos* of the process), and the tendency of growth processes to repeat (in a loose sense of the word) in many different individuals.

¹²Dahlhaus, *Foundations*, p. 14.

¹³*Idem*, pp. 14–15.

¹⁴Adler, *Stil in der Musik*, p. 116.

It would then be possible only to talk of changes in stylistic ideals, instead of stages in an evolutionary process. And once the notion that a style progresses from archaic to classical and eventually to mannerist stages ‘in accordance with the laws of organic evolution’ (Adler’s own solution to our problem) is dismissed as a mere metaphor hypostatized into a law of history, then the forces that caused counterpoint with functionally subordinate parts to evolve into a polyphony of equal voices and back again will continue to elude use.¹⁵

Dahlhaus still holds out hope for an evolutionary model along the lines of Adler’s style-criticism. At least this seems to be the gist of Dahlhaus’s commentary on Adler, and his problematization (elsewhere in *Foundations*) of purely documentary approaches to music history.¹⁶ He accords classification an important role in the historiography of styles but this classification “from without” produces integrated individuals rather than separate style species, and it is these individuals that may “appear as stages in an evolution.” Hierarchized diversity as an image of history does not seem to catch on with Dahlhaus:

Of course, it is always possible to bracket adjacent stylistic complexes within some more comprehensive unit of measure designed for this purpose; but the resulting pyramid of stylistic concepts cannot easily be transformed into a picture of an evolutionary process.¹⁷

This Dahlhaus’s “pyramid schema” is a nested hierarchy of styles. Of course, biological evolutionary theory from the mid-nineteenth century onward provides precisely the means to interpret this systematic hierarchy as a result of history, considering it to be the branches of a historical tree structure.¹⁸ Adler, in his 1885 article, even dedicated half of his musicology (at least by page area) to a “systematic” branch. And even if Adler were not aware of this fact, his methods led his students sometimes to historical trees suspiciously close to cladograms, tree-diagrams of biological species histories.¹⁹ However, one necessary consequence of conceiving of this hierarchy as a tree in time is the acknowledgment that there must be as many historical trajectories as there are “ends” or “leaves” on the tree, each trajectory as a whole unique. Dahlhaus, in his interpretation of Adler, does not seem to consider

¹⁵Dahlhaus, *Foundations*, p. 16. One wonders whether the last word in this quotation should not have been “us.”

¹⁶See Dahlhaus, *Foundations*, pp. 128–136, which casts evolutionary approaches to historiography in the guise of “structural history” and opposes it to the documentation of music’s social environment.

¹⁷Dahlhaus, *Foundations*, p. 15; this quote follows the end of the second-to-last one.

¹⁸One ought to note that the advent of Darwinian evolutionary thinking in biology did not change the natural system proposed by Linnaeus and other taxonomists much. While the systematic groupings remained largely the same, the new historical theory, evolution, revolutionized how biologists viewed these groups’ relationships with one another.

¹⁹As we saw in the second chapter on p. 51.

this option, still assuming that there is one global evolutionary process connecting epochs, with (presumably) the stylistic complexes existing one after another, not many evolutionary histories, each next to the other.

Thus Dahlhaus demonstrates the pernicious influence of a type of holistic ideal engrained in some brands of historical thinking since the turn of the nineteenth century. His “organism model” encapsulates rather neatly the assumption that music-historical change happens like the change within some individual organism, developing from fertilized egg to fertile adult. This biological development process has many of the characteristics that people like Taruskin, Bohlman, etc. consider detrimental to the objective of writing music history: it has a definable beginning and end, an origin and a goal, a clear boundary between inside and out, a small set of variable options within a very conservative, determinative network of historically tested procedures, a resultant body that exhibits the interdependence of parts within the whole . . . The organism model of history seems like the crucial culprit for the dire problems of evolutionary historiography, and Adler seems intimately bound up with its establishment. But whether Dahlhaus’s interpretation of Adler’s musicology is correct, and (if true) whether this applies to all of Adler’s musicology, or just the later, style-based treatises we cannot yet decide. After all, evolutionary theories of history *may* lead to teleological narratives, but they are by no means condemned to do so in every case, for every evolutionary theory.

A general consequence of this discussion is our need to start distinguishing between organismic processes and historical (or evolutionary) processes, and to determine—for the latter—which theoretical features give rise to teleological narratives and which mute or even prevent these displeasing historiographical patterns. For Adler, it seems that his evolutionary roots have been covered up by the decaying leaves of style theory, in the view of recent musicologists. Therefore the next stop on my journey through musicological evolutionism is Adler’s own assessment of the history of style criticism and a near-contemporary critical evaluation of his musicological methods and achievements. After that, in the second-to-next section, I examine the similarities and differences of historical and organismic development.

3.2 THE HISTORY OF “STYLE” (IN ADLER) AND EFFECTS OF STYLE (FOR HISTORY)

Adler’s association with style-criticism is well known, and thus its—and his—association with stylistic evolution of the kind ruminated on by Dahlhaus and criticized by Taruskin ought to be dissected. In the service of uncovering Adler’s (and musicology’s) evolutionary roots, the particular term “style” serves as guide both to the continuity of Adler’s ideas as perceived by himself and to the introduction of a new element into his historiographical methods that came to dominate earlier, more biology-oriented ones.

Adler himself sketches the history of style-criticism in his late eponymous essay. He mentions that Hubert Parry and he both published on the topic of musical style in 1911:

Parry’s approach to the subject was primarily artistic; I stressed the scientific side. To concern oneself with musical style was, one might say, “in the air.” Not that the word “style” had not been mentioned before or that there had not already been isolated attempts to deal with single aspects of the question. The point is that there had previously been no intensive examination of the problem, that it had not been treated in a penetrating, comprehensive way.²⁰

Adler seems to corroborate his student Bienenfeld’s assertion (quoted in the previous chapter) that he had been the first to apply what she called the “evolutionary presentation of art” in music history, if not art history as a whole. In a footnote at this point Adler confidently clarifies his primacy compared to art historians’ use of style:

Heinrich Wölfflin’s *Kunstgeschichtliche Grundbegriffe* was published in 1915. Not until then, as a reviewer observed at the time (*Baseler Nachrichten*, September 21, 1917), there was a book signifying for the scientific study of the fine arts what my “Style” [he means *Der Stil in der Musik*] had for four years signified for music.²¹

Apparently Adler regarded Wölfflin as something of an epigone, or at least not the source of *his* (and presumably Parry’s) methods. To Adler in the 1920s, musicological style criticism must be considered *sui generis* among the arts.

In the next two paragraphs, Adler presents a version of style-criticism’s history, including another view of musicology before him, now more global than in the article in Ambros.²²

²⁰Guido Adler, “Style-Criticism,” *The Musical Quarterly* 20/2 (1934), p. 172.

²¹*Idem*, p. 172, note 1.

²²Adler’s (very instructive) footnotes are integrated as such in their proper place in the quotation.

During the eighteen-seventies and eighties musical historians were working with various kinds of method. Spitta elected the philological approach, Chrysander the biographical; Ambros sought to draw a parallel between musical and plastic art. Some had recourse to aesthetics and ethics; others chose the point of view of general history, seeking to fit music into the historical structure as a whole; many treated their special problems without any method at all, following whatever plan seemed to them best. Spitta could well speak of a jumble (*Wirrwarr*) of methods.

In my introductory essay on the scope, method, and aim of musicology, published in 1885 in the *Vierteljahrsschrift für Musikwissenschaft*, which helped to lay the foundation of modern musical science,²³ I touched only lightly on the question of method. Realizing that a reliable and comprehensive plan would first have to be worked out, I promised to return to the subject later and, to further the working-out of such a plan, sought as investigator and teacher to combine under one head the various moments requiring consideration.²⁴ I found that the vast complex could be summed up in the collective concept “style.” Definition is less important here than coördination, unification. The word “style,” as I have said before, had already been used occasionally in writing on music, just as it had already been used in writing on art. Now method and systematic arrangement were to center about it.²⁵

By Adler’s note 2, the inaugural lecture *Musik und Musikwissenschaft* (from 1898) contains the first clear reference to style, and particularly style-laws, acknowledged by Adler. The 1885 article is free of the style concept, but a measure of continuity is provided by the “laws” of music, to which Adler indeed appeals both in his schema of music science and in the text of “Umfang, Methode und Ziel.” Another interesting piece of information is Adler’s characterization of the early articles of the 1880s as methodical stepping-stones or explorations for his arrival at a unified methodical approach to music. And it is of course this unified methodical approach that Adler chided his elder colleagues for lacking, and that he thought he contributed through style criticism.

While his students would have agreed, more distanced observers were not quite so sanguine. Historiographies of music based on style criticism form a major genre of musicology with many examples from the late nineteenth and the earlier two thirds of the twentieth century. Warren Dwight Allen has delivered the most comprehensive critique of this mode

²³[Adler’s note 2, p. 172:] In this essay the whole structure is said to be governed by “laws” (*Gesetze*); in my inaugural lecture for Vienna ([he cites: Guido Adler, “Musik und Musikwissenschaft,” *Jahrbuch der Musikbibliothek Peters* 5 (1898)], I call them, more correctly, “style-laws” (*Stilgesetze*). One might also call them “style-norms” (*Stilnormen*).

²⁴[Adler’s note 3, p. 173:] In my desire to understand, to make possible a uniform grasp of music’s organic growth, I sought, even in my early studies, to combine the criteria distinguishing the categories in one basic concept (*Die historischen Grundclassen der christlich abendländischen Musik seit 1600*, 1880; *Studien zur Geschichte der Harmonie*, 1881, 1886).

²⁵Adler, *Style-Criticism*, p. 172–173.

of historiography in the mid-twentieth century, with special attention to evolutionary narratives in music history.²⁶ Adler's central position as the originator of style criticism puts him in Allen's sights, and Allen, a contemporary of Adler's students, picks up on some of the apparently biological features of Adler's style thinking, noting their problems and insufficiencies for Adler's great goal of a unified methodology.

In the introduction to his book Allen already challenges Adler's claims to have come up with a general method for writing music histories:

But while the musicologist is concerning himself with specific techniques in limited areas of inquiry, he has not yet formulated a general *method*, a philosophy with reference to the whole field. One of the leaders, Guido Adler, will be treated for his treatise on the "Method in Music History," but this turns out to be merely a discussion of *techniques* for style-criticism and identification. It is significant that Adler himself, although editor of a great *Handbuch*, has written no general history, but it will be shown (in Chapter 11, under "Periodization") that when he tried to outline a *method* for the whole, he fell back into the evolutionary pattern devised during the nineteenth century.²⁷

Allen's book is devoted largely to showing that the pattern of historiography he characterizes as evolutionary—namely, history as necessary qualitative progress—led to flawed historical narratives in disagreement with available evidence. In this way, the evolutionary theory chosen as narrative model becomes a prescriptive filter for the picking and ordering of evidence, rather than a descriptive explanation of all (or most) available evidence. Adler, in Allen's view, is more empirical than other evolutionary musicologists but his technique of dividing music history into style periods is too dependent on the "linear genetic method."²⁸ In the footnote qualifying this term, Allen states:

In his *Method* (p. 44), Adler criticizes some origin theories, but finds the "genetic method" acceptable. Even when he condemns the biological analogy, when carried to its naïve extremes, he nevertheless admits that it is *geistvoll* [spiritually imbued] and "exciting." Adler was strongly influenced by Hans Tietze, who, in his turn, was greatly impressed by the theories presented in Bernheim's *Lehrbuch der historischen Methode*, Leipzig, 1903.²⁹

Whether a "genetic" method ought to be considered "evolutionary" at all, as Allen seems

²⁶Warren Dwight Allen, *Philosophies of Music History*, second, corrected edition (New York: Dover Publications, 1962).

²⁷*Idem*, p. xix; original emphases.

²⁸*Idem*, p. 267; I should note that this "genetic" method has next to nothing in common with biological genetics except for a notion that some type of descent, of passing on information between generations, is happening.

²⁹Allen, *op. cit.*, p. 267; the non-italicization of the *Lehrbuch*'s title is original to Allen's footnote.

to imply here for Adler and, by extension, for music historiography in general, is doubtful. In *fin-de-siècle* scholarship, the word “genetic” was a widely wielded brush, used to paint very speculative and controversial arguments with a coating of scientific legitimacy, even if they lacked empirical justification. Comparing Adler’s proposed connections of musical and architectural style with similar attempts by another historian, Allen notes that Adler’s

position is that technical analysis of music alone, its form (melody, harmony, polyphony, key, subjects, tone-color, etc.) together with its intellectual and psychological content, must provide the basic criteria. Time, place, and composer are the historical facts that must be calculated on these bases alone.³⁰

Thus, Adler’s method depends on (historically informed) analysis of music to derive historiographically relevant facts. Adler is thus not completely arbitrary in his historical inferences: musical evidence serves to identify the historical categories by which the music is then explained. This is, of course, good empiricism, but it may also turn into a self-referential mode of historiography, where musical evidence alone is the proper grounding to explain musical events—another version of the dreaded specter, musical autonomy. Allen traces how Adler’s empiricism interlinks in just such a way, through the style concept:

In the first place, according to this theory [that is, style criticism], the date of a composition can be determined by comparing it with the typical styles isolated as characteristic of certain periods.³¹

Style seems to operate at two historical and methodological levels here: certain styles are characteristic, or typical, of certain associated periods (“style periods” like the Renaissance, Baroque, etc.) but style also denotes the essence of the individual pieces to be fitted into the style period. Thus, styles can be nested, a piece’s style fitting (or not) into a period’s. (We remember Dahlhaus’s problems with recognizing the historical relevance of such hierarchies.) When “individual style” and “period style” agree, the historical pigeonholing of a musical piece is easy. When individual and collective style disagree, however, the detached empirical treatment of the piece reaches its limits, and determining its historical position with respect to the established order of style periods becomes dependent on the willingness of the historiographer to consider other, possibly non-musical evidence. Thus, in dealing

³⁰Allen, *op. cit.*, p. 136.

³¹*Idem.*

with these “problematic” pieces, strict empiricism and musical autonomy reach their historiographical limits, and the musicologist may feel tempted to appeal to extra-musical (say, patriotic) ideals of scholarship to justify his narrative approach to a particular episode of music history.³² Whatever its historiographical merits in the production of coherent music histories, style criticism requires great care in application.

Quite apart from this practical problem, a logical sin may have been committed, too: period styles are defined on the basis of typical styles which were themselves defined through the characteristics of their period. Adler’s method has a strong whiff of circularity about it, only partly obscured by the nesting of more individual styles under the larger categories of the style periods.³³ And of course, the question of how to define the “typical styles” that allow stylistic characterization of a piece in the first place has not been tackled yet. Allen addresses the question in the remainder of his summary:

These periods must first be arranged in historical order. The place is determined by examination of folk music and national characteristics, also with reference to that which is typical. The highest task of style criticism concerns itself with the work of the composer. The typical must always be isolated, not, as in the older school of biography, with subjective, psychological examination of personality traits, but with technical comparisons of individual styles and idioms.³⁴

The subjective elements of historical biographies certainly reared their head in the Spitta-Adler correspondence. To Adler, inferences about moral maturity of a composer seemed scholarly (more or less) ludicrous. To evaluate a piece of music, Adler expected of the musicological treatment a comparison with other pieces of music (perhaps by the same composer, perhaps not, depending on the question asked) and the quantification of their relationships (the “Zusammenhänge” of *Methode*). The double nature of style, as both of an

³²Adler himself was no stranger to ethnocentric biases: he revered the classical and early Romantic Viennese composers. On the opposite side of the coin, he diagnoses the Russian people (at least with respect to their folk songs of the nineteenth century) with an “unverhältnißmäßig zurückstehende musikalische Kunstentwicklung” (incomparably backward musical art development), leaving open whether this is due to innate inability or just slower—for whichever reason—historical progress, and later describes Russian folk songs as “nicht auf der Höhe der abendländischen klassischen Musik” (not at the [high] level of the occidental classical music); see Adler, *Wiederholung und Nachahmung*, pp. 73 and 78.

³³Where in this case the circularity-inducing conceptual device is the style period, Adler’s historical musicology also allows for another possible vanguard of circular reasoning: the regional hierarchy of musical practice as portrayed in his schema for historical musicology. An appendix to this dissertation explores this problem, starting on p. 224.

³⁴Allen, *op. cit.*, p. 136.

individual piece and of a larger group, serves as the methodical basis for historical inferences from the products of analysis. It also allows musicologists to regard music as independent from the non-musical world, and to conceive of it as driven by its own laws—“auto-nomous.”

Style was, by Adler’s own admission, part of his methodological “arsenal” in 1898, and it provided—optionally—a methodical backbone for teleological historiographies grounded in the assumption of music’s (qualified) autonomy from social history. But where Allen’s references to Adler’s “linear genetic method” assume an “extra-musicological” origin in the art-historical treatises of Tietze and Bernheim, Adler maintains that the roots of his style-critical method lay in his earliest musicological publications, both methodological (in “Umfang, Methode und Ziel”) and practically musicological (in his articles on the history of polyphony). If Allen were right, art history would be the factor responsible for style-criticism’s evolutionary tendencies. But several samples of Adler’s terminology (in the subsequent sections of this chapter) corroborate his account of continuity between his earliest thoughts, the introduction of style as a category, and the development of style-criticism in the first decade of the twentieth century. Style as a musicological concept was integrated into an already-present framework of methods for explaining music, which framework formed the content of the 1885 article as well as the point of departure for historiography as “stylistic evolution.” And since the “style” part is a later addition, the core of Adler’s methods must be contained in the “evolution” part, conceived in his early works. It is this early model, a version of evolutionary biology rather than the biologically imprecise “linear genetic method” proposed by Allen, that explains the features and predicaments of Adlers methodology before and after 1900 most concisely.

3.3 *ENTWICKLUNG HISTORICAL AND INDIVIDUAL*

Adlers “back-pedaling” away from naïve biologism does not countervene his commitment to central assumptions of evolutionary biology in building a musicological methodology. To identify these assumptions, I must now turn to the history of several biological concepts in the nineteenth century—including evolution—and gauge (by examination of Adler’s language)

the ones most relevant to his thinking.

A principal problem of discussing evolution in the sphere of musicology arises from the simple fact that the word “evolution” is used imprecisely, and this imprecision applies equally to its German cognate *Entwicklung*, used by Adler in the same rough context. None of the above samples—by Taruskin, Dahlhaus, Adler, Allen, and so forth—are demonstrably wrong in general, but any particular use may be imprecise in the established argumentative context, depending on the historical and disciplinary situation of the argument. Both *what* evolution (or *Entwicklung*) means—the factual content of the concept evolution—and *how* this what has come to pass—theories for or about evolution—are less well-defined in Adler’s time than in ours. Therefore my explication extends over this and the subsequent sections, all the while referencing arguments in biology to contextualize my analysis of Adler’s language:

- In this section, I offer an easy distinction between evolution as historical process and evolution as individual development. Both meanings were used interchangeably in the history of biology, but by the beginning of the twentieth century, development came to designate individual contexts, and evolution historical ones. Adler’s use of *Entwicklung* (strictly, development) does not allow for such a clear distinction yet. Still, for him *Entwicklung* is a word designating more likely what we would call historical processes than what we would call individual development.
- The next section reviews the basics of biological systematics, which forms the basis for all evolutionary theories, including those that influenced Adler. The classification of biological beings in taxonomic groups provides the empirical material for testing evolutionary theories, several of which were current during Adler’s lifetime. (Conversely, the acceptance of Darwin’s genealogical explanation for biodiversity also altered the criteria for constructing taxonomic groupings in late nineteenth- and early twentieth-century systematics.)
- Some musicologists distinguish between the evolutionary theories of Jean-Baptiste de Lamarck and Charles Darwin. This section distinguishes between Darwinism and Lamarckism, and provides a crude survey of the evolutionary theories current during Adler’s life, all of them Darwinist in the broadest sense.
- The evolutionary theory with the clearest terminological residue in Adler’s early articles

proves to be Charles Darwin's proposition of common descent of species due to the historical divergence of their characteristics in (what Darwin termed) the "struggle for existence." However, Adler's application of this *Kampf ums Dasein* differs from Darwin's, and not in a way that would suggest his debt to Lamarck either. A third evolutionary theory must have been his source, overtly close to Darwin but with greater integration between evolution and development processes.

- Ernst Haeckel's prominence, and the way in which his contributions to late nineteenth-century biology were weighted against Darwin's (at least in popular German-language statements on the matter) suggest that Adler, had he wanted access to evolutionary thinking, would have picked Haeckel as a more likely source than Darwin.
- Lastly, Adler's references to Darwin's suggested mechanism for evolution, the struggle for existence, are oblique. They testify to Adler's general awareness of the core tenets of Darwinian biology, but also to his divergence from them in a consistent way that—through the next chapter's arguments—can be attributed to Haeckel.

While this survey of biological points of view by no means covers the wealth of evolutionary theories—neither their histories' nor their current applications'—it serves as a structure by which we can evaluate Adler's opinions, and those of evolutionary musicology's critics.

What we call "evolution" today, in English or German, had different referents in the nineteenth century. In German biology, *Entwicklung* was the most common term referring to biological processes, of any kind. The word simply denoted a coherent process starting at a specified moment in a specific state, and then clearly departing from that state over time.³⁵ When in the 1820s and 30s the embryonic development of animals became an object of scientific scrutiny, this biological development process was called *Entwicklungsgeschichte*, a term which one could variably translate into English as "development story" or "development history." At the same time, when natural history (*Naturgeschichte*) became an accepted scientific discipline, the historical processes described were designated *Entwicklung* simply by virtue of being processes in the biological world, rather than (say) the domain of physics. Theories devised to explain biological processes were called *Entwicklungslehre*

³⁵The etymological roots of the word lie with "uncoiling" or "unwinding," with a vaguely cyclical but clearly directional-in-time aspect. It occurs first in the medical and biological literature on organismic growth during the early eighteenth century.

(theory³⁶ of development). If the theory dealt specifically with natural history, that is, the succession of species in strata of geological time, geologists and biologists both sometimes used “transformation theory,” and if the theory proposed change of species into other species (a controversial topic in the early nineteenth century), “transmutation theory” (both having *-lehre* equivalents in German). Lastly, theories that talked of transmutation as if it were a genealogical process—one generation’s inheritance of a stock of features from their progenitors—were often termed “theory of descent” (*Descendenzlehre* in German). Only around the turn of the twentieth century did German biologists begin to adopt the term *Evolution* for life’s history from their British peers and to assign *Entwicklung* to the development of the individual organism. (In popular German parlance, *Entwicklung* may still be used for evolutionary processes today, as long as the reference to natural history is clear.)³⁷

While the actual etymological history of “evolution” in all its variants is considerably more complicated, with popular and scientific, German and English, biological and sociological usages intersecting in multifarious ways, the above bestiary should suffice for my present purposes, namely clarifying Adler’s (and others’) use of the term. When speaking about *Entwicklung* in biological or biology-derived contexts between about 1830 and the early 1900s, the word could refer to either of three meanings:

1. a generally time-oriented process, onward in time from some defined origin but not necessarily proceeding in a specific direction or towards a specific goal;
2. the development of an individual from egg to adult, otherwise known as growth or maturation (“development” to modern evolutionary biologists); or
3. the evolution (or biological history) of types or groups of living organisms.

The first meaning encompasses the second and third, and therefore the distinction between them is not always clear. A rhetorically crafty author may talk about *Entwicklung* as historical process, but—by virtue of assigned origin and temporal direction (features of all three

³⁶The more correct translation of “Lehre” would be “doctrine,” a subject matter that is taught (from Latin, *docere*), but nineteenth-century scientific German had already adopted this term for scientific theories.

³⁷Robert J. Richards, *The Meaning of Evolution: The Morphological Construction and Ideological Reconstruction of Darwin’s Theory* (Chicago and London: University of Chicago Press, 1992) provides a concise and very useful survey of the denotative field for words like *Entwicklung* or *Evolution* and their English equivalents, covering the whole of the “long” nineteenth century. Richards’s book is peculiarly useful given musicologists’ use of biological terms with a specific meaning, like “recapitulation,” in an equally specific but hugely different sense in their own field.

types of *Entwicklung*)—the author may imply (without empirical support) that such historical *Entwicklung* will also have an end or inherent purpose, as the individual biographical version of *Entwicklung* often does. This malleability of the term makes it a dangerous and loaded one to use, even in Adler’s time. But keeping in mind that there are three distinct meanings, we should be able to sort out the validity of *Entwicklung* assertions in source texts. All three meanings can be valid, depending on the context of the word, but in a well-constructed argument only one meaning should be used, for the sake of coherence.

This multiplicity of meanings rears its head when *Entwicklung* is applied in musicology, and even more so when it is connected with another (by the discussion in the first section above) loaded word, “organic.” Case in point is the first sentence of Adler’s dissertation and first publication: “Die Entwicklung der Tonkunst ist organisch.”³⁸ In nineteenth-century parlance, “organic” is a simple means of connecting a subject to the realm of the life sciences. Primitively, whatever is organic has the properties or is the product of organs, which are parts of animate beings, parts necessary for the survival of these beings, and parts not capable of surviving on their own.³⁹ Of course Adler’s use of “organic” immediately suggests organicist historiography, and thereby an interpretation of “Entwicklung” (development) in Adler’s sentence as individual. But how is this individual constituted and does it really hew so closely to the boundaries of organisms set in biology? Is Adler telling genuine history, or just the biography of an exceptionally large person—a multi-headed Lernaian Hydra perhaps—called “Tonkunst” (music)?

The case provides a good first test for my three-fold distinction above. Depending on the particular meaning of “Entwicklung,” Adler ought to pursue distinct lines of inquiry if

³⁸Guido Adler, “Die Grundclassen der christlich-abendländischen Musik vor 1600,” *Allgemeine Musikalische Zeitung* 15/44 (1880), p. 1; “The development (or history) of tone art is organic.” German often uses compounds of two nouns, like “Ton” and “Kunst” here. Usually the second noun is the root, the first a modifier. In English translation, the modifier often becomes adjectival (one might translate “Tonkunst” as “tonal art” or “musical art”) but this gives the translation a qualitative sense lacking in German: to be tonal or musical has a normative implication. In the German expression, the normative implication arises from the root noun, “art,” not the subset of art that Adler concerns himself with, the art consisting of tones. (If one were to allude to the “musical” quality of the “art” in German, one would use the adjective “musikalisch” or, closer to the actual expression, “tonlich.”)

³⁹By Adler’s time the term also already had a precise chemical meaning: Friedrich Wöhler’s 1828 discovery that urea (a substance supposedly only produced in living animals) could be synthesized in the laboratory dispelled the notion that organic chemical processes were immune to reproduction in the laboratory and, hence, scientific analysis. After this discovery, the term “organic” lost the sense of being solely due to natural processes but retained the sense of indicating the activity of organisms.

he desires to be consistent. Conversely, what types of inquiry he chooses to pursue in his articles points us to the type of *Entwicklung* that Adler usually connects with the term, and exposes any definitional waffling on his part. Thus: (i) If “Entwicklung” here simply means “time-oriented process” in or among living beings, Adler ought to be charged to explain what the features of this process are, particularly when the process starts, how its initial state is constituted, and whether there are any features like direction or periodization unique to the process; (ii) if “Entwicklung” is the development of an individual, this individual is “Tonkunst” (music) and Adler must make clear where he sees birth and (possibly) death, growth and decay as well as indicators for the personal boundaries of the individual being “music” whose biography he documents; (iii) if “Entwicklung” is the history of music, then Adler ought to be clear on what historical theory he will employ to explain what is going on in this history, and whether—even though he talks history and not biography—his historiography follows an organicist fashion of associating history with biographical patterns. These or similar considerations ought to be applied to all occurrences of *Entwicklung* in Adler’s works, especially when he uses the term in compound nouns like the common “Entwicklungsgang” (development process). It may be the case that Adler refers to different types of *Entwicklung* in different contexts, or that he remains consistent. To determine this, the distinction between generic-processual, individual-biographic, and historical-evolutionary *Entwicklung* proves a most valuable tool.

Just how valuable this distinction becomes, and how easily musicologists of earlier times tottered on either side of the boundary, may be seen in the analytical commentaries by Rudolph Reti, contextualized and dissected here by Ruth Solie:

The very instinct which draws analogies between organic life and musical works impels the theorist to see the history of music as a determinate, developmental process. Evolution, especially as viewed within nineteenth-century intellectual history, has an organic life—a teleology—of its own, and invites still further ontogenetic/phylogenetic entanglements. [Solie quotes Reti’s suggestion that slow introductions of symphonies “symbolize[...] the improvisational stage of a composition at the moment of its creation.”] The slow introduction foretells, as an embryo, the form and content of the mature individual. As regards history, Reti tells us that the thematic principle did not appear in the early stages of Western music, but [Solie quoting Reti again:] “Gradually . . . in the course of the evolution, since it obviously corresponds to an inborn sense of musical formation, such affinities between the voices [of counterpoint] emerged in the compositional design, at first sporadically and perhaps instinctively, later more frequently and clearly intentionally.” [Solie concludes:]

The notion is familiar—the sense is “inborn,” and it “emerges” in the history of the art.⁴⁰

Clearly Reti muddles the two types of processes, evolution and development, and the merger of the two is facilitated by reference to a process of “sense emergence” that can be understood as either historical or developmental by virtue of having a definable origin—“inborn” in the musical tradition—and an outward movement of “emergence” but one that can end either with a musical piece (developed terminally), or with a piece of music history.

From the remainder of Adler’s article (and the rest of his musicological oeuvre) it becomes clear that Adler thinks of “Entwicklung” usually in the third sense (he sketches at various points the historical emergences of music genres). As we shall see below, the theory of history he casts his lot with is a modified version of Darwinian evolution. Adler’s preference for the German *Entwicklung* in most of his articles is explained by contemporary German biology’s similar usage. The more precise German terms like *Descendenzlehre* were too intimately connected to biology to apply them to musical matters. To stress that a passing-on of characteristics take place, Adler employs “Genetik,” as W. D. Allen had noted.

One measure of the growing acceptance of the word “evolution,” even in German scholarship, is its use by Adler in 1908, where he speaks of “Evolution” with respect to musical culture.⁴¹ The use of this word for a clearly historical process (the evolution of polyphony from heterophony) suggests that Adler was at least marginally influenced by natural historians, who by that time used “evolution” mostly as reference to history. More precisely, Adler uses the word once he has established to his satisfaction the common origin of polyphonic and homophonic musical techniques in heterophonic folk practice. The idea of splitting lineages is thus associated with “evolution” even in Adler’s mind. The presence of watchwords like “organic” has caused many modern commentators to assume that Adler subscribed to organicism. That Adler falls more in the “history” camp does not absolve him from the possibility of engaging in organicist historiography, depending on the theory of history he chooses in any particular example. Some biological theories of history—read, evolutionary theories—indeed allow for organicist historiography. But asserting that music history is an

⁴⁰Ruth Solie, “The Living Work: Organicism and Musical Analysis,” *19th-Century Music* 4/2 (1980), p. 154; Solie’s or Reti’s emphases.

⁴¹Guido Adler, “Über Heterophonie,” *Jahrbuch der Musikbibliothek Peters* 15 (1908), p. 24

“organic” entity does not necessarily entail that the resulting historiography will follow the lines of individual growth or waxing-and-waning.⁴² Which type of historiography Adler pursued is a separate matter; *that* he pursued history, and not the biography of some unitary, individualized entity *Tonkunst*, becomes clear from following his arguments.

3.4 OF MINUETS AND TARANTULAS: THE UNITS OF EVOLUTION AND ADLER’S REFERENCES TO TAXA

To the practicing biologist, the biosphere (the complete set of biological entities in nature) has a history; this history is called evolution and consists of an enormous number of isolated facts about the past and present. And evolution—the set of facts—exhibits certain features or patterns that can be explained by different theories for evolution, by some theories better and by others worse. An evolutionary theory acts as generator of hypothetical historical narratives,⁴³ and these narratives (once confirmed empirically) are the biological data points supporting the theory, in addition to other pieces of evidence from ancillary sciences, like geology or physiology. Music historiography is in quite the same position: the facts of music manuscript distribution in the libraries of Northern Italy are established by library research; they provide the basis for hypothesizing that the courts reigning in the various cities of that region were active music patrons, a hypothesis that can be tested by various other means, for example, by checking the music repertory for dedicatory pieces, or establishing the provenance of ink and paper, or tracing the distribution of printing privileges. In biology and musicology, it is very important to distinguish evolution as the historical record of life on earth (evolution as a multitude of facts, and a multitude of historical narratives) from

⁴²Just as a quick preview, I mention that “organic” also turns up in Ernst Haeckel’s works in the technical term “organic individual” (which Haeckel thinks of as biological units, like cells, organs, or bodies). I postpone discussion of Adler’s possible debt to *this* use of “organic” until we have a better background on Haeckel’s peculiar biological theories.

⁴³Since this sounds superficially similar to a quip by Sir Karl Popper, describing evolution by natural selection as a “metaphysical research program,” I should clarify that, while I think of evolutionary theories as hypothesis generators, they are not (in my opinion) divorced from the physical world but representations of real-world processes, the summing-up of how change of species in nature happens. Natural selection is such a testable mechanism of historical biological change, and it is not the only one relevant for evolution. This non-exclusiveness and falsifiability make pursuing selection-based accounts worth the historian’s while.

the evolutionary theories used to explain this record (theories comprising a small number of meta-hypotheses and a multitude of confirmed, no-longer-hypothetical narratives). Even if the currently best evolutionary theory were abandoned (due to contrary evidence or a more parsimonious formulation of its tenets), this would not affect the record of natural history, supported by much evidence independent from evolutionary research and, indeed, biology. Evolutionary theories thus do not so much describe the what of biological history, but give answers to the how.

The how of an evolutionary theory itself has a what, an object or a unit in whose change evolution becomes manifest: this is what biologists call a taxon (*pl.* taxa). The best-known type of taxon is the species. Evolutionary biologists test hypotheses about how species or other taxa change, based on the predictions of the evolutionary theory they wish to use. Obviously definitions of evolutionary change have differed over the last 250 years—which is the period with relevant bearing on Adler and musicology—but as a starting point for further refinement, let me suggest the following consensus definition: Evolution is the change over time of organisms’ physical and behavioral characteristics (including their genome), observed through the changing fractions of a population having such characteristics.⁴⁴ Practically, if at some earlier time some fraction of a population has some characteristic, and at some later time the fraction has changed, evolution has occurred. The characteristic itself need not have changed for evolution to occur, as long as its percentage in the population has changed. Of course, over time characteristics change, too. If the different fractions at the later point are sufficiently different in their characteristics, that is, if they have morphologically (and/or behaviorally) departed from one another, they may be considered separate taxa, for example separate species (biologists refer to this process as branching, or speciation).

The critical feature of this definition for evolutionary change is that it happens not *in* individual animals (or plants,⁴⁵ or fungi, or ...) but to or among them, that is, in

⁴⁴The modern consensus is actually closer to “change of gene frequencies over time” but I have expanded it a bit to encompass non-genetic features (despite much talk about “genetics,” genes in the modern sense were a concept unfamiliar to most biologists when Adler developed his musicology around 1880) and behavior (which is presumably closer to the musicologist’s heart than, say, ear size and has drawn the attention of evolutionary biologists throughout the discipline’s history).

⁴⁵Popular accounts of life’s great diversity are almost always animal-centric, quite like my own, mostly. Of course we should not forget that the other great divisions of life contain equally or even more remarkable aspects than the animals. They are simply easier to identify with than a microbe or a portabella mushroom,

groups of these animals, in populations. Evolutionary change is a property of collectives, even if these collectives are referenced (for convenience's sake) by a made-up singular entity, a taxon, defined by the shared features of the group. This concentration on groups of individuals is what makes evolutionary theories theories of history. In the most basic sense, determining any type of historical change requires studying not just one individual but a group of individuals placed in an expanse of time. To use a rather hackneyed example from the world of musicology: If we choose to study the history of the minuet, we cannot simply study one minuet but must study a group of pieces called "Minuet" (or "Minuetto" or "Menuett" or . . .) by their composers (or publishers or performers or . . .). What we then do (presumably) is abstract certain shared features from this minuet population—we classify—and attempt to explain how the features came about—we develop historical explanations. We might discover that there are some pieces not explicitly called minuet that in most aspects agree with the norm. It would make sense to group them as minuets too, based on their features. We might also discover some pieces not called minuets that share most features but had one different characteristic, say, a faster tempo. These could be grouped as a variant of the main minuet taxon. We could then ask whether the faster tempo in these minuets is associated with the progress of historical time: say, are faster minuets by and large happening historically later than slower minuets? (This would be evolution in the sense of historical change in one taxon, or anagenesis.) Or are slower minuets happening earlier, and slower *and* faster ones happening later? (This would be speciation, the evolution of two taxa of minuets from one earlier taxon, also called cladogenesis.) And we could then apply different evolutionary theories to evaluate the causes for these changes.

But these are secondary concerns to the primary one of establishing the fact of Minuet evolution: if we observe that the frequencies of minuet characteristics change over time, evolution is happening. The application of evolutionary theories is predicated on accepting that it is populations that render data suitable for historiography, not single individuals. Any claim of evolution happening to a single organism—or a single minuet—does not make sense in the context of evolutionary biology.⁴⁶ In fact, what I have been doing in this hypo-

and thus get cited more often in popular accounts of biology.

⁴⁶Lamarck's theory of evolution lays the impetus of change at the feet of individuals' decisions about their livelihood, and may thus superficially seem to locate evolution in a single organism. Still, to Lamarck evolu-

thetical example is classifying the group of minuets by virtue of their features, and a stable and successful classification of groups and subgroups is the starting point for constructing evolutionary historical narratives, as Adler knew very well.⁴⁷ His first paper (“Grundclassen der christlich-abendländischen Musik vor 1600”) aimed for a classification of early music genres, which was to provide a basis for his two historiographical papers on harmony in early polyphonic music.⁴⁸

The notion of a taxon was first formalized in the middle of the eighteenth century. Since Aristotle, scientists had referred to similar beings as belonging to the same genus (*pl. genera*). As the name suggests, the definition had a connotation of conservative descent, of new members of a genus *generated* from like members. Since trivial observations showed that animals and plants sometimes produced different offspring (like white sheep birthing brown lambs), a subordinate category of genus was invented, focusing especially on the outward appearance of the animals; this sub-category was called *species* (Aristotle used the word *eidōs*—form, or appearance—and *species* is the medieval Latin translation).

In the turn towards scientific observation and description during the seventeenth century, the old categories of genera and species were formalized by John Ray, who proposed a first comprehensive grouping of biological organisms according to their characters in 1693.⁴⁹ The crucial historical step in biological taxonomy came with Carolus Linnaeus’s formalization of

tion only becomes manifest through inheritance, and is thus a historical process involving many individuals, a temporally extended and evolving population.

⁴⁷The terms classification, taxonomy, and systematics are interchangeable to a degree, in different periods and when used by different authors. Arranging specimens into species is often regarded as taxonomy, but to some, especially in German, as classification (*Klassifizierung* or *Bestimmung*). Determining the reasons for the discovered grouping and developing standards for the classification process are activities most often called systematics today, but may also be called taxonomy. The distinction between the two types of processes goes back to Alphonse de la Candolle, the modern usage (more or less) to Asa Gray, as explained in John S. Wilkins, “What Is Systematics and What Is Taxonomy?,” in *Evolving Thoughts: Struggling with Impermanence and Vagueness in a Complex World*, <http://evolvingthoughts.net/2011/02/what-is-systematics-and-what-is-taxonomy/> (accessed 17 April 2011). (I have found the archives of Wilkins’s blog *Evolving Thoughts* to be a treasure trove of well-written articles on the philosophical consequences of evolutionary biology.) One should note that these terms—and the scientific activities they describe—are independent of evolutionary theory, though evolutionists sought and eventually found a natural justification for taxonomy’s distinctions. Ernst Haeckel first dubbed this evolution-influenced systematic approach phylogeny, and in the twentieth century Willi Hennig formalized it under the name of phylogenetic systematics (also called cladistics).

⁴⁸Adler, *Geschichte der Harmonie*; Adler, *Wiederholung und Nachahmung*.

⁴⁹Biologists use the terms “characteristic” and “character” interchangeably to denote an organism’s physical—and conserved behavioral—features.

species designations and his extension of the incipient hierarchy from species within genera to a massive, and multiply revised, *System of Nature*.⁵⁰ In this system, which in spirit (if not in all details) forms the basis for modern biological systematics, the Goliath Birdeater tarantula is named by its genus and species as *Theraphosa blondi*⁵¹ and it shares the genus *Theraphosa* with *Th. apophysis*. Each organism can be classified as member of one species only, by virtue of possessing a combination of characters unique to the species.⁵²

At this point, a sidelong glance away from minuets and tarantulas and toward Adler's own references to classification terms may be interesting. His regard for objectivity and a consequent willingness to engage in empirical research of music was already apparent from the exchanges with Spitta cited in the previous chapter. In view of the previous two paragraphs, let us turn to the basic activity supporting any evolutionary argument: classification of populations into species and genera. Did Adler talk of "species"? Indeed he did. In his dissertation, he references "Arten" of music, here within larger genre groups.⁵³ Whether these larger groups are genera to Adler is not clear from his choice of words. The habilitation likewise knows species as musical entities.⁵⁴ "Gattungen," the German term for genera, is not as prominent as "Spezies."⁵⁵ Adler prefers various versions of "Gruppen" (groups), such as "Formalgruppen" (formal groups).⁵⁶ The notion that certain such groups perpetuate their characteristics (which was the Aristotelian/medieval reason for using the word "genus") plays an important role in Adler's thinking, though. He sometimes calls the

⁵⁰Thus Linnaeus's title for the many editions of his major systematic publication. *Systema Naturae* encompassed inanimates (like stones or corals), plants (including fungi), and animals. These three "kingdoms" had different taxonomic principles: while inanimates were listed by likeness (and were soon dropped from biological systematics or integrated into the other two kingdoms) and plants were relatively straightforwardly arranged by the features of their reproductive organs, Linnaeus's classification principles for animals proved more tenuous (for example, humans were first classified with apes, but after protests the apes were expelled from *Homo* and awarded genera all their own, like *Pan* for the chimpanzees).

⁵¹Or *leblondi*; the literature is not consistent here, though *blondi* is vastly more common. The genus-species binomial is usually italicized, and sometimes the genus is abbreviated.

⁵²For the curious reader: the character distinguishing the two tarantula species is a slight pink shade in the toes of young *Th. apophysis* instead of brown, in *Th. blondi*.

⁵³Adler, *Grundclassen*, p. 23.

⁵⁴For example, Adler, *Geschichte der Harmonie*, pp. 6 and 46.

⁵⁵One instance of the former is in the late Adler, *Methode der Musikgeschichte*, p. 29.

⁵⁶In contrast to the case of "Tonkunst" above in note 38, the modifier "Formal-" in "Formalgruppen" deserves translation as the adjective "formal." If Adler had simply meant "groups of forms," he would probably have written "Formgruppen." "Formalgruppen" refers to groups of entities which have distinct forms; they are thus "formally grouped" by virtue of their form. "Tonkunst" is not "art" by virtue of its "tones" but simply art constituted of tones.

relationships of these historical groups their “Genetik” (genetics),⁵⁷ sufficient indicator that such groups could (in Adler’s mind) be related to one another in a generative way, one emerging from another without too much obvious transformation.⁵⁸

Both early papers are also familiar with the concept of classification, the dissertation being the titular attempt to comprehensively portray the “basic classes of European music before 1600” (“christlich-abendländisch” or “Christian occidental” being a common nineteenth-century word for Western and Central Europe), and the habilitation ending with a discussion of the types of music falling under the name *Fauxbourdon*.⁵⁹ But quite apart from these early pieces, perhaps the most blatant reference to species as a biological entity—with a sly curtsy in the direction of Darwin’s evolutionary theory—occurs in Adler’s style-theoretical treatise, *Der Stil in der Musik*. Obviously the book abounds with references to “Stilarten” (style species) but another occurrence requires our special attention: in a section where Adler lists mechanisms of style creation (including such manners as “Stilkreuzung”—style cross-breeding), he uses the marginal title “Entstehung der Arten,” which is also the short (and popularly known) translation for Darwin’s “Origin of Species.”⁶⁰ When Adler was writing *Der Stil* around 1910, the fiftieth publication anniversary of Darwin’s book had just passed; I cannot imagine Adler using this well-known short title in the margin of his own book unawares, or unawares of the connection to biological evolution that the both scientifically and *bildungsbürgerlich* educated reader of *Der Stil* would make. After all, Adler had received a note from Friedrich Jodl in February 1809, alerting him to Jodl’s and Berthold Hatschek’s celebratory speeches honoring Darwin’s philosophical and biological achievements, respectively.⁶¹ Of course this connection, and all the other uses of “Arten,” might happen purely in the realm of metaphor, of carrying well-established biological terms over into the alien field of musicology, giving it a scientific flair. Whether Adler pursued in his classificatory exercises an evolutionist agenda depends on his criteria for and methods of classification. To

⁵⁷Again we must remember that genes (much less DNA), which we associate with the biological sub-discipline of genetics, were unknown in Adler’s time. “Genetics” simply referred to heritability, the relations of organisms due to descent.

⁵⁸For example, Adler, *Wiederholung und Nachahmung*, p. 54, where the genetics is an “in allen Kunstgebilden zu analysirende” (genetics to be analyzed in all art creations).

⁵⁹Adler, *Geschichte der Harmonie*, pp. 46–49.

⁶⁰Adler, *Stil in der Musik*, p. 139.

⁶¹More on Hatschek’s relationship to Adler below, at the beginning of the next chapter.

get a better grasp of these in their source discipline, let us return to the biological notion of classification and see how it connects the temporal change of species and their characteristics to historical evolution (one of the three meanings of *Entwicklung*).

To repeat the mantra of taxonomy, critical for classifying an organism is not the presence or absence of any one particular character; critical is the combination of all identifying characters. For our minuet example above, we would need to compile a list of features that the members of the population share (such as ternary form, relatively short duration, triple meter, and so forth). All these characters together would then define the genus *Minuettus*, and if we had slower and faster minuets that were so distinguishable to a sufficient degree, these could be (as with the tarantulas) two species, *Minuettus lentus* and *Minuettus celeris*. But if some minuet-like pieces had, say, quadruple meter, we could not count them under *Minuettus* because they lacked one identifying character of this genus. To accommodate these pieces, we could do either of two things: (i) scrap triple meter as an identifying character of genus *Minuettus* and relegate it to the species characteristics of *M. lentus* and *M. celeris*, thus letting quadruple-metered minuet-like pieces become their own species within the genus, *M. quadruplettus*; or create a new genus *Quadruplettus* that contains minuet-like pieces with quadruple meter. If we took the second route, we could then—if we chose—place the two genera together in a larger, yet more general group, identified by all shared characteristics of *Minuettus* and *Quadruplettus* except meter.⁶²

As my hypothetical example of *Minuettus* and its relation to minuet-like quadruple-metered pieces shows, the Linnean type of thinking lends itself to creating hierarchies of taxa. Several species fit into one genus, and the genus description is by at least one character less specific than either species description is (above, the character lacked by *Minuettus* that distinguished the species *M. lentus* and *M. celeris* was speed). The genera, too, may be fit under a somewhat less specific description and grouped in a more comprehensive

⁶²This decision process, whether to group more subordinate taxa in the same number of comprehensive ones or to increase the number of superordinate taxa, is a perennial bane of taxonomy and has its own nickname, the “lumper-splitter-debate.” Lumpers tend to the first, splitters to the second way of dealing with new information for classification. To a degree the decision remains subject to taste of the individual taxonomist but evolutionary theories—by their general acceptance as explanation for the appearance of taxa—constrain the choices. For a very thorough treatment of the problems associated with taxonomy, illustrated through a classification of mammals, see George Gaylord Simpson, “The Principles of Classification and a Classification of Mammals,” *Bulletin of the American Museum of Natural History* 85 (1945).

taxon. For example, the genus *Theraphosa* may be grouped with other tarantulas in the larger taxon Theraphosidae.⁶³ Similarly we could group *Minuettus* and *Quadruplettus* in the Minuettidae.⁶⁴ Linnaeus realized this (not for minuets, I think) and made hierarchy the principal ordering principle for his system. In its classical formulation, the system has five taxonomic ranks of increasing generality: species, genus, family, order, and class. Any two taxa on the same rank are mutually exclusive. If taxa on different ranks share some characters, they are nested, one in the other.⁶⁵ To a large degree, it is still this hierarchical system in which evolutionary biologists operate today when they assert historical relationships (even though their version of the system is more refined and aware of the shortcomings of the Linnaean model). Very importantly, Linnaeus and his fellow early systematists claimed no historical (that is, evolutionary) implications for the position of a species in the system. Differences or similarities of biological species did not, to them, imply inferences about the historical descent of these species. Theirs was a purely heuristic approach: useful when ordering the enormous number of unfamiliar animals reported from the voyages of discovery but silent on their historical relationships. The task of inferring these relationships from systematic position becomes possible only with the help of an evolutionary theory, applied to the classified and systematized data.

Adler, active a sesquicentury after Linnaeus, is no stranger to hierarchy. Obliquely, his use of terms like “Stilarten,” “Gattungen,” or “Grundclassen” already points to some hierarchical ordering of musical pieces in a classification scheme, with “Grundclassen” being presumably the most general.⁶⁶ So too, the table in Adler’s famous 1885 article has a hier-

⁶³In higher (meaning more comprehensive and less specific) taxa the name is still Latinate but no longer italicized.

⁶⁴The chosen names for superordinate taxa are often based on either older or very typical subordinate taxa. The former is the case for the species *Theraphosa blondi*, which was first systematically described in 1804, and which lent its name to the genus *Theraphosa* in 1870, when *Th. apophysis* was first described and grouped with *Th. blondi*.

⁶⁵Taxonomists keep modifying and extending Linnaeus’s system, chiefly in two ways: by adding new taxa at a given rank in the hierarchy (usually prompted by discovering either animals of a new kind, or new characters in an already-studied species by new research methods); or by creating new ranks, resulting currently in seven, each with an arbitrary number of super- and sub-ranks. Adding ranks to the system can be prompted by desire for a more parsimonious arrangement—including lumper-splitter-preferences—but possibly also by the acceptance of a new taxonomic theory, as was the case when evolutionary theory became part of biology.

⁶⁶Adler does not use families or orders, the other two classical ranks of Linnaean systematics. The term “Grundclassen” itself derives from Adler’s teacher Franz Brentano’s work; see the chapter title in Franz Clemens Brentano, *Psychologie vom empirischen Standpunkte* (Leipzig: Duncker & Humblot, 1874), p. 266.

archically nested series of foci for studying the history of music.⁶⁷ And although Adler does not go as far as drafting a comprehensive system of musical genres (since his interests lay more in historical questions), the same article and table contain his explicit bow to systematics, the invention of “systematische Musikwissenschaft” (systematic musicology). Whether this systematics is anything like the systematics of nineteenth-century biology remains to be shown. That the historian-at-heart Adler considered the invention of such a discipline necessary for a successful “music science” speaks to the central role systematics played (and continues to play) in the historiography of nature.

To summarize our insights about Adler gained at this juncture: it stands to reason that he knew at least which scientific vocabulary he had at his disposal when he desired to distinguish between more general and more specific systematic units, and their interpretation in terms of historical narratives. It is also apparent that Adler’s use of biological terminology is not confined to his early works; “Entstehung der Arten” is his choice in *Der Stil in der Musik*, published a good thirty years after “Grundclassen.” “Evolution” appears about halfway between the two in an article from 1908, and “Entwicklung” as well as “Entwicklungsgang” are perennial favorites when Adler addresses the music-historical process he wishes to pursue. The on-the-musicological-face-of-it unnecessary bow to systematics in the methodological manifesto underlines that Adler recognizes the value of classification for telling histories, even though this reference does not indicate what type of theory Adler would employ to craft these histories from classified data.

3.5 EVOLUTION AND DARWINISM IN ADLER’S LIFETIME

Systematics is the basis for evolutionary thinking. Once characteristic differences between groups of organisms are established, meaningful questions about the origin of the differentiating traits—and hence about the historical trajectories of these groups—become possible.

Brentano uses the term for different modes of psychological phenomena, not for different abstracted types of empirical objects, which latter would be closer to Adler’s use and comparable to biological classification.

⁶⁷Adler, *Umfang, Methode und Ziel*, p. 16; “Geschichte der Musik nach Epochen [which is the only strictly temporal designation in this list], Völkern, Reichen, Ländern, Gauen, Städten, Kunstschulen, Künstlern” (history of music by ages, peoples, empires, countries, regions, cities, schools of art, artists).

Having ruled out a principally organicist basis for Adler’s historical narratives above, now we must determine the basic features of his evolutionary—not developmental—model. This section draws a long arc from the distinction between Lamarckism and Darwinism (which has shaped recent musicological discussions of evolution) through Lamarck’s and Darwin’s theories themselves to a useful taxonomy of evolutionary theories that in the late nineteenth century would have counted as Darwinist although they disagreed with Darwin’s expressed mechanism for evolution, natural selection. Adler, whose views I showcase occasionally, is closer to Darwin’s original ideas than one might expect. This does not absolve him from entertaining an outside view of selection mechanisms, as the last section of this chapter shows.

3.5.1 The View from Musicology

When musicologists discuss evolutionary theories explicitly in recent scholarship, they are often drawn to the distinction between Lamarckism and Darwinism, both broad categories that covered a range of competing evolutionary theories in the late nineteenth century. A good example for the way in which the dichotomy Lamarck-Darwin raises its head in musicology is Leo Treitler’s article “What Kind of Story is History?” Like Taruskin above, Treitler criticizes the teleological mode of historiography employed by many historians of medieval music notation, in which mode

the function to which neumes eventually evolved—the designation of pitch patterns—was inherent in the process of evolution as its goal, and accordingly progress toward that goal depends on the recognition of it by the actors in the story. This brand of evolutionism—it is essentially Lamarckian—had been superseded by Darwin’s theory, but that has never really made a significant impression in the realm of the humane disciplines. Perhaps it is because the Lamarckian version could be readily assimilated into the general conception of gradual transformation, whereas Darwin’s theory was actually quite dissonant with it.⁶⁸

Although Treitler here (and in other articles) advocates an adoption of Darwinian historiographical principles (a position I sympathize with), his characterizations of Lamarckism and Darwinism are not true to the ideas of the two biologists and thus lose force when applied to the historiography of musicology. As we shall see below, gradual transformation is one of the

⁶⁸Leo Treitler, “What Kind of a Story Is History?,” *19th-Century Music* 7/3 (1984), p. 368. My (very positive) attitude toward Treitler’s ideas formed the kernel for undertaking this dissertation project.

major tenets of Darwin’s theory for evolution; and Treitler’s stress on the historical importance of individual decisions is actually a bit closer to Lamarck’s ideas about evolutionary process than Darwin’s.⁶⁹ Treitler’s achievement remains his recognition of the differences between these two evolutionary theories and the notion that the difference may be meaningful musicologically. Such differentiation is the only way to determine how evolution may have had an influence on musicological narratives.

In Adler’s active time, from the late 1870s through the early 1930s, the dominant biological theory of history was, unmistakably, Darwinism.⁷⁰ But two facts necessitate at least marginal attention to Lamarck’s views: (i) the above-mentioned fuzzy awareness of musicologists about this distinction within evolutionary thinking; and (ii) the pervasive presence of both Lamarckian and Darwinian⁷¹ arguments in late nineteenth-century biology, even among Adler’s biologist friends. In the subsequent several paragraphs, I thus give a very short survey of Lamarck’s and Darwin’s original ideas, and the several Darwinian revivals during Adler’s life and the decades during which his legacy developed. After this historical survey, I offer an equally short synchronic sketch of the different types of Darwinism prevalent during the later nineteenth century.

3.5.2 Lamarck’s Lamarckism

In Lamarck’s view, lineages of species come into being spontaneously, in the simplest form observable.⁷²

[L]a nature n’a donc eu à produire directement, c’est-à-dire, sans le concours d’aucun acte

⁶⁹Treitler was likely influenced by his choice of biological sources and the contemporary debates shaping them. He cites Richard Lewontin, who had published in 1979 (with Stephen Jay Gould) a major critique of 1960s and 70s Darwinism: Stephen Jay Gould and Richard Lewontin, “The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme,” *Proceedings of the Royal Society of London, Series B* 205/1161 (1979): 581–598.

⁷⁰Here, as in the case of “Lamarckism” and anywhere else, the suffix “-ism” indicates that the referenced idea has had a long and contentious history of use and abuse, leading to a perilously scarce general definition of what any such “-ism” implies. I use these labels for ease of reference, but ask the reader’s patience while I describe both Darwin’s and Lamarck’s views, which may be a useful antidote against the received caricature.

⁷¹My terminological choice is to denote a broader set of post-1859 evolutionary theories Darwinist, while considering a subset of these theories that stay closer to Darwin’s arguments “Darwinian”; the choice is arbitrary, and a definition is given below.

⁷²The subsequent quotations are from Jean Baptiste de Lamarck, *Philosophie Zoologique* (Paris: Dentu, 1809). My translations.

organique, que les corps organisés les plus simples, soit animaux, soit végétaux.⁷³
(Nature thus wouldn't have to produce directly—that is, without occurrence of an organic act—[any] but the bodies organized most simply, be they animal or plant.)

The simplest form is distinct for animals and plants, giving a nod to the most basic rank of Linnean systematics, the kingdom.⁷⁴ But beyond these simplest forms, species come from other species, relating to one another in lines of descent, just like individuals do descend from their parents. The observable change of these simple forms into more complex forms is wrought by an innate capacity of all organisms toward complexity. And the expression of this capacity in the visible forms of animals, their bodies, is directed by these organisms' habitual behaviors, modulated by environmental constraints:

Or, si de nouvelles circonstances devenues permanentes pour une race d' animaux, ont donné à ces animaux de nouvelles habitudes, c'est-à-dire, les ont portés à de nouvelles actions qui sont devenues habituelles, il en sera résulté l'emploi de telle partie par préférence à celui de telle autre, et, dans certains cas, le défaut total d'emploi de telle partie qui est devenue inutile . . . [Q]ue de nouveaux besoins ayant rendu telle partie nécessaire, ont réellement, par une suite d'efforts, fait naître cette partie.⁷⁵

(When new circumstances have become permanent for an animal race, these animals have been availed of new habits, that is, once they have adopted new actions which have become habitual, the use of this [body] part at preference over [use of] that will result, and—in certain cases—the complete loss of use of that [body] part which has become useless . . . [The fact] that the new needs will make this [body] part necessary, gives realistically, through a series of efforts, birth to this [body] part.)

Lamarck thus draws a causal arrow from the environment (“circumstances”) through persistent behavioral changes (“nouvelles habitudes”) caused by primal needs (“besoins”) to the development of particular characteristics (which in turn determine the systematic position of the species). Instead of formal constraints on changeability inherent in the body form (which were posited by most developmental biologists of the time) Lamarck sees the environment and its influence on the functionality of characters as the limiting factor of evolution. Once a new character proves useful and has been acquired by the animals, parents pass it on to their offspring, thus fixing it in the historical process until it becomes useless again:

⁷³Lamarck, *op. cit.*, p. 274. The “acte organique” may here be regular reproduction or the evolution of a new species.

⁷⁴Contemporaneously with Lamarck, developmental biologists speculated on the nature of these simplest forms. For example, Goethe suggested the structure of the leaf for plants and the bone structure of the vertebra for the bones of vertebrate animals.

⁷⁵Lamarck, *op. cit.*, p. 222.

[L]a génération entre les individus dont il est question conserve les modifications acquises.⁷⁶
([P]rocreation between individuals preserves without question the acquired modifications.)

To summarize the bare-bones process: in Lamarck, the production of offspring and the inheritance of characters is thus an essentially conservative process, while reaction to the varied confrontations of life produces variation and innovation.⁷⁷

This proposed evolutionary process (just described at the level of individuals and their successors) has a consequent “big picture” on the scale of taxonomic history, which affects the narrative patterns of natural historiography. Over time, species perfect their characteristics at the pace required by their environment. The observed species on earth are at different stages of this general process, with the simplest remaining least differentiated, and humans at the current end of the evolutionary process aiming towards greater complexity. One problem that Lamarck was not really able to address with his model was extinction, the obvious vanishing of species from the fossil record at certain points in time. By his theory, changing needs would be dealt with by changing habits, leading to bodily modification but not to extinction. (Since, in the Darwinian framework, variations are due to chance—and thus quite possibly harmful as much as beneficial—extinction poses no principal problem to Darwinian historical narratives.) Evidence for extinction began to accumulate during the first half of the nineteenth century. This and other factors encouraged biologists to muse on other types of historical processes that might explain biodiversity past and present. Lamarck’s work focused biologists’ attention on the history of nature, but it offered an only partially satisfying mechanism for how that history had come to pass.

This does not mean that Lamarck’s ideas were summarily dismissed once Darwin published his own explanation for evolution. In biology, late nineteenth-century botanists—and some of Adler’s friends among them—used the acquisition of characters to explain stunted growth in plant varieties from extreme climates.⁷⁸ This application of the inheritance of

⁷⁶*Idem*, p. 224.

⁷⁷For this reason I am reminded of Lamarck when reading statements like Treitler’s that “[c]hange is a result of individual variation” (Treitler, *op. cit.*, pp. 368–369). While Treitler disavows Lamarckism, his own statements put him perilously close to Lamarck’s ideas.

⁷⁸I am thinking of Adler’s friend Richard Wettstein (Adler, *Wollen und Wirken*, p. 5), who discussed such examples in his systematic study of botany (Richard von Wettstein, *Handbuch der Systematischen Botanik*, second, revised edition (Wien: Franz Deuticke, 1911), pp. 44–48). Wettstein refers to this as “direkte Anpassung” (direct adaptation), in contrast to the adaptation mediated by the struggle for existence.

acquired characters was squarely based on the Darwinian concept of varieties descended in a tree-like pattern from common ancestors, but since stunted varieties retained their features for some generations even when grown under favorable circumstances, botanists assumed that some semblance of inheritance must have held for the stunted growth characteristics acquired in a hostile climate. In the humanities, the notion that behavior was a driving force of historical change resonated, and thus much cultural historiography employed Lamarckian narratives, which often exhibited the features that Treitler and Taruskin were so critical about, like long-range teleology or musical autonomy. Nor have Lamarckian narratives ceased to be invoked in modern attempts to introduce evolutionary theory into musicology.⁷⁹ (Personally I think that such attempts are challengeable on grounds similar to those that biologists have employed to criticize Lamarck's ideas. But an explicit confrontation here would distract from the purpose of discussing Lamarckism, namely as qualified auxiliary in Darwinist narratives of the late nineteenth century.)

A serious stab at the question of Adler's possible debt to Lamarck must remain unanswered for now because Lamarck does not use terms sufficiently different from the rest of biological terminology to indicate any "theory-borrowing" by Adler. Talk of "Entwicklungsperioden" (development periods) is too indistinct to be attributed to Lamarck, and additionally requires analyzing which of the three meanings of "Entwicklung" obtains. Qualitative evaluations of historical processes (indulged in popular descriptions of natural history) match up with some of Adler's own value judgments on historical developments, but these may be applied equally in a Darwinian context. For example, the passage from Adler's "Umfang, Methode und Ziel" where he appeals to the observation of laws of art (cited on p. 9) has distinctly Lamarckian rhetoric—despite Erica Mugglestone's suggestion that it ties in with a Darwinian view of history—but little coherent Lamarckian methodology. Finally, equating musical traditions with the Lamarckian stress on habitual behavior as driving force of evolution is superficially plausible but does not replicate the structure of Lamarck's argument for the historical efficacy of habits. Consequently, any concrete methodical debt of Adler to Lamarck would only show in Adler's arguments and his construction of historical narratives

⁷⁹One example is Jean Molino, "Toward an Evolutionary Theory of Music and Language," in Nils Wallin, Björn Merker, and Steven Brown (eds.), *The Origins of Music* (Bradford, Conn.: Massachusetts Institute of Technology Press, 2001 [second printing]).

along Lamarckian lines. But such arguments cannot be analyzed on the fly, and I would rather dedicate a separate publication to that task. My provisional answer to the question of Adler's Lamarckian debts is that any references to Lamarckian thinking in Adler were filtered through his reception of the evolutionary hypotheses of Ernst Haeckel, who stands squarely in the tradition of Darwin. In effect, any traces of Lamarckism persisting after the publication of the *Origin* are usually rendered within Darwinism's framework. Therefore, I will now move to Darwin's evolutionary theory and its emendations.

3.5.3 Darwin's Darwinism

Before I do this, let me lose a few words about the monicker "Darwinism." I think that both Adler's core precepts and those of his biological model, Ernst Haeckel, fall under this term as it was used in popular debates about biology in the nineteenth century. (The non-biological theories of "social Darwinism" and eugenics—often associated with biological Darwinism—are irrelevant to my points about Adler's sources, as well as discordant with Darwin's biological and ethical convictions.) But of course the application of the term has changed considerable, a process very broadly sketched below. For the sake of consistency, let me define my terms thusly: In the context of biology, "Darwinism" was used for an evolutionary theory that advocated common descent and the tree-like structure of biological history. For many biologists, Darwinism implied (and implies) the primacy of selection as mechanism, but for many others, other mechanisms supervened on the struggle for existence. (Hence, one could credibly if paradoxically talk about Lamarckian Darwinist biologists, at least in Adler's day.)

To reduce confusion, I will employ the adjective "Darwinist" to refer to common-descent evolutionary theories in general, reserving the adjective "Darwinian" to those theories that stress the importance of natural selection as a means of modification, thus explicitly following Darwin. In my usage, "Darwinism" is the broader category, "Darwinian evolutionary theory" a smaller one (which includes the evolutionary theory defended in the modern synthesis), and "Darwin's evolutionary theory" that proposed by the man himself in 1859, the one to which Haeckel reacted in his publications and presentations. Central to all these variants of

late nineteenth-century Darwinism (including Darwin's and Haeckel's) is the notion that all organisms had common ancestors and that their historical relationship and trajectory could be inferred by their proximity in a Linnaean-type classification system. Explicit adherence to Darwinian selection through the struggle for existence, and considering this process a major historical force, was quite a bit rarer. But what, now, are the core ingredients of Darwin's argument?

Essentially, Darwin expanded a well-accepted fact, that a species could produce several varieties related through common ancestry, onto the whole of the systematic edifice, erasing the absolute significance of classificatory ranks like species or genus and replacing them by genealogical links. Thus he devised a natural classification scheme based on two well-accepted facts, the heritability of characters and the variety among offspring, both of which breeders and naturalists could attest to.⁸⁰ It remained Darwin's task to show that nature could take over the role of the breeder and to sketch the implications of his insight for natural historiography. His solution to the first problem was the concept of "struggle for existence," devised after his reading of the economist Thomas Malthus and a dispassionate look at the great loss of heads suffered (in nature) by most populations in each generation. In the Introduction to the *Origin* he summarizes his view thusly:

As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be *naturally selected*. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.⁸¹

Generation upon generation, Darwin imagines slight changes to occur spontaneously (which result in the variations known to breeders). If any group of organisms is consistently exposed

⁸⁰In fact, Darwin starts his argument in the *Origin* with two chapters on variation, first establishing its ubiquity as observed by breeders (in the first numbered chapter) and then demonstrating that variation occurs equally in nature (in the second chapter). Since observed variation turned out to be unpredictable, basically due to chance, Lamarck's idea that new habits created variant features is wrong. Lamarck's mechanisms for evolution, like use and disuse, are ways that help to perpetuate certain variations, but they do not provide the raw material of evolution.

⁸¹Charles Darwin, *On the Origin of Species by Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859), p. 5; Darwin's emphasis. We noted Darwin's struggle with his chosen term in the first chapter. The strong principle of inheritance maintains that children share most features of their parents. As we know since about 1900, when Mendel's experiments with peas became common knowledge, the children need not exhibit the features of their parents to share them.

to different environmental circumstances, their characters will diverge from their old state; the group will evolve. And if the modification of characters is sufficient for a naturalist to take note of, a descendant species will have arisen by natural processes. Thus Darwin explained anagenesis, and cladogenesis fit into his model of history just as well: If the original species persisted in its old environmental range, and the new one evolved its distinguishing character, a branching of one species into two will have taken place. Often intermittent geographical isolation helps this process.⁸² Persistent environmental pressure may also lead to the diversification of habits and, through this by-way, to the modification of body characters. (Thus the integration of use and disuse.) Since these branchings can happen to any number of characters, and since character sets define taxa, the simple process of natural selection can give rise to the immensity of the Linnaean systematic schema, transforming it—if classified carefully—into a genealogy of all organisms, representable by a genealogical tree.⁸³

The first translation of Darwin's book into German was published in 1860, and through the 1860s a number of reactions and popular treatments—several of them by Haeckel—had lodged the core points of Darwin's theory in German scientists' and educated citizens' consciousness. No professional biologist would by the 1880s have challenged the factuality of biological history, or of the common descent of all organisms. However, Darwin's third proposition, his suggested mechanism for evolution, natural selection, fared not quite as well. In the years when Adler was active, between about 1880 and 1930, debate among biologists raged about the importance of selection. Was the struggle for existence just “pruning” the tree of life to eliminate completely un-viable organisms? Or was selection indeed as pervasive as Darwin had suggested, shaping the history of life at every step, for every branch? And if selection was less powerful, what other mechanism could take its place as major force in evolutionary history?

⁸²The reader should note that geographic isolation may not work in other cases. Critical to speciation (in sexually reproducing organisms) is persistent reproductive isolation; developmental pathways that prevent hybrid offspring from reproducing (as in the case of horses and donkeys, which produce infertile hybrids, mules and hinnies) work as well as the geographic separation of populations by a mountain chain or an ocean.

⁸³The second-to-last chapter describes the impact on classificatory practice of accepting common descent with adaptive modification: Darwin, *Origin of Species*, pp. 411–434

3.5.4 Darwinian Resurgences from Darwin to the 1970s

Because many biologists were involved in these debates, and many solutions proposed, the history of evolutionary thinking around 1900 is a fascinating but complicated subject. Just so we do not lose sight of Adler, let me summarize the situation in two ways: first diachronically, characterizing four cycles of Darwinian eclipse and resurgence between the 1860s and today, and second synchronically, offering a taxonomy of mechanisms for variation that would, ultimately, lead to a discounting of selection. (Both summaries, abstract though they are, may serve musicologists as guideposts when assessing evolutionary arguments by their nineteenth- and twentieth-century peers.)

Above I already noted the first Darwinism—Darwin’s in the *Origin*—and the immediate criticism of selection’s power, leveraged in the 1860s and 70s. (We saw this in note 78 on p. 86 for Adler’s old friend Wettstein.) Due to general ignorance about the causes of variation, Lamarck’s propositions were revived, especially the inheritance of characters acquired during an organism’s lifetime. In the 1880s, August Weismann disproved any naïve version of the inheritance of acquired characters experimentally. This led to a first resurgence of selectionism, which is sometimes called “neo-Darwinism.” But around 1900, renewed observations and the rediscovery of Mendel’s laws of inheritance disabused many evolutionary biologists of strict adaptationism again. (Mutations were thought to create new characters, and thus species, in a very small number of generations). Only a thorough statistical analysis of inheritance patterns resurrected Darwin’s notion that changes are small from generation to generation. These insights from population genetics shaped what is called the “modern synthesis” of evolutionary biology in the 1920s and 30s.⁸⁴

As far as the period defined by Adler’s life is concerned, I should end my history here, but the reception of his work extends to the present, and thus it is useful to continue my broad brushwork into the second half of the twentieth century. After the modern synthesis had

⁸⁴Strictly speaking historians of biology identify two syntheses, one a bit earlier, in the 1920s, integrating data from statistical genetics, and the second synthesis a bit later, in the 1930s and possibly even the 40s, which added data from field observations of wild, non-laboratory populations and paleontology. Both synthetic moves work with and buttress a generally Darwinian framework, and thus the terms “second synthesis” and “modern synthesis” have become largely interchangeable as far as the prominence of natural selection is concerned. On this topic by one of the founders and prime exponents of the “synthetic” view, see chapter 12, “Diversity and Synthesis of Evolutionary Thought,” in Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution, and Inheritance* (Cambridge, Mass.: Belknap Press, 1982), pp. 535–570.

removed any serious doubt about the crucial importance of natural selection, thus eventually vindicating Darwin, biologists began to wonder whether certain features of organisms could only be explained by a variant struggle for existence between groups instead of the Darwinian ideal of struggle between individual organisms. Particularly features of animals societies, like altruism in insect colonies, were thought to be better explained by selection for the good of the species instead of selection for the good of an individual which might die due to its altruistic behavior. In the 1960s and 70s, these challenges to selection's power were answered by the concept of kin selection, which focuses on the genes passed on between parents and offspring and shared between siblings (say, the members of most ant colonies). As long as a sufficient number of gene variants are shared between individuals, natural selection encourages altruism. Thus came another resurgence—fourth Darwinism, if you wish—now extending selection's reach even to social behavioral features. But of course the view that selection could provide an explanation for all observable characters of organisms at once roused dissent.⁸⁵ Both Leo Treitler, who cites Richard Lewontin as a source in his above-cited article, and Erica Mugglestone, whose portrayal of Darwinism as selectionism was probably influenced by the biological debates of the late 1970s, seem to base their knowledge of evolution at least partly on this turn of events.

3.5.5 A Taxonomy of Non-Darwinian Darwinisms in Adler's Day

All this back and forth between pro-selection and contra-selection factions in biology hinges on the relative power of the process (or processes) bringing about variation, and the process that fixes this variation in the history of biological lineages. To Darwin, the latter process—natural selection⁸⁶—was strongly function-oriented and had the goal of immediate survival and procreation, rather than any global *telos*, like increasing complexity. Many detractors of natural selection's power in Adler's active time acknowledged selection as an important

⁸⁵This panacea nature of selection is the “panglossian paradigm” criticized in one of the more famous papers in evolutionary biology, Gould and Lewontin, *op. cit.*

⁸⁶We should note that in current biology, selection is not the only process known to cement characters in particular lineages. One important alternative to the purposive process of selection through the struggle for existence is random genetic drift: just by the statistical features of the population, a particular character may become the most common feature of its members, regardless of its usefulness given the ecological niche. Obviously this type of process does not fit the Darwinian paradigm, but it is an important twentieth-century emendation of our understanding of evolution.

force—and were thus legitimately considering themselves Darwinists by the standards of the time—but thought that certain features of variation supervened on selection to steer the historical process, effectively invalidating selection’s power at certain historical turns. As the next section will show, Adler used the struggle for existence several times in his early articles, if in a more expansive manner—verging on group selection—than Darwin would have condoned. But this does not exculpate Adler from possibly also entertaining views that would have sidelined the struggle for existence right away at certain turning points of music history. A comprehensive analysis of his actual arguments must wait, but the small taxonomy of emendations to Darwinism current in the late nineteenth century gives me a chance to check on Adler’s notion of historical process, and see whether this notion would principally sideline a musicological equivalent of natural selection as historically creative force.⁸⁷

Vernon Kellogg distinguishes three theories whose version of variation would inhibit the subsequent action of natural selection.⁸⁸ The first of these is our old friend Lamarckism, in which Kellogg stresses the inheritance of acquired body parts. As opposed to Darwin’s notion of variation arising by chance, the acquisition represents a choice of the organism in response to its needs, and thus drives the character’s change in a particular direction.⁸⁹ Giraffes want to eat *high* leaves, not just leaves generally; musicians intend to add flourishes to plainchant melodies, not just to present the text in the most sensible (or beautiful) fashion. But with such premeditated variations already decided on, selection is relegated to pruning: the giraffe that does not make the decision to eat the high leaves will cease to be (or become) a giraffe, and the singer who decides to sing the melody plainly will cease to become a cantor or soloist. The direction of historical change is thus governed by the individuals’ choices,

⁸⁷My taxonomy derives from a very incisive survey of what was called Darwinism and evolution around the turn of the twentieth century, Vernon L. Kellogg, *Darwinism To-Day* (New York: Henry Holt, 1908). Kellogg lists several auxiliary and alternative theories to Darwin’s core suppositions. I focus on the alternatives, which all challenge the primacy of selection by boosting the role of variation in one way or another. Kellogg is a very handy source on evolutionary theories generally, whose presentation I can unfortunately only ape here. I was alerted to Kellogg’s book by the treatment in Stephen Jay Gould, *The Structure of Evolutionary Theory* (Cambridge, Mass.: Belknap Press, 2002), pp. 141–146; Gould’s rendering has obviously also influenced my reading of Kellogg.

⁸⁸Kellogg, *op. cit.*, p. 362.

⁸⁹*Idem*, pp. 265–266; note that Kellogg rightly rejects attributing such intentionality for Lamarck’s own writings about biology, but especially cultural applications of Lamarckism were interpreting this directionality in terms of conscious human decision-making.

not by these choices' suitability to their biological or musicological environs.

Musicology being a humanities discipline, we would certainly expect human choices to play a role in the history of music, and thus the Lamarckian model is appealing (as mentioned several times already). But did Adler principally allow for such front-loading of the historical process as observed and portrayed by *Musikwissenschaft*? That composers and listeners make choices about the music they make and hear is fairly obvious to Adler, but these choices do not automatically endow the historical process with a drive toward the ultimate goal of the most complex or the most beautiful music:

Überall in Leben und Kunst machen sich Anomalien, Rückbildungen bemerkbar. In dem Begriff der Fortentwicklung liegt nicht der der höheren Vollkommenheit in den Erzeugnissen einer nachfolgenden Zeit eingeschlossen. Auf Erhöhung kann Senkung folgen.⁹⁰

(Anywhere in life and art one can recognize anomalies, reversions. In the notion of progressive development [*Fortentwicklung*] one does not subsume that of the higher perfection of products of a subsequent time. Ascent may be followed by descent.)

The idea that there is an absolute measuring scale of “perfection” aside, Adler does not assume that temporal progress implies qualitative progress, and this directionality is what Lamarckian constraints on variation (as portrayed by Kellogg) foster.

Kellogg's second challenger to selection's power over history is orthogenesis, the idea that variation happens in a constrained and predictable number of characters.⁹¹ Darwin's studies of variation among barnacles and his conversations with animal breeders had convinced him that new “sports” were unpredictable. But many of his colleagues maintained that certain very characteristic features that differentiated systematic groups fundamentally from one another (like the sedentariness of corals or lactation in mammals) must have arisen despite selection, or maintained without its influence. To developmental biologists of the late nineteenth century, this view was particularly appealing because the process of individual development proved to be highly conservative and immune to environmental modification (that is, natural selection). And orthogenesis also interfaced with that period's Lamarckism, in the sense that the latter provided for a progression in history, while the former determined the larger direction in which the historical process turned, say, toward larger body size, longer

⁹⁰Adler, *Methode der Musikgeschichte*, p. 14.

⁹¹Kellogg, *op. cit.*, pp. 274ff.

extremities, thicker shells, or larger brain size.⁹²

Adler's assertion that the branches of music are governed by certain specific highest laws (in his schema for *Musikwissenschaft* in "Umfang, Methode und Ziel") sounds very much like he is laying out evolutionary pathways which ought to be followed by musical history.⁹³ But again *Methode der Musikgeschichte* seems to indicate otherwise:

Es muß vermieden werden, die Unterbrechungen, Störungen, Lateralbewegungen und Rückschritte in der Weise umzudeuten, um eine gerade aufsteigende Entwicklungsreihe zu gewinnen, künstlich zu konstruieren, die Kurve in eine gerade Linie umzugestalten.⁹⁴

(One must eschew re-interpreting the disruptions, setups, displacements, and regresses in such a way as to gain a straightly ascending development series, to construct it artificially, to craft the curve into a straight line.)

Historical process curves and variegates instead of proceeding along a predictable, straight path. Adler's choice of terms, such as his use of (two words for) "regress" here and in the previous quote, show that he does not make the clear distinction between direction and progress diagnosed in Kellogg's alternatives to Darwinian thinking. Nonetheless, Adler distances himself from the model of necessary qualitative progress all too often associated with evolutionary musicology.

Kellogg's third alternative theory boosting the role of variation at the detriment of selection he calls heterogenesis, but it is more commonly known as "mutationism" and associated with Hugo de Vries.⁹⁵ According to this hypothesis, the really important variations in the history of biological lineages are usually massive, causing morphological change within one or a few generations, and thus outpacing the slow and gradual process of natural selection. The observable historical change within biological species happens quickly, in so-called "saltations."⁹⁶ Darwin was wary of this view of history, and cited several times in the *Origin* the

⁹²Musicological criticisms of "teleological" histories are thus perhaps better argued on the grounds of orthogenesis than Lamarckism in its original, early nineteenth-century formulation.

⁹³Adler, *Umfang, Methode und Ziel*, p. 17; in my opinion, Adler's "laws" are descriptive, in the sense of Darwin's "ascertained sequence of events," rather than prescriptive.

⁹⁴Adler, *Methode der Musikgeschichte*, p. 14.

⁹⁵Kellogg, *op. cit.*, pp. 327.

⁹⁶This "saltationism" should not be confused with the idea of "punctuated equilibria" in the fossil record, which originated in the early 1970s in the writings of Stephen Jay Gould and Niles Eldredge. Punctuations in Gould's and Eldredge's sense happen not within a few but several tens or (more likely) hundreds of generations. Measured against the vastness of geological time (and taking the haphazard nature of fossil preservation into account), these changes, while gradual, show up in geological sequences as sudden changes separating periods of apparent stasis.

ancient dictum “*natura non fecit saltus*” (nature does not make jumps). Like orthogenesis or a prominent role for use and disuse in the formation of variations, common macromutations would invalidate the power of selection to shape history.

The issue of mutation does not crop up in Adler, but of course the pace of historical change over time is an item that concerns historians of music, too. The image of genius composers changing the course of history by jumping ahead of their contemporaries formed a well-known trope of nineteenth-century biographies. Adler is quite skeptical of this attitude:

Kein Künstler, kein Kunstwerk steht außerhalb des organischen Entwicklungsganges. Auch die extremsten Experimente müssen sich ihm einordnen.⁹⁷
(No artist and no artwork is outside the organic development process. Even the most extreme experiments must find their rightful place in it.)

And in many of his publications, he stresses the “*Stetigkeit*” (steadiness) of historical processes, using German equivalents of the adjective “gradual” like *allmählich*. As in the other two alternatives to selection’s relative power, orthogenesis and Lamarckism, Adler tends to a characterization of history that indicates his closeness to a Darwinian stance. That he nonetheless diverges from Darwin’s vision (as we will see in the next section) is thus not due to his adherence to Lamarckism, mutationism, or orthogenesis, but to the particular version of Darwinism transmitted to him from his biological sources.

3.6 HAECKEL AND DARWIN COMPARED

That Ernst Haeckel was an influential biologist during the later nineteenth century cannot be disputed, although his record has had to endure some deserved criticism in the second half of the twentieth century. Regarding him from the perspective of a musicologist, however—even a musicologist interested in science generally—the question remains why Adler would have chosen him as a source of biological information, and not any of the other popularizers of evolutionary biology active during the *fin-de-siècle*, or indeed Darwin himself. The answer lies partly in guidance from Adler’s friends familiar with Haeckel’s work, partly too in Adler’s explicit interest in the methods rather (or more) than the results of evolutionary biology. But

⁹⁷Adler, *Methode der Musikgeschichte*, p. 14.

we should not neglect the immense stature that Haeckel had as a German public intellectual, borne from presentations and lectures like the one that (as the next chapter shows) Adler excerpted.

To pin down this stature, I resort to a small volume in the popular series *Sammlung Göschen*, which provided the burgeoning German educated citizenry (*Bildungsbürgertum*) with concise introductions to a massive number of topics, ranging from literature to philosophy to natural science. Well over one thousand such volumes were published. One of them is Rudolf Burckhardt's *Geschichte der Zoologie* (1907), a historical review of zoology from antiquity to the 1890s.⁹⁸ In the last few sections of his book, Burckhardt reviews the spread of Darwinism in several nations, and his evaluations of both Haeckel's and Darwin's achievements are revealing of the high status enjoyed by Haeckel both in the public mind and among his peers generally. If Adler had to choose a thoroughgoing source on Darwinism based on Burckhardt, Haeckel would have been a better bet than a German translation of Darwin. Additionally, Burckhardt's metric of praise and critique intimates the expectations for a good methodology in nineteenth-century German scholarship, expectations that Adler sought to match with his propositions for musicology.

As a general characterization, Burckhardt describes Haeckel as the

Persönlichkeit, die als Prototyp des deutschen Darwinismus unter allen Umständen die größte Bedeutung behalten wird, die auch den Darwinismus für die Zoologie am meisten fruchtbar gemacht hat⁹⁹

(individual who will under any circumstances retain the greatest impact as prototype of German Darwinism, and who has made Darwinism most useful for zoology).

At once we are enjoined to think of Haeckel as the conduit of Darwinism (whatever this may be in Burckhardt's mind) to the broader zoological community. At least in part, Haeckel owes this to his penmanship:

Diese unbestreitbaren Verdienste Haeckels, denen sich vielfach kleinliche und schwächliche Opposition entgegenwarf, können auch diejenigen nicht anfechten, die seinem Ringen

⁹⁸Rudolf Burckhardt, *Geschichte der Zoologie* (Leipzig: G. J. Göschen'sche Verlagshandlung, 1907). Burckhardt was paleontologist and professor for comparative anatomy in Basel and worked at the German marine research laboratory near Rovigno in Istria (now Rovinj, Croatia). I was not able to determine whether he was in any particular way biographically connected to Haeckel but his research fits squarely with late nineteenth-century *Entwicklungsgeschichte* approaches.

⁹⁹Burckhardt, *op. cit.*, p. 139.

nach Weltanschauung im Sinne der Entwicklungslehre passiv oder negativ gegenüberstehen, oder die seine Bemühungen um Popularisierung seiner Ansichten und Organisation Gleichgesinnter wenig gerne haben. Die Kunst des Wortes, der Schrift und des Stifts, seine glänzende Persönlichkeit hat nicht nur in Deutschland, sondern in der gesamten Welt, wo seine in alle Kultursprachen übersetzten Werke wirkten, der deutschen Zoologie eine Anerkennung erzwungen, die von keinem anderen Forscher in ähnlichem Maße ausging und die höchstens mit der Wirkung Cuviers zu vergleichen ist.¹⁰⁰

(These Haeckel's indubitable merits, countered by niggardly and weak opposition, even those cannot refute who react passively or negatively to his struggle for viewing the world according to evolutionary theory, or those who dislike his efforts to popularize his views and to organize those in agreement with him. The art of the word, of writing, and of penmanship, his radiant personality has forced a recognition of German zoology not just in Germany but all over the world, where his works have had influence through translations into all cultured languages, [a recognition] emanating from no other scientist to a similar degree and at most comparable to the influence of Cuvier.)

Given that the history of descriptive zoology is not exactly devoid of evocative writers—think of Humboldt in German, of Buffon, Bates, or Wallace in other European languages—Burckhardt's praise of Haeckel is quite remarkable.¹⁰¹

Darwin gets a considerably more muted endorsement. Although Burckhardt allots Darwin and his Darwinism a comparatively large section (almost ten pages on “Darwinism in England,” of which about six and a half discuss Darwin's life and biological views), the chosen formulations show Burckhardt's strong pro-German bias:

Man kann daher nicht von einer bewußten Fortbildung der Wissenschaft durch Darwin reden; seine Macht beruht vielmehr auf der Tiefe seiner Intuition, die sich in der Erfassung des Entwicklungsgedankens bewährte, während gerade die ins Theoretische gehende Zuchtwahllehre bald in Darwins eigenen Augen nicht leistete, was er ursprünglich glaubte.¹⁰²

(One cannot really talk of a conscious advancement of science through Darwin; his power relies rather on the depth of his intuition, which succeeded in the apprehension of the evolutionary idea, while precisely the theoretically oriented selection theory did not fulfill—soon enough in Darwin's own eyes¹⁰³—what he had originally believed.)

Burckhardt criticizes the “Zuchtwahltheorie” (theory of—nature's—breeding choice, that is, natural selection) for an excessively theoretical bent. To him, the distinction between

¹⁰⁰*Idem*, pp. 141–142.

¹⁰¹It is also largely accurate as regards the spread of Haeckel's works. He was the most widely published biologist of the decades around 1900. At least this is the gist of Robert J. Richards's review of Haeckel's popular publications in Richards, *op. cit.*, pp. 2–4.

¹⁰²Burckhardt, *op. cit.*, p. 131.

¹⁰³This aside refers to Darwin's increasing admission of other mechanisms for evolution into later editions of the *Origin*; Burckhardt seems to miss that Darwin never abandoned his selection theory, never considered it the only mechanism, but always accorded it the status of *primus inter pares* for causing evolutionary change, particularly for the divergence of characters and the effective splitting of lineages.

Darwin's hypothesis of natural selection and Darwinism as commonly practiced is clear; the latter does not necessarily include the former. And Darwin's theory of descent—the “Entwicklungsgedanke” (idea of development/evolution)—is classified as un-“conscious” (not “bewusst”), which subtly denies Darwin's (so-designated) intuitive science the status of methodological rigor, quite in the same sense in which improvisatory or intuited music has sometimes been deemed less artistic than composed music.¹⁰⁴ Thus, besides not being too theoretical, Burckhardt also expects a good scientific theory to be “consciously” progressive beyond the current state of scientific explanation. Assuming that conscious progress in science requires some theorizing, for Burckhardt surely the line drawn for scientific advances is a very fine one to be toed.¹⁰⁵ It seems as if Burckhardt sets up a dilemma for any new scientific proposition that he may disagree with on grounds not based in science: if the new theory has not advanced “consciously” beyond the current state of research, it was lacking in theoretical work; if it exhibits this theoretical advance, it falls short on grounds of empirical justification, relying mostly on intuition. At Burckhardt's hands, Darwin finds himself (metaphorically) in a “catch-22.”

Burckhardt stresses the commonality of Darwin's insights, their shared presence in the community of biologists of his time, and much less their unique or innovative character. Alternatively, he gives lists of problems that Darwin refrained from solving, or even avoided tackling. Darwin's knowledge gaps are stressed:

In Bezug auf die erste Theorie [common descent] muß man sich vergegenwärtigen, daß Darwin nicht über das anatomische und embryologische Wissen seiner Zeit verfügte. Hier war seine große Lücke.¹⁰⁶

(Relative to the first theory [of common descent] one must realize that Darwin did not know of the anatomical and embryological knowledge of his time. This was his big lacuna.)

¹⁰⁴For examples and a critique of this historiographical stance, see the text and notes in Leo Treitler, “The ‘Unwritten’ and ‘Written’ Transmission of Medieval Chant and the Start-Up of Musical Notation,” *Journal of Musicology* 10/2 (1992), pp. 148–149. Adler himself is not exactly innocent of this putdown technique, as we have witnessed in his characterization of A. W. Ambros on p. 45.

¹⁰⁵That natural selection is such an advance in explanatory power for biology Burckhardt—like most of his contemporaries—seems to have missed.

¹⁰⁶Burckhardt, *op. cit.*, p. 133; to the best of my knowledge, Darwin was well informed on anatomy, having described several new species on his voyage with H. M. S. Beagle and published the definitive monograph on living and extinct barnacles in the 1850s. His opinions on embryology also form a major part of his argument for evolution, as in Darwin, *Origin of Species*, pp. 434–450. Burckhardt's worry seems unfounded except perhaps when compared with the extreme heed paid to embryology by German evolutionists after Haeckel.

Anatomy and embryology are of course the cornerstones of the German zoological research program founded by Haeckel, the *Entwicklungsgeschichte* approach to biological historiography, developmental evolutionary biology.

Stressing again consequences unintentional or “indirect,” Burckhardt admits of Darwin’s importance for biology:

Wenn wir heute die Punkte bezeichnen sollen, an denen Darwin für die Zoologie besonders fruchtbringend gewirkt hat, ganz abgesehen von der indirekten Wirkung auf die Anerkennung der biologischen Probleme im allgemeinen, so ist kaum ein Gebiet der Zoologie zu nennen, dessen Pflege nicht vermehrt worden wäre.¹⁰⁷

(If [in 1907] we should mark the points where Darwin’s work was particularly fruitful for zoology—independent from the indirect effect on biological problems in general—there is barely a field of zoology whose practice has not increased.)

But even this praise is laced with the poison of generality. That Darwin was instrumental to renewed vigor in anatomical studies no one would have denied, but it hardly reflects on the sense of biologists—eloquently expressed especially by Haeckel—that Darwin’s proposition of common descent changed the perception that biologists had of their field, and of its objects’ histories.

One wonders what Burckhardt considers lacking in Darwin’s works, and where the interested reader might look for filling these (Darwin’s) lacunae:

Daher ist Darwin als in Hinsicht auf den Transformismus noch nicht auf dem Punkte der deutschen und französischen Naturphilosophie stehend zu bezeichnen, die diesen Einheitsgedanken konsequenter durchgeführt hatte. . . . Seiner großen Breite der Erfahrung und der beharrlichen Geduld ausgedehnten und minutiösen Beobachtens und Experimentierens mit Kulturtieren und Pflanzen entsprach weder seine Kenntnis der anatomischen und physiologischen Wissenschaft seiner Zeit, noch seine philosophische Beanlagung und Ausbildung.¹⁰⁸

(Therefore, with respect to transformism [the change of species], Darwin cannot yet be ranked with the German and French natural philosophy, which had more consistently followed through on the idea of unity. . . . His enormous breadth of experience and the dogged patience of his extensive and intensive observation and experimenting with domestic animals and plants did not compare with his knowledge of the anatomical or physiological science of his time, nor [agree] with his philosophical leanings and education.)

The noted catch-22 reverses: whereas above Burckhardt described Darwin’s “Zuchtwahltheorie” as overly theoretical and not grounded in evidence, here he admits of Darwin’s empirical prowess (“ausgedehnten und minutiösen Beobachtens und Experimentierens”—of extensive

¹⁰⁷Burckhardt, *op. cit.*, p. 135.

¹⁰⁸*Idem*, p. 134.

and meticulous observation and experimentation) but chides him for his lacking “philosophical bent and education” (“philosophische Beanlagung und Ausbildung”). It seems that poor Darwin can never quite get it right by Burckhardt’s standards, even when the latter looks at the same set of hypotheses. Additionally, Burckhardt’s “noch nicht” (not yet, not quite) has a faint whiff of teleological historiography about it, with the French and German work as *telos*, at least in terms of a unified understanding of biological processes (“Transformismus”). And Darwin is not the only one suffering; British Darwinism *toto modo* suffers, too. The recuperative solution must be sought on different shores:

Mit der eigenartigen Form, in der der englische Darwinismus seine Probleme behandelte, hängt zusammen, daß die gesamte spekulative Entwicklung des Darwinismus sich wenig an allgemein wissenschaftliche Normen der philosophischen und historischen Kritik band. Das volle Verständnis für diese Aufgaben, wie denn auch für die systematische Entwicklung des Darwinismus selbst stellte sich erst in Deutschland ein.¹⁰⁹

(Connected to the peculiar manner in which English Darwinism treated its problems is that the whole speculative development of Darwinism had little tied itself to common scientific norms of philosophical and historical critique. Complete understanding of these tasks, as well as of the systematic development of Darwinism itself, only emerged in Germany.)

In passing, I note the similarity between Burckhardt’s expectations on nature and on the study of nature: the history of life undergoes “systematic development” (“systematische Entwicklung”) but so does “Darwinism,” the presentation of life’s history in a systematic way. This “deep homomorphism” between the subject matter and the research discipline was—to nineteenth-century German scientists—a sign of their theories’ quality, and we will observe its effects in Haeckel’s biology, as well as in Adler’s evolutionary musicology. But now on toward the apparent goal of biological science, *Entwicklungsbiologie* as exemplified by Haeckel.

Burckhardt claims that the problems of Darwin and British Darwinism are resolved in the German approach, bringing together the best from both shores of the North Sea. Especially when compared with his dismemberment of Darwin’s reputation above, Burckhardt’s assessment of the German arch-Darwinist sounds like a paean:

Die Stellung Haeckels in der Geschichte der Zoologie ist vor allem darin begründet, daß er die Lehre Darwins und zugleich den Hauptinhalt der deutschen Zootomie und Entwicklungsgeschichte, wie sie um die Mitte des 19. Jahrhunderts vorlag, als Grundlagen zu

¹⁰⁹*Idem*, p. 135.

einer Umgestaltung der theoretischen Biologie bemühte, wie sie in solchem Umfang in der Neuzeit niemals war unternommen worden. Aus dem Darwinismus schaltete er die Zuchtwahllehre, der er auch nie Spezialstudien zuwandte, insofern aus, als er sie mit den übrigen als umbildend anzunehmenden Prinzipien unter dem Begriff der Anpassung subsumierte. Dabei kam von seiner Seite die erste bedeutende Zustimmung zur Umwandlungslehre, deren systematisch über die ganze Lebewelt sich erstreckende Durcharbeitung sein Verdienst ist. Haeckel blieb nicht mehr dabei stehen, die Klassifikation der gesamten Organismen genealogisch zu behandeln, mit kühner Hand Stammbäume für sie zu entwerfen, die als provisorische Leitlinien die größten Dienste getan haben. Gedanken der deutschen Naturphilosophie auf neuer empirischer Basis entwickelnd, fing er an, auch die Organe, Gewebe, Zellen in genetischen Zusammenhang einzuordnen, die genetische Betrachtung auch auf die Funktionen auszudehnen, die biologischen Disziplinen in ihren gegenseitigen Beziehungen zu untersuchen, ganze Gebiete der Wissenschaft erst mit wohl gewählten Bezeichnungen auszurüsten.¹¹⁰

(Haeckel's position in the history of zoology is primarily founded on the fact that he applied at the same time Darwin's doctrine and the main contents of German zootomy and development history [*Entwicklungsgeschichte*] in their mid-nineteenth-century state to serve as foundations for a refashioning of theoretical biology as it had never been attempted in the Modern Age [that is, since the Renaissance]. The selection theory within Darwinism (to which he never devoted any separate studies either), [Haeckel] disabled by subsuming it, with all the other change-inducing principles, under the term adaptation. And this [disablement] even though from his pen flowed the first important agreement with transformation theory [that is, evolution], whose systematic application all over the biological world we owe to him. Haeckel did not just stick to classifying all organisms genealogically, audaciously drawing up cladograms for them which have done great service as provisional directives. Developing some ideas of German natural philosophy on a new empirical basis, he started to integrate organs, tissues, [and] cells into a genetic connectivity, to expand the genetic view also to functions [of organs], to examine biological disciplines for their mutual relations, to endow whole areas of science for the first time with well-chosen designations.)

The final clause probably refers to Haeckel's penchant for naming new biological disciplines, some of which names stuck. More important respective to our interest in Haeckel's attractiveness to a budding methodologist like Adler is Burckhardt's assertion that Haeckel's broadening of Darwin's natural selection to "Anpassung" (adaptation) opened up a place for arguments outside the tight Darwinian constraints of the struggle for existence, which (by Darwin) acted within a population of same-species individuals.¹¹¹ Even if Adler did not have a clear vision of what the units of musicological evolution were—whether works, performances, scores, or some combination of these—Haeckel's broad notion of selection en-

¹¹⁰*Idem*, pp. 140–141.

¹¹¹We saw the musicological consequences of this broadening in Adler's imprecise deployment of "Kampf ums Dasein" and later musicological arguments about adaptation, like Donald J. Grout, "'Adaptation' as a Hypothesis in the History of Music," in Ludwig Finscher and Christoph-Hellmuth Mahling (eds.), *Festschrift für Walter Wiora* (Kassel: Bärenreiter, 1967): 73–78.

couraged adopting a Darwinian framework. And this Darwinian framework of course also entailed the diversifying tree of history, which musicologists were encouraged to discover and explain through systematic and historical musicology.

From the perspective of someone barely educated in biology—as Adler must have been early in his methodological quest—these specialist points would have gained less traction than the general value of Haeckel’s methods as properly scientific. Insofar as Burckhardt’s opinions, expressed in the early twentieth century, are representative of German *fin-de-siècle* opinion on biology as a whole, someone seriously looking for biological methods to emulate would have sought out Haeckel, rather than Darwin or any other writer. After all the latter lacked precisely the “allgemein wissenschaftliche Normen der philosophischen und historischen Kritik” (commonly scientific norms of philosophical and historical critique) necessary to put a new field of scientific historiography together, which was Adler’s desire. All the more surprising then is Adler’s explicit lip-service to the *Kampf ums Dasein*—the “struggle for existence,” also just *Kampf* (struggle)—that crops up in Adler’s earliest musicological publications. Was he then a closet Darwinian, despite the lack of “commonly scientific norms”? Or was Adler’s “struggle” a modification of Darwin’s? The subsequent section attempts an answer.

3.7 ADLER’S APPLICATION OF THE STRUGGLE FOR EXISTENCE IN MUSIC HISTORY

Notwithstanding the general importance of common descent for our modern picture of evolution, natural selection is the much more prominent feature of popular accounts of Darwinism, including musicological ones. (Witness Erica Mugglestone’s commentary on Adler cited in chapter 1.) In my discussion of Mugglestone, I had already alluded to the erroneous interpretation of selection as “picking one of a few” (as in animal husbandry) rather than differential reproduction within a population. As we now know, the latter is much closer to the biological meaning of the term. If he uses it at all, does Adler use the term “selection” (and related concepts, like survival of the fittest or the struggle for existence) more in the

colloquial or in the biological sense? And with respect to common ancestry, does he employ the concept as a tool discerning historical change when comparing different music genres? In this section I will focus mainly (though not exclusively) on the first question, since the terminological “hooks” are clearer and since common descent has a more diffuse influence on Adler’s methodology, one that deserves separate treatment. Common descent informs Haeckel’s refashioning of biological methodology, which is the basis for Adler’s creation of *Musikwissenschaft*, and any thoroughgoing discussion of the latter requires deeper grounding in Haeckel’s biology.

Selection as a biological term is simply taken over into the German lexicon, and prefaced with the proper adjective, such as “natürliche Selektion” for natural selection or “sexuelle Selektion” for sexual selection. In older texts from the nineteenth century, “natürliche Zuchtwahl” sometimes replaces the more common term; “Zuchtwahl” (breeding choice) harkens back to the origins of Darwin’s terminological invention, the “un-natural” selection going on in animal husbandry. In Adler, the word “Selektion” appears but it is exceedingly rare. One case, from the late *Der Stil in der Musik*, mentions the “aesthetic fundamental intentions of selection.”¹¹² Here, the selection process is endowed with intention (“Absicht”), a faculty more central to the analysis of cognitive processes than the statistical processes of evolution. As much as members of a population may exercise their individual faculties in the struggle of existence—including perhaps even aesthetic preferences, as in the choice of a mate or particular food items—natural selection does not have “aesthetic fundamental intentions.”¹¹³ It has nothing but characters which may help as well as hinder the organism’s ability to produce offspring which is fertile itself. Adler does not think in biological terms here, where natural selection is a process undergone passively by all individuals. He seems more in tune with the lines of argument identified by Mugglestone, with selection as a metaphor for compositional decisions that are perhaps not intentionally innovative or under conscious control by the composer (for example, following certain compositional conventions for a particular

¹¹² “ästhetischen Grundabsicht der Selektion”; Adler, *Stil in der Musik*, p. 41.

¹¹³ Darwin recognized that certain features, such as bright plumage, might actually be disadvantageous to individual organisms, but that a higher chance of finding a mate (and hence producing offspring) could balance this disadvantage. The process of sexual selection thus fits into the general paradigm of differential reproduction and resulting diversification, even though on first sight it seems at odds with natural selection’s operation on individuals.

genre, like starting a Baroque-era fugue with a *dux-comes* structure).

But this metaphorical use of “selection” occurs in *Der Stil* and is thus ill indicator of Adler’s biological grounding in his earlier years. In his dissertation and habilitation, published respectively in 1880 and 1882, natural selection makes no explicit appearance but its causative mechanism, the struggle for existence, receives casual billing as a causal force. Looking at Adler, we should remember where Darwin located the struggle for existence:

But the struggle almost invariably will be most severe between the individuals of the same species, for they frequent the same districts, require the same food, and are exposed to the same dangers.¹¹⁴

Adler’s choice for the struggling entities gives us initial clues about the depth of his Darwinian commitments. I compare Adler’s expressions here directly to Darwin, and not to Adler’s much more likely source, Ernst Haeckel, because I would like to continue prying apart the facile simile between evolution and the Darwinian view of history that sometimes besets musicological references to evolution. As we shall see in the next chapter, Haeckel had good reasons for considering himself Darwinian under the auspices of the nineteenth century, perhaps even a “first Darwinist.” This closeness does not imply that Haeckel or his followers reached the same methodological conclusions as Darwin.

The first explicit mention of the struggle for existence, in Adler’s 1880 dissertation, compares the different positions of mass and motet in the history of music:

Während die Messe nur aus kirchlich-rituellen Rücksichten die angelegentlichste musikalische Bearbeitung von Seiten der Discantisten, Contrapunktisten und Tonsetzer erfuhr, und ihre Theilung in die verschiedenen Messensätze nicht specifisch musikalischen Anforderungen verdankt, *erstarkte die Motette in ihrem harten Kampfe um das Dasein mit den übrigen Formalgattungen* zu stählerner Festigkeit und einer die übrigen nicht direct dem Ritus dienenden Gruppen nicht nur an Lebensdauer, sondern auch in tonlichen und symmetrisch constructiven Eigenschaften überragenden Vorzüglichkeit.¹¹⁵

(While the Mass only suffered the most accidental musical treatment by discantists, contrapuntists, and composers—solely due to ecclesiastic-ritual considerations—and [while] it did not owe its division into the different Mass movements to specifically musical conditions, *the motet toughened in its dire struggle for existence with the other formal genera* to steely hardness and to an aesthetic quality [Vorzüglichkeit] towering over the remaining, not directly ritually committed, groups, not just in longevity but also in tonal and symmetrically constructive characters.)

¹¹⁴Darwin, *Origin of Species*, p. 75; in the subsequent paragraphs he also allows for struggle between varieties within the species, and between species within the genus, but only because of their relative similarity.

¹¹⁵Adler, *Grundclassen*, p. 19, emphasis here (and in the translation) mine.

Ignoring the hyperbolic language (and the sentence structure), let us extract the features of the struggle for existence, that most Darwinian of concepts, according to the musicologist Adler. The italicized passage cites the most common German translation of Darwin's term, "Kampf ums Dasein." The German is a bit more martial than the English ("battle (or fight) for the Being" would be an equivalent) but it was (and occasionally still is) used as translation for Darwin's "struggle for life." The entities that struggle are not individual musical pieces in the regular sense, however: the motet defines itself through battle "with the other formal genera" ("mit den übrigen Formalgattungen"). Lest Adler can argue for a recognition of these formal genera as individuals, or at least for their relatively close similarity, the Darwinian notion of struggle does not obtain in his example. By Darwin's standards, Adler would have to show that there is indeed an overpopulation of formal genera, and that they indeed shared the same environment. Both these facts, necessary for any struggle for existence to occur, are perhaps assumed by Adler but not demonstrated outright.

Modern German "biologese" tends to avoid the term *Kampf ums Dasein* but in the hypermasculine military cultures of Prussian-led Germany and the Austrian Monarchy this concept was the one from Darwinian theory that the societal elites could easily identify with. That this identification was erroneous comes down to equal parts lacking interest in the actual workings of Darwin's biology and the deficiencies of most popular accounts of the time. Haeckel uses "Kampf ums Dasein" in his popular articles, too.¹¹⁶ Haeckel describes Darwin's ideas quite accurately but extends their reach beyond biology, into the realm of social structure (and hence into the domain of historical studies).¹¹⁷ There he connects history (biological or socio-political) with "Fortschritt" (progress) of the qualitative—and not just the trivial temporal—kind. Interestingly, he does not suggest explicitly that there is a global end to this process, thus not falling prey to long-range teleology; all evolutionary change, according to Haeckel, has *continuing* perfection ("fortschreitende Vervollkommnung") as goal. This sounds quite upbeat but downplays the humongous cost of individual lives in the struggle for existence. Darwin was more straightforward about this—from an ethical aspect—undesirable feature of nature although he, too, appealed to the perfection of species

¹¹⁶For example, see Ernst Haeckel, "Ueber die Entwicklungstheorie Darwin's," pages 1–28 of *Gesammelte Populäre Vorträge, volume 1*. The section on the struggle for existence is on pp. 15–19.

¹¹⁷Haeckel, *Gesammelte Populäre Vorträge, volume 1*, pp. 24–25.

in the struggle for existence.¹¹⁸

Back to the above quotation: How exactly one could quantify the “hardness” of a motet as “steely” is a question never explicitly answered by Adler, nor is it a question that could (on the face of it) be solved by the application of evolutionary principles. But he does offer a reason for the motet’s “aesthetic quality” (“Vorzüglichkeit” designates the quality inviting aesthetic preference of one object to others, literally “pulling-ahead-ness”). The genre’s significant characters (longevity and the “tonlichen und symmetrisch constructiven Eigenschaften”) differentiate it from “die übrigen nicht direct dem Ritus dienenden Gruppen.” Its use in the religious ritual, effectively its environment as musical genre, make the motet preferable—*vorzüglich*. This may be read as an appeal to struggle for existence and the non-motet’s disadvantage by existing outside the ritual environment. Adler’s choice of “Gruppen” here, rather than the taxonomic “Gattungen,” also implies a passing awareness of the Darwinian struggle happening between real organisms and not taxonomic individuals. But Adler’s suggestion that the “Kampf ums Dasein” happens “mit den übrigen Formalgattungen”—which are taxonomic entities—indicates that his epistemology is confused, or at the least suffers from shaky classification principles.¹¹⁹ Whatever the struggling entities may be in Adler, we do witness his awareness that the background of performative environment has a differentiating causal impact on the motet’s qualities and its success in its “Kampf ums Dasein.” Whether this difference was the crucial historical cause for the motet’s divergence from the other “groups” (or “formal genera”)—as applying Darwinian logic would dictate—or whether the difference provided merely the material (but not the most important cause) for divergence, remains to be seen.

This brings us to Adler’s assessment of the Mass in the first half of the sentence. The Mass is obviously also a musical genre in a religious setting, but Adler makes a point in contrast to the case of the motet: the Mass receives only the most cursory attention (“angelegentlichste” can be translated as “most coincidental”) by the musicians associated with polyphonic

¹¹⁸For example, Darwin, *Origin of Species*, pp. 186ff., discusses “organs of extreme perfection,” but by perfection Darwin here means optimal adaptation to the organism’s current situation, not optimal adaptation to some global standard of adaptedness.

¹¹⁹“Gruppen” may also imply that Adler’s view is close to group selection. Evaluating Adler’s expressions against the differences between selection on individuals, on groups, and on taxonomic entities like genera requires a bit more background on evolutionary thinking specifically in Adler’s time. In Adler’s own epistemology, another category, “Formalgruppen,” connects systematic and “real” groups and their properties.

practice (the “Discantisten, Contrapunktisten und Tonsetzer”). This cursory attention is explainable “nur aus kirchlich-rituellen Rücksichten” (solely due to ecclesiastic-ritual considerations). It sounds as if the experienced musicians were forced to work on the Mass not because they wanted it but because the situation of the Mass in church rites required at least some embellishment of the Proper and Ordinary. The religious background acts again, but not as instigator of struggle for existence boosting the group’s “Vorzüglichkeit” (one assumes that masses would also constitute a group, abstracted under the systematic name “die Messe,” just like “die Motette”). For the Mass in the times of the motet, religious rites serve as sustaining rather than shaping force. Adler does not state whether he considered the Mass one of the related groups or formal genera against which the motet went through its *Kampf ums Dasein*.

The second reference to “Kampf” in his earliest published document is not as rich in implications, but yields clearer evidence about the partners Adler considered locked in struggle and the eventual outcome. He applies the concept to two vocal parts:

Im Kampfe mit dem Discantus wurde der Tenor unterworfen und musste erst allmählig seiner melodischen Structur Geltung verschaffen.¹²⁰

(In the struggle with the discant the tenor was vanquished and first had to gradually assert its melodic structure.)

Discant and tenor are not genres of music; Adler’s application of “struggle” thus seems less about struggle between and more about struggle within a particular musical piece (or within a performance type, given that discant and tenor are two vocal parts in a performance structure as much as two melodic parts of a musical structure). The “fight” happens within a musical entity—the discant-tenor polyphonic structure—and thus Adler may breach the proper boundaries of evolutionary thinking, concerned as it is with history, not developmental processes in some (real or abstracted) individual. The “struggle for existence” seems more broadly applicable in Adler’s usage than it is in Darwin’s.

Two more observations on these two appeals to “struggle” as a processual engine for history: the “losers” are still around after the struggle, and modifications are usually happening to structural features of music. For discant and tenor, the struggle eventually results in a more assertive melodic structure for the tenor (“Geltung verschaffen” may be translated

¹²⁰Adler, *Grundclassen*, p. 17.

as “asserting one’s position”), and for the motet, the aesthetic quality of the “winner” was expressed in the “tonlichen und symmetrisch constructiven Eigenschaften” (the tonal and symmetrically constructive characters). Structure seems to be the most important indicator of the struggle’s results, not least probably because it is easily discernible in historical sources.

The habilitation of 1882 also has two references to “Kampf,” each extending the reach of the concept yet further from Darwin’s original one of competition between individuals (or carefully circumscribed groups of individuals). The first:

[E]s ist der Kampf zwischen der kirchlichen Tonalität und der weltlichen Dur- und Molltonalität, welche letztere endlich den Sieg davontrug.¹²¹

(It is the struggle between the ecclesiastical tonality and the secular major and minor tonality, which latter was victorious in the end.)

Again, loss in this struggle does not imply extinction; Adler does not seem to believe that the “ecclesiastical tonality” is no longer practiced. But the two entities engaged in struggle are now neither groups of musical pieces, nor structural or performative features, but classes of tonalities distinguished by their deference to sacred tradition. (Reference to the Gregorian modes as “Kirchentonarten”—ecclesiastical tonalities—is common in German.)

Below on the same page, it is interval groups that are locked in struggle:

Der Kampf der Terz und Sext, welche in der Theorie lange als Dissonanzen, endlich als unvollkommene Consonanzen, bei uns als Consonanzen [Greek expression meaning “genuine”] angesehen werden, gegen die Quint und die Quart, ihre endliche Vereinigung weisen darauf hin, dass eine *ausserhalb* der kirchlichen Theorie stehende Richtung derselben mit Gewalt Eingang zu verschaffen bestrebt war, dass insbesondere in der von der Kirche anfangs mit Recht verachteten Instrumentalmusik manche ‘mollior harmonia’ im modus lascivus zu finden wäre, gegen welche Harmonie selbst das Tridentinum vergebens anfocht.¹²²

(The struggle of third and sixth—which two were long regarded as dissonances in [music] theory, then as imperfect consonances, in our time as genuine consonances—against the fifth and the fourth, [and] their eventual unification [probably: unification of these intervals in vertical consonant structures] indicate that a movement *outside* ecclesiastical [music] theory sought to integrate the same [that is, unification of the interval types] by force, [and] that especially in the instrumental music—initially justifiably despised by the church—may be found some “softer harmony” in the lascivious mode, against which harmony even the Trentine [Council] fought in vain.)

¹²¹ Adler, *Geschichte der Harmonie*, p. 2.

¹²² *Idem.*

Here the struggling opponents are interval types—again, music-theoretical concepts—and the background environment that frames their struggle is the ecclesiastical hold on music theory, whose fingers are slowly pried away by the incursion of harmony (which unifies the interval types) into secular-derived genres of instrumental music. Adler’s claim of “Vereinigung” of the struggling opponents¹²³ shows us yet another facet of the continuing existence of the struggling partners, one that we noted already in the above “struggle for existence between discant and tenor”: where a strict interpretation of natural selection would force us to consider the “loser” dispatched, Adler’s struggle is one that commonly results in peaceful coexistence after diversification, or even in cohabitation—might one call it symbiosis—of the erstwhile opponent entities in one. This very loose interpretation of individual entities, which through historical processes may meld into one another, renders Adler’s “Kampf” manifestly un-Darwinian. Unless Adler’s definition of groups, individuals, and taxonomic entities is very careful and logically cohesive, his attempt at borrowing the logic of Darwin’s “struggle for life” to explain historical change fails.

On the other hand, if we conceive of Adler’s continuously existing formal genera as not evolutionary individuals but species—and his choice of the taxonomic term “*Formalgattungen*” (formal *genera*) suggests this interpretation—then the process Adler describes could well be cladogenesis, the splitting of lineages. New species, well-defined in their ecological niche, can of course exist side-by-side, just as mass and motet, discant and tenor, and the different interval types seem to do. In this way—even though he employed the concept of struggle wrongly when compared to Darwin’s notion of it—Adler would have grasped that such a process could yield diversity, whether in nature or in music.

Adler’s concept of struggle owes less to Darwin than to Darwin’s German popularizer Ernst Haeckel. Haeckel uses selection not just as means to explain the evolution of distinct taxa from one another, but turns it into a general principle of diversification that also applies to processes “inside” individuals. Haeckel expands the notion of individual “down” to the scale of single cells and “up” to the scale of animal and human societies. It is these notions of individual and of selection—and not Darwin’s more conservative ones—that

¹²³One might think of this as unification under the label consonance, but I consider the interpretation of “unification” as coexistence of fourth, fifth, third, and sixth intervals in chord structures more convincing, especially given Adler’s reference to the “softer harmony” of instrumental music.

Adler used; hence the variety of entities locked in struggle, and hence also the possibility of integrating “winner” and “loser” in a historically new individual. But Haeckel’s expansion of selection’s explanatory power onto processes happening not just to but in Darwinian individuals owes its own justification to the other great discovery of Darwin: the historical relatedness of all organisms, common descent. By assuming common descent, the historian of nature can reconstruct historical processes and conditions of life—even if no direct evidence remains—through careful comparative study of individuals in different lineages. This idea is the crucial link between Adler’s musicology and Haeckel’s Darwinian methodology. While Adler’s idea of selection is non-Darwinian—veers far away from Darwin’s own—his confidence in the explanatory power of common descent allows him to conceive of musicology as a *Geisteswissenschaft* organized like evolutionary biology.

4.0 BIOLOGICAL INFLUENCES ON ADLER'S THINKING

Ernst Haeckel has been a brooding presence in this inquiry, manifesting himself in footnotes and throwaway remarks. The time has come to deal with him directly and in depth. In this chapter, I present Haeckel's biology and philosophy as it connects to Adler's musicology, particularly to his schematic depiction of scientific musicology in "Umfang, Methode und Ziel."¹ To provide the biographical tendons between Haeckel and Adler with some meaty texture—that is, an actual person who may have acted as credible intermediary, as carrier of information in speech and print—I stray once more from the path leading us inexorably to Haeckel, to consider in the first section the Viennese biologist Berthold Hatschek. Hatschek was acquainted with both Haeckel and Adler, and several biographical details suggest his role as conduit for biological information to Adler. The short introductory section on Hatschek also serves to focus our attention on Viennese biology, instead of the more general survey of evolutionary thinking provided in the previous chapter. The remainder of the present chapter is organized in expanding circles of interpretation centered on a crucial source: Adler's manuscript excerpt of a presentation by Haeckel, prepared sometime in the later 1870s or early 1880s, and preserved among Adler's *Nachlass* at the University of Georgia Libraries.²

In the second section of this chapter, I present this manuscript as a documentary source, including the full text and a survey of the remaining content not copied by Adler. The parts copied by Adler are not very rich on actual biological methodology but promote evolutionary thinking quite strongly and would thus have resonated with a music researcher in search of a scientifically validated methodology. I divide my discussion of the Adler's excerpts here into

¹Adler, *Umfang, Methode und Ziel*, pp. 16–17.

²Guido Adler, Die heutige Entwicklungslehre im Verh. zur Gesam[m]twissenschaft.

two parts: the manuscript is first evaluated as historical document for Adler's awareness of Haeckel's existence; and second Adler's excerpts are interpreted both as to their biological-methodological content and as to their biographical resonance with Adler's values. The latter seems to me a central point in Adler's easy acceptance of Haeckel's general methodology, even though Adler's agreement (or lack thereof) with Haeckel's ethical stances has no impact on his adoption of evolutionary thinking into musicology.

The third section of this chapter analyzes the un-copied remainder of Haeckel's presentation, pairing it with statements by Adler in "Umfang, Methode und Ziel" that reveal his rhetorical debt to Haeckel. Then I expand the scope of our view to Haeckel's other presentations in a collection from 1879, which also contains a schema for biology very similar to Adler's for musicology in his 1885 article. Both Haeckel's view of evolution as unifying moment for any scientific discipline and his subdivision of biological research into eight sub-disciplines influenced Adler's own philosophy of musicology deeply. The section ends with a detailed analysis of the process whereby Haeckel's divisions of morphological research got transformed into Adler's schema for the disciplines of scientific musicology, particularly its systematic section. A short summary concludes the chapter.

4.1 BERTHOLD HATSCHEK: ADLER'S PROBABLE CONDUIT FOR HAECKELIAN BIOLOGY

Hatschek (1854-1941) was a friend of Adler's from his Prague days.³ He had studied with Haeckel in Jena and was called to a full professorship in zoology at Prague in 1885 on Haeckel's recommendation.⁴ In 1896, Hatschek was called to Vienna and there headed the newly established institute for comparative anatomy. His research program seems to have been guided by "second" Darwinism (presumably viewed through the spectacles of his mentor Haeckel), and thus a little bit against the tide of the times as represented by Adler's other close biologist friend, Richard Wettstein.⁵ Hatschek's later life was plagued by bouts of depression, which led him to destroy some of his correspondence. With the ascent of national socialism in Austria, he lost his property and died in poverty.

Proof of Hatschek's friendship with Adler besides Adler's reference in *Wollen und Wirken* is difficult to uncover. Especially for the early years of their friendship in Prague, all correspondence seems to have been destroyed. Oblique references are preserved in the correspondence of Adler with the Rosenthal family (Marie Rosenthal was Hatschek's wife).⁶ Letters written during the summer holidays of 1929 contain several requests by Adler to greet one "Dr. H." One letter to Adler has a handwritten note on the verso addressed to "L. G." ("Lieber Guido"?) and signed "Gruss, B." ("Greetings, Berthold"?). The letter contains the sentence:

Gestern war ich im Naturhistorischen Museum, habe viele Kilometer zurückgelegt.
(Yesterday I was at the Natural History Museum, journeyed many kilometers.)

Hatschek had access to Vienna's Natural History Museum's collections, and I do not know of any other member of the extended Rosenthal family who would have had a reason to

³Adler, *Wollen und Wirken*, p. 5.

⁴Otto Storch, "Berthold Hatschek," *Almanach der Österreichischen Akademie der Wissenschaften* 99 (1949), p. 284.

⁵*Idem*, p. 287; in a later passage, referring to Hatschek's theory of inheritance, Storch calls him "a self-described descendant of Darwin and Weismann" (Storch, *op. cit.*, p. 290). August Weismann was the German biologist who reasserted the primacy of selection as an evolutionary mechanism and thus spearheaded the first revival of Darwinian biology in the 1880s. / I alluded to Wettstein's neo-Lamarckism above, in note 78 on page 86.

⁶Guido Adler, Correspondence of Guido Adler with the Rosenthal Family.

spend several hours there. Sadly, scant and speculative as it is, this seems to be the extent of provable written contact between Adler and Hatschek. Slightly more satisfying from a documentary perspective is a postcard (dated 07 July 1909) from Friedrich Jodl to Guido Adler where Jodl refers to a

Darwin-Feier, bei welcher Hatschek und ich sprechen sollen⁷
(Darwin Festival, where Hatschek and I are to speak).

This “Darwin Festival” was apparently a celebration of the centennial of Darwin’s birth and the fiftieth anniversary of the *Origin*’s publication. Jodl, as leading member of Haeckel’s newly formed Monist League in Austria, was probably covering the more general philosophical reaches of Darwin’s researches, whereas Hatschek, as premier comparative anatomist of his time and place, could offer a biological assessment of Darwinian evolutionary thinking, twenty-seven years after Darwin’s death. With respect to Adler, at the least Hatschek was part of the circle of friends including Jodl that derived part of their theoretical background from Haeckel’s interpretation and extension of Darwin.

Hatschek’s contributions to evolutionary biology are numerous and, as in the names for the phyla Cnidaria (for symmetrical jellyfish) and Phoronida (for a peculiar type of worm-like organisms), still with us.⁸ To give the reader an idea of their relationship to Adler’s projected musicological research, let me just mention one example. In several seminal studies from the 1870s,⁹ Hatschek describes the embryonic development of different species of annelid worms in great detail, separates the developmental process in each species into stages (*Entwicklungsperioden*) characterized by distinct characters, summarizes the characters shared by all annelids in each development stage, and then compares these stages in the annelid phylum to typical developmental stages in other individuals of other phyla (for example, to the typical development process in the arthropod and chordate phyla, which contain insects and mammals, respectively). Based on features shared between different phyla at different developmental stages, Hatschek can reconstruct their evolutionary relationship and

⁷Friedrich Jodl, Postcard to Guido Adler, Vienna (?), 07 July 1909.

⁸The phylon name Bilateria for all animals exhibiting bilateral symmetry is also Hatschek’s coinage but recent evolutionary research suggests that all organisms falling under Hatschek’s Bilateria did not descend from a common ancestor.

⁹Summarized in Berthold Hatschek, *Studien über Entwicklungsgeschichte der Anneliden: Ein Beitrag zur Morphologie der Bilaterien* (Wien: Alfred Hölder, 1878).

thus their historical connection to each another. Such a reconstruction would not have been possible—in the late nineteenth century—based on fossil evidence alone. Even comparing mature adults of different phyla might not do the trick, since in that case direct adaptations to current environmental conditions might obscure the historical record. (As we will see below, such lines of argumentation were pioneered by Ernst Haeckel.)

Adler's methodology relies on the study of empirical units—musical works—but it aims to establish their historical relationship, proximately and across spatial and temporal distance. Studies like Hatschek's established correspondences between the study of organismic structure and the defining characteristics of species, between the study of individual development and evolutionary history. Evolutionary biology had been capable of establishing such relationships since the acceptance of Darwin's theory of descent with modification, which maintained that all species—extinct or still thriving, living on the same patch of earth or on different continents—had evolved from one or a few ancestors. From Adler's point of view, the temptation to use evolution as a means of explanation is clear but he needed a theory that allowed the same types of inference from individual development to history at large that Hatschek made in his annelid studies. Here the particular evolutionary theory of Hatschek's mentor and patron Ernst Haeckel, his version of Darwinism, fits the bill, and thus Adler read Haeckel, perhaps on Hatschek's instigation. But what is the documentable background to this cross-fertilization of biology and musicology?

4.2 ADLER’S EXCERPT OF A PRESENTATION BY ERNST HAECKEL

One literally first-hand source connects Guido Adler directly to the biology of his times: a manuscript excerpt of a lecture held by Ernst Haeckel.¹⁰ According to Edward R. Reilly, who prepared the provisional catalogue of Adler’s papers at the University of Georgia, the manuscript is in Adler’s hand.¹¹ Line 3 on the manuscript’s first page names “Prof E. Häckel” as author of the lecture, with an umlaut *ä* to spell Haeckel’s name instead of the more commonly used digraph *ae*.¹² In lines 1–2, Adler copies the title of the lecture: “Die heutige Entwicklungslehre im Verh: zur Gesāmtwissenschaft.”¹³ It translates as: “Today’s Theory of Evolution in Relation to Science as a Whole.” *In nuce*, at some point during his career Adler recorded Haeckel thinking about evolution, keeping a copy among his papers until his death.

4.2.1 Adler’s Manuscript as Witness to His Knowledge of Haeckel

4.2.1.1 Occasion of the Lecture and Historical Connections to Adler Confronted with Adler’s manuscript and reference to Haeckel, the reader should be wondering at first whether Haeckel ever held a lecture of the quoted title. Adler notes that his version is an extract (“Auszug”) but he never cites any particular original or authoritative printed version. However, lines 3–4 contain scant but useful information on the original source: “gehalten in

¹⁰Adler, [*H*]eutige *Entwicklungslehre*; preserved at the University of Georgia’s Hargrett Rare Book and Manuscript Library, ms. 769, box 64, folder 6. The Appendix for figures includes images of the manuscript, courtesy of Hargrett Library.

For ease of reference, I cite Adler’s copy by page number and line number, including the header on p. 1.

¹¹Edward R. Reilly, *The Papers of Guido Adler at the University of Georgia: A Provisional Inventory* (Athens, Ga.: Hargrett Rare Book and Manuscript Library / University of Georgia Libraries, 1975), p. 255. Comparing the script to Adler’s letters and other manuscripts I see no reason to doubt the attribution. For a closer evaluation—including a possibly more precise dating of the script—I lack the graphological experience.

¹²Reilly had misread Haeckel’s last name as “Hückel” in his transcription—understandably so given the similarity of Adler’s script-*ä* to an *ü* (Reilly, *Papers of Guido Adler*, p. 255). This coincidental misreading perhaps obscured the biographical link between the established evolutionist and the aspiring music scientist.

¹³“Verh:” is an abbreviation of *Verhältnis* (relationship). Adler omits one *m* in the common contemporary spelling of *gesamt* (complete, whole), indicating the elision with a superstroke. The “Entwicklungslehre” could be restricted to some theory or tradition of scholarship (“Lehre”) in embryology, but Adler’s (and Haeckel’s) reference to Darwin suggest that the word (in this source’s context) indeed refers to contemporary evolutionary theory.

der Naturforscherversam[un]g¹⁴ in München 1877 Sept” (presented at the natural scientists’ convention in Munich, September 1877). This “Naturforscherversam[un]g” corresponds to the yearly meeting of the *Gesellschaft Deutscher Naturforscher und Ärzte* (Society of German Natural Scientists and Physicians, usually abbreviated GDNÄ), an educational organization founded in 1822 by the developmental biologist Lorenz Oken to spread recent scientific and medical discoveries within the scientific community and introduce them to the broader public. The Society met annually or biennially in large conferences. Haeckel had presented previously in 1863, on the then-juvenile theory of evolution by natural selection, and was by 1877 a well-respected speaker on topics both of biological and of more general nature.¹⁵ A quick glance at the conference proceedings, the so-called *Amtlicher Bericht*, shows us that Haeckel indeed presented “Ueber die heutige Entwicklungslehre im Verhältnisse zur Gesamtwissenschaft” to the participants as a plenary lecture at the Munich meeting, and conveniently his lecture is reprinted in the proceedings.¹⁶

The most obvious possibility for Adler getting to know Haeckel’s presentation is his attendance at the Munich convention, but the conference proceedings do not list his name among the participants. The characteristics of the manuscript also argue against a quasi-stenographic transcript of the “Live in Munich” lecture: the script is clear compared to the notes Adler jotted in his notebooks, although the last several lines of the manuscript show a loosening of his hand. The appearance, its designation as excerpt (“Auszug”), and Adler’s use of German longhand script suggest that the manuscript is no record of a lecture delivered at the moment of writing but rather extracts material from a previously written or a published source.¹⁷ Therefore, an acquaintance with Haeckel’s text by eye, not ear, is much more likely.

This acquaintance may have been facilitated by Adler’s university curriculum: Adler’s

¹⁴As mentioned at the beginning of the dissertation, the square brackets indicate my additions, in this case completing certain common abbreviations of German longhand script.

¹⁵This early presentation is reprinted in Haeckel, *Ueber die Entwicklungstheorie Darwin’s*.

¹⁶Ernst Haeckel, “Ueber die heutige Entwicklungslehre im Verhältnisse zur Gesamtwissenschaft (18. September 1877),” in *Gesellschaft Deutscher Naturforscher und Ärzte, Amtlicher Bericht der 50. Versammlung* (Munich: F. Straub, 1877): 14–22.

¹⁷Some characteristics point to the possibility that Adler transcribed a stenograph of the lecture rather than a printed version but these characteristics (divergences in verb mood and voice) may also be the effect of Adler’s paraphrasing and condensing of Haeckel’s original.

professed “teacher” Franz Brentano lectured both on ethics and on philosophical methodology when Adler attended the University of Vienna, between the mid-1870s and the early 1880s. Possibly Brentano assigned readings from Haeckel, particularly the lecture that—through the ensuing debate among scientists of all stripes—showcased the philosophical and social implications of contemporary science education like few other sources. Adler could have read and excerpted the lecture for his class or seminar, preserving the text because he found it inspiring and ethically congenial. But despite Brentano’s obvious influence on Adler’s thinking, another means of introduction seems at least as plausible: one of Adler’s experienced biologist friends may have alerted him to Haeckel’s lecture and, subsequently, he may have sought a print version on his own accounting. His circle of friends included Friedrich Jodl and Berthold Hatschek at a fairly early time already, and both were well versed in Haeckel’s science, whether it be from the point of view of the biology student or the cultural historian become monist sympathizer.¹⁸ Jodl had family in Munich and thus may have heard of Haeckel’s lecture, but he is not listed as a participant of the meeting. Berthold Hatschek, on the other hand, is.¹⁹ His presence at the Munich convention would have put him in the right position to act as intermediary between Haeckel and Adler. And perhaps Hatschek even owned a copy of the presentation that Adler then used as template for his excerpt. At the very least, Hatschek could have provided authoritative advice to his friend when Adler became interested in Haeckel’s thinking.

The explicitly moral-ethical rather than scientific-methodological bent of Adler’s extractions implies that, when the manuscript was prepared, a biology-influenced musicology was not (yet?) on Adler’s mind. This suggests that copying the presentation happened fairly early in Adler’s career, perhaps even before he had made his final decision to become a *Musikwissenschaftler*, a music scientist. Additionally, given that his early academic papers already reveal a knowledge of evolutionary arguments (if not quite an evolutionary methodology), Adler’s excerpts from Haeckel’s text probably happened before these papers were conceived, and thus probably before the summer of 1880.²⁰ This points to an origin of the

¹⁸The earliest correspondence between Jodl and Adler dates to 1878. Adler mentions Hatschek as among his oldest friends in *Wollen und Wirken*.

¹⁹Gesellschaft Deutscher Naturforscher und Ärzte, *Amtlicher Bericht der 50. Versammlung* (Munich: F. Straub, 1877), p. xxii.

²⁰Adler’s “Grundclassen” article was published in the fall/winter of 1880, and I presume that it was written

manuscript between late 1877 and mid-1880.

4.2.1.2 Haeckel on the Presentation’s Reception and Adler’s Access to Printed Versions At this point, citing Haeckel’s preface to the last printed version of “Ueber die heutige Entwicklungslehre” is a valuable detour because we get a better sense of the lecture’s circumstances, its publication history, and even the emotions it aroused in the audience:

Der vierte²¹ Vortrag über “Die heutige Entwicklungslehre im Verhältnisse zur Gesamtwissenschaft” wurde am 18. September 1877 in der ersten öffentlichen Sitzung der 50. Versammlung Deutscher Naturforscher und Aerzte zu München gehalten und erschien sowohl in dem “Amtlichen Bericht”²² über die letztere, als auch separat in drei starken Auflagen (im September, October und November 1877; Stuttgart, Eduard Koch²³). Obwohl demnach dieser Vortrag, in dem zum ersten Male die Einführung der Entwicklungslehre in den Schul-Unterricht gefordert wurde, weit verbreitet ist, so erscheint dennoch seine Aufnahme in diese Sammlung wohl gerechtfertigt: einestheils als Seitenstück und Ergänzung zu dem 14 Jahre früher auf der Stettiner Naturforscher-Versammlung (1863) gehaltenen Vortrage, der im ersten Hefte der Sammlung abgedruckt wurde,²⁴ andernteils wegen der lebhaften und weitgehenden Erörterungen, die gerade an diesen Münchner Vortrag sich knüpften. Denn als Entgegnung auf denselben hielt 4 Tage später (am 22. September 1877) RUDOLF VIRCHOW²⁵ seinen berühmten Vortrag über “Die Freiheit der Wissenschaft im modernen Staate”, worin er die stärksten Angriffe gegen den ersteren, wie gegen unsere heutige Entwicklungslehre überhaupt richtete.²⁶ Ich habe auf diese Angriffe geantwortet in meiner Schrift “Freie Wissenschaft und freie Lehre” (Stuttgart, Eduard Koch, 1878). Ein näheres Eingehen auf die höchst wichtige pädagogische Seite jener Frage hatte ich damals

and conceived during spring and summer of that year.

²¹“Fourth” refers to its place in the collection: Ernst Haeckel, “Ueber die heutige Entwicklungslehre im Verhältnisse zur Gesamtwissenschaft,” pages 97–120 of *Gesammelte Populäre Vorträge aus dem Gebiete der Entwicklungslehre*, volume 2 (Bonn: Emil Strauss, 1879).

²²Haeckel, [*Heutige Entwicklungslehre (1877, GDNÄ proceedings)*].

²³Ernst Haeckel, *Die heutige Entwicklungslehre im Verhältnisse zur Gesamtwissenschaft* (Stuttgart: E. Schweizerbart’sche Verlagshandlung (Eduard Koch), 1877). This publisher also worked (and still works) under the name “Schweizerbarth’sche Verlagshandlung.”

²⁴This is Haeckel, *Ueber die Entwicklungstheorie Darwin’s*. Apparently Haeckel conceived of the two volumes of *Gesammelte Populäre Vorträge* as a coherent collection.

²⁵Virchow (1821–1902) was among the most prominent and important German anatomists of the nineteenth century, a pioneer particularly in the field of pathology but also of physical anthropology.

²⁶These “Angriffe” (attacks) on evolutionary thinking rested on Virchow’s zealous application of empiricism: since the past processes reconstructed by evolutionary biologists were hypothetical, their historical claims relied on speculation rather than the strict objectivity advocated by critics like Virchow. Because high school should educate students only about reliable scientific results—rather than hypotheses—evolutionary accounts of natural history (say, the evolution of birds) had no place in the curriculum until confirmed by independent means, preferably hard evidence (say, a number of fossils showing the evolution of bird-like features in groups of animals ancestral to birds proper). / Against the background of these terminological skirmishes, it is remarkable that Adler, in his 1885 article, explicitly endorsed the formation of hypotheses in a throw-away sentence when talking about the musicologically scientific method of inquiry (see below at p. 191).

absichtlich abgelehnt. Inzwischen ist diese Seite vorzüglich beleuchtet und zugleich VIRCHOW's Forderung gebührend abgewiesen worden in der kürzlich erschienenen Flugschrift: "Die Hypothese in der Schule und der naturgeschichtliche Unterricht" (Bonn, Emil Strauss, 1879). Der Verfasser derselben, Oberlehrer HERMANN MÜLLER in Lippstadt,²⁷ gehört bekanntlich sowohl zu unseren tüchtigsten Pädagogen, als auch zu denjenigen deutschen Naturforschern, welche—gleich seinem berühmten Bruder FRITZ MÜLLER in Brasilien²⁸—DARWIN's Entwicklungslehre durch eigene werthvolle Forschungen kräftig gefördert haben. Die heftigen Angriffe und schmähhlichen Verläumdungen, die deshalb HERMANN MÜLLER und ERNST KRAUSE, der verdienstvolle Redacteur des "Kosmos"²⁹ und Verfasser von "Werden und Vergehen", kürzlich im Preussischen Abgeordnetenhaus erfahren haben, werden hoffentlich nur dazu beitragen, diesen trefflichen Schriftstellern die wohlverdiente Anerkennung zu sichern.³⁰

(The fourth presentation—on "Today's Doctrine of Evolution in Relation to Science as a Whole"—was read on 18 September 1877 at the first public session of the fiftieth convention of the Society of German Natural Scientists and Physicians at Munich, and appeared both in the "Official Report" on the latter and separately in three big [in number] editions (in September, October, and November of 1877, Stuttgart: Eduard Koch). Thus widely distributed, this lecture, which for the first time demanded the inclusion of evolutionary theory in school curricula, still seems like a well justified addition to this collection: on one hand, as parallel and complement to the presentation from the Scientists' convention (1863) in Stettin—fourteen years ago—which is reprinted in the first volume of this collection; on the other hand, because of the lively and wide-ranging disquisitions which followed particularly this Munich presentation. It was countered, four days later (on 22 September 1877) by RUDOLF VIRCHOW's famous lecture on "The Freedom of Science in the Modern Nation," which directed the gravest assaults against the former [lecture by Haeckel] as well as our modern theory of evolution generally. I have answered these attacks in my publication "Free Science and Free Education" (Stuttgart: Eduard Koch, 1878). Closer attention to the most important pedagogical side of this question I had avoided deliberately. In the meantime, this side has been aptly illuminated and likewise VIRCHOW's demand properly rejected in the recently published booklet: "Hypothesis [as Methodology] in Schools and Education in Natural History" (Bonn: Emil Strauss, 1879). Its author, headmaster HERMANN MÜLLER from Lippstadt, belongs of course to our most industrious educators, and—like his famous brother FRITZ MÜLLER in Brazil—to those German natural scientists who have promoted DARWIN's evolutionary theory heavily through their own valuable researches. The passionate attacks and denigrating accusations recently suffered in the Prussian House

²⁷Müller was an early appreciator of Darwin, well-connected to the Haeckel circle, and a highly respected botanist, his interests eventually converging on studying the coevolution of plants and pollinators. The title's "Hypothesis" is the speculative aspect of evolutionary inference, rejected by the more empirical Virchow, accepted by the aspiring natural historians, like Haeckel and the Müllers.

²⁸Unlike his brother Hermann, Fritz (actually, Johann Friedrich Theodor) Müller fled from the repressive political state into which Germany descended after 1848 to Brazil, there establishing himself as keen observer and naturalist, as well as outspoken atheist. Like his brother and Haeckel, he supported and strove to popularize Darwin's theory.

²⁹This is not an edition of Humboldt's *magnum opus*, which Adler had in his library, but a popular science magazine slanted towards wide-ranging applications of evolutionary thinking. Haeckel and the Müllers were regular contributors. Krause is better known under the pen name "Carus Sterne."

³⁰Ernst Haeckel, *Gesammelte Populäre Vorträge aus dem Gebiete der Entwicklungslehre* (Bonn: Emil Strauss, 1879), pp. ix-x.

of Representatives by HERMANN MÜLLER and [also] ERNST KRAUSE—the meritorious editor of [the periodical] “Kosmos” and author of “Becoming and Ceasing”—will hopefully contribute to secure for these excellent writers their well-deserved acceptance.)

As we can see, Haeckel’s reaction to Virchow’s methodological attack—far more damaging because it came from an ideological ally in the *Kulturkampf*—was swift: he ensured that his views on evolution education expressed at the Munich conference got published immediately and profusely, in the three separate printings of the presentation in late 1877. To inform the public about the contents of evolutionary theory and its foundation in sound scientific thinking, Haeckel’s popular lectures from the 1860s and 70s (including “Die heutige Entwicklungslehre”) were collated in two volumes in 1878 and 1879. As a template for Adler’s extract there are thus three possible printed sources: the GDNÄ-*Amtlicher Bericht*, one of the separate 1877 printings, or the second volume of the collected popular writings, published in 1879. Unlike “Freie Wissenschaft und freie Lehre,” which was reprinted with two later lectures in the 1890s, “Ueber die heutige Entwicklungslehre im Verhältnisse zur Gesamtwissenschaft” was not edited anew during Haeckel’s lifetime. Evidently Haeckel considered it a child of its particular time. That Adler excerpted this source, rather than any of Haeckel’s treatises on the same topics that were more commonly available in the 1890s or later, suggests again that he learned of the presentation and prepared his extract fairly early in his career, at the latest during the late 1880s.

There is no evidence for Adler ever owning a print copy of Haeckel’s lecture, be it the single printing or the collection. One might ask, too, what the point of keeping a manuscript excerpt was if a print was readily available in Adler’s library. However, there are two curious entries in a booklist prepared by Hubert J. Adler, either after the dissolution of Adler’s estate in the early 1940s, or around the time of the collection’s transfer to the University of Georgia. While the books are usually listed by a shortened title and possibly the author, number 208 reads (translated and extending the abbreviations) “various booklets of natural-scientific, religious, and philosophical content” and number 218 “various psychological and philosophical contributions.”³¹ The subject areas are exactly those covered by Haeckel’s

³¹Adler and Anonymous, *op. cit.*

contributions to the two volumes of *Gesammelte Populäre Vorträge*.³² Of course the vague description in the booklist could fit any collection that issued from the Haeckel group of promoters for *Entwicklungslehre*; perhaps Adler owned a few issues of Carus Sterne's journal *Kosmos*.³³ The entries in the book list thus tell us little about Adler's ownership of a particular version of Haeckel's lecture, but they do testify to Adler's continuing curiosity about the nexus of religion, philosophy, and natural science.

The manuscript itself offers precious little information that would allow us to identify either of the three printed versions as the one that Adler had before his eyes. Adler's deviations from Haeckel's spelling are usually shaped by the peculiarities of his native Moravian-Austrian German, as in his choice to spell "Entwicklung" without the second *e* or to replace "eröffnet" with "eröffnet." There are three places that, taken together, may point toward the 1879 collected edition: (i) on p. 1, line 17, Adler spells the word "mikroskopische" (microscopic) with two *k*, as does Haeckel in the 1877- and 1879-version but not in the GDNÄ-version (there he uses "mikroskopische"); (ii) on p. 3, line 11, the word "bloss" ends with a double-*s*, but Haeckel's 1877 (non-GDNÄ) version—and only that one—has a single *s*,³⁴ (iii) on p. 3, line 10, Adler spells "Pflichtgeföhls" as Haeckel does in the 1879 edition but not in the two earlier prints ("Pflichtgeföhles"). By (iii) Adler would be familiar with the collection, by (ii) he would not have used the 1877 separate edition, and by (i) he would not have used the *Amtlicher Bericht* of the GDNÄ. But Adler's variants are within the possible range of spellings for all these words in the nineteenth century, and thus his agreements or disagreements with any particular version of Haeckel's offer little conclusive evidence for a

³²The titles of the other presentations are for the first volume (1878): "Ueber die Entwicklungstheorie Darwin's" (on Darwin's evolutionary theory), "Ueber die Entstehung des Menschengeschlechts" (on the origins of the human genus), "Ueber den Stammbaum des Menschengeschlechts" (on the phylogeny of the human genus), "Ueber Arbeitstheilung in Natur- und Menschenleben" (on division of labor in the life of animals and humans), and "Ueber Zellseelen und Seelenzellen" (on cellular souls and spiritual cells); and for the second volume (1879): "Ueber die Wellenzugung der Lebenstheilchen oder die Perigenesis der Plastidule" (on the oscillating generation of the units of life, or the perigenesis of plastidules), "Ueber die Urkunden der Stammesgeschichte" (on the documents of phyletic history), and "Ueber Ursprung und Entwicklung der Sinneswerkzeuge" (on the origin and evolution of the sensory apparatus).

³³Another booklist, with much shorter titles, mentions "Humboldt, Kosmos" twice. Hubert J. Adler's list does not support the contention that Adler *senior* owned two copies of Humboldt.

³⁴Although it is phonetically possible, "blos" would be a very unusual spelling which one would expect Adler to have corrected to the more common "bloss" or, in modern German, "bloß."

particular template.³⁵

4.2.1.3 A Biographical Scenario for Adler’s Excerpt of Haeckel’s Lecture My contention that Adler relied on the 1879 collected edition rests on other, methodological similarities that are discussed *en detail* in the next large section. To conclude this prefatory subsection, I offer a possible biographical scenario for the encounter between Haeckel’s words and Adler’s pen. This scenario rests on the fact that Haeckel visited Vienna at least once in the late 1870s, in late March 1878. He held two public lectures which are also reproduced in the collection that contains “Ueber die heutige Entwicklungslehre”: the first is “Ueber Zellseelen und Seelenzellen” (on cellular souls and spiritual cells)³⁶ and the second “Ueber Ursprung und Entwicklung der Sinneswerkzeuge” (on the origin and evolution of the sensory apparatus).³⁷ Adler may have attended either lecture, and especially the second one would have been of putative interest to the aspiring music scientist, since it deals with the evolution of the auditory system (among other sensory systems). The first lecture’s title promises a working-out of Haeckel’s notion of a “cellular soul,” discussed in the earlier “Über die heutige Entwicklungslehre”; the “spiritual cells” are simply neurons, whose role in the nervous system was just then being discovered. It is quite possible that Adler (previously unfamiliar with Haeckel’s ideas) got to know them by attending the lectures in late March 1878—perhaps instigated by his friends—and was provided later with a version of the Munich lecture, which he then copied.

Even with this proposal to resolve the “mechanics” of the Adler-Haeckel connection, Adler’s motivation still remains mysterious. By the content that he copied, at the time of contact Adler was less interested in Haeckel’s biological methodology than his views on evolution-based ethics and, to a lesser degree, in the possibility that an evolutionary approach might unify the sciences and history. Haeckel’s methodological views are more prominent in the parts of his presentation that Adler omitted than those that he copied. But if evolution-

³⁵All deviations of Adler’s manuscript from *each* of Haeckel’s printed versions are catalogued in the footnotes to the manuscript’s text in subsection 4.2.2.

³⁶Held on 22 March 1878 at the “Concordia,” a public lecture hall; Haeckel, *Gesammelte Populäre Vorträge*, volume 1, p. 143.

³⁷Held on 25 March at the “Scientific Club,” a university-connected group of scholars similar to a debating society; Haeckel, *Gesammelte Populäre Vorträge*, volume 2, p. 121.

ary methodology was not his first desire, what was, besides a putative reading assignment from Brentano?

I would like to suggest that the time of Haeckel's presence in Vienna was something of a liminal time for Adler: in early 1878, he had just finished his law degree and started his practical education at a Viennese law firm. For whichever reason, he decided to quit after working for only three months, apparently on good terms with his employer.³⁸ Perhaps Hatschek or Jodl alerted Adler to Haeckel's existence. Perhaps Adler attended one of Haeckel's Viennese lectures in this period of disorientation, when his previous plans to pursue musical studies besides practicing law were replaced by the pressure to come up with a worthy endeavor that would lead him to success in musicology. Musicology at that point in history was anything but a secure career choice, if by "secure" one means "leading to a respectable academic position." The siren call of evolutionary science (which permeates all of Haeckel's publications), the promise that an *Entwicklungslehre*-based approach might elevate music historiography to scientific standing, would have found receptive ears in Adler. At an early point in time (in 1878?), while not yet keening for a complete methodology, Adler saw fit to read and extract parts of "On Today's Evolutionary Theory in Relation to the Whole of Science." But at some later moment, perhaps in 1879 or 1880, the concrete possibilities offered by Haeckel's version of evolution must have taken a hold of Adler's scholarly mind.

His autobiography only states that he returned to music studies and that eventually, in 1880, he produced his dissertation, "Die Grundclassen der christlich-abendländischen Musik vor 1600." Since the dissertation shows clear evidence of exposure to evolutionary theory (evidence encapsulated in its initial declaration, "Die Entwicklung der Tonkunst ist organisch"—the evolution of tone art is organic), the time between mid-1878 and mid-1880 may well have been spent by Adler immersing himself in biological thinking, at least its theoretical foundations. As our reading of Rudolf Burckhardt's review of zoology in section 3.6 showed, Haeckel was a well-accepted authority on evolution in the German language, and Adler's connections to Jodl and Hatschek probably sufficed to introduce him to the foundations of biological evolution which he started to apply in "Grundclassen" and his other articles from the 1880s. Such a biographical scenario fits Adler's situation early in his mu-

³⁸Adler, *Wollen und Wirken*, p. 4f.

sicological career, the aspirations for *Musikwissenschaft* he considered realized later in his life, in retrospect, and it explains the thorny conundrum that Adler copied Haeckel's less methodological and more philosophical propositions.

That Adler's manuscript is not completely distinct from his methodological enterprise later on, my commented reproduction below will show. But one codicological peculiarity of the title page may also help us conjure the image of Adler's methods arising from his early reading of Haeckel: in the manuscript's header (lines 3 and 4), both "E. Häckel" and "1877 Sept" are underlined by a wavy, blue-gray pencil mark, quite different from the ink underlinings in the body of the text (which Adler probably added when copying). These pencil lines might have been added by somebody reviewing the papers (perhaps a librarian or the people taking care of the *Nachlass*) but interestingly a very similar pencil mark, in similarly shaky hand, occurs on other documents, particularly those that feature in Adler's autobiography. Perhaps these lines marking Haeckel and the occasion were thus drawn by Adler himself, at a time when he was reviewing his collected papers.³⁹ Similarly, in the top left corner of the first page, there is an uppercase *Kurrent* "V." This appears also on the sketches, drafts, and proofs for Adler's inaugural article for the *Vierteljahrsschrift*, "Umfang, Methode und Ziel."⁴⁰ If the siglum is a reliable indicator, then Adler (or the person ordering his papers before they were re-ordered and catalogued at the University of Georgia) connected the excerpt from Haeckel and its date explicitly to Adler's methodological *opus primum*.

4.2.2 Haeckel in Adler's Hand: The Lecture's Content and Extended Implications

In this section, I quote and discuss the entirety of Adler's manuscript. It is the only hard evidence we have of Adler's explicit engagement with evolution, and therefore deserves such special scrutiny. The reproduction and detailed discussion serves several ends, concomitant with the manuscript's multiplicity as a piece of evidence:

1. the text traces Haeckel's development of a more comprehensive sense of *Entwicklung* from

³⁹Haeckel's lecture is not mentioned in Adler's autobiography.

⁴⁰See Hargrett Rare Book and Manuscript Library / University of Georgia Libraries, ms. 769, box 1, folder for 1885. More common than "V" as a siglum is "Vjsch" or "Vjschr."

his reading of Darwin's works; while Adler copies only the most salient parts, Haeckel's general contention that *Entwicklung* provides a foundation for historiography even in the humanities shines through;

2. Haeckel's critique of religion as dogmatic is not poised to uproot Adler's already quite undogmatic views, but Haeckel's development of a monist ethics from (and in unrecognized conflict with) *Entwicklungslehre* provides support for Adler's humanist views, thus predisposing him to consider Haeckel's more technical positions in a congenial way;
3. in Adler's excerpts, actual information on biological historiography is scarce but sufficient to induce a return to this article (and potentially others in the 1879 collection) when Adler was getting serious about adopting and adapting *Entwicklungslehre* to musicological tasks;
4. we get a sense of what Adler knew of Haeckel's ideas first-hand (because he was copying it) and "first-eye" (because at least he should have skimmed the remainder of the text).

The text covers almost four pages on a leaf once folded, each page of about quarto size. Adler uses the contemporary formal German longhand script (*Kurrentschrift*) with one instance of Latin letters, which indicates borrowed foreign words (similar to Italic typeface in modern English-language printing). Otherwise he underlines both for semantic emphasis and to indicate personal names. In his manuscript, Adler uses several common German longhand abbreviations: (i) the noun suffix "-ung" gets shortened to "-g" (for example, "Entwicklg" from "Entwicklung") and likewise "-eit" to "-t" (such as "Einht" from "Einheit"); (ii) double *m* is contracted to "m̄" ("gesamt"⁴¹ is written "gesāmt"); (iii) the definite and indefinite articles are replaced by ciphers resembling a lowercase Latin-script *e*⁴²; (iv) the conjunction "und" is abbreviated as "u." In the quotations below, I have expanded all these abbreviations to their regular German values, bracketing my expansions. My subheadings do not represent explicit subdivisions in Adler's or Haeckel's text; they simply structure this subsection, alerting the reader to recurrent themes.

⁴¹This older spelling of *gesamt* was probably itself an abbreviation of *gesammelt* (collected, or gathered).

⁴²The root for this grapheme is probably the final turn in the German *Kurrentschrift* lowercase *d*; it functions as abbreviation for the various definite articles starting with *d*, like "der," "die," "das," and their declensions. A similar abbreviation is used for the indefinite articles "einer," "eine," "eines," and their forms, here probably based on *Kurrent-e*.

4.2.2.1 From Darwin to Haeckel’s Vision of *Gesamtwissenschaft* Haeckel’s introductory remarks and his short historical survey of *Entwicklung* approaches in biology are excised in Adler’s “Auszug.” Instead, he starts (quite prosaically) with a reordering and paraphrase of just a few sentences in Haeckel’s first few pages that provide Haeckel’s moral-philosophical arguments with a biology-historical background:

*Darwin*⁴³ durchstieß zuerst vor 18 Jahren d[ie] starre Eisdecke der herrschenden Vorurtheile. In den Zeiten d[er] Naturphilosophie wurde d[er] 1. Grundriss für den gewaltigen Bau d[er] einheitlichen Entwickl[un]gsgeschichte gelegt. Die bezüglichlichen Errungenschaften der jüngsten Jahrzehnte sind bedeutend.⁴⁴

(*Darwin* first penetrated the inflexible ice cap of dominant prejudices eighteen years ago. In the era of natural philosophy the first blueprint for the imposing edifice of unified development history was drawn. The related achievements of the most recent decades are important.)

Where Haeckel gives a fairly detailed background of the methodological and historical predecessors to Darwin—Kant and Goethe as much as Lyell—Adler merely provides the frame. In these introductory pages, Haeckel sketches the core concepts of Darwin’s evolutionary theory and recapitulates the challenges that Darwinian thinking poses to teleology, the former explanatory mechanism for the history of organisms. Then he counters criticisms that biology must be an “exact”—that is, positivistically empirical—or experimental science. Rather it is (like its sister discipline geology) a “historical natural science” (“historische Naturwissenschaft”) treating its objects like a political historian. Haeckel stakes evolution’s claim to a more general scientific application on biology’s proof that humans are the current end of a long lineage of vertebrates, asserting the rootedness of “intellectual activity” (“Geistesthätigkeit”) in the brain.

⁴³The GDNÄ-version and the 1879 collection do not use small capitals to emphasize the names of Darwin and (below) Virchow, while the 1877 separate printing does. Adler just underlines personal names, which was common for manuscripts and thus not indicative of a particular source version.

⁴⁴Adler, [*H*]eutige *Entwicklungslehre*, p. 1, lines 5–6; compare Haeckel, [*H*]eutige *Entwicklungslehre* (1877, GDNÄ proceedings), p. 14; Haeckel, [*H*]eutige *Entwicklungslehre* (1877, separate printings), p. 4; and Haeckel, [*H*]eutige *Entwicklungslehre* (1879, collection), pp. 99–100. Pregnant phrases and images like “Eisdecke der herrschenden Vorurtheile” or “den gewaltigen Bau d[er] Entwickl[un]gsgeschichte” are borrowed from the initial sentences of the third and fourth paragraphs.

At this point Adler’s excerpt jumps in for a more extensive quotation.⁴⁵ The first sentence is a paraphrase again, but the remainder of Adler’s text is sufficiently close to Haeckel’s printed versions to note divergences for fingering a possible source version. I reproduce Adler’s writing choices and corrections as carefully as possible.

Die von dieser Theorie abhängende Seelenlehre(~~frage~~^{frage}⁴⁶ steht heute in einem ganz anderen Lichte als vor 20 Jahren. Gleichviel wie man sich auch den Zusam[m]enhang von Seele u[nd] Leib, von Geist u[nd] Materie vorstellen wolle, so geht so ~~soviel~~^{soviel}⁴⁷ aus d[er] Entwickl[un]gslehre⁴⁸ hervor, dass mindestens alle organische Materie,⁴⁹ wenn nicht überhaupt alle Materie⁵⁰ in gewissem Sinne beseelt sei.⁵¹ Zunächst hat uns d[ie] fortgesetzteschrittene⁵² mikroskopische⁵³ Untersuchung gelehrt, dass die anatomischen Elementartheile der Organismen, die Zellen,⁵⁴ allgemein ein individuelles Seelenleben besitzen.⁵⁵
(The ~~doctr~~ question of the soul dependent on this theory [*Entwicklung* theory] presents itself in a light entirely different from twenty years ago. Regardless of how one might imagine the connection between soul and body, between mind and matter, it follows from *Entwicklung* theory that at least all organic matter, if not matter overall, is endowed with spirit. First, ~~continued~~ advanced microscopic research taught us that the anatomical elementary parts of organisms, the cells, generally exhibit a spiritual side.)

Here Adler skips a sentence where Haeckel argues for the individuality of cells as “elementary organisms.” (In his *Generelle Morphologie*, Haeckel had considerably broadened the concept of the individual from the organism, extending it both “inward” to cells and “outward” to animal groups. The latter will become important later in Adler’s excerpt, when Haeckel turns to animal “statecraft,” the social organisation and stratification of, say, ant colonies.)

⁴⁵The printed versions are at Haeckel, [*H*]eutige *Entwicklungslehre* (1877, *GDNÄ proceedings*), p. 17; Haeckel, [*H*]eutige *Entwicklungslehre* (1877, *separate printings*), p. 12; and Haeckel, [*H*]eutige *Entwicklungslehre* (1879, *collection*), p. 108. If Adler attended one of the Viennese lectures on brain and sensory evolution, he might have found here, in “Ueber die heutige Entwicklungslehre,” the more ethical-philosophical implications of evolution omitted there.

⁴⁶Probably Adler wanted to write “Seelenlehre” (doctrine of spirit/soul) but then checked and corrected to “Seelenfrage” (question/topic of spirit/soul) then decided to write the second part “frage” anew. All prints have “Seelenfrage,” emphasized and in scare quotes, both of which Adler omits.

⁴⁷Adler corrects his apparent misuse of the indefinite “soviel.”

⁴⁸All three prints insert “mit voller Klarheit” (with complete clarity), not so Adler.

⁴⁹This comma is a dash (German, *Gedankenstrich*) in the prints.

⁵⁰Here Haeckel also uses a dash; Adler has a line break.

⁵¹All prints use the indicative form “ist.” German uses the subjunctive for paraphrasing someone else’s words, and this practice seems to have snuck into Adler’s copying.

⁵²Adler first wanted to write “fortgesetzte” (continued) but then corrected to Haeckel’s “fortgeschrittene” (progressed).

⁵³The GDNÄ-version has “mikroskopische,” the other two prints replace the *c* with *k*, like Adler.

⁵⁴Word emphasized in the prints.

⁵⁵Adler, [*H*]eutige *Entwicklungslehre*, p. 1, lines 9–19. Haeckel’s talk of *Entwicklungslehre* here is not clearly evolutionary theory as a theory of natural history; hence my preservation of the German word in the translation.

Adler continues:

Die grossartige und höchst fruchtbare Anwend[un]g, welche *Virchow* in seiner *Cellular-Pathologie*⁵⁶ von der Zellentheorie auf das Gesamtgebiet der theoretischen Medicin gegeben habe,⁵⁷ beruhe ja eben darauf, dass die Zellen nicht mehr als die todten, passiven Bausteine des Organismus, sondern als die lebendigen,⁵⁸ activen Staatsbürger desselben betrachtet werden.⁵⁹

(The magnificent and highly fruitful application of cell theory to theoretical medicine that *Virchow* had wrought in his *Cellular Pathology*, was founded on just that fact, that cells are no longer considered the dead, passive building blocks of the organism but its living, active citizens.)

Adler does not reproduce the paragraph break of Haeckel's three printed versions, and he paraphrases the next paragraph, using Haeckel's phrases and making them fit.⁶⁰

Bei den einzelligen Organismen, den Infusorien, fände⁶¹ man dann auch dieselben Ausser[un]g[e]n⁶² des Seelenlebens, Empfind[un]g, Darstell[un]g,⁶³ Willen u[nd] Beweg[un]g, wie bei den höheren Thieren. In d[en] Zellen befindet sich das Protoplasma als wichtigste Zellsubstanz und in diesem wäre ist⁶⁴ demnach d[er] letzte Factor des organischen Seelenlebens zu suchen.⁶⁵

(In the single-celled organisms, the Infusoria, one would find the same expressions of spiritual life, [like] sensibility, representation, intention, and motion, as in the higher animals. In the cells we find the protoplasm as most important biological substance and in the same the last [contributing] factor of organic spiritual life ~~could be~~ should be sought.)

⁵⁶The title of Virchow's publication is underlined in Adler's manuscript, as would be common for the title of a book, but not emphasized in any of the prints, where Haeckel refers more to Virchow's research area than any specific publication.

⁵⁷For "habe" and the next word, "beruhe," Adler uses the German subjunctive, Haeckel the indicative in all prints. Again, this may be an artifact of German conventions for paraphrases.

⁵⁸This comma is Adler's.

⁵⁹Adler, *[H]eutige Entwicklungslehre*, p. 1, lines 19–25.

⁶⁰Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, p. 17; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, p. 13; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, p. 108–109.

⁶¹The subjunctive is Adler's. Haeckel uses the verb *antreffen* (to find, to meet).

⁶²The *Umlaut* dots or a clear *e* between *A* and *u* is missing in Adler; the prints all use the customary *Ae*. The missing *e* in the plural suffix *-en* is an unusual abbreviation on Adler's side.

⁶³Haeckel uses "Vorstellung" (imagination) instead of Adler's "Darstellung" (depiction, presentation) and connects "Empfindung" and "Vorstellung" with "und."

⁶⁴The prints use the subjunctive "wäre." In my estimation, "ist" is an artifact of Adler's paraphrasing technique: he lifts a passage where Haeckel describes molecular "souls" and puts it into a more tentative sentence on researching the "last factor of organic spiritual life." The way that Adler's chimaera of a sentence is constructed, the factual first part ("In d[en] Zellen befindet sich das Protoplasma als wichtigste Zellsubstanz") uses the indicative appropriately, but forces the indicative in the much more speculative second half, which in Haeckel's originally independent sentence used the subjunctive. Perhaps Adler thus tripped over German grammar customs.

⁶⁵Adler, *[H]eutige Entwicklungslehre*, p. 1, lines 25–31.

In the next few pages of his presentation, Haeckel goes to some pains to make his (very speculative) ideas about molecular “souls” more palatable to his audience. Rightly, from the perspective of a musicologist, Adler skips these musings and proceeds in his excerpt to the most evocative sections of Haeckel’s paper, which advocate a unified scientific approach. But in Haeckel’s eyes, such a *Gesamtwissenschaft* is possible only if one adopts an *Entwicklung*—loosely speaking, an evolutionary—view:⁶⁶

D[ie] Einheit d[er] Weltanschauung,⁶⁷ zu der⁶⁸ uns d[ie] neue Entwickl[un]gslehre⁶⁹ hinführt, löst den Gegensatz auf, welcher bisher zwischen den verschiedenen dualistischen Weltssystemen bestand.⁷⁰ Sie vermeidet d[ie] Einseitigkeit des Materialismus⁷¹ wie des Spiritualismus, sie verbindet den praktischen⁷² Idealismus mit dem theoretischen Realismus, sie vereint Naturwissenschaft u[nd] Geisteswissenschaft zu einer allumfassenden⁷³ einheitlichen Gesamtwissenschaft.⁷⁴

(The unity of worldview, to which only the new *Entwicklung* theory leads us, dissolves the opposition which had heretofore existed between the distinct dualistic world systems. It [meaning the unified worldview] avoids the one-sidedness of materialism and spiritualism, it connects practical idealism with theoretical realism, it unites the sciences of nature and of the mind in an all-encompassing unified complete science.)

Haeckel makes a rhetorical, not a factual point here, but one can imagine quite easily that a young, impressionable musicologist would take Haeckel’s advice to heart and pursue the unified worldview “to which only the new *Entwicklung* theory leads us.” Haeckel next turns to evolutionary ethics (and the excerpting Adler with him), but in the interest of understanding his view of what evolution could do methodologically (and what he thought it was), let me spell out the connections between *Entwicklung*, the unified worldview, and the scientific method that Adler omitted from between the previously cited sections.

Haeckel derives his notion of “protoplasmic molecular soul” (“Plastidulseele”) from chemical forces and notes the correspondence of his molecular psychology to that of earlier atom-

⁶⁶Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, p. 18; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, pp. 14–15; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, p. 110.

⁶⁷Unlike Adler, Haeckel emphasizes “Einheit” and “Weltanschauung” in all three prints, and adds the parenthetical remark “(oder der “Monismus”)” (or ‘monism’) which Adler drops.

⁶⁸Haeckel uses “welcher.”

⁶⁹Haeckel adds “demgemäss” (thusly), in all three prints.

⁷⁰Here Adler needs to skip to the second page. In Haeckel, the paragraph continues.

⁷¹Haeckel has a comma.

⁷²Haeckel spells it “practischen.”

⁷³Haeckel has a comma.

⁷⁴Haeckel emphasizes the last word; Adler, *[H]eutige Entwicklungslehre*, p. 1, line 31, to p. 2, line 5.

ists. The differences between the activities of molecular and the more commonly known souls, he asserts, “das sind nur verschiedene Stufen des universalen psychologischen Entwicklungsprozesses” (these are just different stages of the universal psychological *Entwicklung* process).⁷⁵ By introducing several steps (“verschiedene Stufen”) Haeckel unites all natural phenomena on a shared scale; *Stufen* connotes both different height and—as *Entwicklungsstufen*—different phases of development/evolution. By arguing for molecular souls (however these might compare to the more conventional ones that were common currency in Western religious thought) Haeckel has endowed the smallest chemical units known in the nineteenth century with a spiritual side.⁷⁶ Now, having placed all his scientific-empirical ducks on the stepwise ascending scale of psychological *Entwicklung*, he is in the position to push for a blending of methodologies in the sciences and humanities.

The old methodological conceit had been that the humanities study animated beings and their affairs—effectively, human life—while the sciences study solely material objects. Haeckel terms this older, Enlightenment position (which he traces to Kant’s writings on natural science) dualism. Since meanwhile the sciences had made great strides in understanding biological entities and their overt similarity to human-made ones, they were (by Haeckel’s standards) in the position to study human affairs as capably if the barrier between humans and their closest similes, the animals, could be breached. To Haeckel, Darwin’s proposition of common descent, and the consequent easy fit of human beings in the history of life, was this breach. Science could now be applied to human concerns, including such heretofore

⁷⁵Haeckel, [*H]eutiige Entwicklungslehre (1879, collection)*, p. 110. I cannot help but remind the reader of Darwin’s remark quoted earlier where he argued for accepting the agency-laden term selection on the grounds that chemists also used the similarly agency-laden term elective affinity. Where Darwin rejected any implication of intelligent agency in selection (or evolution as a whole), Haeckel employs the very closeness of these concepts to human mental processes to draw in his audience, not simply to educate them but to habituate them to the new biology as they had become habituated in earlier ages to the Enlightenment promises of ongoing perfection and education (*Bildung*).

⁷⁶While atoms were considered the building blocks of matter, molecules were the only forms in which atoms could be observed “in the wild,” that is, in chemical experiments. Atoms served in some sense as the features determining a molecule’s properties, quite like characters in biological systematics defined the features of a taxon. Mendeleev’s table of elements ordered the types of materials according to their chemical properties (such as affinity). A little after 1900, finally, atoms became empirically observable (through the development of nuclear chemistry) and the properties of various elements could be explained as effects of their atomic structure, that is, their weights and their proton and electron numbers. / Despite Haeckel’s strongly vitalistic language, his supposed spiritual properties of chemicals are not supernatural but an effect of natural (for molecules, chemical) forces. Haeckel remains committed to materialism, although his language can be easily misconstrued as vitalist.

distinctly philosophical questions as a philosophy of ethics. Such a state of affairs, where scientific methodology was the sole option to resolve questions material or moral, Haeckel called monism. For all his engagement for monism and materialism, however, Haeckel was still a sufficiently inspired Romantic (and skilled rhetorician) to preserve the concept of spirituality and the soul, as long as it could be extended to non-human organisms and, eventually, to molecules. This is the reason for his long section on the “protoplasmic molecular soul,” which—through *Entwicklung* in both senses—constitutes and creates the features and habits of organisms. Science need not remain a source for insights about the material world only. It can as easily make claims about the empirically verifiable mental world—the German word *Geist* covering the semantic continuum between soul, spirit, and mind—thus becoming a truly “complete science”: *Gesamtwissenschaft*.

For an art historian like Adler, this cumulative view of science’s powers invited alignment of his historiographical agenda with the methods of natural science. In “Umfang, Methode und Ziel der Musikwissenschaft” at any rate, Adler claims an “Analogie der kunstwissenschaftlichen Methode mit der naturwissenschaftlichen Methode” (analogy of art-science methodology to natural-science methodology).⁷⁷ The methodology (as Adler notes a bit later) is the inductive method: abstracting from empirical evidence to general laws.⁷⁸ But of course, to address the all-important question of music’s spiritual impact on the human mind, the inductive method ought better to be aligned with the specific theory that enabled Haeckel to christen “complete science”: that of *Entwicklung*. In the sections that Adler extracted, a few clues to Haeckel’s particular notion of evolutionary theory are dropped; we will encounter them below as we continue with Adler’s text. But these clues are insufficient to reconstruct Haeckel’s theory to the extent that it would explain the peculiar features of Adler’s musicological methods. For that level of detail, we will have to comb more carefully through the sections of Haeckel’s presentation (and other sources) that Adler quite probably read, but did not write down in the source we have at our hands. (Subsection 4.3.1 of this chapter turns to this task.)

⁷⁷Adler, *Umfang, Methode und Ziel*, p. 15.

⁷⁸Adler promises to write a separate treatise on this methodology in 1885 but does not get around to it until *Der Stil in der Musik* in 1909–10. By that time evolution had receded from the cusp of Adler’s methodological thinking into the well-worn and -used background structure of musicology.

4.2.2.2 *Entwicklungslehre*, Adler’s Personal Religion, and Ethical Universals

Having established evolution’s claim to scientific importance, Haeckel turns to the original objective of his talk, namely to countering serious reservations some scientists in the 1870s still had to teaching evolution in schools. On the three pages after his rousing paean to *Gesamtwissenschaft*, Haeckel argues for adopting *Entwicklung* theory in curricula primarily due to its special status as “historische Naturwissenschaft” (historical natural science). Evolution’s modifications to the classical nineteenth-century notions of causality might (Haeckel hopes) enliven the rather dry and systematic account of natural-science research that seems to have been taught in schools.

Adler disregards this discussion, which makes me think that at the time of excerpting Haeckel’s lecture his mind was not (yet?) on musicological methodology. Given that Adler picks up where Haeckel turns to ethics, perhaps Adler was excerpting with a university course on the subject in mind, or possibly answering a personal moral-philosophical impulse.⁷⁹

Die weitaus wichtigste u[nd] schwierigste Anforder[un]g, welche d[ie] praktische⁸⁰ Philosophie an d[ie] Entwickl[un]gslehre stellt, scheint diejenige einer neuen Sittenlehre⁸¹ zu sein.⁸² Nun hielten aber bisher die weitesten Kreise an d[er] Ueberzeug[un]g fest, dass diese wichtigste Aufgabe nur im Zusammenhang⁸³ mit gewissen kirchlichen Glaubenssätzen zu lösen sei. Da nun diese Dogmen⁸⁴ namentlich in Verbind[un]g mit uralten Schöpfungsmythen,⁸⁵ den Erkenntnissen d[er] Entwickl[un]gslehre geradezu widersprechen, glaubte man durch die letztere auch Religion und Moral auf das höchste gefährdet zu sehen.⁸⁶ Diese Befürchtung halte ich⁸⁷ für irrig, indem ich meine,⁸⁸ sie entspringe aus der beständigen Verwechslung⁸⁹ zwischen d[er] wahren, vernunftgemässen Naturreligion⁹⁰ und d[er] dogmatischen, mythologischen Kirchenreligion.⁹¹

⁷⁹Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, p. 19; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, p. 17; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, p. 113.

⁸⁰Haeckel spells it with a *c* in all three printed versions whereas Adler chooses the acceptable variant with *k*.

⁸¹The word is emphasized in the prints.

⁸²Adler skips a sentence on the continuing importance of religious education.

⁸³Haeckel uses the variant with an *e* at the end.

⁸⁴All prints have a comma here, Adler a linebreak.

⁸⁵Haeckel consistently hyphenates to “Schöpfungs-Mythen.”

⁸⁶Haeckel here has a paragraph break which Adler ignores.

⁸⁷Curiously, the first person singular is Adler’s; Haeckel uses the more general plural “halten wir.”

⁸⁸The conjunction by “indem ich meine” is Adler’s, Haeckel starting a new sentence with the indicative “Sie entspringt.”

⁸⁹Haeckel uses the regular alternative “Verwechslung.”

⁹⁰Haeckel emphasizes the word in all prints, as he also does “Kirchenreligion” at the end of the sentence; Adler does neither.

⁹¹Adler, *[H]eutige Entwicklungslehre*, p. 2, lines 5–19.

(Overall the most important and challenging request posed by practical philosophy to *Entwicklung* theory seems to be that of a new moral doctrine. Until now the majority of society remained loyal to the conviction that this most important task could only be solved by certain ecclesiastical beliefs. Because these dogmas, particularly those connected to ancient creation myths, obviously contradict the findings of *Entwicklung* theory, one believed that the latter also threatened religion and morality to the highest degree. I consider this fear erroneous, whereby I think that it issues from the continued confusion between the true, rational religion of nature and the dogmatic, mythological religion of the church.)

The last sentence is probably the most curious one in Adler’s manuscript: he ties together two of Haeckel’s sentences with the emphatic connection “indem ich meine” (whereby I think) and he goes for the direct first person singular instead of Haeckel’s more placid (because of implied majority support) first person plural. The words of the sentences are unchanged; thus a paraphrasing error seems unlikely. Either Adler copied from an original (whether spoken or written) that differs in this aspect from the three printed versions of Haeckel’s presentation. Or he identified so closely with Haeckel’s ideas about religion that he momentarily lapsed into direct speech.⁹² Remembering that Adler was Jewish in a still predominantly Catholic university- and state-hierarchy (as witnessed by the reminiscences of Adler’s son⁹³) we may well imagine him yearning for a more “vernunftgemässe” (rationally oriented) religion.

Again I would like to deviate from the straight path of citing Adler’s text and intersperse commentary on the effects and attractions of Haeckel’s ideas on Adler, now concerning his personal religious position. Through Hubert J. Adler’s memoirs we learned that Adler—while raised Jewish—practiced his religion in a rather lax way: he kept the high holidays but replaced studies of the Torah and its commentaries with reading Goethe and Schiller. Now, let us compare Haeckel’s words (as transcribed by Adler) with Adler’s own, written to introduce his final work, the autobiography *Wollen und Wirken* (translatable as “Intentions and Works”):

Meine Religion besteht in der Ehrfurcht vor Gott, der Achtung jeder Konfession, sofern sie moralischen Gesetzen, ethischen Normen entspricht, in der Nächstenliebe, der Liebe zur Natur, [...] In der Zurückweisung des Egoismus jedweder Art, in dem Bestreben nach Selbsterhaltung mit besonderem Hinblick auf die Gesundheit, [...] ferner in dem Streben nach Wahrheit in Leben und Wissenschaft, in Vermeidung jedweden Aberglaubens, in treuer

⁹²If Adler prepared the excerpt for a university course, perhaps he was required to read it out to his colleagues.

⁹³Quoted above on pp. 21ff.

Erfüllung aller reeller Pflichten.⁹⁴

(*My religion* consists of awe toward God; of respect toward each religion, as long as it adheres to moral laws [and] ethical norms; of loving one's neighbor, loving nature, [...] Of rejecting any type of egoism, of zeal for preserving one's self, particularly one's health, [...] additionally of striving towards truth in life and science, of eschewing any superstition, of faithful completion of all realistic duties.)

Trying to pinpoint where this attitude is rooted, Adler notes a few sentences later: “Der geistige, der seelische Mensch ist das Produkt seiner Anlage, seiner Umgebung, seiner Studien” (the intellectual, the spiritual human being is the product of his origins, his environment, [and] his studies).⁹⁵ If we compare Adler's religious outlook late in his life—he dates his statement on “my religion” to 20 September 1928—to Haeckel's statements above that prompted Adler's lapse into the personal speech of “indem ich meine,” we notice a similar attitude towards religious ethics, even though Adler does not share Haeckel's animus against organized (that is, church) religion. Both men hold religions to ethical norms not unique to these religions. Both reject superstition and champion the pursuit of truth in life and science. Both relate to nature (not to mention Goethe) through reverence and love. In the subsequent excerpt from Haeckel's presentation, we shall see that he—like Adler—stresses “love” as a central ethical imperative, which is counteracting egoism, a natural negative force that is properly indulged only in the preservation of the self. *In nuce*, Adler's own ethical *Credo* (despite its overt declaration a half-century after Haeckel's presentation) bears witness to Haeckel's ethical convictions. He struck a chord in Adler; not just in the scientist, for the methodological promises of *Entwicklungslehre*, but also in the human being, for the humanistic implications of Haeckel's interpretation of evolution. This possible resonance may be a reason that Adler held on to the manuscript until he died.⁹⁶ Certainly, Haeckel's attention to philosophical issues would have eased any antagonism Adler may have had against a scientific approach to humanities questions, including those of the scientific musicology he would begin to mint in the early 1880s.

In the next section, after setting up the opposition of the “rational natural religion” to the “dogmatic church/ecclesiastical religion” copied by Adler, Haeckel wields the weapon of

⁹⁴Adler, *Wollen und Wirken*, p. 1; Adler's emphasis.

⁹⁵Adler, *Wollen und Wirken*, p. 2.

⁹⁶Since I cannot prove empirically that Adler prepared the excerpt shortly after Haeckel presented and published in the late 1870s, the time over which the paper remained in his personal possession is a mystery.

Entwicklung on the battleground of the history of ethics. He maintains that religions were at one point moral institutions but step-by-step squandered this authority, leading many people to abandon their religious beliefs—an admirable act to Haeckel. Adler skips this passage (he remains less enthused by the *Kulturkampf* rhetoric) and continues his copying where Haeckel makes positive claims about evolutionary ethics. This section is framed by Adler’s sole two clearly discernible paragraph breaks:⁹⁷

Unabhängig von jedem kirchlichen Bekenntnisse⁹⁸ lebt in d[er] Brust jedes Menschen d[er] Keim einer echten Naturreligion.⁹⁹ Sie ist mit den edelsten Seiten des Menschenwesens selbst untrennbar verknüpft. Ihr höchstes Gebot ist d[ie] Liebe¹⁰⁰ d[ie] Einschränkung unseres natürlichen Egoismus zu Gunsten unserer Mitmenschen u[nd] zum Besten d[er] menschlichen Gesellschaft, d[ere]n¹⁰¹ Glieder wir sind. Dieses natürliche Sittengesetz ist viel älter als alle Kirchenreligion; es hat sich aus den socialen Instincten¹⁰² d[er] Thiere entwickelt. Bei Thieren sehr verschiedener Classen,¹⁰³ vor Allem¹⁰⁴ bei Säugethieren, Vögeln und Insecten, treffen wir d[ie] Anfänge desselben an. Nach den Gesetzen der Gesell[un]g (Association) u[nd] d[er] Arbeitstheil[un]g¹⁰⁵ vereinigen sich hier viele Personen zu d[er] höheren Gemeinschaft eines Stockes oder Staates.¹⁰⁶

(Independently from any ecclesiastical confession, the seed of true natural religion lives in the heart of each human being. This [natural religion] is inseparably tied to the noblest aspects of humanity. Its highest commandment is *love*, the limitation of our natural egoism for the benefit of our fellow human beings and for the best of the human society whose members we are. This natural moral law is much older than all ecclesiastical religion; it has evolved [in history] from the social instincts of animals. In animals of widely different classes, in mammals, birds, and insects, we encounter the beginnings of the same [moral law]. According to the laws of combination (association) and of division of labor here [in animal societies] many persons unite in the higher community of a colony [as in corals or jellyfish] or a state [as in ants or bees].)

⁹⁷Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, pp. 19; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, p. 18; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, pp. 113–114.

⁹⁸Adler adds the final *e*, an archaism perhaps due to his native Moravian-Austrian German.

⁹⁹Haeckel again emphasizes “Naturreligion” and uses a semicolon here.

¹⁰⁰Adler’s only (!) emphasis other than the names of Darwin and Virchow, here following Haeckel. The latter uses a comma, which Adler omits because of a linebreak.

¹⁰¹Adler uses his regular abbreviation for the definite article based on the letter *d* but attaches an *n* to denote the genitive plural, which is what Haeckel uses in the originals.

¹⁰²Haeckel emphasizes “socialen Instincten,” not so Adler

¹⁰³Haeckel spells the word “Klassen”; “Classen” is a variant, common particularly among nineteenth-century academics educated in Ancient Greek and/or Latin.

¹⁰⁴Haeckel uses “Allen.”

¹⁰⁵The “division of labor” Haeckel sees as social analogue to the divergence of bodily characters in the struggle for existence, and “Gesellung” refers to the combination of differently skilled organisms in larger groups, as for example in the differently skilled workers of an ant colony. Both are, to him, equally results of the overarching process of diversification described by Darwin.

¹⁰⁶Adler, *[H]eutige Entwicklungslehre*, p. 2, lines 20–34.

According to Haeckel, *Entwicklungslehre* can provide moral guidance (if not explicit moral standards) as capably as traditional, religiously influenced moral doctrine. Haeckel's supposition that there is a species-specific "love" countering the ruthlessness of the struggle for existence ("unseres natürlichen Egoismus") relies on the assumption that this altruism is not a product of natural selection, the *Kampf ums Dasein*; thereby Haeckel potentially reintroduces through the back door a dualism that his philosophy of monism rejected explicitly.¹⁰⁷ This internal problem of Haeckel's philosophical argument has little bearing on Adler's acceptance of his biological-historical positions but it will help us evaluate the universalist promises of a strictly Haeckelian methodology against their potentially "un-universalist" philosophical underpinnings.

Also, an association of this term, "higher community," with the "higher animals" of taxonomy is fairly easy; for example, one might assume that only higher animals (an old-fashioned taxonomic term for more complex, warm-blooded animals like mammals or birds) exhibit the type of love that can lead to "higher communities." Of course, Haeckel's use of the comparative "höhere" invites judgments of preference, which the distinction between different animal groups in taxonomy—irrespective of their labels—does not imply. Below, Haeckel's first example of animal altruism—the ant colony—is not of a "higher" animal, quite probably to make his point that morality of his broadly defined kind is universal, found among bacteria and lower animals as much as among higher animals. But his later examples—lions, parrots, and dogs—all fit this category neatly.

Lastly, the notion that "love" between humans may foster a "höhere Gemeinschaft," a qualitatively more advanced community, is an ideal very much rooted in Enlightenment and Romantic thinking. (Any particular religious tradition would probably posit its qualitative advance less on the ethical requirement of love—which is common among religions—than on the constitutive requirement of the believer's faith rooted in a particular tradition, which differs among religious denominations.) Such "higher communities" run galore in the late nineteenth-century; in Germany, one example is the group of admirers around the poet Stefan

¹⁰⁷Particularly from the 1960s onwards, biologists have taken great strides to explain the benefits of altruistic behavior in the struggle for existence, as long as this altruism happens between close relatives. Haeckel's approach, which relies on altruism between species members, is closer to group selection than the selection of shared genes, which latter is closest to a modern version of Darwin's theory of common descent.

George. The more damnable consequence of postulating “higher communities” as outcomes of some natural and inevitable process, particularly in politics, is the inflated nationalism seen in many European nations in the first decades of the twentieth century, particularly in pre-Great-War Germany, and later in fascist Italy, Austria, and Germany. The ethical universal of “love,” when directed unconditionally towards the properties of some homeland, social order, or ethnicity, proved corrosive precisely by setting up a differential of values between the mutually “loving” members of the “higher” community and the unloved other peoples.

4.2.2.3 Evolutionary Mechanisms and the Instinctual Origins of Cultured Social Order Haeckel’s implied analogy, between human societies and their institutions (which none of his contemporaries would have denied being a product of historical circumstances) and the different castes of insects in a colony (which Darwin and others had succeeded to explain through the action of natural selection), was a sly trick to accustom his audience to the crucial importance of *Entwicklungslehre* in an education system geared toward general scientific literacy. In the next few paragraphs, also copied by Adler, Haeckel elaborates on the features and the genesis of such animal “states.” Here we can detect the variances of Haeckel’s evolutionary view from Darwin’s, variances that do not remove Haeckel from the large boat of nineteenth-century Darwinism but cast suspicion on his thorough commitment to Darwin’s own propositions. (Adler’s broad application of the struggle for existence, discussed above, and his adoption of a schema by Haeckel, explained below, suggest that he conceived of his musicology more in line with Haeckel’s Darwinism rather than Darwin’s.)

On the top of the third page, Adler continues:¹⁰⁸

Das Bestehen derselben¹⁰⁹ ist mit Nothwendigk[ei]t an d[ie] Wechselwirk[un]g d[er] Gemeindeglieder und an d[ie] Opfer geknüpft, welche dieselben auf Kosten ihres Egoismus dem Ganzen bringen. Das Bewusstsein dieser Nothwendigk[ei]t, das Pflichtgefühl¹¹⁰ ist nichts anderes, als e[in] socialer Instinct. D[er] Instinct ist aber immer e[ine] psychische Gewohn-

¹⁰⁸Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, p. 19–20; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, pp. 18–19; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, p. 114.

¹⁰⁹Haeckel uses “desselben” in all prints, referencing the animals’ “colony” or “state,” while Adler’s “derselben” is tied to the “höhere Gemeinschaft” (higher community).

¹¹⁰Adler misses Haeckel’s emphasis on this word and the subsequent comma.

h[ei]t, welche ursprünglich d[urch]¹¹¹ Anpassung erworben¹¹² dann aber im Laufe d[er] Generationen erblich geworden ist u[nd] zuletzt “angeboren”¹¹³ erscheint.¹¹⁴

(The stability of the same [colony/state in Haeckel, “higher community” in Adler] is necessarily tied to the mutuality of the community’s members and to the sacrifices they bear for the whole at the expense of their egoism. The consciousness of this necessary connection, the feeling of duty/responsibility, is nothing but a social instinct. But the instinct is always a mental custom, acquired through adaptation at the beginning, become inheritable in the course of several generations, and in the end appearing “native [to the species].”)

The last sentence of this paragraph, with echoes of both Lamarck and Darwin, gives a very clear indication of the intrinsic differences between Darwin’s and Haeckel’s theories for evolution that Adler had “at hand.”

In spite of Haeckel’s copious genuflection towards Darwin and his idea of natural selection, he sees adaptation (“Anpassung”) as the process of acquiring a character (at least a behavioral one) “zuerst” (at first, at the beginning), with heritability following in due time, “im Laufe der Generationen” (in the course of generations). This is a very plain version of Lamarckian inheritance of acquired characters. First the acquisition (which Lamarck would also have readily conceded to some type of adaptation process to environmental conditions), then the integration into history by means of inheritance. The general ignorance of these means of inheritance in the late nineteenth century excepts Haeckel from criticism about his hand-waving approach to genetics. But Haeckel also misconstrues an important element of the struggle for existence according to Darwin, which leads to possible failures of his historiographical approach and those that derive from his, like Adler’s. Haeckel implies that adaptation shapes inheritance; Darwin presupposes varied but (for each lineage in a generation) persistent inheritance, from which the struggle for existence picks locally successful varieties. In Darwin variability—including possibly maladaptation—is a necessary feature of the historical process in each generation. Without it, the struggle for existence has no persistent historical effect, and Darwin’s version of evolution as a diversifying tree of life is unthinkable. In Haeckel variability plays no role other than perhaps muddying the signal provided by the “mental custom” (“psychische Gewohnheit”) adapted for its intrinsic good.

¹¹¹Adler abbreviates but uses a full lowercase *d*, not his abbreviation for the article “der”; the word in Haeckel’s prints is “durch.”

¹¹²Haeckel has a comma here.

¹¹³Scare quotes are Haeckel’s.

¹¹⁴Adler, [*H*]eutige *Entwicklungslehre*, p. 3, lines 1–8.

A separate moral instance to discern this good, Haeckel’s “highest commandment” of love, must be present such that by adaptation the “feeling of responsibility” (“Pflichtgefühl”) can be acquired and, in the end, inherited.

Haeckel is thus not just Lamarckian in the sense of relying on the inheritance of acquired characters (which Darwin allowed as a minor source of variation in later editions of the *Origin*) but also manifestly un-Darwinian, in the sense of devaluing the struggle for existence as the main engine of history. Reiterating what I said above, by appealing to a separate “highest commandment,” at least in arguments about the natural roots of ethics, Haeckel also jeopardizes his claim to a monistic philosophy of ethics. The commandment of “love” counteracts that of “egoism,” which driving emotion Haeckel attributes to the struggle for existence. Haeckel’s monist imprecision in his ethical philosophy does not impact Adler’s musicological methodology very much. But Haeckel’s biological sidelining of variability in evolution and of the struggle for existence in adaptation to environmental (including social) circumstances has an impact on how Adler will structure his histories.

After this digression into Haeckel’s attitude towards Darwin’s evolutionary thinking, let us return to Adler’s transcript. Haeckel chooses the example of social insects¹¹⁵ to illustrate the parallels between human moral behavior and that of “lowly” animals like ants:¹¹⁶

Um uns von der bewunder[un]gswürdigen Macht des thierischen Pflichtgefühls¹¹⁷ zu überzeugen, brauchen wir bloss¹¹⁸ einen Ameisenhaufen zu zertrümmern. Da sehen wir sofort inmitten d[er] Zerstör[un]g Tausende eifriger Staatsbürger nicht mit Rett[un]g ihres eigenen lieben Lebens beschäftigt, sondern mit dem Schutze des theuren Gemeinwesens, welchem sie angehören. Muthige Krieger des Ameisenstaates setzen sich zur kräftigen

¹¹⁵Like Darwin had in his chapter “Instinct” in Darwin, *Origin of Species*, pp. 207–244, particularly on pp. 219–224. Interestingly, Darwin’s examples from among the ants are not their altruistic behavior but the slave-making behavior of certain species. Given the intention of Haeckel’s lecture—making evolution palatable for the teaching of ethics—his not following Darwin’s example was a wise choice. As an abolitionist, Darwin was probably more motivated to understand the natural conditions for what he saw as an unmitigated ill of some human societies.

¹¹⁶Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, p. 20; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, p. 19; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, pp. 114–115.

¹¹⁷Haeckel’s reissue in the 1879 collection agrees with Adler’s spelling; the GDNÄ and 1877 version use the slightly more archaic “Pflichtgeföhles.” This is one instance that points to Adler using the 1879 version as a template.

¹¹⁸In the 1877 separate prints, Haeckel spells this word “blos,” the version in the GDNÄ report and the 1879 collection has a double “s,” like Adler.

Gegenwehr gen¹¹⁹ unsern¹²⁰ eindringenden Finger.¹²¹ Pflegerinnen der Jugend retten d[ie] sogenannten “Ameiseneier”¹²² die geliebten Puppen, auf denen d[ie] Zukunft des Staates beruht; emsige Arbeiter beginnen sofort mit unverdrossenem Muthe, d[ie] Trümmerhaufen wegzuräumen,¹²³ neue Wohn[un]g[e]n einzurichten. Die bewunde[run]gswürdigsten¹²⁴ Culturzustände¹²⁵ dieser Ameisen, der Bienen &¹²⁶ anderer socialer¹²⁷ Thiere haben sich aber ursprünglich ebenso aus den rohesten Anfängen entwickelt, wie uns[ere]¹²⁸ eigene menschl[iche]¹²⁹ Cultur.¹³⁰ Se[l]bst jene zartesten,¹³¹ schönsten Regungen des menschl[ichen]¹³² Gemüthslebens,¹³³ d[ie] wir v[o]rzugsweise poetisch verherrlichen, finden wir bereits im Thierreiche ausgebildet.¹³⁴ Oder ist nicht d[ie] innige Mutterliebe d[er] Löwin, d[ie] rührende Gattenliebe d[er] Papageien (*Inséparables*¹³⁵) d[ie] aufopfernde Treue des Hundes längst sprichwörtlich? Die edelsten Affecte des Mitgeföhls u[nd] d[er] Liebe, welche d[ie] Handl[un]gsweise bestimmen, sind hier wie beim Menschen nichts Anderes¹³⁶ als veredelte Instincte.¹³⁷

(To convince ourselves of the admirable power of the animal feeling of responsibility [or duty] we only need to destroy an anthill. In the midst of the havoc, we see thousands of diligent citizens unconcerned with saving their own dear life but [concerned] with the protection of the valuable communal entity [“Gemeinwesen”] to which they belong. Courageous warriors of the ant state launch a vigorous defense against our intrusive finger; the nurses of the young save the so-called “ant eggs,” the beloved pupae, on which the future of the state depends; industrious workers commence with undiminished zeal to remove the rubble and create new dwellings. The admirable cultural state [“Culturzustände”] of these ants, of the bees, and of other social animals have originally developed [or evolved] from the roughest beginnings, just like our own human culture. Even those most tender and beautiful emotions of human sensitivity [“Gemüthsleben”] which we prefer to glorify poetically we already find preformed in the animal kingdom. Has the devoted maternal love of the lioness, the touching connubial love of the parrots (*Inséparables*), [or] the caring fidelity of the dog not already

¹¹⁹Haeckel uses “gegen,” but “gen” is a reasonable if old-fashioned abbreviated version.

¹²⁰The formal German version, used in the prints, is “unseren.”

¹²¹A semicolon in Haeckel.

¹²²The scare quotes are Haeckel’s and he hyphenates the word. Adler leaves out the subsequent comma.

¹²³Haeckel uses the conjunction “und” instead of the comma.

¹²⁴The superlative is Adler’s, Haeckel has “bewunderungswürdigen.”

¹²⁵Haeckel emphasizes this word.

¹²⁶Haeckel writes out “und.”

¹²⁷Haeckel uses “socialen.”

¹²⁸Abbreviated with a colon as “uns:”

¹²⁹Abbreviated as “menschl:”

¹³⁰Here Haeckel breaks his paragraph but Adler continues on the same line.

¹³¹Haeckel uses “und” instead of the comma.

¹³²Abbreviated as “menschl:”

¹³³Haeckel uses “Gemüthslebens” in all prints.

¹³⁴Haeckel uses the word “vorgebildet” in all sources, which affords the animal emotions a distinct role as “pre”-decessors (“Vor-fahren”) of human emotions. Given that lions and parrots are still existing species which are only distantly related to humans, these species’ emotions are not in an evolutionary sense ancestors to ours. Adler’s choice of word, “ausgebildet” (expressed) is more careful, though I do not know whether choice on his part or a simple mistake was involved.

¹³⁵Adler omits Haeckel’s scare quotes but adds the *accent aigu* and emphasizes the French term, using Latin script. The comma after the parenthesis he omits.

¹³⁶Lowercase in Haeckel.

¹³⁷Adler, [*H*]eutige *Entwickelungslehre*, p. 3, line 9, to p. 4, line 1.

become idiomatic? The noblest affects of compassion and love, which determine the course of action, are here [in these three cases] as in humans nothing but ennobled instincts.)

Haeckel's description of the ant society has the distinct flavor of late nineteenth-century German social structure; after all, he calls the ants "Staatsbürger" (citizens), and "diligent" ("eifrig") ones at that. In this state ("Ameisenstaat" is a common German expression for ant colonies) the warriors are "courageous"; the ants taking care of the young are female¹³⁸; and the workers (these not explicitly female¹³⁹) are "not sulking" ("unverdrossen"). Haeckel does not address the question (unlike Darwin in his—admittedly more biological than socio-moral—disquisitions on social insects) how these different castes evolved. These are just part of the "most admirable cultural states" ("bewunder[un]gswürdigsten Culturzustände") of ants. Haeckel does drive the point home that these in his view desirable qualities have arisen from similarly "most rough beginnings" ("rohesten Anfängen") as the desirable qualities of human culture. While we cannot quite pin Haeckel down on a common-origin approach here (though of course he explains and endorses the concept elsewhere), we get a sense that he understood its egalitarian consequences, denying human culture intrinsic original uniqueness.¹⁴⁰

4.2.2.4 The Irrelevance of Religious Moral Doctrine and the Victory of *Entwicklungslehre* In the concluding paragraph of the presentation, from which Adler drops only one sentence, Haeckel places a takeover bid on behalf of *Entwicklungslehre*, particularly for moral philosophy. This extreme challenge together with Haeckel's promotion of evolution as a high school subject probably caused the backlash by Virchow and others, documented in Haeckel's prefatory notes to the publication in his 1879 collection (cited above). For someone like Adler, less tied to the prevalent Catholicism of Austria-Hungary and indeed benefitting from the liberalization of education, Haeckel's propositions presented less a threat to the

¹³⁸Haeckel uses the feminine-gender "Pflegerinnen," not the masculine-gender "Pfleger" which would have been more neutral even under nineteenth-century usage rules.

¹³⁹In ant societies, usually all workers—whether engaged in child rearing, forage, defense, or architecture—are female. The queen is the sole persistently fertile female, and the males are raised for breeding, not for any other societal function.

¹⁴⁰Of course this does not prevent his considering human culture as unique and superior due to extrinsic factors, such as its evolutionary history. Haeckel's statement is solely about the shared ("ebenso") lowliness of origins, not the eventual cultural products of natural history.

established moral-political order and more an invitation to explore *Entwicklungslehre* as a potent new methodology, even to explain social phenomena.¹⁴¹

Anknüpfend an diese Auffass[un]g hat also d[ie] Ethik d[er] Entwicklungslehre¹⁴² keine neuen Grundsätze aufzusuchen, sondern vielmehr d[ie] uralten Geb¹⁴³ Pflichtgebote auf ihre naturwissenschaftliche Basis zurückzuführen. Lange vor d[er] Entsteh[un]g aller Kirchenreligion¹⁴⁴ regelten diese natürlichen Pflichtgebote d[as] gese[t]zliche¹⁴⁵ Zusammenleben d[er] Menschen, wie d[er] sozialen Thiere. Diese bedeut[un]gsvolle Erkenntnis sollte sich die Kirchenreligion¹⁴⁶ zunutze machen, statt sie zu bekämpfen. Denn nicht derjenigen Theologie gehört die Zukunft, welche gen¹⁴⁷ d[ie] siegreiche Entwickl[un]gslehre einen fruchtlosen Kampf führt, sondern d[er]jenigen, welche sich ihrer bemächtigt, sie anerkennt &¹⁴⁸ verwerthet.¹⁴⁹

(Continuing from this opinion, the ethics of evolutionary theory should not [or need not] invent new foundations but rather ground the ancient ~~commandments~~ duties on their natural-scientific base. Long before the advent of all ecclesiastical religion these natural duties ordered the lawful communal life of humans as much as of social animals. This instructive insight should be utilized by ecclesiastical religion instead of fighting it. The future belongs not to the theology that fights a losing battle against the victorious doctrine of evolution [“Entwicklungslehre”] but to the one [theology] that studies it, accepts it, and emulates it.)

Haeckel does not dismiss theology outright, offering her the assistance of *Entwicklungslehre*. That the latter is “victorious” (“siegreich”) is out of the question, though.¹⁵⁰ The offer seems to be one that religion (in Haeckel’s eyes) is not in a position to refuse. In the sentence that Adler omits, Haeckel formulates as aim for this interaction between science and theology “eine vernunftgemässe Begründung der Sittenlehre auf der unerschütterlichen Basis fester Naturgesetze” (a rationally-oriented foundation of moral doctrine on the unshakable basis of consistent natural laws). If we replace “Sittenlehre” with “musicology,” Haeckel’s phrase might as well serve as motto for Adler’s program in “Umfang, Methode und Ziel.” The last two sentences return to the grand, euphoric vision that Haeckel summons for all scientists

¹⁴¹Compare Haeckel, *[H]eutige Entwicklungslehre (1877, GDNÄ proceedings)*, p. 20; Haeckel, *[H]eutige Entwicklungslehre (1877, separate printings)*, pp. 19–20; and Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, p. 115.

¹⁴²Haeckel emphasizes “Ethik der Entwicklungslehre,” not so Adler.

¹⁴³It looks like Adler wanted to write “Gebote” but then corrected himself.

¹⁴⁴Haeckel hyphenates the word.

¹⁴⁵The omitted “t” is probably a writing error.

¹⁴⁶Again Adler omits the hyphen.

¹⁴⁷Abbreviated “gegen.”

¹⁴⁸Abbreviated “und.”

¹⁴⁹Adler, *[H]eutige Entwicklungslehre*, p. 4, lines 2–14.

¹⁵⁰Another instance of sloppy “Kampf ums Dasein” rhetoric. In what sense evolutionary theory could be an individual suited for participation in Darwinian struggle, or even a group of such individuals, Haeckel never explicitly states.

adopting the precepts of evolutionary theory:¹⁵¹

D[er]¹⁵² Sieg des Monismus über den Dualismus eröffnet¹⁵³ uns den hoffn[un]gsvollsten Fernblick auf e[inen] [unendlichen]¹⁵⁴ Fortschritt ebenso uns[erer]¹⁵⁵ moral[ischen]¹⁵⁶ als¹⁵⁷ intellect[uellen]¹⁵⁸ Entwickl[un]g! In diesem Sinne begrüßen wir d[ie] heutige¹⁵⁹ v[on] Darwin¹⁶⁰ neu begründete Entwickl[un]gslehre¹⁶¹ als d[ie] wichtigste Förderung unserer reinen u[nd] angewandten Gesamt-Wissenschaft.¹⁶²

(The victory of monism over dualism offers us the most expectant outlook onto an infinite progress in both our moral and our intellectual evolution [*Entwicklung*]! Therefore we welcome the modern evolutionary theory [*Entwicklungslehre*], newly founded by Darwin, as the most important support for our pure and applied unified science.)

Leaving *Kulturkampf* rhetoric and Adler's possible sympathy for its positions aside, these last sentences encapsulate the methodological promises of adopting an evolutionary approach in any scientific discipline: they unify and structure the researcher's approach and conduct. By Adler's own statements on his "religion," he was as committed to nature, to intellectual truthfulness, and to "love" as "highest commandment" as Haeckel professed to be. Haeckel's invitations to adopt evolutionary theory would thus not have sounded iconoclastic, as they might have to other scientists and historians of Haeckel's time. And if one believes Haeckel, *Entwicklungslehre* is the means to the end of a scientific description of history. It would be the first methodological task of the historian to develop a framework in which evolution could be applied; Adler does as much in his 1885 "Umfang, Methode und Ziel." To identify the evolutionary features that Adler integrated into his methodology, we cannot rely on his extractions from "Ueber die heutige Entwickelungslehre" alone. Therefore the next section is devoted to the biological techniques that make Haeckel's evolutionary theory a template for

¹⁵¹Compare Haeckel, [*H*]eutige *Entwicklungslehre* (1877, *GDNÄ* proceedings), p. 20; Haeckel, [*H*]eutige *Entwicklungslehre* (1877, separate printings), p. 20; and Haeckel, [*H*]eutige *Entwicklungslehre* (1879, collection), p. 115.

¹⁵²Haeckel uses "Dieser."

¹⁵³Adler uses an uncommon but acceptable variant of "eröffnet," possibly due to his Moravian-German extraction.

¹⁵⁴This is Haeckel's word. Probably to save time, Adler draws the common mathematical symbol for infinity, a sideways "8."

¹⁵⁵Abbreviated as "uns:"

¹⁵⁶Abbreviated as "moral:"

¹⁵⁷Haeckel uses "wie."

¹⁵⁸Abbreviated as "intellect:"

¹⁵⁹Haeckel uses a comma here and writes out the following "von."

¹⁶⁰The name is emphasized in all prints but not underlined in Adler.

¹⁶¹This and the remaining words are emphasized in Haeckel's versions but not in Adler's. "Gesamtwissenschaft" is written as one word and has an exclamation mark in the prints.

¹⁶²Adler, [*H*]eutige *Entwicklungslehre*, p. 4, lines 14–21.

historiography. I use both the remainder of the presentation excerpted by Adler and several other sources by Haeckel to piece together what Adler adapted to create his *Entwicklung-*informed musicology.

4.3 TOWARD AN EVOLUTIONARY METHODOLOGY FOR MUSICOLOGY

True to the path laid out in the chapter's preface, I now expand the scope of interpretation from Adler's excerpt to the remainder of Haeckel's "Ueber die heutige Entwicklungslehre."¹⁶³ Presumably Adler should have become at least fleetingly familiar with it when copying out the sections that had first raised his interest. Some of Haeckel's formulations resonate with Adler's in "Umfang, Methode und Ziel," other parts of the article present a condensed version of evolutionary theory, both the Darwinian version generally and Haeckel's emendation of it in particular. As a root resource for constructing evolutionary musicology, "Ueber die heutige Entwicklungslehre" would thus have been sufficient. The first subsection below sketches the methodological morsels potentially useful for building a scientific musicology on the basis of evolution, but also notes the methodological and historiographical perils that Haeckel's innovative but often all-too-audacious interpretation of Darwin entailed.

The importance of "Ueber die heutige Entwicklungslehre" notwithstanding, the other presentations collected in the 1879 volume offer equally (or more) valuable resources for the inquisitive nineteenth-century musicologist. Chief among these is the historical survey "Ueber Entwicklungsgang und Aufgabe der Zoologie"¹⁶⁴ (about the development process and task of zoology). Apart from several formulations that prefigure Adler's concerns addressed in "Umfang, Methode und Ziel," Haeckel here presents and argues for a tree-like structure of biological research and schematizes it in a way that is surprisingly similar to Adler's famous diagram in the 1885 article. Although direct evidence is lacking, I propose that this diagram by Haeckel—and two related diagrams from Haeckel's *Generelle Morphologie der Organismen*—resonated with Adler and inspired his own rendering of musicology as historical and systematic. The second subsection is therefore devoted to a detailed comparison of Adler's and Haeckel's schemata. Perhaps confused by Haeckel's own evolutionary propositions, Adler seems to have meshed or intercalated sections of Haeckel's tables that—

¹⁶³My discussion in this section does not depend on any particular published version; therefore I will only cite the 1879 volume of Haeckel's *Gesammelte Populäre Vorträge*.

¹⁶⁴Ernst Haeckel, "Ueber Entwicklungsgang und Aufgabe der Zoologie," pages 1–24 of *Gesammelte Populäre Vorträge, volume 2*.

for biology, and consequently for a biology-inspired historiographical method—should have remained distinct.

4.3.1 The Remainder of Haeckel’s Lecture as Resource for Adler

In the previous section, when discussing Adler’s excerpts, I speculated about his interests in Haeckel’s presentation. The problem we are facing at the current juncture of my argument is the transition from general interest (which a historian like Adler may well have had in evolutionary biology) to explicit borrowing (which the parallelism between Haeckel’s and Adler’s schemata of their disciplines suggests). In this subsection, I sketch four steps in which Haeckel’s arguments would have aided such a transition. (i) Haeckel sets up evolutionary biology as a “historical natural science” (“historische Naturwissenschaft”) and aligns it explicitly with the historical sciences in which Adler was trained—paleography, archeology, and comparative art history. This rhetorical move by Haeckel brings his methodology even closer to the concerns of Adler than the poetical waxing about *Gesammtwissenschaft* in the sections copied by Adler. Quite probably, the notion of “historische Naturwissenschaft” serves as catalyst to transform Adler’s interest in Haeckel philosophy into one about Haeckel’s scientific methodology. This methodology depends (ii) on a peculiar reinterpretation of Darwin’s concept selection which allows Lamarckian evolutionary mechanisms to rear their head in a Darwinian framework, and it has at its core (iii) a blending of development and evolution, devised by Haeckel to integrate development studies into evolutionary biology. Useful as this extension and integration may have been for Haeckel’s and his contemporaries’ articles on evolutionary history, it also bears the seed for the (iv) confusion of evolution and development that often besets Haeckelian accounts of history, be it in biology or in musicology. Haeckel’s championing of development may undercut the crucial role of systematic comparison in evolutionary arguments.

4.3.1.1 Evolutionary Biology as Historical Natural Science In his lecture to the GDNÄ, Haeckel had to appeal both to scientists, trying to rally them around a new and still mildly controversial theory, and to non-scientists, needing to convince them of evolution’s

worth as a subject for high school instruction. These two groups exerted twin pressures on the content of his talk. In the German scientific community, empiricism was extremely highly valued and experimental confirmation of results *de rigueur*. In 1870s' German school curricula, the sciences did not yet enjoy the high acclaim that they would after 1900—partly due to the lobbying of people like Haeckel or Ernst Mach.¹⁶⁵ Secondary education was still centered around the classical languages, like Latin or Greek, and historical subjects, resulting in a so-called humanistic education. At least in the latter subject, history, the scientific method had been accepted in the guise of *Quellenkritik*, source criticism. Ever since the mid-nineteenth century, historiography had become scientific in the sense of applying strict standards of empirical rigor, a movement encapsulated in the term *Geisteswissenschaften*.¹⁶⁶ In his lecture, Haeckel exploited these tensions and alignments between the sciences and the humanities adroitly by declaring evolutionary biology a *historische Naturwissenschaft*, a history-based science of nature. Of course, Adler's aim was exactly the converse, the development of a nature-based science of (music) history.

Addressing the natural-scientific critics of evolution, Haeckel discusses the standards of evidence that should be applied in evolutionary arguments. We can see that both the approach—historical—and the standard of evidence—empirical but not experimental—fit well with the source situation confronting a musicologist:

Vollends verkehrt aber ist es, wenn man dafür [for “Descendenz-Theorie”] exacte oder gar experimentelle Beweise verlangt. Diese oft gehörte Forderung entspringt dem weitverbreiteten Irrthum, dass alle Naturwissenschaft *exact* sein müsse; man stellt ja auch häufig alle anderen Wissenschaften unter dem Namen der “Geisteswissenschaften” der ersteren gegenüber. . . . Wenn auch die Forderung einer möglichst exacten, womöglich sogar mathematischen Begründung für *alle* Wissenschaften im Princip bestehen bleibt, so ist sie doch für den weitaus grössten Theil der biologischen Wissensfächer unmöglich durchzuführen. Hier tritt vielmehr an die Stelle der exacten, mathematisch-physikalischen die *historische*, die geschichtlich-philosophische Methode.¹⁶⁷

(But it is completely misguided to expect of it [“Descendenz-Theorie,” or the theory of descent] exact or even experimental evidence. This regularly expressed charge results from the commonly held error, to assume that all natural science should be *exact*; one often also opposes all other sciences to the former [exact sciences] under the term ‘sciences of the mind.’ . . . Even though the expectation of a proximately exact, ideally even mathematical

¹⁶⁵Adler preserved an article by Mach among his papers, where the latter argued for the inclusion of mathematical and physical subjects in secondary school.

¹⁶⁶Adler is ambivalent about this term (Adler, *Wollen und Wirken*, p. 5), perhaps less because he disapproved of *Wissenschaftlichkeit* than because the term *Geist* (spirit) seemed discordant in a scientific setting.

¹⁶⁷Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, pp. 102–103.

foundation for *all* sciences remains valid in principle, to establish such [a foundation] for the largest slice of the biological disciplines is impossible. Rather, here the *historiographical*, the historico-philosophical method replaces the exact, mathematical-physical one.)

Haeckel thus proposes a loosening of the stricter definition of sciences, embracing the *Geisteswissenschaften* on his quest for “holistic science” (yet another translation for the elusive term *Gesamtwissenschaft*). For Adler, who seeks a point of methodological contact that does not jeopardize musicology’s garnering the prestige of the scientific method, Haeckel’s approving appeal to the “historical sciences”—Rankean historiography dedicated to the past “wie es eigentlich gewesen” (as it had originally been)—extends a hand. Adler had been schooled in classical historiography and source studies (*inter alia* by Engelbert Mühlbacher, publisher of Carolingian *monumenta* in Austria). Haeckel’s conscious parallelism between historical and biological “Urkunden” (official documents) throughout this and his other public lectures was designed to appeal to the empiricist aspirations of exactly this partition of his audience.

The other task of the human historian—the placement of empirical morsels in the sweep of plausible but ultimately speculative historical narratives—was a conundrum that biological scientists had only just discovered, particularly through the increasing number of fossils found in the 1850s and 60s. Moreover, historicity was not a common feature of natural-scientific inquiry prior to the early to mid-nineteenth century; with geology, evolutionary biology was the first major historical scientific discipline. The established sciences, like physics, chemistry, and even post-Linnean systematic biology, were resolutely non-historical. It is here where the “historico-philosophical method” becomes an important anchor for Haeckel to appeal to his natural-scientist but evolution-skeptical audience. They would all have been educated in the traditional high-school system, would thus have been subjected to this “method,” and would have acknowledged it as a proper means to determine historical processes. (Science education proper did not start until a student’s entry into the university system.) The relative stability of historiographical narrative techniques had been secured through repeated references back to Hegel’s philosophy of history, and by the second half of the nineteenth century, historiography as a speculative (but nevertheless evidence-based) account of the past was well-accepted. Where Haeckel may have had to convince his colleagues in the “hard sciences” (physics and chemistry, particularly) that evolutionary narratives of biological history

measured up to their empirical ideals, in the historians he found understanding compatriots, and in the high-school taught “historical sciences” a well-known and broadly-accepted image for biological historiography. For Haeckel, then, the speculative element in evolutionary historiography—phyletic history or “Stammesgeschichte”—was just as dignified as the many already familiar historical disciplines, with equal claims to educational relevance:

Nur durch kritische Benutzung der *historischen Urkunden*, durch eben so umsichtige als kühne Speculation ist hier annähernde Erkenntniss mittelbar möglich. Die Stammesgeschichte benutzt diese Geschichts-Urkunden in derselben Weise und verwerthet sie nach derselben Methode, wie andere historische Disziplinen. Wie der Geschichtsschreiber mit Hülfe von Chroniken, Biographien, Briefen uns ein anschauliches Bild einer längst verflossenen Begebenheit entwirft; wie der Archäologe durch das Studium von Bildwerken, Inschriften, Geräthschaften die Erkenntniss von den Culturzuständen eines längst untergegangenen Volkes erwirbt; wie der Linguist durch vergleichende Untersuchung aller stammverwandten lebenden Sprachen und ihrer älteren Schriftdenkmäler uns deren Entwicklung und Ursprung aus einer gemeinsamen Ursprache nachweist; ganz ebenso gelangt heute der Naturhistoriker durch kritische Benutzung der phylogenetischen Urkunden, der vergleichenden Anatomie, Ontogenie und Paläontologie zur annähernden Erkenntniss der Vorgänge, welche im Laufe ungemessener Perioden den Formenwechsel des organischen Lebens auf unserer Erde veranlasst haben.¹⁶⁸

(Only by critical use of the historical records, by equally as careful as audacious speculation, a proximate understanding is mediately possible. The history of phyla uses these historical records in the same way and deploys them in the same way as other historical disciplines. How the historian drafts a visualizable picture of a long bygone event with the assistance of chronicles, biographies, [or] letters; how the archeologist acquires an understanding of the cultural states of a long-perished people through the study of paintings, inscriptions, [or] tools; how the linguist demonstrates to us the history—and the origins in a shared original language—of phyletically related modern languages and their older manuscripts by comparative examination: just like that, the natural historian arrives through critical employment of the phylogenetic record, that is, comparative anatomy, ontogeny, and paleontology, at an approximate understanding of the processes that have caused the form changes of organic life on our planet during unmeasured eons.)

In an explanatory footnote, Haeckel drives the correspondence of his researches and those of conventional historians home once more:

Der *historische Charakter* der morphologischen Naturwissenschaften (vor allem der vergleichenden Anatomie und Ontogenie, wie der Paläontologie) kann nicht genug betont werden; möglichst exacte Beschreibung der empirischen Thatsachen ist natürlich hier, wie auch in jeder historischen Wissenschaft zu fordern; aber diese Wissenschaften selbst können niemals exact werden.¹⁶⁹

¹⁶⁸ *Idem*, pp. 104–105.

¹⁶⁹ *Idem*, p. 118, n. 12.

(The *historical character* of the morphological sciences (in particular of comparative anatomy and ontogeny, as of paleontology) can hardly be stressed enough; a description of the empirical facts as exactly as possible ought to be required here as in any historical science; but these sciences themselves can never be exact.)

In this latter pronouncement, Haeckel was of course mistaken; evolutionary biologists developed (in the 1920s and 30s, long after his death) mathematical formalisms that describe evolutionary processes rather precisely, thus measuring up to Haeckel's idea of an "exakte Wissenschaft."¹⁷⁰ Also, more precise determinations of evolutionary units—say, the means of inheritance, which Haeckel did not know but which we know as genes, stretches of DNA—have allowed biologists to test assumptions about evolutionary processes under experimental (or laboratory) conditions.¹⁷¹

Of course biologists cannot travel back in time to observe long-range biological history taking place, and in this sense Haeckel's admission of evolutionary biology's historiographical inadequacies still holds (and will for the foreseeable future). But the wealth of information indirectly discernible about the past more than makes up for this lack of direct observation, however crippling it might seem to weigh on the historian's task initially. Evolutionary theory as a historiographical construct enables these inferences from particulate observations towards biological history. Given that (in Haeckel's time) a historical natural science was a "new thing" and thus *sui generis*, his qualms and his appeals to the authority of human historiographers are quite understandable. But evolutionary biology's track record (even then) sufficed to assure its acceptance in the scientific world as a whole, and this acceptance engendered its appeal to historians of those *Geisteswissenschaften* that dealt with more alien products than lettered records, inscriptions, or languages. *Entwicklungslehre* itself became a promising means of inference for these fields—including musicology—and was used with varying success.

¹⁷⁰I am thinking of Ronald Fisher's and Sewall Wright's statistical accounts of population genetics that demonstrated the efficacy of natural selection and defined the relative importance of non-selective evolutionary mechanisms, particularly the spreading of feature variants among members of a population through genetic drift.

¹⁷¹In one of the more peculiar turns in the history of science, the physical sciences eventually, during the 1920s, were forced to adopt statistical (that is, non-exact by the standards of the 1860s) interpretations of elementary particles to explain their properties, the so-called quantum mechanics. Much of the philosophical, mathematical, and physical groundwork to this "quantum revolution" was laid in Vienna, by people whom Adler knew and admired (like Ernst Mach), collaborated with (like Max Planck as reviewer for the *Vierteljahrsschrift*), or knew of (like Franz Serafin Exner, advisor to Ernst Schrödinger).

The historian Adler would have felt the biologist Haeckel's appeal to shared empirical-speculative methods; the musicologist Adler would have understood the interpretive problems posed by the historiography of non-lingual records that still pained Haeckel. The "methodologist" Adler includes in his "Umfang, Methode und Ziel" a long sentence¹⁷² that reads like a response to Haeckel's appealing call to the historian, the archeologist, and the linguist, comparing their working habits—their "wie" (how)—to those of the natural historian. As Haeckel extended a hand to his fellow historians in the humanities, we may view Adler here as extending his hand back to the natural historians. The only difference is that Adler does not appeal to the working habits of biologists, as Haeckel did in the passage cited above, but to the laws that they employ in their depictions of history:

Wie von den Anfängen der einfachen Melodie ausgehend der Bau der Kunstwerke allmählich wächst, wie von den einfachsten Thesen ausgehend die in den Tonproducten latenten Kunstnormen complicirt und complicirter werden, wie mit entschwindenden Culturen die Tonsysteme vergehen, wie an das Glied sich nach und nach eine Kette von Zellen anschließt und so organisch wächst, wie die außerhalb der fortschrittlichen Bewegung stehenden Elemente, weil nicht lebensfähig, untergehen—dies darzulegen und nachzuweisen ist die dankbarste Aufgabe des Kunstgelehrten.¹⁷³

(The most satisfying task of the scholar of art is to demonstrate and establish how, proceeding from the beginnings of simple melody, the structure of works of art gradually grows; how, proceeding from the simplest thesis, the artistic norms latent in the tonal products become more and more complicated; how tonal systems pass away with disappearing cultures; how, little by little, a chain of cells attaches itself to a limb and so grows organically; how elements standing outside the mainstream of progressive development perish because they are not viable.¹⁷⁴)

Setting aside for the moment the more precise nature of these biological explanatory means—we will reconstruct Haeckel's particular evolutionary views in the next two subsections—Adler's orientation along the lines of Haeckel's passage is palpable. Apart from the incessant "wie," Adler also references extinguished cultures, as Haeckel does the "perished people" who had produced inscriptions and paintings studied by archeologists. Haeckel diagnoses "Formenwechsel" (change of forms) in life's history, Adler—in music's history—the gradual growth of the art products' "Bau" (structure). One point of difference is Adler's much more overt allusion to progress, to "fortschrittliche Bewegung." Haeckel is explicitly talking about

¹⁷²Already familiar to the reader from my critique of Mugglestone's interpretation of Adler in the Introduction, on pp. 9ff.

¹⁷³Adler, *Umfang, Methode und Ziel*, p. 9.

¹⁷⁴Mugglestone, *op. cit.*, p. 8.

historical disciplines in which he was a layperson, and thus quite probably he preferred to be more careful about sweeping statements. Adler's reference to biology is more metaphorical and thus he himself freer in his allusions. As I have observed several times in the course of this study, rhetorical appeal to biology does not make Adler's methodology biological. If his ideas are indeed sourced from Haeckel, this passage cannot serve as evidence; we must examine Haeckel in greater detail.

What we can extract from this and the other passages in "Ueber die heutige Entwicklungslehre" cited above is Haeckel's confidence that evolutionary biology works from the same foundations as the contemporary historical sciences, to the degree that he calls biology a "historical natural science"; and this "elevation" of mere systematics is grounded in Darwin's transformation of the "dead" Linnean systematic tree into a "living" genealogical tree:

So knüpfen jetzt diese historischen Naturwissenschaften, Geologie und Phylogenie, das einende Band zwischen den exacten Naturwissenschaften einerseits und den historischen Geisteswissenschaften andererseits. Die gesammte Biologie, insbesondere aber die systematische Zoologie und Botanik, wird dadurch zum Range einer wahren Natur-*Geschichte* erhoben, ein Ehrentitel, den diese Fächer längst führten, aber erst jetzt verdienen. Wenn diesselben auch heute noch vielfach, sogar officiell, als "beschreibende Naturwissenschaften" bezeichnet und den "erklärenden" gegenüber gesetzt werden, so zeigt das nur, welchen falschen Begriff man bisher von ihrer wahren Aufgabe hatte. Seitdem das "natürliche System" der Organismen als ihr Stammbaum erkannt ist, tritt an die Stelle der todtten beschreibenden Systematik die lebendige Stammesgeschichte der Klassen und Arten.¹⁷⁵

(Thus these historical natural sciences—geology and phylogeny—tie the unifying cord between the exact natural sciences on one side and the historical mental sciences on the other. All of biology, but particularly systematic zoology and botany, are elevated thereby to the level of true natural *history*, an honorary appellation that these fields already possessed but that they only now deserve. Even though these are still commonly, even officially, called "descriptive natural sciences" and are contrasted with the "explanatory" [natural sciences], this only shows how misguided the impression of their task was. Ever since the "natural system" of organisms has been recognized as their genealogical tree, the living phyletic history of classes and species replaces the dead descriptive systematics.)

As we can see, Haeckel regards "Geschichte" (history) as an "honorary title" ("Ehrentitel")—a sly ploy to appeal to his historian readers and draw them to the side of allowing the teaching of evolution in the humanistically oriented high schools. On Adler's side, a reciprocal elevation of musicology to the status of a "science" (*Musik-Wissenschaft*) plays a similar role. Of

¹⁷⁵Haeckel, [*H*]eutige Entwicklungslehre (1879, collection), pp. 105–106.

course, this elevation for musicology is only possible if it adopts the evolutionary method, and preferably the one promoted and shaped by Haeckel.

4.3.1.2 Haeckel's Re-Interpretation of Darwin: Adaptation as Differentiation

Our next task will be to examine the components and foundations of this evolutionary view of nature—in the hands of Haeckel and through the eyes of Adler—and extract its consequences for historiographical practice beyond the well-established empirical nature of its records. As Haeckel's several remarks above have already suggested, it is less the particular mechanism of natural selection and much more the conception of organic life as a family tree—of natural history as a specific structure—that garner his respect for Darwin. Methodological emulators like Adler are more likely to focus on the consequences of phylogeny for developing their research methods than delve into the nitty-gritty of figuring just which evolutionary mechanism—selection, hybridism, use and disuse, or sundry others—was responsible for the shape of some particular crooked branch in the phyletic history. What Haeckel subsumed under the term adaptation, a historian of art like Adler might well call a creative impulse (as scientifically ill-defined as this term may be). Nonetheless, Haeckel's reinterpretation of Darwin's concept of natural selection was a prerequisite for his integration of individual development into evolutionary arguments. In this subsection, I trace Haeckel's position *vis-à-vis* this central tenet of Darwinism while, in the next section, I sketch his departure from it.

For all of Haeckel's deviation from, or loosening of, Darwin's proposals, if we compare his works with assessments of his achievements by contemporaries like Rudolf Burckhardt, we notice at once the great deference that Haeckel shows to Darwin. Far from ignoring or officiously downplaying the Englishman's legacy, Haeckel puts himself emphatically among his intellectual descendants. In the passage which Adler paraphrased as the beginning of his excerpt, it is Darwin,

der vor 18 Jahren die starre Eisdecke der herrschenden Vorurtheile zuerst durchstieß, be-seelt von demselben Grundgedanken einer einheitlichen Weltentwicklung, welcher vor hundert Jahren unsere grössten Denker und Dichter bewegte, an ihrer Spitze *Immanuel Kant* und *Wolfgang Goethe*¹⁷⁶

¹⁷⁶*Idem*, p. 100.

(who first breached the immovable ice sheet of reigning prejudice eighteen years ago, motivated by the same grounding idea of a unified universal development which had already empowered our greatest thinkers and poets, at their helm *Immanuel Kant* and [*Johann Wolfgang [von] Goethe*])

I am not so sure that Darwin would have seen himself consciously in the tradition of the two German thinkers, whatever admiration he may have had for their scientific, philosophical, and poetic skills. (Darwin did place himself in the debt of Alexander von Humboldt, on the other hand.) Haeckel's constant awareness of the big picture of natural historiography—in the same paragraph he mentions Lamarck, Geoffroy St. Hilaire, Lorenz Oken, and Wilhelm Schelling—may have contributed to a diminishing stature for Darwin, especially given the German-British rivalry by the turn of the twentieth century and the always present biological doubts about the historical relevance of natural selection.

Haeckel had no such doubts, and rightly declared selection Darwin's central contribution to evolutionary biology in the very next sentence:

Durch Aufstellung seiner Selectionstheorie, der Lehre von der natürlichen Züchtung im Kampfe um's Dasein, vermochte *Darwin* namentlich den wichtigsten biologischen Theil der allgemeinen Entwicklungslehre fest zu begründen, die schon im Anfang unseres Jahrhunderts aufgetauchte Abstammungslehre oder Descendenz-Theorie.¹⁷⁷

(By proposing his selection theory, the doctrine of natural breeding by the struggle for existence, Darwin succeeded in founding securely the most important biological part of general *Entwicklung* theory, the genealogical or descent theory that had already emerged at the beginning of our [nineteenth] century.)

Again Haeckel refers to older versions of transformation theory—that other early name for what we usually call evolution—and he is thinking quite probably of people like Charles's grandfather Erasmus Darwin, like Georges de Buffon, and like Lamarck of course, all of whom theorized the mutability of animal forms through history. Darwin's great achievement had been, in Haeckel's view, the explanation of the process by which these forms are modified in nature, where no human breeder can steer their fate. In Haeckel's eyes, Darwin's explanation for morphological change of species goes against the teleological view of nature, proving that

die Zweckmässigkeit im Bau der organischen Formen weder allgemein noch vollkommen ist; dass sie nicht der Ausfluss eines zweckthätigen Schöpfungsplanes, sondern durch das

¹⁷⁷ *Idem.*

zufällige Zusammentreffen mechanischer Ursachen mit Nothwendigkeit bewirkt ist¹⁷⁸
(the effectiveness in the structure of organic forms is neither general [or common] nor perfect; that they [the forms] are not the effects of a goal-directed creative plan but effected through the accidental meeting of mechanical causes with necessity).

This “accidental” (“zufällige”) nature of biological processes, their historical contingency, is one reason for Haeckel’s refusal to have evolutionary biology measured against the standards of “exact” science, which can repeat its experiments at will.

The contingent nature of biological explanations, and their appeal both to necessity (in the form of biological “laws”) and unforeseen circumstances (in the form of heredity’s and the environment’s gifts), are encapsulated in Haeckel’s rendering of Darwin’s insight that similarity of form in different species affords a clue to their possibly shared ancestral history:

Ihre [organic forms’] Aehnlichkeit ergiebt sich als natürliche Folge der *Vererbung* von gemeinsamen Stammformen, ihre Verschiedenheit als nothwendige Wirkung der *Anpassung* an verschiedene Lebensbedingungen.¹⁷⁹

(Their [the organic forms’] similarity results as a natural effect of *inheritance* from shared ancestral forms, their difference as necessary effect of *adaptation* to different life circumstances.)

Up to this point, Haeckel is still squarely within a reasonable interpretation of Darwin’s ideas, especially if viewed through nineteenth-century spectacles. The dangers inherent in abandoning Darwin’s prescribed notion of the struggle among individuals are illustrated in a sentence from a different paper in the collected presentations, “Ueber Ursprung und Entwicklung der Sinneswerkzeuge.”¹⁸⁰ Haeckel comments on the possibility of humans relearning to move their external ear, an ability their ancestors and mammal relatives had:

Es ist dies eine der merkwürdigsten Beispiele für die grosse Macht der Uebung und Gewohnheit, des gewaltigsten Hebels der Anpassung.¹⁸¹

¹⁷⁸*Idem*, p. 102; the last clause raises echoes (in my mind) of Jacob Monod’s characterization of evolution as “chance and necessity” in his eponymous book.

¹⁷⁹Haeckel, [*H]eutige Entwicklungslehre (1879, collection)*], p. 102.

¹⁸⁰We recall that this was one of the two papers Haeckel presented in Vienna. In the 1879 collection, it is reprinted just after “Ueber die heutige Entwicklungslehre.”

¹⁸¹Ernst Haeckel, “Ueber Ursprung und Entwicklung der Sinneswerkzeuge,” pages 121–164 of *Gesammelte Populäre Vorträge, volume 2*, p. 152. This page and the following show that Haeckel did not shy away from commenting on the pressing musicological matters of his day; he discusses potential sensory-apparatus differences between Wagnerians, Beethovenians, and non-European musicians. Adler was of course a Wagnerian in his early days (witness his teenage encounters with Wagner reported in the beginning of *Wollen und Wirken*), so Haeckel’s commentary may have attracted Adler to the biologist’s writings along this route, too. According to one booklist, Adler also seems to have owned a book with letters exchanged between

(This is one of the most peculiar examples for the great power of practice and custom, the most forceful lever of adaptation.)

“Uebung und Gewohnheit” (practice and custom) refer to repeated behavioral patterns, and Haeckel calling them the “lever of adaptation” implies a stance on evolutionary mechanism very close to Lamarck’s. The French biologist attributes the adaptations to the “efforts” exerted by animals in response to their needs (“besoins”).¹⁸² The German allows for concurrence, for “Kampf ums Dasein,” indeed considers this the final arbiter of evolutionary change, but the lever moving the characters of a lineage in this way or that are “Uebung und Gewohnheit.” When Haeckel starts to classify the different mechanisms for producing historiographically relevant changes, Lamarckian behavioral changes seem more responsible for decisive splittings of lineages, with the struggle for existence only “confirming” the changes that behavior, or embryological disposition, have produced.

In the face of this resurgence of Lamarckian references in Haeckel’s language, we may well start to think of him as a Lamarckian evolutionist. But for all his championing of Lamarck as one originator of evolutionary biology, Haeckel’s interest in embryology and internal development causes him to diverge sharply from the adaptationist legacy that Lamarck’s mechanism for evolution established. Where Lamarck and Darwin stressed the importance of adaptation processes, Haeckel and Darwin the powers of concurrence among individuals, and Lamarck and Haeckel the influence of behavior on physical characters, the feature that renders Haeckel’s evolutionary biology *sui generis* is his integration of individual development into the framework established by Darwin’s evolutionary theory. By virtue of this integration, which led Haeckel to means of reconstructing biological history ultimately at odds with Darwin’s propositions, he developed a view of biological research that became the template for Adler’s scientific musicology.

4.3.1.3 Haeckel’s Re-Interpretation of Darwin: Integrating Development into Evolution The similarity and difference of organic forms, discerned by careful systematic classification, is of course not simply the result of biological history, that is, evolution. Each

Haeckel (in the list spelled “Heckel”) and Wagner. Because of the unclear reference in the list, attributing a particular publication is not possible.

¹⁸²Lamarck, *op. cit.*, p. 222.

individual animal is not born in the shape in which the biologist encounters it. Rather, the organism undergoes the other *Entwicklung* process, embryonic and (more generally) individual development, to arrive at its adult form. Haeckel was well aware of the (then) incompleteness of paleontological records of biological history.¹⁸³ Likewise comparative anatomists often had trouble discerning whether similarity of a particular character in two species indicated close common ancestry (in which case the character would be called a homology) or whether the similarity was simply due to adaptation to similar life circumstances, without close ancestral ties (in which case it would be an analogy). Homologies pointed to history in the form of life's genealogical tree, analogies mucked up the record.

These difficulties in interpreting both the paleontological and the taxonomic records encouraged Haeckel to stress the value of a third kind of “historische Urkunden” for evolution, the embryological record, that is, the similarities and differences of organic forms observed during their development. The obvious powerful “distractions” of adaptation to current life circumstances (Haeckel was interpreting adaptation here in a very Lamarckian use-disuse sense) were not really affecting the shaping of animal form in the sheltered life of the embryo. Here was (to Haeckel and his followers) a much more reliable record of history if one had a means of establishing correspondence between forms effected through individual development and forms that were products of phyletic history (“Stammesgeschichte”). By Haeckel, this correspondence was attributed to his “biogenetic basic law” (“biogenetisches Grundgesetz”) which he formulated countless times in his publications. In the article excerpted by Adler, he offers the longer version:

Denn nach den Vererbungsgesetzen sind die Formwandlungen welche der Keim unter unseren Augen in kürzester Frist durchläuft, eine gedrängte und abgekürzte Wiederholung der entsprechenden Formwandlungen, welchen die Vorfahren des betreffenden Organismus im Laufe vieler Millionen Jahre unterlagen.¹⁸⁴

(Because according to the laws of inheritance the changes of form—which the seed suffers quickly during our observation—are a condensed and shortened repetition of the correlating changes of form suffered by the ancestors of the organism in the course of millions of years.)

And on the next page he shortens it and, a few sentences later, clarifies the explanatory relationship between phylogeny and ontogeny:

¹⁸³Ernst Haeckel, “Ueber die Urkunden der Stammesgeschichte,” pages 81–96 of *Gesammelte Populäre Vorträge, volume 2*.

¹⁸⁴Haeckel, *[H]eutige Entwicklungslehre (1879, collection)*, p. 103.

*Die Keimesgeschichte ist ein Auszug der Stammesgeschichte, bedingt durch die Gesetze der Vererbung. . . . Diese stammesgeschichtliche (oder phylogenetische) Deutung der keimesgeschichtlichen (oder ontogenetischen) Erscheinungen ist bis jetzt die einzige Erklärung der letzteren.*¹⁸⁵

(The history of the seed [that is, embryology] is an excerpt of the history of the stem/trunk [in Haeckel's own terminology, the "phylum"], conditioned by the laws of inheritance. . . . This phyletic-historical (or phylogenetic) interpretation of the seed-historical (or ontogenetic) phenomena is so far the latter's only explanation.)

The process of individual development in a particular branch of the tree of life—*Entwicklungsgeschichte* in the then customary sense of the term—is thus an extract of the historical process that formed the particular branch.

Like Adler's "Auszug" of Haeckel's presentation, this extract of biological history retains the order of historical events: the first stage of development is a single cell, just like the earliest organisms were single cells; additional, more complex stages appear usually after, not before, the simpler stages; reversals of this order of events (for example, in the extreme simplification of some parasite bodies) are due to environmental constraints.¹⁸⁶ But of course the "repeat" of history is sped up greatly in the short period that divides fertilized egg from fertile adult. Historical stages not essential to the survival of the lineage are lost during evolutionary history, and thus a much-shortened, condensed development process appears for each species. Or, in a formulation probably more familiar to English-speakers, ontogeny recapitulates phylogeny.

This evolutionary "law" was dismantled progressively during the twentieth century, most importantly through the discovery of the actual mechanisms of inheritance, which do not allow for the direct influence of environmental conditions on *Keimesgeschichte* that Haeckel had imagined. A regularity quite close to Haeckel's seems to hold, however; this is von Baer's law, first proposed by the embryologist Karl-Ernst von Baer in the 1820s, and duly acknowledged by Haeckel. Von Baer observed that embryos of widely different animal taxa look very similar during their early stages of development and diverge towards their specific form only during the later stages. This holds true for the vertebrates and can reasonably be in-

¹⁸⁵*Idem*, p. 104.

¹⁸⁶In my example, the well-evolved and well-placed parasite does not need its complicated sensory organs any more, and thus dispatches them in a final developmental stage; a digestive tract and some means for disseminating offspring are enough to ensure survival of the organism and perpetuation of the kind.

terpreted as evidence for the common ancestry of these animals groups.¹⁸⁷ Haeckel's fault was the interpretation of these differences not just as evidence for systematics, from which history could then be inferred, but as direct evidence for the history of each lineage.¹⁸⁸ Here Haeckel's broadening of Darwin's selection—the struggle for existence between individual organisms—to the more diffuse concept differentiation (which might happen between cells in a body as well as organisms in an ecological niche as well as phyla in biological history) becomes an effective methodological support for explaining natural history. Any biological process that results in an increasing number of entities arising from a smaller number may then be regarded as evolution. Conversely, laws or regularities identified in one type of biological process may—through the prism of selection/differentiation—be discerned in other types of biological processes as well. Obviously Haeckel's definitional extension of selection serves to unify the methods of different biological sub-disciplines, a fact reflected in the structure of biological research as Haeckel pictured it in several publications discussed below. Since Adler used these pictures as inspiration for his own schema in “Umfang, Methode und Ziel,” Haeckel's reinterpretation of selection thus exerts a “long arm's reach” on musicology.

4.3.1.4 Bypassing Systematics Through Inferences from Development Based on a reverse application of the central theorem of Haeckel's evolutionary biology, embryological research can be made useful for determining evolutionary relationships. Haeckel's students—including prominently Adler's desired reviewer for the *Vierteljahrschrift*, William Thierry Preyer, and his old friend Berthold Hatschek—made a cottage industry of this particular type of “developmental evolutionary biology” during the last third of the nineteenth century.¹⁸⁹

¹⁸⁷Darwin did not mention von Baer in the *Origin's* first edition but filled in this gap in the revised and amended third edition (1861) on p. 471.

¹⁸⁸Stephen Jay Gould dedicated his first major book to clearing up the relationship between individual and historical processes in biology, criticizing Haeckel quite forcefully for his overenthusiastic assumptions about the embryological records of history; see Stephen Jay Gould, *Ontogeny and Phylogeny* (Cambridge, Mass.: Belknap Press, 1977), pp. 76–85.

¹⁸⁹My coinage “developmental evolutionary biology” is a deliberate riff on the late twentieth-century biological sub-discipline of “evolutionary developmental biology.” “Evo-devo” uses the now well-confirmed theory of evolution as common descent to illuminate the way in which animal forms are actually “made” in embryological processes. In this sense, evo-devo may be seen as a late fulfillment of Haeckel's dream of an integrated science of biological forms, which—for ignorance of the means of inheritance—his “devo-evo” was only able to guess at. Notably, selection plays no role in this modern developmental biology, and the differentiation processes observed in embryological development have few similarities to the struggle for existence. For a survey of evo-devo's findings, see for example Sean B. Carroll, *Endless Forms Most Beautiful: The New*

But Haeckel's easy assumption, that the embryological record is a record of history (less a few episodes), may derail the particular historical narratives constructed. After all, the development process—for all its similarity to the broad category of processes denoted by the term *Entwicklung*—is goal-directed and tightly constrained, whereas this is not the case for biological history.¹⁹⁰ The way in which Haeckel proceeded to derive historical narrative from individual development thus takes on particular argumentative weight.

Since Adler's interest was in methodology, and since the process of historical research is one which he pondered throughout his life, I will give a little more detail on Haeckel's methods of historical inference from the embryological record. According to Haeckel, the classificatory characters of each biological form can be divided into two groups: those characters that transmit the signal of inheritance faithfully (Haeckel calls these "palingenetic" or "auszugsgeschichtlich"—extract-historical), and those that are less reliable as indicators of common ancestry because they are tweaked by current (or past) environmental necessities (these are "cenogenetic" or "fälschungsgeschichtlich"—deceptive-historical). In a different article from the 1879 collection, Haeckel expands his definition of the "Grundgesetz" again:

Die Keimesgeschichte ist ein Auszug der Stammesgeschichte; um so vollständiger, je mehr durch Vererbung die Auszugsentwicklung beibehalten wird, um so weniger vollständig, je mehr durch Anpassung die Fälschungsentwicklung eingeführt wird.¹⁹¹

(The history of the seed is an extract of the phyletic history; the more complete, the more inheritance maintains the extract development; the less complete, the more adaptation introduces forged [or apparent] development.)

Quite probably, we should not read "Fälschungsgeschichte" as morally evaluative ("Fälschung" being the German term for "forgery," but "verfälscht" close to "deceptive"), just as a more pronounced expression of the fact that adaptive measures often occlude the natural historian's view of his research object's evolutionary history. For embryology, these

Science of Evo-Devo and the Making of the Animal Kingdom (New York: Norton, 2005).

¹⁹⁰As we saw above, Haeckel was fully aware that evolutionary historiography—at least *post* Darwin—demoted teleological historical narratives, which makes the strong correlation he drew between development and evolution even more curious. Perhaps this cognitive dissonance on Haeckel's part must be filed under the heading "old habits die slowly." Teleological histories had been a part of biological researches for such a long time that the very different type of *telos* presented in Darwin's account of adaptation was acknowledged by Haeckel but not integrated into his own method of historiography. (In Darwin, local environmental circumstances influence the "shape" of species at any moment in history, and the local environment is not endowed with any sense of global finality at any such moment, be it present or future.)

¹⁹¹Haeckel, *Urkunden der Stammesgeschichte*, p. 94; Haeckel emphasizes the sentence as a whole.

concepts were fairly new. In comparative anatomy, a similar pair of terms—homology and analogy—had been part of the biological vocabulary since Cuvier introduced them in the 1830s. Homologies were similar structures in systematically close groups (such as the five-fingered hand in most mammals, and several other classes of vertebrates), and analogies similarities due to function (like fins to propel animals through water). For a historian reconstructing a genealogical tree of life, the homologies were more important because they indicated shared ancestry and thus invited establishing a definite historical ancestor. Analogies were important to determine the life circumstances of the observed animal (for example, whales live in water) but they often obscured the species's mooring in history (whales' fins obscured that these fins once were legs, a fact that closer anatomic studies revealed; with the help of homologies like milk production and the presence of hairs, whales could be placed among mammals). While Darwin's principle of natural selection stressed the importance of the environmental circumstances (which were responsible for analogous characters) for natural historical process, the zeal of anatomists to reconstruct the tree of life still lead them to an excessive focus on homologies. Haeckel, who sought to integrate anatomy into the broader field of systematics, fell victim to this bias towards inherited shared characters, too, when he introduced embryology into evolutionary biology.

Inference from systematic similarity (even when established through embryological comparisons) towards historical relatedness was a fair methodological technique, and indeed the basis for Darwin's endorsement of von Baer's law and of much embryological work done in the decades after the *Origin's* publication. What makes Haeckel's "biogenetic basic law" problematic as a tool for natural historiography is the possibility of bypassing systematics altogether to establish historical lineages. This application of comparative principles goes against the logic of inferring distances of nodes on the evolutionary tree first, before establishing the shape of the branches. In Haeckel's view, defining the stages of development (commonly called "Entwicklungsperioden") defines the extract of evolutionary history that embryonic development presents. Coherent processes of growth and slow change during a development stage represent gradual evolution during history. Breaks between the "periods"—as in the transformation of egg to caterpillar, caterpillar to pupa, and pupa to adult butterfly—are the major developmental changes that represent "lost" stages of history,

lost most likely due to some radical change in the butterfly's ancestor's ecology. By this historiographical model, perhaps at some point in history producing a silk cocoon was advantageous to a fully developed, adult butterfly-ancestor shaped like a caterpillar (as housing, for example). But then some environmental change required adaptation to new circumstances that implied life on the wing. This historical break in adaptive pressure thus necessitated a break in the development of the butterflies' ancestors. The accumulated characters that allowed the caterpillar in the cocoon to live as a normal organism were lost except for its (palingenetic) ability to cocoon, and the (cenogenetic) adaptations that allowed the species henceforth to live as butterfly started to accumulate, thus erasing some historical records of the butterfly phylum's previous life. This application of Haeckel's biogenetic law thus does not really require us to study the other available historical records (fossils, and comparative studies of butterflies and related insect families), particularly if these records are very scarce (as they were in Haeckel's time). Knowledge of the developmental timeline and discernment of its major breaks is sufficient to reconstruct history.

Adler, so far as I know, never postulated the close correspondence between history and individual development that Haeckel required in his "biogenetisches Grundgesetz." For one, musical pieces were to Adler pieces of evidence, not the quasi-living entities that they might have been to a historian influenced by, say, Schenker's analytical methods. Where he analyzes musical pieces, Adler looks at them with the eyes of a taxonomist, discerning parts, not with the eyes of a physiologist, describing processes. For a historical interpretation of music's sequentiality Adler thus lacked inclination; a slow introduction to a sonata movement did not mean sluggish historical evolution of the early symphony. But Haeckel's "law" still exerts a certain amount of indirect influence on Adler's thinking because it shapes both Haeckel's methodological reorganization of biology—which we will discuss in the next section and which Adler emulated—and because there is some "seepage" of narrative tropes from development into historiography, seepage that has plagued "biologized" musicology generally. If *Keimesgeschichte*, the story of the individual, is indeed causally connected (through the biogenetic law) to *Stammesgeschichte*, the story of a phylum, would we then not also expect reconstructions of history to exhibit some of the same features that characterize development? Features like *Entwicklungsperioden* (development stages), continuity and gradual

growth; sudden breaks with massive extinctions, especially of those members of a group incapable of adaptation to new circumstances; the alignment of the surviving members with the general progressive change of the environment, . . . My allusion here to Adler's passage about investigating the art laws of different periods which are the core of music-historical work ("die Erforschung der *Kunstgesetze* verschiedener Zeiten . . . ; diese ist der eigentliche Kernpunkt aller musikhistorischen Arbeit"¹⁹²) is quite deliberate. Adler's examples of "art laws" are heavily leaning toward biological language. It is not inconceivable that, besides pilfering the terms "chains of cells," "organic" and "gradual growth," "perished" groups and musical traditions, Adler also adopted the roles these concepts played in Haeckel's inferences from development onto history. Alas, such adoptions are better examined in the context of the historical arguments they help constitute.

The obvious danger of adopting Haeckel's interpretation of selection, his meshing of history and development processes, and his inferences of historical periods from development periods (both *Entwicklungsperioden*) lies, perhaps paradoxically, in a bypassing of systematics. Differences in the development of two organisms are real and possibly evolutionarily important differences, but their value for determining common-descent relations emerges only when they are transformed into systematic differences. Systematics and biological historiography are mutual in the sense that the former collates the evidence for the latter, while the latter explains the evidence present in the former. Haeckel's (and Hatschek's) very close observations of development processes enabled their very sharply argued articles about the historical relationships of invertebrates, relationships that evolutionary biologists had hitherto—for lack of fossil evidence in the mid-nineteenth century—left alone. But they employed this evidence in these arguments in a "systematics way," like they would have evidence from comparative anatomical studies, not in the "recapitulationist" way that Haeckel's dictum suggested. In musicology this difference between using development as evidence or as informant of the reconstructed history is sometimes obscured, leading to organicist historiography. But Adler's empiricism saves him from excessive flights of fancy, and thus his historical hypotheses about polyphony remain as sound as Haeckel's about, say,

¹⁹²Adler, *Umfang, Methode und Ziel*, p. 9.

the siphonophores.¹⁹³

4.3.2 The Sources and Principles of Adler’s Schema for *Musikwissenschaft*

The time has come to transgress the confines of “Ueber die heutige Entwicklungslehre” and search for profitable parallels between Adler’s and Haeckel’s methods and opinions elsewhere. Still, we need not roam very far: in the same collection, nay, the same 1879 volume, several other articles offered themselves as sources to Adler’s potentially interested eyes. I mentioned “Urkunden der Stammesgeschichte” (records of phyletic history) above and will have occasion to do so again below. But the most important additions to Adler’s musicological-methodological arsenal come from the first presentation reprinted in the volume, “Ueber Entwicklungsgang und Aufgabe der Zoologie”¹⁹⁴ (about the development process and task of zoology). There is the vocable *Entwicklungsgang*, which Haeckel uses as a word for historical (not embryological) processes, and which Adler uses in the same manner throughout his career, from his dissertation to *Methode*.¹⁹⁵ There is, too, Haeckel’s explicit methodological concern, his desire to establish zoology’s “Inhalt, Umfang und Behandlung”¹⁹⁶ (content, scope, and treatment), a trinity which—together with the title’s “Aufgabe”—may well have shaped Adler’s own titular trinity of “Umfang, Methode und Ziel” (scope, method, and aim).¹⁹⁷ The presentation is a first-rate source on Haeckel’s rethinking of biology in the light of Darwin’s propositions in the *Origin*, amended by his own, more development-oriented biological interests. But what may turn out to be the most intriguing parallel is the summary schema of biological research Haeckel puts at the end of the article.¹⁹⁸ Here, in this table first published in 1869, with roots in Haeckel’s *Generelle Morphologie* of 1866, we have a clear predecessor to Adler’s own schema for musicological research from 1885. Arguably,

¹⁹³Ernst Haeckel, *Zur Entwicklungsgeschichte der Siphonophoren* (Utrecht: C. van der Post Jr., 1869). This soundness does not mean that their hypotheses were necessarily correct, of course, just reasonably arrived at with the methodical and empirical tools of their time.

¹⁹⁴Haeckel, *Entwicklungsgang und Aufgabe*.

¹⁹⁵I mentioned an example above, on p. 36.

¹⁹⁶Haeckel, *Entwicklungsgang und Aufgabe*, p. 3.

¹⁹⁷“Behandlung” here may refer either to the treatment of zoology’s objects, and hence to the discipline’s methods, or to the treatment of zoology’s principles of research, that is, a reflexive stance towards its methods, and hence to the discipline’s methodology. Haeckel’s meaning is not entirely clear.

¹⁹⁸Haeckel, *Entwicklungsgang und Aufgabe*, p. 24.

Adler's schema is the incarnation of his musicological methodology: in "Umfang, Methode und Ziel," he calls it the "System dieser Wissenschaft"¹⁹⁹ (system of this science). He reiterates this statement thirty-four years later in *Methode*,²⁰⁰ and he seems to have thought that any proper scientific subject of research should have such a system. This subsection will be devoted to drawing the parallels between Haeckel's and Adler's schemata and plumbing the depths of their respective systematic ideologies.

To ease the reader into the "world" of these schemata—and spare him or her a few minutes in scrambling for the original sources—I have reproduced their salient structures and contents in a series of eight tables, each followed by its translation. First is Adler's schema from 1885, split into its historical and systematic halves, and then Haeckel's from 1869/79, split into morphology and physiology.²⁰¹ There are a few cuts of inessential material in Adler's table (the adjectives describing harmonics and rhythmicity, and the list of pedagogical subjects) because these would have necessitated a second page, destroying any notion of the symmetry inherent in Adler's schema. As it is now, the reader can combine and compare the different sections of the two tables with each other by putting the tables side-by-side. The tables run from p. 168 to p. 175.

For reasons of documentary proximity, Haeckel's table in "Ueber Entwicklungsgang und Aufgabe der Zoologie" (1869, reprinted 1879) is the most valuable source for my endeavor: if Adler accessed the 1879 collection for sourcing his manuscript, then he could have happened upon the table with the least bit of browsing. Its structure with two main branches and eight individual research areas is mirrored by Adler's schema, even if the latter does not reproduce Haeckel's intermediate four sub-branches. But Haeckel's 1869 table is connected to several others in Haeckel's works, particularly in the *Generelle Morphologie*. The complete model for Haeckel's simplified 1869 version is the table titled "Zoologie oder Thierkunde"²⁰² (zoology or animal studies). While the left half of this table (morphology) agrees pretty much with the later, simplified version, the right half (physiology) has several variants, both in subject

¹⁹⁹Adler, *Umfang, Methode und Ziel*, p. 8.

²⁰⁰Adler, *Methode der Musikgeschichte*, p. 6.

²⁰¹There is a reproduction of Adler's Schema in the Appendix for figures. Unfortunately, I was not able to secure a high-quality scan of Haeckel's schema. The 1879 collection of essays is in the public domain and available online.

²⁰²Haeckel, *Generelle Morphologie*, p. 238.

Musikwissenschaft	I. Historisch (Geschichte der Musik nach Epochen, Völkern, Reichen, Ländern, Gauen, Städten, Kunstschulen, Künstlern)	A. musikalische Paläographie	(Notationen)
		B. Historische Grundclassen	(Gruppierung der musikalischen Formen)
		C. Historische Aufeinanderfolge der Gesetze	1. wie sie in den Kunstwerken je einer Epoche vorliegen 2. wie sie von den Theoretikern der betreffenden Zeit gelehrt werden 3. Arten der Kunstausübung
		D. Geschichte der musikalischen Instrumente	

Table 1: “Historical Musicology” in Adler’s 1885 Schema (German Original)

Science of Music	I. Historical (history of music by ages, peoples, empires, countries, regions, cities, schools of art, artists)	A. Paleography of Music	(notations)
		B. Historical Basic Classes	(grouping of musical forms)
		C. Historical Succession of Laws	<ol style="list-style-type: none"> 1. as they are evident in the art works of an age 2. as they are taught by the theoreticians of that age 3. species/kinds of musical practice
		D. History of Musical Instruments	

Table 2: “Historical Musicology” in Adler’s 1885 Schema (English Translation)

Musikwissenschaft	II. Systematisch Aufstellung der in den einzelnen Zweigen der Tonkunst <i>zuhöchst stehenden Gesetzen</i>	A. Erforschung und Begründung derselben in	1. Harmonik [...] 2. Rhythmik [...] 3. Melik (Cohärenz von tonal und temporär)
		B. Aesthetik der Tonkunst	1. Vergleichung und Werthschätzung der Gesetze und deren Relation mit den appercipirenden Subjecten behufs Feststellung der <i>Criterien des musikalisch Schönen</i> 2. Complex [...]
		C. Musikalische Pädagogik und Didaktik	(Zusammenstellung der Gesetze mit Rücksicht auf den Lehrzweck) [...]
		D. Musikologie	(Untersuchung und Vergleichung zu ethnographischen Zwecken)

Table 3: “Systematic Musicology” in Adler’s 1885 Schema (German Original)

Science of Music	II. Systematic The Compilation of the <i>Highest- Positioned Laws</i> in the Distinct Branches of Music	A. Research and Foundation of these by	1. harmonics [...] 2. rhythmic [...] 3. melodic research (coherence of the tonal and the tempo- ral)
		B. Aesthetics of Mu- sic	1. comparison and evaluation of the laws and their relation to the perceiving subjects to determine the <i>criteria of the musically beautiful</i> 2. the complex [...]
		C. Musical Peda- gogy and Didactics	(compilation of the laws with respect to teaching) [...]
		D. [Comparative] Musicology	(examination and comparison for the purpose of ethnogra- phy)

Table 4: “Systematic Musicology” in Adler’s 1885 Schema (English Translation)

Animale Morphologie oder Formenlehre der Thiere	I. Anatomie Körperbaulehre der Thiere (Verglei- chende Anatomie)	1. Tectologie oder Structurlehre	(Histologie, Organologie, Blas- tologie, Cormologie)
		2. Promorphologie oder Grundformen- lehre	(Geometrische ideale Grundform und reale Körperform)
	II. Zoogenie Entwickelungsge- schichte der Thiere	3. Ontogenie Keimesgeschichte	(Embryologie, Meta- morphosenlehre, Lebensgeschichte)
		4. Phylogenie Stammesgeschichte	(Palaeontologie, Ge- nealogie, Natürliche Systematik)

Table 5: “Animal Morphology” in Haeckel’s 1869 Schema (German Original)

Animal Morphology or Theory of Forms of Animals	I. Anatomy Theory of Animal Body Plans (Com- parative Anatomy)	1. Tectology or Theory of Struc- tures	(study of cells, or- gans, embryos, bod- ies)
		2. Promorphol- ogy or Theory of Basic Shapes	(geometrical ideal basic shape and real body shape)
	II. Zoogeny Development His- tory of Animals	3. Ontogeny History of Seeds	(embryology, theory of metamorphoses, life history)
		4. Phylogeny History of Stems	(paleontology, ge- nealogy, natural systematics)

Table 6: “Animal Morphology” in Haeckel’s 1869 Schema (English Translation)

Animale Physiologie oder Leistungslehre der Thiere	III. Ergologie Physiologie der Ar- beitsleistungen)	5. Physiologie der vegetativen Leis- tungen	(Stoffwechsel, Ernährung, Ver- dauung, Ath- mung, Kreislauf, Fortpflanzung)
		6. Physiologie der animalen Leis- tungen	(Empfindung, Bewe- gung, Wille, Vorstel- lung, Seelen-Leben)
	IV. Perilogie Physiologie der Beziehungen	7. Oecologie Haushaltslehre	(Oekonomie, Woh- nung, Beziehungen zu anderen Organis- men, Parasiten)
		8. Chorologie Verbreitungslehre	(Geographie und Topographie der Thiere, Wanderun- gen)

Table 7: “Animal Physiology” in Haeckel’s 1869 Schema (German Original)

Animal Physiology or Theory of Animal Powers	III. Ergology Physiology of Activities)	5. Physiology of Vegetative Activities	(metabolism, nutrition, digestion, breathing, circulation, procreation)
		6. Physiology of Mental Activities	(Sensation, Motion, Intention, Imagination, Spiritual Life)
	IV. Perilogy Physiology of Relationships	7. Ecology Theory of House-keeping	(economy, housing, relation to other organisms, parasites)
		8. Chorology Theory of Distribution	(geography and topography of animals, migrations)

Table 8: “Animal Physiology” in Haeckel’s 1869 Schema (English Translation)

area and arrangement.²⁰³ The eight-branched table in *Generelle Morphologie* is interesting, too, because it shows some of the more remote conceptual concerns that went into Haeckel's construction of what in 1869 looks like a fairly strictly-organized 2-by-2-by-2 hierarchy.²⁰⁴

Another table in the *Generelle Morphologie* (this one titled “Morphologie der Organismen”—morphology of organisms) proves equally important because it depicts Haeckel's basic view of morphology in the most concise manner.²⁰⁵ Its division principles as well as its role as left branch of the larger “zoological” schemata raise several interesting questions about Adler's opinion of musicology's “stuff.” If all that mattered was simply founding a science of musical “form” then Haeckel's science of morphology should have been sufficient. Another argument for this table as a source to Adler is its placement in the introductory and methodologically oriented “first book” of *Generelle Morphologie*. We cannot trust Adler to necessarily comb through the dense prose of the whole book (more than 1200 pages) in search of guidance. A quick glance at the first one-hundred and some pages, on the other hand, might well have been within the temporal possibilities even of a busy law and music student. These early pages cover topics like “Begriff und Aufgabe” (definition and task), “Eintheilung” (subdivision), as well as “Methodik der Morphologie der Organismen” (methodology for the morphology of organisms) which are what Adler would have needed to get a grip on the principles of Haeckel's divisions of biological research.²⁰⁶ On the other hand, in the schema of “Umfang, Methode und Ziel,” Adler aspires to include in musicology questions of didactics and of philosophy (in the guise of aesthetic beauty) that do touch, however tenuously, on the spiritual values and intellectual activities arrogated by Haeckel to the physiology side of his larger schema, at least in the 1869 version. And—the simplest indicator—Adler's schema has eight research areas, not four like the smaller table. It is thus

²⁰³I consider the constant translation of Haeckel's disciplinary names into English difficult because they are either well-accepted, like *Oecologie* (even if Haeckel's definition of ecology differed from the current one), or obscure, like *Perilogie*. Below I explain the connotations of Haeckel's terms when necessary. To avoid impeding the flow of the English sentences, I “anglify” Haeckel's terms; for example, *Chorologie* becomes “chorology.”

²⁰⁴Unfortunately, a more thorough discussion would require etching some of the more remote nooks of German nineteenth-century philosophy, a project I would rather pursue at a different time.

²⁰⁵Haeckel, *Generelle Morphologie*, p. 30.

²⁰⁶Respective to Adler's knowledge of the *Generelle Morphologie*, I have no record that he owned or even so much as looked at the book. But given his circle of friends and access to the university libraries, sneaking a peek at this or that figure or passage in Haeckel would not have presented insurmountable challenges.

difficult to see the smaller schema as proximate source to Adler's. In any case Adler had the content of the smaller schema available in Haeckel's 1869 schema. In the end, Adler's schema mediates—uneasily—between both the smaller, more precise morphological table and the philosophical directions for research offered in the larger zoology schema. In my analysis below, I will focus on the eight-pronged table.

The following subsections approach the issue of Adler borrowing from Haeckel from several angles. In the next subsection, I demonstrate that Adler's cited inspiration, the schema by Quintilian he reproduced below his own, does not offer the scientific inferences to history that Adler craved and evolution offered; likewise the music sciences of the 1860s, acoustics and scientific musical biography, are sidelined by Adler in his schema. The subsection after that takes a broad evolutionary influence for granted (mainly the correspondence between systematic research and historical inference) but interrogates the left-right-symmetry of Adler and his biological model, and wonders whether Adler would have arrived at a 2-by-4 structure without the lead provided by Haeckel; Adler's text, at any rate, makes two research areas sound marginal that, in the schema, receive equal space with their partner disciplines. Then I turn to the content of Haeckel's 1869 schema and compare its methodological structure to Adler; while Adler understands the general methodical distinctions drawn by Haeckel, his musicological schema obscures the complementary relationships between sub-disciplines that make Haeckel's schema an easy model for organizing biological research. Lastly, I offer a very speculative scenario for the actual borrowing process on Adler's part. While my conclusion—a particular series of steps in which Adler appropriated Haeckel's schema—is tentative and challengeable, the act of viewing musicology through the spectacles of Haeckel's methodology alone proves enlightening as to the vision of musicology that Adler strove to embody in his article, and that has shaped musicologists' methodological deliberations since.

4.3.2.1 Doubtful Musicological Precedents to Adler's Schema: Quintilian and Earlier German Music Science One curious feature of Adler's schema, in the context of "Umfang, Methode und Ziel," is its lack of explicitly stated model or historical foundation. The only hint that Adler gives of any inspiration for putting his science in this peculiar form

is the reproduction of Quintilian’s “musikalische[s] Unterrichtssystem der Griechen” (the [Ancient] Greeks’ system of musical didactics) at the bottom of the two pages. In Adler’s oldest book index, this schema is copied on the second-to-last verso.²⁰⁷ But unlike Adler, Quintilian does not aspire to creating a comprehensive scholarly research discipline. His system lists areas of music theory on the left and the typical subjects of music education on the right. For all of Adler’s proclaimed interest in making musicology useful to the practicing musician and composer,²⁰⁸ he thinks of musicology as research, not as practical education. Quintilian’s educational concerns are integrated into systematic musicology, particularly into section II.C.,²⁰⁹ “Musikalische Pädagogik und Didaktik” (musical pedagogy and didactics). His theoretical research areas also form a part of the systematic side of Adler’s schema: The triad “Harmonik, Rhythmik, Metrik” (the study of harmony, rhythm, and meter; I.B.c., d., and e.), “special-technical” part of Quintilian’s *theoretikon*, has a sound equivalent in Adler’s “Harmonik, Rhythmik, Melik” (II.A.1., 2., and 3.). The last field, “Melik,” is an invention of Adler, described as “Cohärenz von tonal und temporär” (coherence of the tonal and the temporal [aspects of music]). The closest equivalent to this in Quintilian’s schema would be either “melodic composition” (II.C.f.) or “rhythmic composition or applied study of rhythm” (II.C.g.). Both are parts of the *praktikon-paideutikon*, thus indicating that Adler does not preserve Quintilian’s distinction between his two branches but collapses both into systematic musicology. While Quintilian might thus serve as visual template, and as the all-important anchor of Adler’s new humanistic scholarship in Greco-Roman categories, his “system of music” is not the actual methodological root of Adler’s schema. Most importantly, Quintilian’s model offers no means of integrating historical explanations into his system, and this would be anathema to the avowed historian Adler, as much as a purely systematic biology turns out to be anathema for the biological historian Haeckel:

²⁰⁷Guido Adler, *Bücher-Index*, a number of indexes are preserved, all of them small booklets filled wholly or partially with citations. Probably Adler did not own copies of these books but collected the references for further research. Unless otherwise noted, I refer only to the oldest index, entitled “Bücher-Index I.” Preserved at University of Georgia (Athens, Ga. U. S. A.), Hargrett Special Collections Library, ms. 769, box 60, folder 2. / The page reproducing Quintilian in the index also carries a cryptic reference to the systematic names for octopus and cuttlefish. I have not been able to identify a likely biological source, say among Hatschek’s papers on developmental evolutionary biology, for this reference.

²⁰⁸For example, on Adler, *Umfang, Methode und Ziel*, p. 18.

²⁰⁹For Adler’s, Haeckel’s, and Quintilian’s schemata, I try to give a short representation of the discussed field’s position in the schema by citing its siglum.

Diese [Haeckel refers to “reine Systematik”—pure systematics] will weiter nichts, als alle einzelnen Thier- und Pflanzenformen kennen, beschreiben und mit Namen unterscheiden. Eine solche rein beschreibende Naturgeschichte kann aber nie eine Wissenschaft sein.²¹⁰

(This [pure systematics] desires nothing other than knowing all particular animal and plant forms, describing them and differentiating them by name. But such a purely descriptive natural history can never be a science.)

This harsh evaluation of classical systematics as unscientific emerges from Haeckel’s view on science’s duties:

Denn jede Wissenschaft muss als solche einen gewissen Schatz von allgemeinen Resultaten und Gesetzen aufweisen können; sie muss nach dem Verständniss der Erscheinungen und nach der Erkenntniss ihrer Ursachen streben; sie darf sich niemals mit der blossen Kenntniss einzelner Thatsachen begnügen.²¹¹

(Namely every science must *qua* science exhibit a certain trove of general results and laws; she [science] must strive for the understanding of phenomena and the justified knowledge of their causes; she must never contend herself with the plain knowing²¹² of singular facts.)

The balance between history and systematics as scientific approaches to music, apparent in Adler’s table, must thus have its source not in Quintilian’s cited schema but elsewhere. Since the rejection of pure systematics by Haeckel (and Adler’s departure from Quintilian) is founded on his definition of the core duties of science, a look at the distinction between scientific science and scientific “non-science” might be profitable. My latter coinage—scientific non-science—does not refer to pseudoscience, which Haeckel and Adler would have rejected out of hand as irrelevant to their research objectives. Rather, I mean those disciplines of scientific inquiry not central to the chosen research area, yet crucially important for pursuing arguments in it, like geological stratigraphy for the evolutionary biologist, or watermark studies for the musicologist. In short, I am referring to auxiliary sciences (*Hilfswissenschaften*). Haeckel does not include clear sets in his tables; probably his impulse towards unification of all sciences under one got the better of him. But Adler does list *Hilfswissenschaften* to his two branches of *Musikwissenschaft*, and there are some surprising inclusions that elucidate what Adler thought of as central, and what marginal, to musicological science.

²¹⁰Haeckel, *Entwicklungsgang und Aufgabe*, p. 7.

²¹¹*Idem.*

²¹²Haeckel’s dichotomy between “Erkenntnis” (the subject matter of epistemology) and “Kenntnis” (knowledge) is difficult to render in English. The former depends crucially on placing phenomena in their causal “Zusammenhang,” or causal connectivity.

The two lists of auxiliary sciences are not formally integrated into Adler’s schematic structure; they are simply listed below the more proper research interests of musicologists (as far as Adler is concerned). Therefore they will play no role in my detailed comparison of Adler’s and Haeckel’s categories in the next larger section. Two peculiarities are wont to be mentioned, however, because they chafe with music research as Adler’s contemporaries understood it: 1. for a methodology that claimed to be scientific, Adler’s decision to relegate the most commonly accepted kinds of musicological science, acoustics and music psychology, to the *Hilfswissenschaften* of systematic musicology must have raised a few eyebrows; and 2. the music historians like Spitta may well have reacted equally annoyed to Adler’s placement of the venerable genre of composer biographies in the second, ancillary tier of music research.

The first demotion indicates that the physical and mathematical sciences were not central to Adler’s conception of a scientific musicology. Where Chrysander and Helmholtz had held out for “*musikalische Wissenschaft*” and “*Tonwissenschaft*,”²¹³ respectively, for “musical science” and “science of sound,” Adler was interested in a “science of music” (*Musikwissenschaft*) and music, *Tonkunst*, was inextricably intertwined with *Tonwissenschaft* throughout history.²¹⁴ Neither of the two older scientists succeeded in creating a science that explained all, and particularly the contingent, historical aspects of music. Haeckel’s *Entwicklungsgeschichte* promised just that, a historically self-aware science of a historical subject matter:

Zum wahren Verständniss einer jeden Erscheinung gelangen wir nur dadurch, dass wir den geschichtlichen Gang ihrer Entstehung und ihres Wachstums Schritt für Schritt verfolgen. Jedes Verhältniss wird, mit einem Worte, nur durch seine *Entwicklungsgeschichte* erkannt. Dieser Grundsatz gilt ebenso von der menschlichen Wissenschaft, wie von allen übrigen organischen Functionen.²¹⁵

(We arrive at a true understanding of any phenomenon solely by tracing the historical process of its becoming and its growth step by step. Each relationship is recognized only through its *development history*. This basic tenet applies equally to human science [he means natural science practiced by humans, not particularly the humanities] as to all other organic functions.²¹⁶)

²¹³These are the titles given to the discipline by the two musicologists in their publications of the 1860s.

²¹⁴These are Adler’s sentiments expressed in the first paragraph of Adler, *Grundclassen*.

²¹⁵Haeckel, *Entwicklungsgang und Aufgabe*, p. 3.

²¹⁶Haeckel considers the practice of science, like any other human activity, a result of human biology and thus of its particular *Entwicklungsgeschichte*.

Far from descending into a methodological rabbit hole, Haeckel's *Entwicklung* approach even to the history of science itself serves as methodological unifier and guarantees that the methods of the constructed science (which are constituted of the auxiliary sciences' approaches) answer to the same principles as this science's methodology (which is constituted of the different methods and their philosophical principles of integration and inference). By adopting this stance, Adler eschews the problem faced by the scientific musicologists of an earlier age, who hewed to empiricism as prime virtue but were unable to derive their principles of historical inference from natural-science methodologies. Chrysander still relied on the philosophy of history established in the first half of the nineteenth century by political historians like Ranke to fashion historical narratives. The emergence of evolution as first major natural-scientific theory of history in the 1860s²¹⁷ enabled Adler's methodological borrowing via Haeckel's expositions. The subject matter of musicology, music, could thus be systematically evaluated on historically sensitive grounds; the physical, mathematical, and psychological constraints on human sound production were an important matter of research but merely ancillary to determining the diversity and historical formation of music genres, the *Entwicklung* of music as a systematically diverse set of practices.

If acoustic musicologists were peeved at Adler's demotion of their discipline's status to "auxilliary," their colleagues the historians must have been no less rattled. "Biographistik der Tonkünstler" not fully *Musikwissenschaft*? The venerable genre of "life and works" not *Musikwissenschaft*? The interplay between Weber's moral (and nuptial) development and his compositional progress²¹⁸ not *Musikwissenschaft*? I think we are getting to the bottom of the rift that opened every once in a while between two of the editors of the *Vierteljahrsschrift*, Adler and Spitta. The latter had produced a major contribution to the life-and-works genre, his three volumes dedicated to Johann Sebastian Bach; the former challenged this mode of musicological research, admitting it into the realm of musicological science only as auxiliary discipline, on a level with the "statistics of musical associations,

²¹⁷Arguably geology had proposed natural-scientific principles for historiography earlier in the nineteenth century, especially with Lyell's uniformitarianism, but these did not offer explanations for subject matters that contained the diversification of results as a crucial feature; in the case of natural history this feature was the increasing number of species, that is, increasing biodiversity in the historical tree of life. Earlier evolutionary theories, like Lamarck's, did not spread sufficiently before the publication of Darwin's *Origin* to influence alien fields of inquiry.

²¹⁸See above, section 2.5 on p. 29 for Adler crossing swords with Spitta.

institutes, and performances,” perfectly empirical but “bean-counting” scholarly activities, and subservient to the real centerpieces of research, the four research areas of historical musicology. As Adler writes in “Umfang, Methode und Ziel”:

Die Biographistik hat sich in letzter Zeit unverhältnissmäßig in den Vordergrund gedrängt, sich sogar als Musikwissenschaft [*par excellence*²¹⁹] geberdet²²⁰ . . .
(In recent times, biography has pushed its way into the limelight to excess, even claimed to be musicology itself . . .)

Adler’s reluctance to elevate biography to the same status is neatly explained by the correlation between individual development and historical change that Haeckel postulated in his biogenetic law: if we think of an artist’s biography as her ontogeny, her becoming as member of a particular musical culture, then the law requires the scholar to trace the becoming of the musical culture and the artist’s particular position in it by comparative studies.²²¹ Otherwise an evaluation of the artist’s historical significance is impossible. Haeckel stresses this mutuality between development history (*Entwicklungsgeschichte*) and comparison (*Vergleichung*) in his discussion of the left, formal part of the 1869 table.²²² Adler likely misses this broadly comparative element in the usual musicological life-and-works literature, which investigates artists and their personal histories in isolation from other, comparable artists.

Another problem that came up in Adler’s evaluation of the musicologist Schöne’s life of Weber was the disconnect between the biographical and the artistic development of the artist.²²³ To Adler, this disconnect between the inner life of the artist and the outward circumstances of his social life introduced a fatal flaw into Schöne’s argument, a view he expressed quite forcefully to Spitta. In Haeckel’s article, we find two attitudes that provide foundations for Adler’s strong views from an evolutionist perspective: first, Haeckel denies a principal dichotomy between inner and outer modes of research into the body shape of animals, because—depending on their analytical or synthetic stance—both systematics as evaluation of the outer features of animals and anatomy as evaluation of the inner features of

²¹⁹Adler uses a Greek expression.

²²⁰Adler, *Umfang, Methode und Ziel*, p. 10.

²²¹This is the tenor or Adler’s description of biography’s tasks on the top of p. 11.

²²²Haeckel, *Entwicklungsgang und Aufgabe*, p. 20.

²²³The reader will recall that Schöne had suggested separate processes of perfection in Weber’s moral and musical development, with causal interaction of these two aspects of Weber’s life only when the former had reached its apex in Weber’s marriage.

animals research the same subject matter and arrive at the same development-historical conclusions;²²⁴ and second, from the “physiological” point of view, the assumption that there is a separate, non-biographical aspect to some individual’s life akin to a creative principle (the *elan vital* in biology or the artistic genius in musicology) leads to empirically unsupportable assertions and the breakdown of the scientific method.²²⁵ Both stances exposed facile musicological biographies as historiographically useless, the former because the life-and-works genre relied on interpreting the created musical works as images of incommensurable extra-musical processes, the latter because the assumption of two streams of historical process, one not accessible to verification after the artist’s death, went against empiricism. The only sensible task left to the biography of artists is then the documentation of the artist’s life, leaving the interpretation of his or her music to the careful, systematics-informed historical explication. Artistic biography thus takes its rightful place next to the equally documentary statistical studies.

This look at Haeckel’s positions and their putative influence on Adler’s distinction between auxiliary and proper musicological research areas allows us a first stab at summarizing the criteria that Adler applied to devise his musicology as science. Empiricism is necessary for crafting scientifically valid arguments, but not sufficient to guarantee “scientific-ness.” Determining relationships (*Zusammenhänge*) between empirical facts is the objective for observing (and classifying) them, but the principles of classification and observation should not be chosen *ad hoc* (as they were in the distinction between inner and outer qualities of organisms—for Haeckel—or artists’ biographies—for Adler). Rather these principles should be developed from a self-aware methodological stance that is historically informed, effectively an *Entwicklungsgeschichte* approach to creating a methodology as well as determining valid methods for the new science, be it biology after Darwin or musicology after Adler.²²⁶ *Entwicklungsgeschichte* informs not just the what of musicological science, the facts found and narratives constructed, but equally asserts its power over the how of musicology, the research disciplines that constitute proper, scientific music research. It is not just music prac-

²²⁴Haeckel, *Entwicklungsgang und Aufgabe*, pp. 11–12.

²²⁵*Idem*, p. 19.

²²⁶This *précis* comes fairly close to the summary of Adler’s methodology I had extracted from his *Methode*. See section 2.7, on p. 39.

tice that undergoes *Entwicklung* but also musicological practice—doing musicology. And the *Entwicklung* of musicological practice, of *Tonwissenschaft* from the dawn of music’s history to the year 1885, is summarized in the system of musicology that Adler presents on pp. 16 and 17 of “Umfang, Methode und Ziel.”

4.3.2.2 The Structure of Adler’s Schema: Right/Left Asymmetries and Essential Marginalia

We can easily see that Adler divides his schema into two halves, historical musicology on the left and systematic musicology on the right, and then each again into four research areas. (Haeckel has an intermediate rank, with roman numerals, and hence a 2-by-2-by-2 structure in three ranks to Adler’s 2-by-4 division in two ranks.) Why Adler would have chosen these relative positions of historical and systematic musicology is a fair topic for speculation, especially since Haeckel, in the 1869 table, placed processual matters on the right and static, “formal” matters like systematics on the left. Why did Adler keep the symmetry, but flip the halves? The answer is probably rooted in the regular German reading direction—left to right—and both authors’ intention to reassure their readers by presenting familiar fields of research first, and new, more tenuous and potentially disruptive ones later.

Systematics and anatomy both were well-weathered biological lines of inquiry by the mid-1800s, and morphology in general also had a pedigree that could be traced back to Democritus and Aristotle.²²⁷ Thus a reader encountering either anatomy or morphology at the left of Haeckel’s tables would be reasonably assured about the reliability of the table’s author, before letting her eyes wander to the right. In the earlier table from the *Generelle Morphologie*, the relatively recent development studies were followed at the right-most edge by phylogeny, the biological discipline (or principle) that had received widespread attention only seven years before the publication of Haeckel’s book. In the later table (from the presentation given in 1869, three years after Haeckel’s big publication) the right side contains “physiology,” which at first may seem like a perfectly respectable medical discipline but upon closer inspection included such resolutely nonbiological research areas as “Wille, Vorstellung, Seelen-Leben” (intention, imagination, spiritual life). In both cases, the spatial placement seems like a deliberate choice to draw the readers into the thought processes behind the

²²⁷Haeckel does so in Haeckel, *Entwicklungsgang und Aufgabe*, p. 10.

schemata—which thought processes they might well have found compelling—before letting them notice the strange disciplines that were thusly integrated into biology. Adler quite likely followed a similar strategy, except that in his case the veneration of his fellow humanities researchers for history suggested placing the historical branch—of that as yet ill-defined field musicology—to the left, and the wholly new—by name if not by researches—systematic musicology to the right. This solution for the large-scale symmetry is plain, but therefore probably also true.

A much more intriguing question is whether the four research areas in each of Adler’s branches were really necessary. What if Adler had never seen Haeckel’s schemata? Would he have arrived at a similar structure for musicology or would his picture have looked appreciably different? If we compare the schema, which seems so precise and stable, according each of the research areas equal space, to the discussion of these research areas in the text, we notice that for two of these areas the schema is at odds with Adler’s words: for the cases of “Musikologie” (II.D.) and “Geschichte der musikalischen Instrumente” (I.D.). The former has the shortest distinct description of all eight areas, the latter not even a distinct descriptive paragraph. Adler calls them both “Nebengebiete” (neighboring areas; better: marginal areas) but still includes them in the schema. Their presence there is a good indicator that Adler’s conception of the schema—and of musicology as a whole—was a process separate from his description of its methods—which was driven by the practical experience of musicologists in 1885.

“Musikologie,”²²⁸ that is,

die vergleichende Musikwissenschaft, die sich zur Aufgabe macht, die Tonproducte, insbesondere die Volksgesänge verschiedener Völker, Länder und Territorien behufs ethnographischer Zwecke zu vergleichen und nach der Verschiedenheit ihrer Beschaffenheit zu gruppieren und sondern.²²⁹

(comparative musicology, which accorded itself the task of comparing for ethnographic purposes the tone products—particularly folk songs of diverse peoples, countries, and regions—and grouping or separating them according to the difference of their properties²³⁰)

This is the entirety of Adler’s description, except for calling it a “neues und sehr dankens-

²²⁸The English lexical equivalent would be “musicology” of course, but a better translation is comparative musicology. The chafing of the English- and German-language versions of the word was noted by several early English and American reviewers of Adler’s *Musikwissenschaft*.

²²⁹Adler, *Umfang, Methode und Ziel*, p. 14.

²³⁰“Beschaffenheit” corresponds to the English noun “make” (as of a car) but is more commonly used to denote the totality of observable properties of something.

werthes Nebengebiet” (a new and very praiseworthy²³¹ neighboring area). That “Musikologie” is a “Nebengebiet” makes Adler’s inclusion of it in the schema remarkable, particularly since he decided to jettison the much more scientific, and thus probably presentable, acoustics. But it is quite probably the focus on comparison that appeals to Adler so much that he call the area “sehr dankenswerth.” After all, comparison played a crucial role in evolutionary biology, a role Haeckel aptly summarizes in “Ueber die Urkunden der Stammesgeschichte,”²³² in the same volume of collected presentations. Comparative anatomy determines the “Formverwandschaft” (form-based relationship) of different organisms, classifying them as members of different “types” in anatomy, where the “Typus” is an analogy of the divine *Bauplan* (blueprint) presupposed by systematians before biologists began to think about natural means of diversification. By virtue of Darwin’s evolutionary theory, which envisions biodiversity as a genealogical tree,

[d]ie typische Formverwandschaft wird zur realen (durch Vererbung bedingten) Stammverwandschaft. Der vergleichenden Anatomie aber fällt die Aufgabe zu, die wahre Formverwandschaft von der scheinbaren zu unterscheiden, und nachzuweisen, wieviel von der Aehnlichkeit verwandter Formen durch Vererbung von gemeinsamen Stammformen, wieviel durch Anpassung an gleiche Lebens-Bedingungen zu erklären ist;²³³

(the type-based formal relationship becomes the real (caused by inheritance) phyletic relationship. Comparative anatomy faces the task to differentiate true from apparent formal relationship, and to document how much of the similarity of related forms may be explained by inheritance from shared phyletic ancestors [Stammformen] and how much by adaptation to the same circumstances of life.)

Comparative studies thus serve to distinguish characters that indicate a real, genealogical historical relationship from others that have come by their characters through the obfuscating influence of adaptation. One might think that this type of decision-making, which has immediate impact on historiography—after all, the true formal relationship is the species’ history—had better be placed in the historical part of either biology or musicology, but both Haeckel and Adler agree that the grounding impulse of this type of comparative research (especially for Adler’s “ethnographical purposes”) belongs in the systematic section, providing secure differentiations of characters and of phyla that form the basis of historiography.

²³¹ “Dankenswerth” means “worthy of [giving] thanks” and in the context also has the connotation of a “welcome” new research area.

²³² Haeckel, *Urkunden der Stammesgeschichte*, pp. 90–91.

²³³ *Idem.*

(On the other hand, Adler does allow for “Gruppierung der musikalischen Formen” in area I.B. of historical musicology, a parallelism that must be addressed and interpreted in my comparison of the schemata below.)

The other minor issue is of course the strange inclusion of organology among the historical research areas. Adler has no paragraph dedicated to this area and he much less argues for it as he (meanderingly) arrives at it on pp. 9–10 of “Umfang, Methode und Ziel.” On p. 9, Adler discusses the *Kunstgesetze* (art laws) of different periods, waxes poetically in the passage crammed with biological metaphors that has engaged us several times already, and then distinguishes between such laws as determined by theoreticians and as exercised by musicians and composers. Adler generally comes down on paying more heed to musical practice. Even when a composer is both theoretician and practitioner, and does not write anachronistic music, the theoretical treatises are not ideal: “immer aber muß man sich vor Allem an die Kunstwerke selbst halten”²³⁴ (one always has to consult the art-works themselves before anything else).

At this point Adler seems to introduce the next topic or field after *Kunstgesetze* on the top of p. 9, by emphasizing the “Darstellung der verschiedenen Arten der Kunstausübung”²³⁵ (presentation of different *kinds [or species] of musical practice*). From the next few sentences we learn that by “practice” (“Ausübung”) Adler means the musician’s craft, because the issues he raises are conflicts between compositional expectations and the technical abilities of musicians, as well as the dangers of excessive ornamentation (for the Baroque period described as “Schling- und Schmarotzerpflanze”—strangling and parasitic plant). These technical concerns lead him naturally to instrumentation as the next topic emphasized in printing, about halfway down on p. 10. Only the last sentence of this passage refers to the history of instruments so prominently featured in the schema:

Mit der Geschichte der Instrumentation ist im innigsten Connex die Geschichte der musikalischen *Instrumente* in ihrem Bau und ihrer Verwendung—ein Nebengebiet des historischen Theiles der Wissenschaft.²³⁶

(Connected most centrally to the history of instrumentation is the history of musical instruments in their construction and their use—a neighboring area of the historical part of the science.)

²³⁴Adler, *Umfang, Methode und Ziel*, p. 10.

²³⁵*Idem.*

²³⁶*Idem.*

Again we are confronted with a “neighboring area” (as for “Musikologie” above) and the question why it, and not some better-suited “main” area appears in the schema. I think the way in which Adler arrived at the history of instruments gives us a partial answer: the major break away from describing the area that studies the “art laws” happened when Adler introduced the “Arten der Kunstaübung.” From the abstract topic of historically relevant laws, discussion turns to the incommensurable practical topic of performance practice and its concrete diversity. The only problem a resolute empiricist like Adler is facing is the dire lack of historical evidence for practical musical decisions (apart from the indications of scores, of course). And here the literally hard evidence provided by the shape of a lute, the bore-holes of an hautbois, or the valves of a french horn allows the musicologist to reconstruct historical changes in musical practice based on concrete, replicable observations in the best scientific manner. Therefore the history of musical instruments receives pride of place in the research areas while the “Arten der Kunstaübung” are tacked onto the “Kunstgesetze” as their third point.

To answer my initial question, whether the structure of any schema drawn by Adler would have been the same given his description of the fields in the article, I think we can answer it in the negative. While the grand symmetry of history and systematics is easily explained through the general principles of evolutionary biology, the four-fold division of Adler’s second rank is not obvious, and would certainly conflict with his stated predecessor, Quintilian’s schema. Comparative musicology (“Musikologie”) seems a fairly unmotivated general addition to the other three fields of systematic musicology; and the history of instruments is connected more intimately to the “Arten der Kunstaübung” than they are to their putative schematic superior, the “Kunstgesetze.” Properly, Adler’s schema could well have been three-membered for each branch. Adler may have added comparative musicology to the schema to placate one of the ethnographically oriented authors to the first volume of the *Vierteljahrsschrift* (for example, Carl Stumpf), and then constructed the fourth field of historical musicology to keep the symmetry. But altogether more likely is that he had a template for an eight-field table that he then sought to match and modify to fit the conceits of a musicologist interested in historiography. Haeckel’s figure in the 1869 article was within Adler’s reach if he excerpted Haeckel’s article from the 1879 collection. It is thus plausible

to consider that source the inspiration to his 2-by-4 structure. In the next section, I examine whether this overt similarity is mirrored by similarities in the content of Haeckel's and Adler's schemata.

4.3.2.3 Analyzing the Schemata Through Methods of Inquiry To clarify the thought patterns that led Haeckel to adopt his particular arrangement of biological research areas—and thus to guide our checking on whether Adler employed these same thought patterns his methodical principles—let me turn to the first book of Haeckel’s *Generelle Morphologie*, where he first argued for a comprehensive reevaluation of biological researches. The book’s fourth chapter is entitled “Methodik der Morphologie der Organismen”²³⁷ (methodology²³⁸ of the morphology or organisms). And it is divided into two halves, both titled—with a Kantian flair—“Kritik der naturwissenschaftlichen Methoden” (critique of natural-scientific methods). In the first half, Haeckel discusses the methods “welche sich gegenseitig nothwendig ergänzen müssen” (which must necessarily complement each other) and in the second half the methods “welche sich gegenseitig nothwendig ausschliessen müssen” (which must necessarily exclude/invalidate each other). The second group of methods is not very interesting for us because it reiterates Haeckel’s philosophical principles, favoring in each of the three pairs dogmatism/critique, teleology/causality (vitalism/mechanism²³⁹), and dualism/monism the latter; apparently Haeckel the scientist is an anti-dogmatic causality-oriented monist, something we know already from the presentation excerpted by Adler.

More relevant to Adler’s development of a musicological methodology is the first half of the chapter, where Haeckel presents three pairs of methods that complement each other: empiricism/philosophy (experience/knowledge²⁴⁰), analysis/synthesis, and induction/deduction. Since these pairs—we may also refer to them as binaries—are complementary, any two members of a pair cannot inform the methods of the same research area. For example, a research area cannot be analytical and synthetic at the same time. But each half of such a binary can inform the research methods in two research areas, thus pairing up areas by their complementary methods. For example, research conducted according to strictly empirical principles offers valuable insights but—by complementarity—requires that this research be reflected through different, philosophical methods to yield scientifically valid insights.²⁴¹ (I

²³⁷See the listing of contents, Haeckel, *Generelle Morphologie*, p. xxvi.

²³⁸“Methodik” is a word coined to indicate the theory of methods for some discipline; “methodology” seems like the closest English equivalent.

²³⁹This parenthesized alternative is Haeckel’s.

²⁴⁰Again the alternative is Haeckel’s, in German “Erfahrung und Erkenntniss”; “Erkenntniss” is more precisely translated as recognition and forms the subject of “Erkenntnislehre” (epistemology).

²⁴¹This complement-centered view of research processes has its roots in Hegel’s philosophy and its continuing

will point out how research areas pair up in this way below, both for Haeckel and for Adler.) And the three pairs among themselves are, of course, freely combinable (for example, a research area can be empirical and analytical, or empirical and synthetic).

Theoretically, eight combinations result from the three binaries, and there are indeed eight research areas in both Adler's and Haeckel's larger schemata. But Adler disposes of one rank of division, while Haeckel explicitly depicts three ranks. Haeckel's structure of complementary research areas is thus fairly easy to comprehend, whereas in Adler only the complementarity between historical and systematic musicology is clear at first sight. Adler assumes that one of the three binaries has little bearing on his way of doing researches, the inductive/deductive one. In "Umfang, Methode und Ziel," he already puts his faith in the inductive half of the last pair, reasoning for it by the analogy of "art science" to the scientific method:

Zur Erreichung seiner Hauptaufgabe, nämlich zur Erforschung der Kunstgesetze verschiedener Zeiten und ihrer organischen Verbindung und Entwicklung wird sich der Kunsthistoriker der gleichen Methode bedienen wie der Naturforscher: vorzugsweise der *inductiven* Methode. Er wird aus mehreren Beispielen das Gemeinsame abheben, das Verschiedene absondern und sich auch der Abstraction bedienen, indem von concret gegebenen Vorstellungen einzelne Theile vernachlässigt und andere bevorzugt werden. Auch die Aufstellung von Hypothesen ist nicht ausgeschlossen. Die nähere Begründung des Gesagten sei einer speciellen Abhandlung vorbehalten, das Schwergewicht der Betrachtung liegt in der Analogie der kunstwissenschaftlichen Methode mit der naturwissenschaftlichen Methode.²⁴²

(To arrive at his main task, namely researching the art laws of different times and their organic connection and evolution, the art historian will apply the same method as the naturalist: preferably the *inductive* method. He will stress the commonality of several examples, will separate out the differences, and will also apply abstraction, by neglecting certain parts and preferring [other parts] of the concretely given phenomena. Even the proposition of hypotheses is not forbidden. The closer argument for these statements shall be relegated to a special treatise,²⁴³ the important part of this consideration is the analogy of the art-scientific method with the natural-scientific method.)

One short sentence in this quotation ("Even the proposition of hypotheses is not forbidden.")

development through the nineteenth century, of course. The complementary pairs of approaches act as antitheses which research, through their balancing and combination, seeks to subsume in a scientifically valid research product.

²⁴²Adler, *Umfang, Methode und Ziel*, p. 15.

²⁴³Adler fulfilled his promise for a better explication of his methodical principles in stages, first in his inaugural lecture as ordinary professor (Adler, *Musik und Musikwissenschaft*), then—fortified with the style concept—in *Der Stil in der Musik*, and finally in *Methode der Musikgeschichte* and *Style-Criticism*. Even by the time of his inaugural lecture, in 1898, the importance of arguing the foundations of his methodology had receded into the background because it was self-consistent and well-accepted.

seems a bit randomly inserted at first: all of historical science has to propose hypotheses because its subject matter is no longer subject to direct scrutiny. But on the other hand, “hypothesis” was the general term in which evolutionary narratives were discussed in the 1870s, both by critics like Virchow and by proponents like Hermann Müller.²⁴⁴ Thus Adler’s short and innocuous phrase may be interpreted as a reference to pro-evolutionary arguments like Haeckel’s.

The deductive method—which uses more generally accepted facts (like scientific “laws”) to explain more specific facts—is subsumed under what Haeckel labeled the philosophical and, particularly, the synthetic approaches. Where empiricism represents the inductive inferences from observed data to scientific facts, philosophy allows the researcher to order his conclusions in a logically (and probably metaphysically) coherent way. Where analysis separates and distinguishes facts according to general categories in distinct groups, synthesis connects these facts with each other to show how each separate fact in the synthesized group is a proper member of the group. Deduction as a separate method was thus of no central need to Adler—by Haeckel’s standards—and would have challenged his claims to the crucial scientific feature of empirical inquiry, because universal musicological laws (comparable in status, say, to gravity) were not yet generally acknowledged. Any proposed deductive inferences from such laws in musicology would have been challengeable on grounds of lacking empirical support. Additionally, Haeckel analyzes deductive inferences as consisting of an inductive inference (from data to abstracted facts), a logical conclusion (structured by philosophical reason), and a confirmation (which ought to be empirical).²⁴⁵ One may thus conceive of deductive reasoning as a specific application of the other complementary methods Haeckel lists. For these reasons, I see no problem in jettisoning the induction/deduction binary from my analytical sieve.

The remaining two pairs of Haeckel’s methodical categories, however, are valid means of pigeonholing Adler’s research areas. Haeckel stresses the complementary, interdependent nature of each pair. Empiricism and philosophy as well as analysis and synthesis are absolute categories, but a research area cannot be designated wholly empirical or wholly

²⁴⁴We recall Müller’s treatise on the subject, cited by Haeckel above on p. 121.

²⁴⁵Haeckel, *Generelle Morphologie*, p. 81.

philosophical. Rather, a research area is simply more philosophical when compared with its more empirical complementary area. Empiricism/philosophy is thus like an axis on which the areas can be placed relative to their partners, and the same is true for the analysis/synthesis axis. In the lists below, I argue the position of each area in Haeckel's and Adler's schema relative to the two axes' extremes. Once this pigeonholing process is complete, we can start to evaluate what kinds of complementary fields appear in Adler's table and how this structure of complements relates to the complement structures in Haeckel's tables.

Since I derived the categories of analysis from Haeckel, let me first apply them to Haeckel's table in the article from 1869. As in the subsequent lists, I anglify Haeckel's names for the disciplines, regardless of whether he used a common term with established meaning (like anatomy), or his invented name actually caught on (as for ecology and phylogeny), or it was promptly forgotten (this being the most common case). In this analysis, I concentrate on the eight sub-disciplines; I place them in their respective rank, but do not assume that the higher ranks have immediate relevance for my analysis. Bold printing emphasizes the fields of research and the properties I assign to them as results of my analysis. At the end I pair up fields and results in a table, for ease of comparison with the subsequent tables.

- **Morphology: I. Anatomy: 1. Tectology** studies structures and, more precisely, the composition of organisms. (The four areas of interest listed by Haeckel refer to the size of the organized structure, from a cell for histology to a polyp or colony for cormology.) Describing the parts requires empirical care and and noting their coexistence in the observed body not much abstraction or speculative thinking. The scientist distinguishes and separates out the different parts of the structure. Therefore tectology is **empirical and analytical**.
- **Morphology: I. Anatomy: 2. Promorphology** is the science of basic forms (“Grundformenlehre”) and it relies on abstraction from the observed body forms, allowing postulation of an “ideale Körperform” (ideal body shape). Besides, promorphology draws together abstract and concrete knowledge as well as knowledge from the observation of many different species. Hence, promorphology is **philosophical and synthetic**.
- **Morphology: II. Zoogeny: 3. Ontogeny** is the science concerned with individual development. It observes the temporal phases of development empirically, say between

the egg-stage and the larval stage of a butterfly, and separates them by their differences. Hence it is **empirical and analytical**.

- **Morphology: II. Zoogeny: 4. Phylogeny** draws information about groups of similar animals together, abstracts from their particularities to shared sets of features that all such organisms have (but that do not describe any one individual completely) and, by placing them in a nested hierarchy of genealogically related taxa, synthesizes this information into a phylogenetic tree, an abstract representation of biological history. Clearly, phylogeny is **philosophical and synthetic**.
- **Physiology: III. Ergology: 5. Physiology of Vegetative Powers** concerns itself with bodily processes like digestion (“Verdauung”), blood circulation (“Kreislauf”), or breathing (“Athmung”). These are easily accessible by empirical observation, and they are easily differentiated processes serving distinct functions for the animal. Their observation happens not in a comparative manner and thus does not employ synthesis. Therefore, studying the vegetative powers is **empirical and analytical**.
- **Physiology: III. Ergology: 6. Physiology of Mental Powers** investigates emotional and intellectual processes that were traditionally less part of biology than psychology. Haeckel includes them in an integrative, *Gesamtwissenschaft* move. While these mental processes are observable, engagement with them for the purposes of scientific study must be content with abstracted observations.²⁴⁶ And these intellectual operations, like sensation (“Empfindung”) or imagination (“Vorstellung”) manifest themselves in so many different versions that studying them as abstracta requires synthetic work. Hence research into mental powers is **philosophical and synthetic**.
- **Physiology: IV. Perilogy: 7. Ecology** is probably Haeckel’s best known coinage, and studies the specific relationships tying different species together in the web of life. Despite this moment of connectivity to ecological research, the relations observed by the researcher are results of distinguishing similar processes for many different combinations of animals. (For example, predation on deer is an important general factor in the deer’s life but whether the predation happens by wolves hunting communally or mountain lions

²⁴⁶Current, early twenty-first century neuroscience may be in a slightly better position than Haeckel almost 150 years ago, but mental processes of the broad range he envisions are still not accessible to empirical enquiry.

hunting alone has crucially different influences on the deer's life.) Thus the ecologist works in an analytical manner, and of course the value of these observations owes little to abstraction. (Although an interpretation of the observations in terms of, say, migration patterns of herds may very well turn to abstraction from these observations; but Haeckel reserves these studies to the complement of his ecology, namely chorology).²⁴⁷ Thus ecology works **empirical and analytical**.

- **Physiology: IV. Perilogy: 8. Chorology** is the study of distribution and migration patterns just mentioned. Although empirical observation is necessary to establish the animals' (or plants' if we are talking about topographic ranges) presence in a region, the interpretation of these presences in terms of a pattern of movement, say, an annual cycle, departs from empirical observation of animals and takes other disciplines' results into account (like yearly or regionally different weather patterns determined by meteorologists). Chorology is therefore **philosophical and synthetic**.

In the summary table, I preface the eight research areas with sigla composed of "M" for morphogeny or "P" for physiology, the roman numerals of the middle rank, and the Arabic numeral for the research area. This system of sigla preserves something of the hierarchy of Haeckel's schema, without making my table too complicated to read. The horizontal line between the morphological and the physiological areas serves the same end:

This is a rather plain result but it makes sense given the eight fields' avowed foci of research and the clear connections between empirical observation and the required classification of many different phenomena into analytical categories. Conversely, the abstraction from observed data entails almost willy-nilly a simplification and integration of the phenomena into broader unified descriptions and explanations, a process prone to the synthesis of distinct observations, sometimes from disparate fields of inquiry, into melded categories.

Haeckel is very clearly aware of each field's complexity and the variety of techniques that must be brought to bear on discovering scientific facts in it. Given his stress that the two pairs empiricism/philosophy and analysis/synthesis complement each other (some-

²⁴⁷Modern ecology, in fact, does concern itself both with organism-to-organism relations and with Haeckel's chorology, such as migratory patterns. This is a fairly good illustration of the principle of complementarity at work. Just to study predation, or just to study the ranges of animals, is interesting, but more biologically meaningful is a study of the interdependencies between range and, say, feeding patterns.

Siglum	Research Area	Method
M.I.1.	tectology	empirical-analytical
M.I.2.	promorphology	philosophical-synthetic
M.II.3.	ontogeny	empirical-analytical
M.II.4.	phylogeny	philosophical-synthetic
P.III.5.	vegetative powers	empirical-analytical
P.III.6.	mental powers	philosophical-synthetic
P.IV.7.	ecology	empirical-analytical
P.IV.8.	chorology	philosophical-synthetic

Table 9: Haeckel’s Research Areas and Their Method-Combinations

times even within the same discipline) my pigeonholing may seem unfair. An example is Haeckel’s detailed discussion of the premises behind contemporary anatomy and systematics, which he considers principally the same field but his colleagues in biology separate, based on whether the researcher looks at the inner form—in anatomy—or outer form—in systematics.²⁴⁸ Haeckel eventually argues that anatomy is more prone to an analytical approach and systematics to a synthetic one. In his newly conceived system of biological research, anatomical questions (of Haeckel’s time) are thus answered by tectology and ontogeny, while the systematians are more likely to employ promorphological and phylogenetic techniques. Such qualifications for the benefit of biologists aside, I hope to have captured in the above table the broad methodical allegiances of the research fields in Haeckel’s schema as they would appear to a lay-reader of *Generelle Morphologie*—a lay-reader like Adler (and most musicologists)—who perhaps browsed the book and did not bother to follow every last argument of its author to its philosophical foundations.

But how does Haeckel’s systematics of biological research translate into its practice, into the construction of biological arguments? Here the principle of complementarity exerts a powerful draw: because Haeckel’s research areas are very clearly paired within larger

²⁴⁸See Haeckel, *Generelle Morphologie*, pp. 31ff.

categories, leading to the 2-by-2-by-2 structure we observed, the researcher can assemble his or her arguments based on this scaffolding. As mentioned above, ecological insights interface with chorological ones to produce knowledge about the studied organism's situation, both geographical and physiological. This knowledge can then interface with knowledge derived from studying the physical and mental activities studied in fields P.III.5. and 6. And lastly, that cumulative knowledge is a complement to, and informant of, the questions about form answered in the morphological half of Haeckel's table. Of course the same works from the other side of the table, too. In this way, complementarity between the—methodically clearly distinct—research areas fosters an inferential pattern that the researcher is encouraged to follow. More practically speaking, because no one researcher could really address all these different angles of a biological problem in one publication, Haeckel's proposed structure allows different publications—and thus also different researchers—to work together in a structured way.

The structuring is not provided by the complementary methods, however, but by Haeckel's consistent hierarchical pairing, illustrated with the roman and arabic numerals. In each hierarchical "taxon" of biological methodology, the two members have clearly demarcated tasks. Let me demonstrate this for one example, the science of becoming form, zoogeny, and its members phylogeny and ontogeny. The methods of phylogeny (M.II.4.) are synthetic, drawing together information about the process of biological history; one might thus think that, in the end, phylogeny is about process. That is partly correct; the "partly" is encoded in the hierarchy of Haeckel's system by the superordinate field of *Entwicklungsgeschichte* or "zoogeny." But phylogeny studies the process of history only mediatedly, through the determination of branching patterns within the natural system of organisms. Phylogeny is after the shape (or form) of the tree of life, not its processual aspects. "Lebensgeschichte" (which may be translated either as "biography" or as "(hi)story of life") is the domain of phylogeny's processual twin in the *Entwicklungsgeschichte* disciplines, ontogeny. Ordinarily we think of ontogeny only as the study of individual development, but Haeckel's expansive definition of organic individual (which includes groups of organisms, which could conceivably be populations) puts tracing the history of a particular population of animals under

the principal purview of ontogeny, too.²⁴⁹ Where phylogeny tells us what the divisions of biological history are—namely, the taxa or branches of the tree of life—ontogeny tell us how they came to be separate thusly.²⁵⁰ We gain knowledge about the historical process not by studying phylogeny only (as one might think at first) but only by studying ontogeny (in Haeckel’s definition) and phylogeny in tandem.

After this illustrative analysis of Haeckel’s 1869 table, let us apply the same sieve to Adler’s eight research areas of his two musicologies. (Here I keep the German titles for the discussion, anglicizing them in the summary table.)

- **I.A. “musikalische Paläographie”** Paleography derives its evidence from musical writing, at Adler’s time the only type of explicit evidence for music from bygone times. (Today, we would perhaps include sound recordings in this category, as well as the more traditional evidentiary methods like the study of watermarks.) It is manifestly not on the philosophical or abstracting side of the first axis. As for the second axis, Adler suggests that paleographic studies allow a first temporal classification of the music represented by the score; this classification is enabled by distinguishing and dividing all of the written music into (temporal) divisions, pigeonholing the wealth of evidence. Therefore paleography works in an analytic fashion. (The historical interpretation of the classes in terms of historical epochs is, strictly speaking, already a synthetic-interpretive move, better fit to research area I.C. And analyzing the different notation signs in sight of their musical meaning—as notes—is properly the task of II.A., which covers analysis. Thus complementarity exercises its power in Adler’s table, too.) Paleography is thus **empirical and analytical**.
- **I.B. “Historische Grundclassen”** Adler’s reference to grouping (“Gruppierung”) may sound like the creation of systematic units, but defining the “historical basic classes” is closer kin to the work preparing comparative anatomy, the discipline that Haeckel counts

²⁴⁹Such an interpretation may be extreme, but it could at least conceivably be anchored in Haeckel’s notion of a “genealogical individuality of organisms,” described in Haeckel, *Generelle Morphologie*, vol. 2, pp. 26–31.

²⁵⁰This interpretation fits with Haeckel’s expanded view of adaptation operating both within individuals and among them. Whereas most biologists then and now understood adaptation in the struggle for existence as a principally historical process (with various effects on individual development), Haeckel seems to swing the other way, considering it principally internal to organic individuals, whether these be as-yet undifferentiated cells in an organ or organisms in a group.

among the three to evaluate evidence about historical processes, to evaluate “Urkunden” about the “Stammesgeschichte.”²⁵¹ The plain grouping is a process leading to the division of musical works into basic classes, and hence an analytical process. One may think of the “Grundklassen” as stacks of works ordered by certain characteristics, classified but not yet interpreted according to some systematic principle, which evolutionary theory will provide. (The interpretation of, say, all minuet-form pieces as members of a genus with a common ancestor would then be a synthetic extrapolation of the analytically created data, creating the taxon *Minuet*. This would of course be the job of a complementary systematic research area, for example II.B., which deals with the subjects that indeed consider minuets minuets in the particular historical setting.) Adler’s classes, like Haeckel’s “types,” are collations of things (in Adler’s case musical works and their forms). The works are of course empirical things, but the recognition of their forms (effectively the creation of the forms from the evidence present in the scores) requires thought-work. It relies on empirical evidence but does not treat it directly; what the works are grouped by are the “musikalischen Formen,” abstractions. Therefore, I would place this research area at the philosophical end of the first axis. The area “historical basic classes” is thus **philosophical and analytical**.

- **I.C. “Historische Aufeinanderfolge der Gesetze”** Adler’s use of the word law here invites the comparison to his subtitle for systematic musicology. There, the laws were “the highest laws proper to each branch” (“die in den einzelnen Zweigen der Tonkunst zuhöchst stehenden Gesetze”); here, the laws succeed one another through history, but they are also circumscribed by the historical epoch (“wie sie in den Kunstwerken je einer Epoche vorliegen”—as they are present in the artworks of one epoch by itself). The research area divides the laws by epoch but binds them together in each epoch (note that the laws do not follow one another in the epoch but simply “are present”—“vorliegen”). This determination of the laws in the epoch is a synthetic process within the epoch, not one leading to the differentiation of groups of laws (which would thus be analytic). Describing the change of laws from one epoch to the next, that is, the interpretation of the

²⁵¹The other two disciplines are development studies (ontogeny) and paleontology; see Haeckel, *Urkunden der Stammesgeschichte*, p. 86.

before-after (“Aufeinanderfolge”; Adler does not use “Entwicklung”) as an evolutionary process, would require a decision on which laws are most relevant, and this is the domain of systematic musicology. Therefore, I would place research into the “historical succession of laws” at the synthetic end of the second axis. As in my argument for research area I.B. above, abstraction is necessary to determine the laws as it is necessary to determine the forms; therefore I would place this area in the philosophical category, too. Area I.C. is thus **philosophical and synthetic**.

- **I.D. “Geschichte der musikalischen Instrumente”** The synthetic character of the “historical succession of laws” carries over into the “history of musical instruments” even though the methodical character of the research area’s objects changes. (We discussed Adler’s smooth transition from I.C. to I.D. above.) Where the study of “laws” required abstraction from evidence to epochal grouping, the instruments—and even the performance practice evident in score instructions—may be approached in a solidly empirical way. The history of instruments is not analytical because the instruments—particularly those of historiographical relevance—are intimately tied to their epoch and its performance practice preferences (seeing a depiction of the psalterion will make us think of high medieval music rather than eighteenth-century dance). Within this epoch, for example as “Modeinstrumente” (fashionable instruments), they offer empirical evidence for the “Arten der Kunstausübung” (species of artistic practice)²⁵²—which are not empirically present to the scholar—and allow the musicologist to synthesize information about what musicians were actually doing. The instruments are empirical evidence for the musical culture and the musical activity—music making—associated with these instruments, whereas scores—post-analysis—yield evidence about music. Therefore, I classify the history of instruments as **empirical and synthetic**.

- **II.A. “Erforschung und Begründung [of supervenient laws]”** The “research and foundation” of systematic musicology’s proposed laws happens on the basis of evidence, and this evidence, though not as concrete as an ink dot or a watermark on paper, is nonetheless empirical: to rhythmicists Adler relegates the “zeitlichen Eigenschaften” (tem-

²⁵²This is the gist of Adler’s transition from “laws” to “history of instruments” on *Umfang, Methode und Ziel*, p. 10.

poral properties), to harmonics the “tonalen Beschaffenheiten”²⁵³ (tonal properties) of musical works. The third discipline, “Melik” (melodic research, roughly), he characterizes as “Erforschung des inneren Zusammenhanges” (inquiry into the inner connectivity)—which is conceivable as abstract rather than empirical—but he equates the “inner connectivity” immediately with the “Reciprocität der rhythmischen und harmonischen Beschaffenheiten” (reciprocity of rhythmic and harmonic properties), thus tying the subject matter of melodic research back to safe, testable grounds.²⁵⁴ On the second axis, this musicological research area is closer to the analytical end: for both rhythmic and harmonics, Adler describes the activity as “Zusammenfassung und Erklärung” (collation and explanation). The process of collation, as in I.B. above, does not necessarily imply synthesis, just a listing and separate explanation of the musical laws apparent in the rhythmic and harmonic aspects of the researched music. (The laws are evaluated not here but by aesthetics, in II.B.) Even “Melik,” which entails a synthesis of harmony and rhythm, yields separate laws, not synthesized knowledge about them. Effectively rhythmic, harmonic, and melodic research distill the several laws actually present and working in some music from the infinite and indistinct amount that could be present and effective, thus analyzing the “law content” of the music. (Note that decisions about the importance of laws are not the subject matter of this field. II.A. is closest to our current way of thinking about music analysis.) For these reasons, I characterize this research area as **empirical and analytical**.

²⁵³This and all quotations in this paragraph and its footnotes are from Adler, *Umfang, Methode und Ziel*, p. 11.

²⁵⁴In the next sentence, Adler talks of the “sogenannten musikalischen Kunstformen” (so-called musical art-forms) as “Abstraktionen aus den verschiedenen ein- und mehrstimmigen Tongebilden” (abstractions from the diverse mono- and polyphonic sound creations), but these “abstractions” are not the direct product of “Melik.” They are arrived at “mittelst der Thematik” (by means of thematics), and thematics is the “wissenschaftliche[...] Erforschung der Bedeutung und Stellung der musikalischen Gedanken in einem Kunstwerke” (scientific discovery of the meaning and placement of musical thoughts in a work of art). This process of discovery has musical thoughts, abstractions from musical sound, as its objects and it abstracts from them again by evaluating their “importance and position” (a different translation of “Bedeutung und Stellung”). Thematics is thus a philosophical, not an empirical undertaking, and the products of applying it to “unison, homophonic, and polyphonic music,” the “so-called musical art-forms,” Adler rightly calls abstractions. But that music is not an abstraction, and it—not the art-forms—is the subject matter of “Melik.” Thus even melodic research concerns itself with empirical objects, even though it infuses this study with abstractions. These abstractions themselves, the “Kunstformen,” are the product of research into the “historische Grundclassen” (I.B.) which *is* a philosophical area, yielding the basic classes as abstract products.

- **II.B. “Aesthetik der Tonkunst”** Adler charges this area with the “Vergleichung und Werthschätzung” (comparison and evaluation) of the musical laws derived in I.A. (or indeed any empirical field). This is squarely a synthetic activity, and requires abstraction from the derived laws, which makes it philosophical. The field is not devoid of empirical grounding; Adler requests that the “comparison and evaluation of the laws” recognizes “deren Relation mit den appercipirenden Subjecten behufs Feststellung der *Kriterien des musikalisch Schönen*”²⁵⁵ (their [the laws’] relation to the perceiving subjects [that is, people] for the purpose of defining the *criteria of the musically beautiful*). As mentioned above this drive for the “musically beautiful” is assumed to govern all musics, presumably a legacy of Adler’s studies with Eduard Hanslick.²⁵⁶ Adler’s reference to the “appercipirenden Subjecten” (perceiving subjects²⁵⁷) shows that he is not interested in philosophical constructions of the beautiful: the criteria of the musically beautiful are accessible to the scholar only through the relation of musical laws to musical listeners, people perceiving the music. (Of course composers and performers are equally part of this group, since they, too, perceive the music and apply aesthetic criteria to it. In principle Adler does not distinguish between musician- and non-musician-listeners.) This empiricism is handmaiden, however, to the real activity of the research area, the “comparison and evaluation” of musical laws, and this is philosophical work amounting to an integration or synthesis of the various laws found into the highest one (or ones) in the particular branch of music, just as the description for systematic musicology as a whole requires. (The integration arises from the fact that the law highest in its relative branch will affect many other laws effective in the branch. The highest law explains the way in which the other laws affect the members of the branch in the particular way.) Therefore aesthetics should be counted as **philosophical and synthetic**.

- **II.C. “Musikalische Pädagogik und Didaktik”** In a parenthetical remark, Adler describes the scholar’s activity as “Zusammenstellung der Gesetze mit Rücksicht auf den

²⁵⁵Adler, *Umfang, Methode und Ziel*, p. 17; emphasis original.

²⁵⁶Hanslick had, of course, published *On the Musically Beautiful* (Hanslick, *op. cit.*), the manifesto of formal aesthetics. Adler seems to have accepted Hanslick’s premise that something like the musically beautiful indeed exists, but cushioned Hanslick’s formal aesthetics in a more carefully argued empirical approach to the derivation of the laws determining some music’s beauty.

²⁵⁷Where “Subjekt” is the proper term for person in idealist philosophy.

Lehrzweck” (collation of laws with respect to the purpose of teaching). As in previous cases, the word “Zusammenstellung” indicates not synthetic melding but analytical grouping of objects, here of the laws, divided from one another and pigeonholed into the six pedagogical subjects Adler mentions. The empirical units of this area are abstract ones; first, it is the laws, which are generally abstracted objects (with the abstraction happening in I.A.), and second, didactics require the teaching of the doubly abstracted highest law (which is being determined through the synthetic process of I.B.). Therefore, musical pedagogics fits near the **philosophical and analytical** poles of the two axes.

- **II.D. “Musikologie”** Comparative musicology is, as mentioned above, a research area that Adler discusses in the most cursory fashion only (six lines on p. 14, compared with pp. 11–14 for the other three areas). In the schema it receives a regular column, though, and the short description “Untersuchung und Vergleichung zu ethnographischen Zwecken” (inspection and comparison for ethnographic purposes). While *Musikologie*’s objective (like all systematic musicology’s) is the highest laws, its research objects are the “Tonproducte, insbesondere die Volksgesänge verschiedener Völker, Länder und Territorien”²⁵⁸ (tone products, particularly the folk songs of different peoples, countries, and territories)—one could hardly think of more empirical, un-abstract things to observe and catalogue. And indeed, as for area II.A., another watch-word makes an appearance: besides comparing, the practicing “musicologist” should group (“gruppieren”) and distinguish (“sondern”) the tone products “nach der Verschiedenheit ihrer Beschaffenheit” (according to the differences of their total properties). “Beschaffenheit” is the totality of properties, an object to empirical observation. Deciding where to place *Musikologie* on the second axis is somewhat more complicated (as it was for II.A.). We may think that the “inspection and comparison” involves a lot of analytical work, thus pigeonholing comparative musicology as analytic. But the analysis that surely goes on in the discipline of comparative musicology is already covered by Adler’s II.A. What distinguishes *Musikologie* is comparison, which is also a method in the synthetic area II.B., and the ethnographic purpose governing this type of research. Musical laws are grouped and differentiated (“gruppieren und sondern”), but ultimately synthesized to describe the

²⁵⁸Adler, *Umfang, Methode und Ziel*, p. 14.

musical practice of one people, country, or region. Quite probably, Adler imagines that each such group practices music with a unique combination of laws, ordered by its “ap-
percipirenden Subjecten” (perceiving subjects) according to their aesthetic preferences (pace II.B.), and thus producing music of that group’s style. This unifying of laws in a people’s style is discovered by the scholar synthesizing the previously analytically distinguished laws. Therefore comparative musicology, Adler’s *Musikologie*, is properly viewed as **empirical and synthetic**.

After this argument for pigeonholing Adler’s fields of research in Haeckel’s methodical categories, here is the summary table (with anglicized names for Adler’s fields):

Siglum	Research Area	Method
I.A.	paleography	empirical-analytical
I.B.	historical basic classes	philosophical-analytical
I.C.	historical succession of laws	philosophical-synthetic
I.D.	history of musical instruments	empirical-synthetic
II.A.	rhythmics, harmonics, “Melik”	empirical-analytical
II.B.	aesthetics	philosophical-synthetic
II.C.	pedagogy and didactics	philosophical-analytical
II.D.	[comparative] musicology	empirical-synthetic

Table 10: Adler’s Method-Combinations by Haeckel’s Coordinates

Compared with Haeckel’s steady association of empiricism and analysis as well as philosophical abstraction and synthesis, Adler’s research disciplines are much richer and explore all possible permutations. Where Haeckel’s pairing—his 2-by-2-by-2 structure—provided the structure for inferences and the method-combinations the bases for research, in Adler the method-combinations seem designed to accomplish both these tasks. Despite this potentially confusing trait, there are certain symmetries within Adler’s schema that do suggest the exercise of complementarity as an inferential tool, the most apparent one being of course that historical and systematic musicology each have each one of the four possible combinations. But this does not immediately solve our problem of deciding, say, how an insight about

the watermarks of a historical document made in I.A. should be related to any of the other research areas. The complementarity of history and systematics is suggestive, but even if we were to choose a systematic step in our argument, following the watermark insight, it is unclear to which of the four possibilities we should first direct our attention. This would not have happened in Haeckel's structure. If Adler had used the binary-complement principle as consistently as Haeckel, if Adler had thus had three ranks to his schema rather than just two (musicology type and research area), comparison with Haeckel's paired pairs of disciplines would have been possible and inferences about Adler's adaptations could have been made. Alas, this is not the case.

Just so that this section of involved discussion does not end on such a dire note, let me suggest one way in which the above analysis of Adler's schema could be made useful in musicology. At several junctures I noted that a general view of some musicological discipline contained more than one discipline as defined by Adler.²⁵⁹ For example, music criticism uses (at least) analysis of music with respect to its principal components (Adler's field II.A.) and then an aesthetic evaluation in terms of the people making and hearing the music (Adler's fields II.B.). An edition project of medieval sources uses at least I.A. to gather information about the notations, and then I.B., which allows the distinction of meaningful classes of music, classes reflected in the finished musicological work. Perhaps this work even traces a historical succession of musical techniques within the repertory (I.C.), requiring music analysis (II.A.), and ideally it will analyze the repertory with a view of the aesthetic preferences of the musicians who were involved with the music historically (II.B.). My point here is the fact that historical and systematic musicology, generally, and the eight fields, more specifically, are usually all utilized in the act of doing musicology, if not in as structured a way as Haeckel's. Adler's division, and my analysis above, offer an inroads into the analysis of musicological research. Given the *recherché* distribution of all eight fields by the two axes of abstraction/empiricism and analysis/synthesis, quite probably the complementary nature of different pairs of fields are what Adler considered an organizing principle for doing musicology. (After all, he offered just the system, not the process of *Musikwissenschaft*.) Doing musicology means combining Adler's fields (engaging in their particular methods)

²⁵⁹The same was of course trivially true for Haeckel's research areas.

in cumulative research projects, where each field's methods complement the others'. In this manner, reading Adler measured by Haeckel's methods might inculcate the analysis of musicological arguments.

4.3.2.4 A Speculative Adaptive Scenario for Creating Systematic Musicology

I think it is sensible to believe that Adler did some plain copying (like equating “Grundclassen” with classes of “Grundformen) from Haeckel's tables into some ancestor of his musicological schema, on some scrap paper now lost in the landfills of Vienna or perhaps still to be found at the archives of the Universities of Georgia or of Vienna. At the very least, the structure of Adler's schema owes to Haeckel's its two branches and their four research areas each (along with the occasional Quintilian-borrowed triad). But—and this is a rather Haeckelian evolutionary lesson—the structure of a thing does not necessarily describe or plainly represent its *Entwicklungsgeschichte*; the tectology of Adler's schema gives us only mediate clues to its ontogeny, that is, Adler's thought processes.²⁶⁰ Therefore I have appended one more subsection that attempts to outline the process, rather than the hard facts, of transforming Haeckel's thought-world into Adler's. Here, I pursue the genesis of systematic musicology's four branches, at the expense of historical musicology. There are several reasons for this decision: (i) Adler's imprecise notion of what differentiates fields I.C. and I.D., and particularly how “Arten der Kunstausübung” (species/ways of musical practice) are to be evaluated; (ii) he knew history as a scholarly discipline quite well and his learned biases obscured his dependency on Haeckel; (iii) conversely, systematic study of music was a new field, and any evidence for Adler exercising his biases should be more easily discernible on that blank canvas. Curiously, and quite probably because of his fuzzier notion of what systematic musicology entailed, Adler maintains even late in his career that evolutionary thinking might be useful to the systematic musicologist but not the historical researcher.²⁶¹

²⁶⁰Extending the analogy (for the sake of illustration) the promorphology in this case would be determining the several binaries, and the phylogeny an extrapolation of these schemata to figure out which biological one provided the decisive point of departure for the branching-event represented by Adler's schema. I am not quite sure how to tackle this problem with the categories of Haeckel's physiology, but Adler's schema can be applied to its own invention quite profitably, to generate further topics for research.

²⁶¹Adler, *Methode der Musikgeschichte*, pp. 44–45. Adler here allows for evolutionary methods in the establishment of historical types, a notion more dependent on his style-critical method than the earlier set of assumptions governing “Umfang, Methode und Ziel.”

This late admission encourages me to regard systematic musicology as genuine residue of Adler's evolutionary aspirations, and to regard in it the delicate interplay between different levels, binaries, and research areas leading to Adler's adoption of evolutionary thinking and adaptation of its methods.

Let me outline my speculative account of how Adler read Haeckel's table and what interpretive steps (and pratfalls) he made in two ways: first with a table (Table 11 on p. 208) to show the process leading to Adler's realization of the incomplete commensurability of Haeckel's schema with his own musicological preconceptions; and second with a more general list of steps, suggesting where Haeckel's imprecisions (or excessive methodological distinctions) gave Adler some leeway to adjust his schema without feeling that he had abandoned the project of scientific (systematic) musicology altogether. (The table ought to be read in the manner of a visually structured paragraph.)

The steps of the adoption process are:

1. Interested in secure foundations for historiography and inspired by Haeckel's articles (and perhaps his book), Adler accepted the centrality of systematic studies for any scientific attempt at a history of music. He thus gave systematic studies equal weight to historical ones in *Musikwissenschaft*, assuming that an evolutionary approach entailed complementarity between form- (read, systematics-) and process- (read, *Entwicklungsgeschichte*-) related disciplines.
2. Haeckel's physiological half of the table lacked the explicit reference to history that Adler thought an evolutionary view at music history required. The concern for activities shown by physiology is reflected in Adler's multifarious references to the laws active in music, which are the principal objects of research to systematic musicology. But the ephemeral nature of musical activities could not make them principal bases for the study of music history, and hence Adler superimposes these active aspects of music with systematic means of research, which do—in biology—discover empirical evidence for historical processes.
3. Haeckel's 1869 schema (as well as the smaller one in *Generelle Morphologie*) pair their *Entwicklungsgeschichte*, the only explicit historical field of biology, with anatomy. For inspiration to systematic musicology, Adler looked to the anatomical parts of Haeckel's

Adaptation Step	Realm of Form		Realm of Process	
Adler sees ... which, by Haeckel, is and Adler reads as	anatomy (M.I.) completed form circumscribed event		zoogeny (M.II.) becoming form historically extended process	
Since laws are features and preferences reasons:	features are interacting laws	reasons are subjective aesthetic preferences	features are transmitted laws	reasons are culture-specific preferences
The objective of research is	“law structure” of the event	aesthetic conditions on laws per event	invariant features of transmitted laws	conditions on invariance per tradition
And these are observable	in individual cases	in individual cases	in collectives	in collectives
This agrees with Haeckel for and disagrees with his	structural anatomy	theory of basic forms because they are shared by many	individual development because the individual is not a collective	history of collectives (phyla)
But and they explain		aesthetic conditions happen in the individual and are subject to change the reasons for individual “law structures” of music events	features of laws are (largely) invariant over history the invariance of distinct musical traditions	

Table 11: Thought Process Behind Adapting Haeckel’s Schema in Systematic Musicology

schemata.

4. Adler conceived of his plain analysis of musical laws active in the observed piece of music (II.A.) as an equivalent to Haeckel's tectology, structural research. This initial adoption by Adler is supported by the fact that both areas have the same research method combination (empirical-analytical), the only such case for systematic musicology.
5. Adler's assumption that tectology covered all concerns of musical structure (with concomitant definition of basic forms unnecessary or implicit in tectological analysis) allowed his divergence from Haeckel's model. The most likely reason for his divergence was his strong awareness of the complementarity between form and process inherent in the evolutionary interpretation of systematic observations as evidence for history.
6. In his divergent view, Adler equated (wrongly by Haeckel's categories) form as apparent in the structure of an individual with the subjectivity of an organic individual. By Haeckel's structure of researches, only the evaluation of an individual's structures by the standards established (in promorphology) as basic forms allows the scholar to infer the unique aspects of the studied individual, which only then become the proper subject to interpretation as an ontogenetic *Entwicklungsgeschichte*.
7. Haeckel's expansive notion of the organic individual blurred the boundaries between the individual organism and a small group of individuals. Adler paired music analysis (II.A.), which concentrates on individual pieces of music, with the evaluation of such pieces by their listeners, which is a collective process but could be conceived as an individual process under Haeckel's definition if the musical piece and its "aesthetic reach" was well-defined. Aesthetic interpretation offered Adler an immediate interpretation of systematic data about musical process in terms of their historical situation, thus conforming to the tight history-systematics codependence. Since this nexus of interaction was located in a Haeckelian individual made musicological, Haeckel's ontogeny was the proper *Entwicklungsgeschichte* equivalent, cast as the aesthetics of music (II.B.).
8. To the pair of disciplines describing (II.A.) and explaining (II.B.) individual cases of musical happenstances from a systematic perspective, Adler added a pair doing the same for parallel processes distinct between musical traditions. These were defined by canonized teaching and separation of each culture from the other, usually along lines

clearly marked to ethnography. Teaching (II.C.) provided the means by which constant theoretical forms were transmitted, “Musikologie” (II.D.) studied the mooring of such traditions in their respective situation, comparing one group of musical activities against the other. Both fields of musicology, by virtue of their attention to large historical trends and their reasons, also were large-historical complements to the focused look at information about specific musical situations, in II.A. and II.B. Thus II.C. and II.D., together, took up the role of Haeckel’s zoogeny.

9. For his transformation of morphology into systematic musicology, Adler’s guiding principle was thus the assumption that the new type of musicology required options toward historical interpretation at each level. This principal complementarity structured his table and governed his divergence from Haeckel.

This proposed chronicle of steps and misunderstandings shall be the current end to my analysis of Adler’s schema.

4.4 ADLER'S RELIANCE ON HAECKEL

This chapter set out to demonstrate two facts: that Adler had sufficient opportunities to inform himself on the biological views of his times; and that his contact with the particular evolutionary views of Ernst Haeckel left its traces not just in Adler's rhetoric but also in his methods. That Adler should have chosen Haeckel is explained by Haeckel's immense stature, particularly in German-language Europe, and by Adler's friendship with several of Haeckel's students or associates. A manuscript by Adler, excerpting a public presentation by Haeckel (though probably from a print source), shows that Adler had at least rudimentary interest in Haeckel's thoughts. Circumstantial considerations speak for Adler's manuscript as from the late 1870s or early 1880s.

The content of Adler's excerpts praises evolutionary theory highly and recommends it as a unifying methodology for all of science (including non-natural science). Haeckel's presentation portrays evolution as a scientific theory that would not conflict with Adler's personal views, and indeed might have influenced them. The explicit connection between the narratives of biological historiography and the well-established humanities drawn by Haeckel would have presented a good anchor for Adler's continued interest in evolutionary theory, particularly when he found himself searching for a unifying, scientific methodology for musicology.

In the remainder of Haeckel's lecture, which Adler probably read, Haeckel describes the crucial components of evolutionary theory, especially the correspondence and interdependence between historiography and systematics in evolutionary biology. Another paper by Haeckel, reprinted with the paper that aroused Adler's interest, contains a schema for biological research that resembles Adler's ground-breaking schema for musicological research from 1885 closely. Manifold correspondences between these schemata can be established, both visual and in terms of their content. If Adler indeed tried to replicate Haeckel's structure, he made a few misinterpretations that are explained by his ignorance of some finer points in Haeckel's methodological arguments. Nonetheless, Adler's schema seems to have worked sufficiently well for him to cite it again (more than three decades after its first publication) in *Methode der Musikgeschichte*, his major methodical legacy to the musicological community

of the twentieth century. Presumably the complementarity between history and systematics, which Adler had borrowed from Haeckel and contemporary evolutionary biology, was the reason for his confidence in the continuing validity of the schema. Certainly he allowed for evolutionary principles to supervene in systematic tasks of musicology, even though later in his career he got wary of these principles' application in historiography. The complementary structure of his schema, born from the complementary nature of evolutionary arguments itself, preserved the evolutionary ideas that helped Adler launch a *Wissenschaft* of music, even though they receded into the background of musicological consciousness. Adler's schema has shaped our view of his place in musicology, a view to which a Haeckelian evolutionary angle has now been added, respective of his earliest methodological commitments.

5.0 CONCLUSION

The demonstration of Adler’s debts to Haeckel in the previous chapter may be the end of this inquiry but it is such only for reasons of limited time and scope, not for reasons of natural finality. The realization that Adler received inspirations central to his edifice of *Musikwissenschaft* from a science *bona fide*—evolutionary biology—shifts our perception of what his enterprise entailed and how it shaped musicological research after 1885. In this conclusion, I would like to retrace the argument of this dissertation from a position of mild skepticism—assessing what has actually been achieved in the previous pages—and to point out subsequent steps for researching the nexus between biology and music research, an endeavor that seems to me of extreme interest to the field of musicology now.

5.1 RECAPITULATION OF THE ARGUMENT

When confronted with the idea that Adler would have borrowed methodical morsels from the evolutionary biology of his time, the reader may well have reacted with both boredom and raised eyebrows; boredom because the adoption of organicist rhetoric in early musicology is a well known phenomenon, and raised eyebrows because, on the face of it, Adler is guilty of organicist thinking but to a much smaller degree than many of his contemporaries. My inquiry seems misplaced, and better directed at the more robustly “evolutionary” musicologists like Oswald Koller,¹ discussed by some of the sources mentioned in the first and third chapter. Adler’s principal methodological contribution to musicology—his structuring of musicological research in “Umfang, Methode und Ziel”—seems exempt from connections

¹Koller, *op. cit.*

to evolutionism. Style criticism, Adler's later methodology, appears to be a much better target, primarily because talk of "stylistic evolution" pervades musicology during the first two thirds of the twentieth century. The notion of evolution seems to have been introduced into musicology on the wings of the style concept, and this concept makes his first appearance in Adler's thinking late in the 1890s, as he himself acknowledges.

To view the history of Adler's—and by extension, musicology's—evolutionism solely through the spectacles of style is a red herring, however. For Adler, biological rhetoric formed part and parcel of his methodological and historiographical arguments from his first publication in 1880 onward. Style, whose normative historiographical implications were developed by Adler contemporaneously with art historians, represents a graft onto the older stem of Adler's evolutionism, a graft whose vigorous growth at Adler's hands (fostered during the first two decades of the twentieth century) overshadowed its source of stability. To read "Umfang, Methode und Ziel" in light of Adler's stylism is permissible if one thinks of the article as a precursor to the later publications like *Methode der Musikgeschichte*; Adler himself cites his schema again in the beginning of this *magnum opus*. But if one wishes to understand the basic assumptions that led Adler to his early methodology on its own terms, appeals to stylism are misguided.

Once style is jettisoned, the situation seems a bit clearer already. Certain terminological choices by Adler support the impression that he had at least a passing acquaintance with biological writings. But these writings might just be the occasional article in a newspaper, from which a word here and a phrase there were appropriated as metaphors and stuck in otherwise completely musicological contexts. (I think of metaphor here as a rhetorical technique that draws the reader's attention because of its alienness in the chosen context.) Evolutionary biology was the shining new gem in the crown of scientific inquiry during the later nineteenth century, and Adler's interest in science surely fostered his general awareness of what was going on in the sciences. Moreover, the clout of the scientific method in educated circles must have appealed enormously to any musicologist aiming to provide his own field with prestige. And evolutionary biology, as a science of natural history, would have been a better fit to the thoroughly historical worldview of musicologists than the pristine experimental science of physics. But none of these considerations necessitate any explicit

engagement with biological concepts and the ways in which they structured the arguments of biologists. In other words, Adler may have affected the feathers of scientific—and particularly biological—thinking, but for the purpose of preening and display, not to propel his methodological flight.

At this juncture, the fairly detailed (for a musicological project) discussion of biological concepts in the third chapter is the necessary prerequisite to a further evaluation of Adler's claims for *Musikwissenschaft*. The diffuse notion that many musicologists have of evolution—Is it biological history, or perhaps more like organismic development? Are its objects historical artifacts, living organisms, or abstracted species? Is Darwinian evolutionary theory appropriate for musicological explanations, or perhaps better Lamarckism?—obstructs any clear view of the actual evolutionary elements in Adler. The third chapter jumped through these successive hoops and gradually pigeonholed Adler's rhetoric, his choice of terms, as influenced by a nineteenth-century Darwinism subtly at odds with Darwin's own opinions about evolution. (Many of these opinions have been confirmed by twentieth-century evolutionary research; some have been rejected.) Adler refers to music history as a process of development (*Entwicklungsgang*) but “development” here really is a historical process, not the individual maturation thusly labeled in modern biology. One important biological component of his methods is classification, which he pursues copiously, particularly in his early papers on medieval polyphony. Adler's classifications are not comparable to contemporary biologists' in detail, but they serve the same purpose, a definition of biological entities that might serve as units in evolutionary narratives. As his terms suggest, Darwinism would be the most likely theory to foster such narratives for Adler. The specific situation of nineteenth-century German biology casts doubt on Adler's direct consultation of Darwin's works, however. The most prominent advocate for Darwinism in Germany, Ernst Haeckel, seems like a better fit, especially because Haeckel was renowned as methodological innovator in evolutionary biology.

Haeckel's books were widely available in Germany, and they included several popular presentations on Darwinian evolutionary biology and its methods that Adler would have had access to, probably, but this probability does not explain why he would have been aware of Haeckel's publications in the first place. Here Adler's circle of friends played a large role:

several were biologists or interested in Haeckel's philosophy, and one of his closest friends, Berthold Hatschek, even studied with Haeckel. Hatschek and several other people could have served as means of contact between Haeckel's ideas and Adler's consciousness.

That such contact happened is documented by the central source of my dissertation, a short manuscript excerpt that Adler prepared of a lecture by Haeckel. The excerpt is not dated by Adler, but circumstantial evidence suggests a relatively early date of copying—sometime in the late 1870s or early 1880s, before Adler started working on “Umfang, Methode und Ziel”—and fingers Hatschek's role as plausible intermediary: he attended the conference where his advisor Haeckel presented the paper. The excerpt does not contain any information particularly useful to the “methodologist” Adler except for the promise that adopting evolutionary thinking would lead to a unification of the natural and the humanistic sciences. Proof for Adler's reliance on Haeckel's methodology must thus be sought elsewhere.

It is found in the remainder of the lecture, which Adler presumably skimmed while excerpting, and to which he could have returned at a later point, when musicological topics became more pressing concerns than the ethical ones mainly discussed in Adler's excerpts. In the presentation's remainder, Haeckel spells out the basics of evolutionary biology in the wake of Darwin's publication of the *Origin*, draws fairly strong analogies between traditional historical research (which Adler had learned during his studies at the University of Vienna), and gives a summary account of his own evolutionary ideas, which differ somewhat from those of his idol Darwin. If Adler read these sections, whether during his excerpting work or later, he would have come away with a relatively sound impression of evolution's possibilities in the 1870s, not to mention the rhetorical tropes that lent his claims to scientific musicology such a distinctly biological (and faintly Darwinian) sound. All these observations are only speculative, though: Adler's reading of Haeckel need not have triggered his integration of evolutionary thinking into his arguments, beyond a few tropes. The documentation of Adler's *debt* to—as opposed to his interest in—evolutionary biology requires more thoroughgoing analysis of his ideas.

Such analysis could principally proceed in two ways. 1. One might compare Adler's historiographical arguments to those published by his biological counterparts, like Haeckel or Hatschek. A first casual glance shows parallel argument structures in Hatschek's and

Adler's papers from the 1870s and 80s. Both start their historiographical papers by identifying the shared characters of the studied entities (organisms in Hatschek, musical pieces in Adler), then classify them by similarity and systematize them by applying criteria derived from evolutionary theory; eventually both propose historical narratives based on that systematization. This structure for biological arguments emerged in the wake of biologists' acceptance of Darwin's proposition of common descent, and it is curious that Adler's articles from the 1880s also exhibit the structure.² For reasons of space, and the need for more biological details, I have excluded this comparative study from the dissertation (perhaps to include it in a different publication). 2. The way actually pursued in the last section of this dissertation takes aim at Adler's schema in "Umfang, Methode und Ziel," the embodiment of his musicological methodology. If one could show that Adler appropriated this schema from Haeckel, and perhaps even suggest the way in which Adler recast Haeckel's methodical constraints in musicology, then a sufficient level of debt could be inferred.

The volume with the reprint of Haeckel's lecture that aroused Adler's curiosity (and pen) also contains a lecture on the history and tasks of zoology, as Haeckel sees them. At the end of that paper, written in 1869 and published in 1879, Haeckel draws a schema for the research areas of zoology that looks almost exactly like Adler's for musicology, drawn in 1885. Both schemata have two balanced halves encompassing four sub-disciplines each, the descriptions for each schema's sub-disciplines show some resemblances, and Adler's schema—when compared to his description of the research areas in the text of his article—seems to contain two research areas that need not have been there, had it not been for his emulation of some schematic model: organology (I.D) and comparative musicology (II.D). Adler's own cited source for his schema (a drawing by a Greek music theorist) agrees less with his than his agrees with Haeckel's. But of course, the superficial resemblances need not indicate a deeper similarity. Therefore I analyze the structure of both schemata, the principles according to which their research areas are placed with respect to each other. The supervenient principle of pairing in Haeckel's schema is one of form- and process-oriented research disciplines complementing each other. This works at the more general level of evolutionary history and

²This is relatively clear for Adler, *Geschichte der Harmonie* and Adler, *Wiederholung und Nachahmung*, less so for Adler, *Satz eines unbekanntes Klavierkonzertes*. A comparative study of these articles (and some biological equivalents) is one potentially profitable future project issuing from this dissertation.

systematics as well as between neighboring research areas investigating the physical form and the constitution of animal bodies. The question is whether such complementarities also inform Adler's schema, in a way roughly similar to Haeckel's.

By their methods, the sub-disciplines of each schema observe different principles of combination. Haeckel straightforwardly combines empirical methods with an analytical attitude and more abstract studies with a synthetic streak. Adler mixes up the two binaries empirical-abstract and analytical-synthetic in every possible combination. An easy parallel between Haeckel and Adler is thus not apparent. On the other hand, this analysis of Adler's research areas in terms of Haeckel's methodical categories opens the door to a fascinating means for structuring Adler's arguments in his articles, and seeing his schema for musicology at work, so to speak. (As stated above, an analysis of Adler's arguments must become part of a different publication.) Also, the necessary close look at the different areas' methods shows that many of them are still practiced by musicologists today, making the currency of Adler's schema in today's musicology another direction of inquiry inviting pursuit. Therefore this and the subsequent rounds of analysis contribute to a better understanding of Adler's musicological thinking, quite apart from their relevance to my argument about his evolutionary roots.

Since Haeckel's methods did not yield the desired close parallelism between the schemata, I next apply the form-process binary, dear to the musicologist and the biologist, and a mainstay of nineteenth-century categorizations. Again the match is not perfect but now the principle of complementarity yields an interpretation of systematic musicology that would result from Haeckel's anatomical branch of researches by simply flipping two disciplines. The probable reason for this flip—as detailed in the last section on the two schemata—is a conflict between the form-process binary and the question whether the research areas study collectives or individuals. Adler attempted to stay true to the spirits of evolutionary inferences and of Haeckel's schema, but the expansive notion of individual promulgated by Haeckel confused Adler and led him to modify his model to suit better what he saw as musicology's equivalents of individual and collective processes in biology. By demonstrating this process of Adler adopting Haeckel's premises and adapting his schema to musicology's demands, I hope to have made a credible case for Adler's debt to Haeckel's evolutionary

thinking.

5.2 REFLECTION AND PROJECTION

Massive as this dissertation is, it does not address all the topics that it could—or even should—have addressed. Especially the second and third chapters often characterized aspects of Adler’s life and thought or arguments in biology or musicology on a few pages, where they would well deserve a substantial chapter on their own, perhaps even a separate dissertation. While I grieve over not having given them their due attention here, I think my decision to concentrate on the link between Adler, musicological methodology, and evolutionary thinking at the expense of other topics is defensible. Some such topics would have required a substantially larger dose of biological knowledge, both current and of Adler’s time, and thus might be better fit to the history and philosophy of science than to musicology. Other topics might profitably shape a book-length biography of Adler but such an endeavor should be based on the archival material in Georgia, Vienna, and elsewhere, granting it greater proportions than I have been able to allocate here. Lastly, a serious study of the diffusion of Adler’s ideas in practical musicology—both his and others’—is a fascinating topic but one which needed the above study of Adler’s early core commitments to evolution to take flight. Thus I am content to provide a short, non-exhaustive list of further questions and topics that arose in my study of Adler’s and Haeckel’s thinking, and to leave their resolution to future efforts and (hopefully also) other scholars.

- My analysis of the relationship between Adler’s and Haeckel’s schemata focused on the systematic branch of musicology, because of its newness and obvious reflection of biological thinking. A similar comparison should be done for historical musicology, and the scope of these comparisons should be extended to other similar tables by Haeckel, especially in the *Generelle Morphologie*. Optionally, other binaries than the ones I chose could be employed to analyze the schemata.
- Above I mentioned the potential of my analyses of Adler’s schema to invigorate close analysis of Adler’s arguments in his early historiographical papers. Such analysis should

demonstrate how the complementarities of approach and scope for different research areas serve to support larger musicological arguments. Particularly well-suited to exploring this methodical analysis should be Adler's "Wiederholung und Nachahmung in der Mehrstimmigkeit," published just a year after he had presented his schema. Beyond that, one could check whether the same types of arguments are pursued in Adler's later publications, and whether the method also applies to the arguments of other musicologists.

- A different means of checking my contention that Adler's early musicology arose from contemporary evolutionary biology is the comparison of Adler's early articles to those of evolutionary biologists, particularly Haeckel and Hatschek. There are superficial structural similarities, but the analysis should of course delve into their respective theoretical commitments, and would thus be suited to a history-and-philosophy-of-science approach.
- My dissertation hardly touched on the *Entwicklungsgeschichte* of Adler's methodology, that is, the accumulation of his methodical bits from his dissertation through the early polyphony papers and "Umfang, Methode und Ziel" to the point when style becomes a major topic.
- Within the previous item, Adler's methodical debts to his revered teacher Franz Brentano deserve much more attention than they have been accorded so far. Brentano supplied crucial philosophical struts to Adler's means of arriving at abstract classes of musical objects, the process of musicological classification. The validity of Brentano's arguments and Adler's adoption of them should be tested, just as I have attempted to do for Haeckel's evolutionary theory.
- Adler's notion of musical laws has also received scant attention in the dissertation even though it is central to his early methodology. Generally, musicologists seem more familiar with the unbending deterministic laws of nineteenth-century physics, which invite reductionist arguments. The version of lawfulness introduced into science by evolutionary biology is quite different, relying on statistical analysis and acknowledging the contingency of historical processes. Adler's view is quite probably closer to the latter, allowing several laws in concert to shape music-historical situations. How this "concert action of laws" happens and how the musicologist ought to study and describe it is a very

important topic for further research.

- Haeckel's and Adler's view of science is rooted deeply in nineteenth-century thought, reaching all the way back to the end of the eighteenth century and German idealism. Friedrich Hegel's link between scientific inquiry and history, and his notion of dialectics, exert a powerful hold on both Haeckel—in terms of the form-process binary—and Adler—through Hegel's *Aesthetics*, and there particularly the introductory chapter. Hegel's analysis of art-historical research opposes the determination of characteristic features in art and their interpretation as products of history, a tension in the process of writing art-historical accounts that continues to haunt musicologists (we saw an example when discussing Carl Dahlhaus's and Richard Taruskin's views on the matter).
- Musicologists are of two minds about evolutionary historiographies, some (like Leo Treitler) qualifiedly endorsing the option, others not. Since we have seen that musicology's interpretation of evolution is sometimes at odds with biology's, and since biology's interpretation has reached a certain measure of internal consistency not achieved in musicological evolutionism, it would probably be sensible for musicologists interested in evolutionary thinking to orient themselves toward modern biology's understanding of evolution, rather than the more antiquated versions still entertained at times. Drawing such methodical analogies between the two fields should be done with all due care (and with Adler's methodology as both inspiration and cautionary example) but it might lead to new and exciting means of musicological historiography.
- The same applies, of course, to historical musicology's sister by the same father, ethnomusicology. Franz Boas's injunction against evolutionary ethnographies was directed at the facile “just-so” stories constructed by Adler's contemporaries. Modern evolutionary theory takes a very similar position on excessive use of adaptive explanations to account for historical change in biological communities. On these grounds, some types of evolutionary explanations (if well-defined and -circumscribed) may well have a place in ethnomusicological arguments.
- Indeed, Adler's original portrayal of historical and systematic musicology gives no evidence of his thinking of the two fields as separate disciplines. When we view Adler's schema through the spectacles of evolutionary biology this makes sense, as neither sys-

tematics nor historiography alone can fully explain musicological or biological matters. Practically, in the past forty years musicologists in both disciplines have effected a rapprochement of approaches, with historical musicology adopting ethnographic methods and ethnomusicologists tracing the histories of musical traditions. The currency of Adler's schema is a central question raised by my study of musicology's evolutionary roots. And the rapprochement of Adler's erstwhile branches on the tree of musicology serves as indicator that his vision for the field still has some validity, and that a rethinking of the disciplinary boundaries—with biological evolutionary principles in mind—could be a task worth while.

Musica scientia est bene modulandi. “Music is the knowledge of how to change the mode well.”³ Thus one of the earliest Western-European definitions of the subject that musicology purports to study. Adler's musicology professed to be *scientia*, too, albeit in the nineteenth-century sense of empirical, logically organized study. Music researchers before him had been engaged in such studies, but they had not been able to enunciate how their conclusions about musicological matters were actually derived from their observations in a manner comparable to sciences like physics. With the advent of a science of natural history, however, the analogy to music history could be drawn tightly, and a genuine “science of music” could be constructed. Adler rose to the task and etched *Musikwissenschaft's* features based on his memories of Ernst Haeckel's vision for biology. With this credible claim to scientific legitimacy musicology entered academia, ever to remain there. Today we need no explicitly scientific methodology to justify our accounts of music's actions in our world (though of course musicologists should be free to pursue such analogies if they so desire). Musicology is simply the study of what humans call “music” or “musical,” and why that is so. The task of doing musicology has become at once easier—because more means of inquiry are open to us—and more difficult—because just one direction of research may not yield very interesting results. In a sense, we are in the situation of the medieval musician: we need to decide how to change the modes of our researches well. Adler provided one early and

³The sentence is attributed to Augustine of Hippo by medieval writers, but it gains entrance into the musicological literature with two of the earliest theoretical treatises preserved in Western Europe, Aurelian's *Musica Disciplina* and Hucbald's *Musica Enchiridis*.

moderately successful example in the organization of his schema for the slightly unnatural science of music he envisioned. Besides the cautionary lessons of such histories, for us there are really no normative constraints except to balance consistency and flexibility: *tantôt libre, tantôt recherché*.

APPENDIX A

REGIONALITY IN HISTORY: NESTED PLACES AND THE TEMPTATIONS OF TELEOLOGY

My argument for Adler's adaptation of Haeckel's schema rests particularly on their shared structure and the way in which this structure, through complementarities invented by Haeckel, informs both biology's and (imperfectly because of Adler's modifications) musicology's methodology. But issues other than the structure also found their way from Adler's reception of evolutionary thinking into the toolbox of historical musicology. Both "subtitles" of musicology's main branches suggest an awareness of (biological) tree-thinking on Adler's side, but each reference to nested hierarchies or branching trees has very different implications for the coherence of either branch of music research. Where Adler's regional subdivision of historiography (in the subtitle to the historical branch, I.) may at first seem innocuous but reveals inferential problems when scrutinized, the reference to "highest laws" on the systematic side raises the spectre of nineteenth-century scientism but, when compared with Adler's examples of stylistic laws in later publications, yields to an interpretation in terms of relative prominence of evolutionary mechanisms. Given the charges of teleological historiography often launched at evolutionary musicology, I pursue the first problem: how regional focuses may foster teleological arguments. Extended treatment of the role of laws in Adler's and in biology's arguments I must postpone to a later publication.

Historical musicology deals with successions of events, of course. It is then perhaps a bit curious to find just one unequivocal temporal term among the eight pigeonholes within which the history of music happens: "Geschichte der Musik nach Epochen, Völkern, Reichen,

Ländern, Gauen, Städten, Kunstschulen, Künstlern” (history of music by epochs, peoples, empires, countries, regions, cities, artistic schools, artists). “Epochs” are indeed time periods: Adler uses the term to denote the historical periods indicated by their characteristic notation style: “Epoche der Neumen, die Epoche der Mensuralzeichen und die der Taktbezeichnung” (the epoch of neuma notation, the epoch of mensural signs, and that of metric indication).¹ This type of historical period seems (in Adler’s imagination) to last on the order of four- or five-hundred years. But quite obviously significant historical changes often happen much more suddenly, on much smaller time scales. And indeed Adler elsewhere reveals that “school” and “artist” are not just social categories but equivalent to epoch as historical-temporal ones: he speaks of determining “entweder allgemein die Epoche oder genauer die Schule”² (either generally the epoch or more precisely the school) or indeed an artist and one of his “Schaffensperioden (creative periods). The latter was (and still is) the most common period scale for life-and-works biographies.

But even if we allow for these temporal designators at the largest and smallest historically significant stretches of time, the majority of Adler’s proposed classification ranks is still geographical. How are we to read this, especially given Haeckel’s 1869 table, where questions of geography happen at the extreme right, as chorology (P.IV.8), the “theory of distributions” (“Verbreitungslehre”)? There seems to be a bit of conceptual migration going on, and one wonders whether Adler rearranged the structures of Haeckel’s tables to suit his own musicological purposes. He retained the historical/systematic division which in Haeckel was the guiding principle of the smaller 1866 version but was expanded toward the more general form/process distinction in the more detailed tables, from later in *Generelle Morphologie* and from 1869. Truth be told, Haeckel’s latter, eight-branched version is relatively more speculative. The lines of inference from physiological findings to morphological interpretations (and *vice versa*) are not as secure as those from history to anatomy (or systematics) and anatomy (or systematics) to history. Adler probably picked as main division the one most obvious and useful to him as music historian—after all, what would “music physiology” be—and then arranged suitable semblances of Haeckel’s physiological categories in his

¹Adler, *Umfang, Methode und Ziel*, p. 8.

²*Idem*, p. 7.

historical (for processes) and systematic (for form-determinate research) musicologies.

Adler's nested geographical units would make evolutionary sense either as systematic co-determinant of regional subspecies (as in "the Northern-European Marian motet") or as ecological settings for local-historical "struggles for existence" (like the "processes of collective action and mediation"³ leading to the evolution of specific madrigal kinds in, say, Florence or Rome). But in the schema that so powerfully influences musicologists' view of their tasks, these regions ended up indiscriminately in the header. In biology, irreversible migrations (or spreads) from one place to another, resulting in diversification, are indeed a process happening in history and do determine historical changes. But Haeckel's aim for the table was more a demonstration of how annual migrations (say, of caribous) or the placement of species on the earth can influence all aspects of their form (hence his placement in the non-morphological branch).⁴ This is inconsistent with interpreting geographical position and change (like Adler) as history. The movement of caribou across the Canadian tundra is a feature of this species's individuals. Should the migration pattern change as a whole (say, to more southerly or northerly routes), a historically relevant—read, evolutionary—change may have happened. But as feature of the organism caribou, migration and geographical position have no privileged, *a priori* historical implications compared to all the other features of this species.

Translating this example to musicology, the existence of certain types of literary madrigals in Florentine intellectual circles (particularly the group of Pietro Bembo) do not *a priori* arise from the confinement of this tradition to this place. Being crafted and practiced in Florence did not automatically make any such madrigal one of its kind. Rather presence in Florence colluded in the evolution of such madrigals with many other features, some of which (like local pride in Florentine poets and their styles) were wedded to the city, while others (like the techniques of word play and rhyme schemes employed by these poets) were most certainly not. Locality in the sense promulgated by Adler may help focus research but

³Borrowing this apt (if unintended) rendering of the struggle for existence from Taruskin, *op. cit.*, volume 1, p. xxviii.

⁴Compare here also the table on Haeckel, *Generelle Morphologie*, p. 236. Haeckel makes his methodological stance in the right-most sub-branch clearer: "Physiologie der Beziehungen des thierischen Organismus zur Aussenwelt" (physiology of the relationships of the animal organism to the environment), which encompasses both ecology and biogeography. Haeckel refers not to the "Stämme" (phyla), the units of phylogenetic history, but to organisms.

it does not serve as prime guiding light to explaining historical contingencies. If Adler were to adopt such locally determinate constraints on historiography, he might well indulge in a particular type of teleology: since madrigal no. 272 was written and performed in Florence, its relevant features are those of the Florentine madrigal. Other features, which may well explain its popularity in the city better than those of the proposed Florentine tradition, might be neglected in its historical evaluation, leading to a myopic view skewed by privileging one (here geographical) feature above others and skewing the historical narrative towards it.⁵

Besides the privileging of position over other features, Adler's introduction of geography as a dominant historiographical category also may encourage excessively plain historical narratives, just-so stories to the tune of "practicing chant outside in snowy winters in Northern climes explains the short phrases and frequent tremolos in its melodies." The causal chain may perhaps even have (potential) merit; cold may cause shivering and shortened breath. But there are several other ways in which this environment may have exerted influence on the chant style, leading to different adaptations; the chants may have been performed around a fire, or after vigorous exercise. To explain a musical practice in a particular historical situation, devising one possible evolutionary explanation by invoking one parameter with selective power is not enough. As many sensible explanations as possible for many different observed effects (here the ambitus, phrasing, performance time and place) ought to be found, because the most important—and thus historically dominant one—cannot be foreseen by the scholar in advance. The historical evaluation must weigh them all to determine the (one or several) most important factors in the particular historical situation. The place of a musical activity (like the subject of Haeckel's chorology) has many possible consequences for the ways in which the activity is done (which would be Haeckel's ontogeny) and the historical process in which it came to be done in this way as opposed to other ways (phylogeny). In this manner, research on one side of Haeckel's schema (in chorology) informs the explanations devised in the research disciplines on the other side of the table (ontogeny and phylogeny). In Adler's schema, the same potential cross-pollination between systematic research and historical research also exists (and the next chapter examines examples in one of Adler's major articles).

⁵Another, far less hypothetical case for geographical position as source of privilege and framework for teleological narratives is the historiography of music from German-language Europe in the nineteenth and the twentieth century, especially for large forms like the symphony.

But Adler's confusion of geographical position of biological individuals with the geographical range of taxonomic individuals jeopardizes the validity of these inferences.

The root problem in Adler's "subtitle" for historical musicology goes back (or down) to the root of evolutionary biology's central premise: observed biodiversity suggests—but does not solely determine or represent—divergent histories. If by his nested regions Adler meant to refer to the nested hierarchy of taxa, he missed the crucial inferential relation between systematic hierarchies and evolution: the former determine the units of the latter, the latter explains the presence of units for the former. The practicing evolutionary biologist may well use both types of inference in her research, but at least conceptually the systematic classification and the historical explanation are separate activities. The ease of using geographical references does not imply their paramount importance, especially in the determination of relationships between more morphologically (and evolutionarily) distant taxa. Haeckel was aware of this and distanced researches into biogeography from the anatomical/systematic definition and historical evaluation of phyla. Whether for practical reasons or for ignorance of the underlying biological details, Adler placed the character that (through systematic comparative study) might help determine the reasons for some evolutionary change, with the (historical) description of that process. This conflation makes his geographical subdivision of historical musicology suspect, unless it is supported by other evidence for divergences of musical practice, essentially submitting additional characters to systematic evaluation.

APPENDIX B

FIGURES AND IMAGES

This appendix contains, on the subsequent five pages, five images that may be useful to the reader of this dissertation, but are not essential to understanding its arguments. These figures are:

- Figure 1: Adler’s schematic picture of the research disciplines of musicology, originally printed on pp. 16–17 of his article “Umfang, Methode und Ziel der Musikwissenschaft” (*Vierteljahrsschrift für Musikwissenschaft* 1/1 (1885): 5–20), which is now in the public domain. I have rotated Adler’s figure and cropped it to fit comfortably on one page.
- Figures 2–5: the four pages of Adler’s manuscript excerpt of Haeckel’s presentation, preserved at the Hargrett Rare Book and Manuscript Library / University of Georgia Libraries (Athens, Ga., United States), ms. 769, box 64, folder 6, which is here reprinted with permission. I am very grateful to the Hargrett Library staff for providing me with the source image for these figures. The size of the images has been changed to fit the page, but the aspect ratio has been preserved. The four text pages are all on one sheet of paper, once folded. Pages 1 and 3 are *recto*, pages 2 and 4 *verso*.

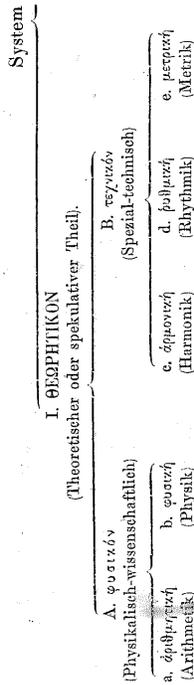
In tabellarischer Übersicht ergiebt Musik-

(Geschichte der Musik nach Epochen, Völkern, Reichen, Ländern, Gauen, Stämmen, Kunstschulen, Künstlern).

- A. musikalische Paläographie (Notationen). B. Historische Grundelassen (Gruppierung der musikalischen Formen). C. Historische Aufeinanderfolge der Gesetze. D. Geschichte der musikalischen Instrumente.

Hilfswissenschaften: Allgemeine Geschichte mit Paläographie, Chronologie, Diplomatik, Bibliographie, Bibliotheks- und Archivkunde. Litteraturgeschichte und Sprachenkunde. Geschichte der Jitungen. Geschichte der mnschen Künste und des Tanzes. Biographistik der Tonkünstler, Statistik der musikalischen Assoziationen, Institute und Aufführungen.

Zum Vergleiche diene die synoptische Tafel nach Aristides Quintilianus, welche die Übersetzung giebt die griechischen termini möglichst getreu, manchmal umschreiben,



sich das Gesamtgebäude also: Wissenschaft.

II. Systematisch.

Aufstellung der in den einzelnen Zweigen der Tonkunst zuhöchst stehenden Gesetze.

- A. Erforschung und Begründung derselben in der Tonkunst. B. Aesthetik der Tonkunst. C. Musikalische Pädagogik und Didaktik. D. Musik-kologie. 1. Harmonik. 2. Rhythmik. 3. Metrik. 4. Prosodie. 5. Harmonielehre. 6. Kompositionstheorie. 7. Instrumentationstheorie. 8. Methoden des Unterrichts im Gesang und Instrumentalspiel.

Hilfswissenschaften: Akustik und Mathematik. Physiologie (Tonempfindungen). Psychologie (Tonvorstellungen, Tonurtheile und Tongefühle). Logik (das musikalische Denken). Grammatik, Metrik und Poetik. Pädagogik. Ästhetik etc.

vollständigste Übersicht über das musikalische Unterrichtssystem der Griechen enthält; wenn der vollkommen deckende Ausdruck im Deutschen fehlt; der Musik.

II. ΠΡΑΚΤΙΚΟΝ-ΠΑΙΔΕΥΤΙΚΟΝ (Unterricht oder praktischer Theil).

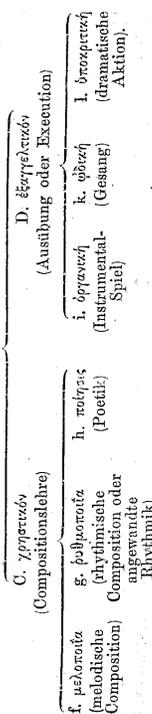


Figure 1: Adler's Schema for Musicology from 1885

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