

THE UNIVERSITY OF CHICAGO

THE FORGOTTEN FOUNDER OF QUANTUM MECHANICS:  
THE SCIENCE AND POLITICS OF PHYSICIST PASCUAL JORDAN, 1902–1980

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For my grandfather, Fred Greenstein, in memoriam.

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## Abstract

Quantum mechanics continues to beguile scholars and the public alike, as does the stirring tale of its discovery: during the interwar period, amid the vibrant milieu of Weimar Germany, a collection of liberal, free-thinking physicists, many of whom were Jewish, developed a theory that changed the world. It is thus all the more curious that one of the major architects of this famous theory remains practically unknown: the brilliant German mathematical physicist Pascual Jordan (1902–1980). At only age 24, Jordan, in collaboration with Werner Heisenberg and Max Born, outlined the fundamentals of quantum theory as we now know them. Yet Jordan is overlooked today due to his Nazi-era writings that praised Hitler’s regime; an unrepentant fascist hardly fits into the usual heroic narrative of scientific triumph. But the omission of Jordan has left a lacuna; he almost certainly deserved a Nobel Prize for his scientific contributions and he trained an entire generation of West German physicists after the war. Moreover, it is historically significant that one of the talented quantum pioneers saw no apparent contradiction in joining the Nazi Party. This dissertation fills this gap, presenting the first full account of Jordan’s complicated and contradictory twentieth century life and adding necessary nuance to the traditionally gallant story of quantum mechanics.

Using newly discovered sources from over twenty different archives, *The Forgotten Founder of Quantum Mechanics* makes four major historiographical interventions. First, it demonstrates that actions taken long after Hitler’s death often dictated who is collectively remembered as an “unapologetic Nazi.” Without relativizing his Nazi-era actions, this dissertation shows that Jordan came to be remembered exclusively as a remorseless fascist not, as has been thought, exclusively because of his pro-Nazi statements during the Third Reich, but in large part due to his decision to reenter politics in the late 1950s as a Cold Warrior in postwar West Germany.

Second, this dissertation refutes the common misconception that modern science can only function properly in a democracy. During World War II, Jordan in Nazi Germany outlined a vision of science on an industrial scale, strikingly similar to that which developed in the United States after the war. But Jordan's version of "big science" had a Nazi veneer, envisioning a network of research institutes across Europe under German control. Though Nazi authorities proved uninterested in his plan, that Jordan developed it under such an autocracy demonstrates that there is nothing inherently democratic about big science. The failure of Jordan's attempt to found a "Nazified" version of "big science" leads to this dissertation's third intervention, namely, the proposal of a new model of analysis for historians of the Nazi regime—and other authoritarian systems. This is namely that of the "failed collaborator," as I characterize Jordan; for despite all his attempts to convince the regime that science was worthy of lavish financial support, the Nazis remained indifferent to Jordan's pleas.

Finally, this dissertation shows that Jordan's stutter severely hampered his career prospects. Because of this invisible disability, he was denied opportunities to build his reputation and further his career well before his political radicalization in the early 1930s. I argue that Jordan's stutter was a crucial factor in why he never achieved the same level of recognition as his more famous colleagues—and why he never won the Nobel Prize. Ultimately, this dissertation argues that Jordan's life should be remembered precisely for the reasons why it has been forgotten, as those reasons reveal much about both German history and the history of modern science.

## List of Abbreviations

ABBAW	Archive of the Berlin-Brandenburgische Akademie der Wissenschaften, Berlin
ACDP	Archiv für Christlich-Demokratische-Politik, Konrad-Adenauer-Stiftung, Sankt Augustin, Germany
ACSP	Archiv für Christlich-Soziale-Politik, Hanns-Seidel-Stiftung, Munich, Germany
AHQP	Archive for the History of Quantum Physics, Various Locations
AEA	Albert Einstein Archives, Hebrew University of Jerusalem
AIP	Niels Bohr Library and Archives, American Institute of Physics, College Park, Maryland
AMPG	Archiv der Max-Planck-Gesellschaft, Berlin
AWLM	Akademie der Wissenschaft und Literatur in Mainz, Mainz.
BAB	Bundesarchiv, Berlin-Lichterfelde, Berlin
BB	<i>Baltische Brüderschaft</i> (Baltic Brotherhood) archive, DSHI 120, Document Collection, Herder Institute, Marburg
BSC	Bohr Scientific Correspondence, Niels Bohr Archive, Copenhagen
BSCS	Bohr Scientific Correspondence, Supplement, Niels Bohr Archive, Copenhagen
BStU	<i>Bundesbeauftragte für die Unterlagen des Staatssicherheitsdienstes der ehemaligen Deutschen Demokratischen Republik</i> (Stasi Records Agency), Berlin
DAW	<i>Deutsche Akademie der Wissenschaften zu Berlin</i> (East German Academy of Sciences)
DLA	Deutsches Literaturarchiv, Marbach
DVV	<i>Deutsche Verwaltung für Volksbildung</i> (German Administration for Peoples Education)
EWP	Eugene Wigner Papers, Princeton University Library
GUA	Göttingen University Archive, Göttingen
HRP	Hans Reichenbach Papers, Archives of Scientific Philosophy, Archives and Special Collections, University of Pittsburgh Library System
HUA	Humboldt University Archive, Berlin
JFP	James Franck Papers, Regenstein Library, University of Chicago
JvNP	John von Neumann Papers, Library of Congress, Washington, DC

LPP	Ava Helen and Linus Pauling Papers, Oregon State University Libraries, Corvallis, Oregon
MDP	Max Delbrück Papers, California Institute of Technology Archives, Pasadena, California
NAB	<i>Nachlass</i> Adolf Butenandt, Archiv der Max-Planck-Gesellschaft, Berlin
NAMA	<i>Nachlass</i> Adolf Meyer-Abich, Hamburg State and University Library
NCFvW	<i>Nachlass</i> Carl Friedrich von Weizsäcker, III. Abt., Rep. 111, Archiv der Max-Planck-Gesellschaft, Berlin
NEK	<i>Nachlass</i> Erwin Guido Kolbenheyer, Kolbenheyer-Gesellschaft, Geretsried, Bavaria
NHD	<i>Nachlass</i> Hugo Dingler, Hofbibliothek Aschaffenburg, Aschaffenburg
NMB	<i>Nachlass</i> Max Born, Staatsbibliothek zu Berlin, Potsdamer Strasse, Handschriftenabteilung
NMvL	<i>Nachlass</i> Max von Laue, III. Abt., Rep. 50, Archiv der Max-Planck-Gesellschaft, Berlin
NOH	<i>Nachlass</i> Otto Hahn, III. Abt., Rep. 14A, Archiv der Max-Planck-Gesellschaft, Berlin
NON	<i>Nachlass</i> Otto Neurath, Vienna Circle Archive, Noord-Hollands Archief, Haarlem, Netherlands
NPJ	<i>Nachlass</i> Pascual Jordan, Staatsbibliothek zu Berlin, Potsdamer Strasse, Handschriftenabteilung
NSDAP	<i>Nationalsozialistische Deutsche Arbeiterpartei</i> (National Socialist German Workers' Party); official name of the Nazi Party
NSLA	Niedersächsisches Landesarchiv, Hannover, Germany
NWG	<i>Nachlass</i> Walther Gerlach, Archiv des Deutsches Museum, Signature NL 080, Munich
NWoG	<i>Nachlass</i> Wolfgang Gentner, III. Abt, Rep. 68A, Archiv der Max-Planck-Gesellschaft, Berlin
NWH	<i>Nachlass</i> Werner Heisenberg, III. Abt, Rep. 93, Archiv der Max-Planck-Gesellschaft, Berlin
PLC	Pauli Letter Collection, Wolfgang Pauli Archive, CERN Archive, Geneva, Switzerland
RDP	Robert Dicke Papers, C0886, Princeton University Library, Manuscripts Division.
REM	<i>Reichsministerium für Wissenschaft, Erziehung und Volksbildung</i> (Reich Ministry for Science, Education, and National Culture), normally called the <i>Reichserziehungsministerium</i> (Reich Education Ministry)

RFA	Rockefeller Foundation Archives, Sleepy Hollow, New York
RUA	Rostock University Archive, Rostock
SAG	Stadtarchiv Goslar, Goslar
SdtH	Stadtarchiv Hannover, Hannover
SED	<i>Sozialistische Einheitspartei Deutschlands</i> (Socialist Unity Party of Germany); the Marxist-Leninist ruling party of East Germany
SGP	Samuel Goudsmit Papers, American Institute of Physics, College Park, Maryland
StaH	Staatsarchiv Hamburg, Hamburg
StbG	Staatsbibliothek Göttingen, Göttingen

## Introduction

*Mr. Jordan/ takes neutrinos/ and from them he/ constructs light  
But in pairs do/ they always travel/ one neutrino/ can't be found.*

—satirical lyrics about Pascual Jordan, to the tune of “Mack the Knife,” c. 1930s<sup>1</sup>

Few topics in the history of science have attracted as much scholarly work as the 1920s quantum revolution in physics; fewer still have captured the public imagination like the terrifying threat of “Hitler’s bomb.” Einstein’s oft-misused quip that “God does not play dice”—a legacy of his long debates with Niels Bohr and Max Born over the uncertainty inherent to quantum mechanics—has stuck as deeply in collective memory as his equation  $E = mc^2$ . Similarly, Michael Frayn’s well-regarded play *Copenhagen* has brought Werner Heisenberg’s role in the German nuclear project during World War II—and more broadly, the question of how German scientists compromised or collaborated with the Nazi regime—to the attention of a large audience.<sup>2</sup>

Given the amount of public and scholarly attention given to the quantum revolution, Heisenberg and “Nazi science,” it is curious that the peculiar life of the brilliant mathematical physicist Pascual Jordan (1902-1980) remains so little known. At only age 24, Jordan, in collaboration with Heisenberg and Born, authored the *Dreimännerarbeit* (three-man paper), outlining the fundamentals of quantum theory as we know them today.<sup>3</sup> On scientific merit alone, Jordan almost certainly deserved at least a share of a Nobel Prize.<sup>4</sup> Next to Heisenberg, Jordan was perhaps

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<sup>1</sup> The origin of this satirical song is unknown; it is related by Abraham Pais in his book *Inward Bound*. The original German text, which preserves the rhyming scheme from Kurt Weill and Bertolt Brecht’s original lyrics, reads: *Und Herr Jordan/ nimmt Neutrinos/ und daraus baut/ er das Licht. Und sie fahren/ stets in Paaren/ Ein Neutrino/ sieht man nicht*. For the first mention of this humorous song in scholarly literature, see Abraham Pais, *Inward Bound: Of Matter and Forces in the Physical World* (Oxford: Clarendon Press, 1986), 419.

<sup>2</sup> Michael Frayn, *Copenhagen* (New York: Anchor Books, 1998).

<sup>3</sup> Max Born, Werner Heisenberg, and Pascual Jordan, “Zur Quantenmechanik II,” *Zeitschrift für Physik* 35, no. 8–9 (1926): 557–615.

<sup>4</sup> Don Howard, “Quantum Mechanics in Context: Pascual Jordan’s 1936 Anschauliche Quantentheorie,” in *Research and Pedagogy: A History of Quantum Physics through Its Textbooks*, ed. Massimiliano Badino and Jaume Navarro, Max Planck Research Library for the History and Development of Knowledge, Studies 2 (Berlin:

the most prominent theoretical physicist of the younger generation to remain in Germany after the Nazi takeover; but unlike Heisenberg, Jordan joined the Nazi Party after Hitler's rise to power and attempted to secure a place for the "new" physics in the "new" Germany. After the war, Jordan played a crucial role in the reconstruction of West German physics as a professor at the University of Hamburg; at the same time, against the advice of colleagues, he reentered politics with Konrad Adenauer's Christian Democratic Union. Serving in the Bundestag with the CDU from 1957-1961, Jordan became a prominent public intellectual in the Federal Republic, writing innumerable newspaper articles on political issues of the day.

Jordan was active in the political sphere his entire life, making his story a strong counterexample to the persistent myth that scientists and science are "anti-political" or "apolitical."<sup>5</sup> By studying Jordan, this dissertation analyzes how one of the most prominent German scientists chose to engage with political authority in three different Germanies: the Weimar Republic, the Third Reich, and the postwar Federal Republic. I identify the continuities in Jordan's political views throughout his turbulent life, and how he attempted to use his scientific expertise as political capital during Germany's tumultuous twentieth century. In particular, I examine how Jordan first rose to fame in physics under the Weimar Republic and his political radicalization well before Hitler's rise to power, how Jordan consistently—and unsuccessfully—attempted to convince the Nazi regime into supporting science, how he then cleverly played the occupying powers against each other to rehabilitate himself in the aftermath of World War II, and, finally, how he chose to reenter politics at

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Edition Open Access, 2013), 267; William A. Fedak and Jeffrey J. Prentis, "The 1925 Born and Jordan Paper 'On Quantum Mechanics,'" *American Journal of Physics* 77, no. 2 (February 2009): 128–39.

<sup>5</sup> On the persistence in the public mind of the myth that science and scientists are—or should be—apolitical, see for example Robert S. Young, "A Scientists' March on Washington Is a Bad Idea," *The New York Times*, January 31, 2017, sec. Opinion, <https://www.nytimes.com/2017/01/31/opinion/a-scientists-march-on-washington-is-a-bad-idea.html>.

the height of the Cold War. Directly addressing Jordan's image in historical memory, I argue that it was this reentry into politics in the late 1950s, when Jordan sided with Adenauer's government, attacking his colleagues who spoke out against the possibility of West German nuclear armament and deriding them as naïve fools, that ensured Jordan would be remembered as an "unrepentant Nazi." Using many sources previously unavailable or unknown to scholars, my dissertation thus completes our picture of Jordan, complementing work done by internalist historians of physics and intellectual historians. In doing so, I aim to fully understand Jordan's many contradictions: how was it, after all, that a man with so many Jewish colleagues, friends, and collaborators could join the Nazi Party and actively propagandize for Hitler's regime?

### **State of the Field**

What research has been done on Jordan has unsurprisingly focused mainly on his actions during the Nazi period, which until now have remained shrouded in mystery. Work in this category has largely focused on analyzing Jordan's actions—in particular, his decision to join the Nazi Party—against a moral compass which points in only two directions; these authors tend almost invariably to view him as a villain who betrayed his Jewish colleagues. Norton Wise's pioneering 1994 book chapter stands first and foremost in this genre. Wise opens his essay with an assessment of Jordan's characteristically bizarre mix of traits that would delight Freud, one which was leavened by a genius for physics and a fervent German nationalism: "Pascual Jordan remains an enigma of *das dritte Reich*."<sup>6</sup> Wise's solution to this enigma is one of unequivocal condemnation of the far-right

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<sup>6</sup> M. Norton Wise, "Pascual Jordan: Quantum Mechanics, Psychology, National Socialism," in *Science, Technology, and National Socialism*, ed. Monika Renneberg and Mark Walker (New York: Cambridge University Press, 1994), 224.



nationalist *Machtpolitik* he saw central to Jordan's adult worldview, which occupied his vision from the Weimar Republic to the Federal Republic:

Jordan's picture of the world, from beginning to end, from physics to philosophy to politics, centered on the necessity for leadership through power in the organization of complex systems and on a willingness to manipulate other people and their ideas in the greater interest of justifying power. That in itself, I have tried to show, is the lesson we ought to draw from Jordan's history.<sup>7</sup>

In recent publications, Wise continues to use Jordan as an example of a scientist who lacked moral character.<sup>8</sup> On the whole, though somewhat polemical, Wise's article nevertheless remains the most incisive analysis of Jordan's politics and its influence on his science.

In German language scholarship, Dieter Hoffmann and Arne Schirmmacher have similarly located Jordan on this conservative spectrum, in the Third Reich and Federal Republic, respectively. Hoffmann presents Jordan as a "prominent" example of those "competent and talented" physicists who "willingly and consciously offered their services" to the Nazis.<sup>9</sup> As will be seen in Chapters 2 and 3, my analysis of Jordan during the Nazi period builds on Hoffmann's, but our interpretations of Jordan's image in historical memory differ dramatically.<sup>10</sup> Schirmmacher, on the other hand, outlines Jordan's reentry into the West German public sphere in the late 1950s, describing Jordan's

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<sup>7</sup> Ibid., 253–54.

<sup>8</sup> M. Norton Wise, "Forman Reformed, Again," in *Weimar Culture and Quantum Mechanics: Selected Papers by Paul Forman and Contemporary Perspectives on the Forman Thesis*, ed. Cathryn Carson, Alexei Kojevnikov, and Helmuth Trischler (London: Imperial College Press, 2011), 428–29.

<sup>9</sup> Dieter Hoffmann, "Pascual Jordan (1902-1980): Der gute Nazi," in *Die Universität Rostock in den Jahren 1933-1945: Referate der interdisziplinären Ringvorlesung des Arbeitskreises „Rostocker Universitäts- und Wissenschaftsgeschichte“ im Sommersemester 2011*, ed. Gisela Boeck and Hans-Uwe Lammel, Rostocker Studien zur Universitätsgeschichte 21 (Rostock: Universität Rostock, 2012), 131–61, here 131.

<sup>10</sup> In particular, Hoffmann argues that Jordan has often been portrayed as the "good Nazi"—which perhaps he has in writings from his former students—while I argue in Chapter 5 that Jordan has gone down in history as an unrepentant Nazi due to his Cold War-era decision to reenter politics. See Ibid, 132, 157.

methods as those of a Machiavellian figure who believed that the ends justified the means.<sup>11</sup> In this dissertation, I will also visit Jordan's Cold War-era political reentry in Chapter 5, but will largely consider it from a different angle, namely through how it affected Jordan's image in the public mind and in historical memory.

The most comprehensive work on Jordan from historians of science, though, has surely come from Richard Beyler, in his 1994 dissertation and a series of articles and book chapters that have followed.<sup>12</sup> Beyler's dissertation, *From Positivism to Organicism: Pascual Jordan's Interpretations of Modern Physics in Cultural Context*, presents a detailed study of Jordan's idiosyncratic biophysical theories from their origination around 1930 to his death in 1980.<sup>13</sup> Like many of his contemporaries and collaborators who took part in the quantum revolution of the 1920s—including Niels Bohr and Erwin Schrödinger—Jordan believed that the new physics augured further imminent revolutions in biology, psychology, philosophy, and other fields.<sup>14</sup> Beyler extensively details Jordan's attempts to

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<sup>11</sup> Arne Schirrmacher, "Physik und Politik in der frühen Bundesrepublik Deutschland: Max Born, Werner Heisenberg und Pascual Jordan als politische Grenzgänger," *Berichte zur Wissenschaftsgeschichte* 30, no. 1 (March 2007): 13–31, particularly 24.

<sup>12</sup> Richard Henry Beyler, "From Positivism to Organicism: Pascual Jordan's Interpretations of Modern Physics in Cultural Context" (Harvard University, 1994); Richard H. Beyler, "Targeting the Organism: The Scientific and Cultural Context of Pascual Jordan's Quantum Biology, 1932-1947," *Isis* 87, no. 2 (June 1996): 248–73; Richard Beyler, "The Demon of Technology, Mass Society, and Atomic Physics in West Germany, 1945–1957," *History and Technology* 19, no. 3 (2003): 227–39; Richard H. Beyler, "Exporting the Quantum Revolution: Pascual Jordan's Biophysical Initiatives," in *Pascual Jordan (1902-1980): Mainzzer Symposium zum 100. Geburtstag*, ed. Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 329 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007), 69–81; Richard H. Beyler, "Jordan Alias Domeier: Science and Cultural Politics in Late Weimar Conservatism," in *Weimar Culture and Quantum Mechanics: Selected Papers by Paul Forman and Contemporary Perspectives on the Forman Thesis*, ed. Cathryn Carson, Alexei Kojevnikov, and Helmuth Trischler (London: Imperial College Press, 2011), 487–503; Richard H. Beyler, "Exhuming the Three-Man Paper: Target-Theoretical Research in the 1930s and 1940s," in *Creating a Physical Biology: The Three-Man Paper and Early Molecular Biology*, ed. Phillip R. Sloan and Brandon Fogel (Chicago: University of Chicago Press, 2011), 99–144.

<sup>13</sup> Beyler, "From Positivism to Organicism."

<sup>14</sup> Probably the most famous and influential work to emerge from the revolutionary physicists was Erwin Schrödinger, *What Is Life?* (Cambridge, England: Cambridge University Press, 1944); see also Beyler, "From Positivism to Organicism," 3–4.

“export” the quantum revolution, though much of that effort remains unpublished. Importantly, Beyler was also the first to discover that prior to Hitler’s assumption of power, Jordan published cultural and political articles under a pseudonym, “Ernst Domeier,” in *Deutsches Volkstum*, a far-right *völkisch* magazine aimed at upper-class conservatives.<sup>15</sup> (Ernst was Jordan’s first legal name; Domeier was the birth name of Jordan’s beloved maternal grandmother—I will return to the ‘Domeier’ connection below.<sup>16</sup>)

Most other work on Jordan falls into a final category: internalist-oriented historians of physics interested in tracing his contributions to the various fields of theoretical physics in which he worked during his long scientific career. Until recently, almost all this internalist work focused on Jordan’s contributions to the physical ideas of the quantum revolution and early quantum field theory.<sup>17</sup> This group of historians has identified Jordan’s “unsung” contributions to the development

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<sup>15</sup> Beyler, “From Positivism to Organicism,” 207–24; see also Beyler, “Jordan Alias Domeier.” For the primary evidence that Domeier is indeed Jordan (letters from Jordan to Henning Stapel in which Jordan acknowledges the ‘Domeier’ pseudonym) see NPJ, Nr. 609 and 782.

<sup>16</sup> On Jordan’s relationship with his maternal grandmother, see Pascual Jordan, “Pascual Jordan,” in *Philosophie in Selbstdarstellungen*, ed. Ludwig J. Pongratz, vol. 1 (Hamburg: Felix Meiner Verlag, 1975), 194–95.

<sup>17</sup> Beyler’s work, though it focuses on Jordan’s science, is not internalist history of science; his work is far more an intellectual history of Jordan’s biophysical theories. For examples of internalist works on Jordan’s early career in quantum mechanics, see, among others, Anthony Duncan and Michel Janssen, “Pascual Jordan’s Resolution of the Conundrum of the Wave-Particle Duality of Light,” *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics* 39, no. 3 (September 2008): 634–66; Anthony Duncan and Michel Janssen, “From Canonical Transformations to Transformation Theory, 1926–1927: The Road to Jordan’s Neue Begründung,” *Studies in History and Philosophy of Science Part B: Studies in History and Philosophy of Modern Physics* 40, no. 4 (December 2009): 352–62; Bert Schroer, “Pascual Jordan’s Legacy and the Ongoing Research in Quantum Field Theory,” *The European Physical Journal H* 35, no. 4 (April 2011): 377–434; Christoph Lehner, “Mathematical Foundations and Physical Visions: Pascual Jordan and the Field Theory Program,” in *Mathematics Meets Physics: A Contribution to Their Interaction in the 19th and the First Half of the 20th Century*, Studien zur Entwicklung von Mathematik und Physik in ihren Wechselwirkungen (Frankfurt am Main: Verlag Harri Deutsch, 2011), 271–94; Jan Lacki, “The Early Axiomatizations of Quantum Mechanics: Jordan, von Neumann and the Continuation of Hilbert’s Program,” *Archive for History of Exact Sciences* 54, no. 4 (January 2000): 279–318; Jagdish Mehra and Helmut Rechenberg, *The Formulation of Matrix Mechanics and Its Modifications*, vol. 3, 6 vols., The Historical Development of Quantum Theory (New York: Springer-Verlag, 1982); Max Jammer, *The Conceptual Development of Quantum Mechanics*, International Series in Pure and Applied Physics (New York: McGraw Hill, 1966).

of quantum mechanics in the 1920s and early 1930s.<sup>18</sup> Jordan was a key figure in this revolution, and the list of his collaborators in the 1920s and 1930s reads as a who's who of early twentieth century physics; even setting aside his famous work on quantum theory with Born and Heisenberg, Jordan worked with, among others, John von Neumann, Eugene Wigner, and James Franck.<sup>19</sup> Internalist scholarship on this period makes it clear that Jordan almost certainly deserved a Nobel Prize. As Don Howard puts it, “[t]hat Jordan never won the Nobel Prize is a puzzle...the fact remains that his contributions to the development of modern quantum theory were as fundamental and far-reaching as those whose achievements were recognized with a Nobel Prize.”<sup>20</sup> (Some have speculated that Jordan never won the prize because of his pro-Nazi writings during the Third Reich<sup>21</sup>; I address this topic below.) Even his contribution to the collaborative work with Heisenberg and Born has, it seems, been understated: in the first Born-Jordan paper of 1925, for example, Jordan contributed the majority of the new concepts introduced.<sup>22</sup> More provocatively, Mara Beller has argued that the

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<sup>18</sup> As Silvan Schweber terms it, Jordan remains the “unsung hero among the creators of quantum mechanics”. See Silvan S. Schweber, *QED and the Men Who Made It: Dyson, Feynman, Schwinger, and Tomonaga*, Princeton Series in Physics (Princeton: Princeton University Press, 1994), 5. On Jordan’s contributions to quantum field theory, see Walter Dittrich, “The Cofounder of Quantum Field Theory: Pascual Jordan,” *The European Physical Journal H* 40, no. 2 (March 2015): 241–60; Jürgen Ehlers, “Pascual Jordan’s Role in the Creation of Quantum Field Theory,” in *Pascual Jordan (1902-1980): Mainzer Symposium zum 100. Geburtstag*, ed. Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 329 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007), 23–35.

<sup>19</sup> James Franck and Pascual Jordan, *Anregung von Quantensprüngen durch Stöße*, vol. III, Struktur der Materie in Einzeldarstellungen (Berlin: Verlag von Julius Springer, 1926). See also Pascual Jordan, John von Neumann, and Eugene Wigner, “On an Algebraic Generalization of the Quantum Mechanical Formalism,” *Annals of Mathematics* 35, no. 1 (January 1934): 29–64.

<sup>20</sup> Howard, “Quantum Mechanics in Context: Pascual Jordan’s 1936 Anschauliche Quantentheorie,” 267.

<sup>21</sup> Jeremy Bernstein, “Max Born and the Quantum Theory,” *American Journal of Physics* 73, no. 11 (2005): 1004–6. Jordan does not seem to have made any public comments on the Nobel situation, but privately he felt slighted, as he made clear in a 1978 letter to Dirac: “Since Heisenberg’s death I am the only one of the authors of the “Three-authors’-article” Born-Heisenberg-Jordan [i.e. the *Dreimännerarbeit*] who is  $\alpha$ ] still living  $\beta$ ] not having got a Nobel-Prize. Also my different contributions – partially in common articles with W. Pauli, O. Klein, E. Wigner – concerning quantum electrodynamics as a natural continuation of quantum mechanics gave me no better position.” Jordan to Dirac, July 20, 1978, NPJ, Nr. 679.

<sup>22</sup> For more information, see the detailed exposition of the collaboration in Bartel L. van der Waerden, ed., *Sources of Quantum Mechanics*, Classics of Science 5 (New York: Dover Publications, Inc., 1967), 38–57.

inspiration for Heisenberg’s uncertainty principle likely came from Jordan’s 1927 *Habilitationsvortrag*, which suggested that “[p]robably we shall find that an incomplete determinism, a certain element of pure chance, is intrinsic in these elementary physical laws [i.e. quantum mechanics].”<sup>23</sup>

Happily, in recent years, internalist historians of science have also begun to turn their attention to Jordan’s contributions to postwar developments in physics. The recent surge of scholarship on the “golden age” of general relativity in the 1950s and 1960s has brought attention to Jordan’s postwar career in that field; in the late 1940s, he turned away from “quantum biology” and biophysics and began to focus on the theory of general relativity. As these historians have shown, Jordan—along with his school in Hamburg—was an integral part in the renaissance of general relativity during this period.<sup>24</sup> Even the twilight of Jordan’s career, the late 1960s and early 1970s, during which Jordan published several works on the proposed expansion of the Earth—a result of Jordan’s pet theory that the gravitational constant actually varied slowly over time—has now

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<sup>23</sup> Pascual Jordan, “Philosophical Foundations of Quantum Theory,” trans. Robert Oppenheimer, *Nature* 119, no. 2998 (April 16, 1927): 566–69, here 569; the German original is Pascual Jordan, “Kausalität und Statistik in der modernen Physik,” *Die Naturwissenschaften* 15, no. 5 (February 4, 1927): 105–10; Mara Beller, “Pascual Jordan’s Influence on the Discovery of Heisenberg’s Indeterminacy Principle,” *Archive for History of Exact Sciences* 33, no. 4 (1985): 337–49.

<sup>24</sup> A new history of the general relativity community during the Cold War has recently been published; see Roberto Lalli, *Building the General Relativity and Gravitation Community During the Cold War* (Berlin: Springer, 2017). See also Alexander Blum, Roberto Lalli, and Jürgen Renn, “The Reinvention of General Relativity: A Historiographical Framework for Assessing One Hundred Years of Curved Space-Time,” *Isis* 106, no. 3 (2015): 598–620; Alexander S. Blum, Roberto Lalli, and Jürgen Renn, “The Renaissance of General Relativity: How and Why it Happened,” *Annalen der Physik* 528, no. 5 (May 2016): 344–49; Alexander Blum et al., “Editorial Introduction to the Special Issue ‘The Renaissance of Einstein’s Theory of Gravitation,’” *The European Physical Journal H* 42, no. 2 (June 2017): 95–105; Phillip James Edwin Peebles, “Robert Dicke and the Naissance of Experimental Gravity Physics, 1957–1967,” *The European Physical Journal H* 42, no. 2 (June 2017): 177–259; Joshua N. Goldberg, “US Air Force Support of General Relativity: 1956–1972,” in *Studies in the History of General Relativity*, Einstein Studies 3 (Boston: Birkhäuser, 1992), 89–102; George Ellis, “Editorial Note to: Pascual Jordan, Jürgen Ehlers and Wolfgang Kundt, Exact Solutions of the Field Equations of the General Theory of Relativity,” *General Relativity and Gravitation* 41, no. 9 (August 13, 2009): 2179–89. For an argument that there was no dip in interest in general relativity between 1925 and 1955, see Hubert Goenner, “A Golden Age of General Relativity? Some Remarks on the History of General Relativity,” *General Relativity and Gravitation* 49, no. 3 (March 2017): Article 42.

received attention from scholars, particularly Danish historian of science Helge Kragh. In his 2015 book *Varying Gravity*, on the history of theories of varying gravitation, he concludes that Jordan had little respect for traditional geophysicists and that they, in return, did not hold his work in high regard.<sup>25</sup>

Along with this literature on Jordan, there has been a voluminous amount written about his far more famous contemporary and collaborator—Werner Heisenberg.<sup>26</sup> As will be seen, Heisenberg’s life weighed heavily on Jordan’s—whenever Jordan experienced career success, Heisenberg was inevitably one step ahead of him. Nevertheless, though the two were colleagues, they were not friends, and Heisenberg was a far defter political operator than Jordan ever was. The vast majority of the Heisenberg literature is concerned with his role in the German nuclear project during World War II, and debates whether or not he was willing to build a nuclear weapon for Nazi Germany.<sup>27</sup> The Heisenberg literature will be used in this dissertation, but sparingly, for two reasons. First, Jordan was never involved with nuclear work during World War II, so this dissertation will not

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<sup>25</sup> Helge Kragh, *Varying Gravity: Dirac’s Legacy in Cosmology and Geophysics*, Science Networks. Historical Studies 54 (Basel: Birkhäuser, 2016), here particularly 159. See also Helge Kragh, “Pascual Jordan, Varying Gravity, and the Expanding Earth,” *Physics in Perspective* 17, no. 2 (2015): 107–34; H. Kragh, “Expanding Earth and Declining Gravity: A Chapter in the Recent History of Geophysics,” *History of Geo- and Space Sciences* 6, no. 1 (May 5, 2015): 45–55; Helge Kragh, “Gravitation and the Earth Sciences: The Contributions of Robert Dicke,” *ArXiv:1501.04293 [Physics]*, January 18, 2015, <http://arxiv.org/abs/1501.04293>. See also Wolfgang Kundt, “Jordan’s “Excursion“ into Geophysics,” in *Pascual Jordan (1902–1980: Mainzer Symposium zum 100. Geburtstag*, ed. Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 329 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007), 123–32.

<sup>26</sup> David C. Cassidy, *Uncertainty: The Life and Science of Werner Heisenberg* (New York: W.H. Freeman, 1992); David C. Cassidy, *Beyond Uncertainty: Heisenberg, Quantum Physics, and the Bomb* (New York: Bellevue Literary Press, 2009); Cathryn Carson, *Heisenberg in the Atomic Age: Science and the Public Sphere* (New York: Cambridge University Press, 2010).

<sup>27</sup> The debate rages on: on one side there are those like journalist Thomas Powers, who fallaciously view Heisenberg as the single-handed saboteur of Hitler’s nuclear ambitions, and on the other there are those like Paul Lawrence Rose, who see him as one of “Hitler’s willing executioners,” who would gladly have built a bomb if only he could. See Thomas Powers, *Heisenberg’s War: The Secret History of the German Bomb*, 1st ed. (New York: Knopf, 1993); Paul Lawrence Rose, *Heisenberg and the Nazi Atomic Bomb Project: A Study in German Culture* (Berkeley: University of California Press, 1998).

concern itself with that wartime effort. (What Mark Walker has termed the “Myth of the German Atomic Bomb,” though, will bear on Chapter 5.) Second, and more broadly, it is important to have another example of how a scientist could act under Nazism, and could attempt to rehabilitate themselves after 1945. As the second-most famous theoretical physicist of his generation who remained in Germany under the Nazis, Jordan provides another crucial case study.<sup>28</sup>

Finally, there is an extensive literature on science in Germany during the twentieth century. Paul Forman’s articles—and his namesake thesis—remain formative texts on the relationship between science, culture, and politics during the Weimar Republic.<sup>29</sup> These works by Forman influenced scholars interested in science under Nazism like Alan Beyerchen, whose *Scientists under Hitler*, a synoptic study of the physics community during the Nazi period, remains a classic.<sup>30</sup> Beyerchen’s work inspired similar studies for other scientific fields, like those by Ute Deichmann on biology and chemistry during the Third Reich.<sup>31</sup> For historians of physics, much work on this period has focused on the nature of the wartime German nuclear project, and the myths that have

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<sup>28</sup> It seems that in many academic fields, one figure who became entangled with Nazism in some way has received the lion’s share of attention from scholars. In physics it is obviously Heisenberg; in philosophy it is Martin Heidegger; in law, it is Carl Schmitt; in literature, it is Ernst Jünger; in biology, it is Konrad Lorenz. It is important, though, to look not just at the most iconic figures, for they often are exceptions to the norm.

<sup>29</sup> Paul Forman, “Weimar Culture, Causality, and Quantum Mechanics,” *Historical Studies in the Physical Sciences* 3 (1971): 1–115; Paul Forman, “Scientific Internationalism and the Weimar Physicists: The Ideology and Its Manipulation in Germany after World War I,” *Isis* 64, no. 2 (June 1973): 151–80; Paul Forman, “The Financial Support and Political Alignment of Physicists in Weimar Germany,” *Minerva* 12, no. 1 (January 1974): 39–66; see also Alexei Kojevnikov et al., *Weimar Culture and Quantum Mechanics: Selected Papers by Paul Forman and Contemporary Perspectives on the Forman Thesis* (London: Imperial College Press, 2011). On German academic culture more generally, see also the book that inspired Forman’s thesis, Fritz K. Ringer, *The Decline of the German Mandarins: The German Academic Community, 1890-1933* (Cambridge, Mass.: Harvard University Press, 1969).

<sup>30</sup> Alan D. Beyerchen, *Scientists under Hitler: Politics and the Physics Community in the Third Reich* (New Haven: Yale University Press, 1977). See also Alan Beyerchen, “What We Now Know About Nazism and Science,” *Social Research* 59, no. 3 (Fall 1992): 615–41.

<sup>31</sup> Ute Deichmann, *Biologen unter Hitler: Porträt einer Wissenschaft im NS-Staat* (Frankfurt am Main: Fischer Taschenbuch Verlag, 1995); Ute Deichmann, *Flüchten, Mitmachen, Vergessen: Chemiker und Biochemiker in der NS-Zeit* (Weinheim: Wiley-VCH, 2001).

surrounded it since Germany's defeat in 1945. Mark Walker's works remain the standard in this area.<sup>32</sup> Similarly, in the history of engineering, Michael Neufeld's work on the German rocket program during World War II tells a crucial story dispassionately.<sup>33</sup> In the history of medicine, Robert Proctor's books on Nazi cancer research have proven influential.<sup>34</sup> And with the ascent of a younger generation of historians of science—raised well after the war was over—to leadership roles in German scientific societies in the 1990s and 2000s, a vast array of these groups, including the German Physical Society, the German Chemical Society (now the Society of German Chemists), and the Max Planck Society (the successor of the Kaiser Wilhelm Society), have examined their own history under Nazism.<sup>35</sup> In recent years, historians of science have also begun to examine how scientists coped during the postwar Allied occupation of Germany from 1945 to 1949 as well as their fate under socialist rule in East Germany.<sup>36</sup> Yet the history of science in postwar West Germany remains comparatively understudied; the last two chapters of this dissertation will help

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<sup>32</sup> Mark Walker, *German National Socialism and the Quest for Nuclear Power, 1939-1949* (New York: Cambridge University Press, 1989); Mark Walker, "Science, National Socialism, and the Longue Durée," *Historical Studies in the Physical and Biological Sciences* 24, no. 2 (January 1994): 395–401; Mark Walker, *Nazi Science: Myth, Truth, and the German Atomic Bomb* (New York: Plenum Press, 1995); and Walker continues to forcefully present his argument, see Mark Walker, "Physics, History, and the German Atomic Bomb," *Berichte zur Wissenschaftsgeschichte* 40, no. 3 (September 2017): 271–88. Walker's concept of the "Myth of the German Atomic Bomb" will play an important role in Chapter 5, as will be seen.

<sup>33</sup> Michael J. Neufeld, *The Rocket and the Reich: Peenemünde and the Coming of the Ballistic Missile Era* (New York: Free Press, 1995); Michael J. Neufeld, *Von Braun: Dreamer of Space, Engineer of War* (New York: Vintage Books, 2007).

<sup>34</sup> Robert Proctor, *The Nazi War on Cancer* (Princeton: Princeton University Press, 1999); Robert Proctor, *Racial Hygiene: Medicine Under the Nazis* (Cambridge, Mass.: Harvard University Press, 1988).

<sup>35</sup> See for example, as a small sample, Dieter Hoffmann and Mark Walker, *Physiker zwischen Autonomie und Anpassung: Die Deutsche Physikalische Gesellschaft im Dritten Reich* (Weinheim: Wiley-VCH, 2007); Helmut Maier, *Chemiker im "Dritten Reich": die Deutsche Chemische Gesellschaft und der Verein Deutscher Chemiker im NS-Herrschaftsapparat* (Weinheim: Wiley-VCH, 2015); Susanne Heim, Carola Sachse, and Mark Walker, *The Kaiser Wilhelm Society under National Socialism* (New York: Cambridge University Press, 2009).

<sup>36</sup> On the immediate postwar period, see in particular Klaus Hentschel, *The Mental Aftermath: The Mentality of German Physicists, 1945-1949*, trans. Ann M. Hentschel (New York: Oxford University Press, 2007). On East German science, see Dolores L. Augustine, *Red Promethus: Engineering and Dictatorship in East Germany, 1945-1990* (Cambridge, Mass.: MIT Press, 2007); Kristie Macrakis and Dieter Hoffmann, *Science under Socialism: East Germany in Comparative Perspective* (Cambridge, Mass.: Harvard University Press, 1999).



contribute to this growing subfield.<sup>37</sup> In short, using Jordan as a lens into German scientific, cultural, and political history, this dissertation speaks to literature on science and politics before, during, and after the Nazi period.

### Source Problems

The main reason why Jordan has remained such an “enigma” is simple: previous researchers have been stymied by gaps in the available source base. While Jordan’s *Nachlass* in the Berlin State Library comprises some twenty-seven boxes—an objectively large collection by any measure—the vast majority of the collection dates from after 1945, largely from the 1950s onward. What pre-1945 material is present in the collection mainly consists of correspondence with physicists involved with the quantum revolution of the 1920s—much of which was microfilmed as part of the Archive for the History of Quantum Physics project in the 1960s—along with a few sets of lecture notes from Jordan’s early years in Rostock. These documents, useful though they are to historians of quantum mechanics, long predate Hitler’s rise to power and have little to do with politics. When it comes to the Nazi era, from 1933 to 1945, Jordan’s *Nachlass* contains next to no material, making it very difficult to gain a picture of Jordan’s exact relations with the Party.<sup>38</sup>

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<sup>37</sup> The most extensive study of West German science remains Carson’s book on Heisenberg, which contains extensive discussions of the scientific milieu in the Federal Republic; see Carson, *Heisenberg in the Atomic Age*. Few other works treat the subject extensively, though the Max Planck Society launched an eight-year project to study its own history in 2014. (It is a successor to the project on the history of the Kaiser Wilhelm Society.) Initial publications from this research group appear promising in this regard; see for example Thomas Steinhauser, Hanoach Gutfreund, and Jürgen Renn, *A Special Relationship: Turning Points in the History of German-Israeli Scientific Cooperation*, 2. durchges. Auflage, Ergebnisse des Forschungsprogramms Geschichte der Max-Planck-Gesellschaft 1 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2017). On postwar compensation of Jewish and left-wing scientists dismissed from the Kaiser Wilhelm Society, see Michael Schüring, *Minervas verstoßene Kinder: vertriebene Wissenschaftler und die Vergangenheitspolitik der Max-Planck-Gesellschaft*, Geschichte der Kaiser-Wilhelm-Gesellschaft im Nationalsozialismus 13 (Göttingen: Wallstein, 2006).

<sup>38</sup> A notable exception is Jordan’s correspondence with physicist and scientific journal editor Paul Rosbaud from 1941 to 1944, apparently acquired by the library in 1969, i.e. before Jordan’s death, and which is split into two folders, NPJ Nr. 583 and Nr. 765. Particularly bizarre in this instance is that the letters are original

What happened to Jordan's papers from before 1945? According to Jordan himself, many of his personal papers, manuscripts, and correspondence from 1945 and earlier were destroyed during the war.<sup>39</sup> *Prima facie*, this was certainly the case—to an extent. Jordan was, for example, definitely present in Peenemünde, the site of the V-2 rocket research base during World War II, when Allied forces bombed it in August 1943. Writing to biologist Adolf Meyer-Abich, he reported losing a “thick parcel of physical, mathematical, and biological off prints” in the attack.<sup>40</sup> Similarly, earlier in 1943, a large package of Jordan's was stolen while shipped via train; this parcel apparently contained scientific books, more off prints, and correspondence, including letters detailing the intrigue he was enmeshed in during the war.<sup>41</sup> So considering Jordan's peripatetic wanderings during the war, the heavy bombing of Rostock—where most of his papers were located—and the general chaos surrounding the collapse of 1945, much certainly was simply destroyed during the war.<sup>42</sup> Moreover, after the end of the war, Jordan's apartment in Rostock was commandeered by the Soviet occupying forces, leading to the loss of many of his possessions, likely including additional correspondence.<sup>43</sup>

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copies of letters from Jordan to Rosbaud (along with several carbon copies of letters, unsigned, from Rosbaud to Jordan), meaning that these documents somehow found their way into Jordan's *Nachlass* from the possession of Rosbaud. How this happened is a mystery. For more on Rosbaud, see Chapter 3.

<sup>39</sup> Jordan stated in a 1949 letter to John von Neumann that several reprints Jordan had of scientific papers by von Neumann were destroyed in a fire during the war; see Jordan to John von Neumann, December 16, 1949, NPJ, Nr. 745. Another letter from 1946, to a C. Freiherr von Stein, states that a manuscript of a book by Jordan, never published, on quantum biology was a “victim” of the war, as the paper reprints and research material that were necessary to write the book were destroyed. See Jordan to C. Freiherr von Stein, April 4, 1946, NPJ, Nr. 1141.

<sup>40</sup> Jordan to Meyer-Abich, September 15, 1943, NAMA, Ba 38.

<sup>41</sup> Jordan reported that “everything concerning the affair with Scheel,” referencing attempts at intriguing discussed at length in Chapter 3, was stolen. See Jordan to Meyer-Abich, March 8, 1943, NAMA, Ba 38.

<sup>42</sup> Several letters from Einstein were, according to Jordan, supposedly destroyed in an air raid; see Jordan to John Stachel, April 14, 1978, AEA, document 75-274.

<sup>43</sup> See Friedrich Möglich to Günther Rienäcker, July 20, 1947, and Rienäcker to Captain Tabatschnik, July 23, 1947, both in Personalakten Pascual Jordan, Bl. 9, 11, RUA. Jordan's wife Hertha was evidently able to retrieve some of the family's furniture from the apartment in Rostock, but the fate of the correspondence is unknown; it was likely destroyed. For more on the furniture saga, see Hertha Jordan to Josef Naas, January 21, 1948, AKL 1945-1968, Nr. 45, ABBAW.

Yet Jordan himself also certainly destroyed many of his own papers. In several extant letters—dating both from during and after the war—Jordan mentions destroying correspondence himself or instructs his correspondent to destroy the letters he sent.<sup>44</sup> During the war, Jordan likely destroyed documents relating to his various attempts to denounce the group of physicists known as the *deutsche Physiker*, who attempted to ban the teaching of relativity theory and quantum mechanics as “Jewish physics.” (This intrigue will be the subject of much discussion in Chapter 2 and 3.) And after the war—or in its final stages—it seems almost certain that Jordan personally destroyed incriminating material relating to his unsuccessful attempts to enlist science in the service of the Nazi regime. Consistent with my analysis of his denazification in Chapter 4, my suspicion is that he likely destroyed many incriminating documents pertaining to his attempts to persuade the Nazis of science’s value. It also seems as though the Jordan *Nachlass* was edited again after his death. Many documents contain “editorial notes” at the top of the documents in the handwriting of Jordan’s wife, Hertha, and the family evidently went through the papers before donating them to the Berlin State Library, separating the “personal” from the “scientific.”<sup>45</sup>

Moreover, my experiences in the archives of Jordan’s various correspondents made it clear that much was lost even during the postwar period—when one might have expected a more complete archive to survive. One notable example is with American physicist Robert Dicke, a fellow proponent of variable gravitation. Dicke’s papers in the Princeton University Archives contain considerable scientific correspondence with Jordan from 1960 through the 1970s—including

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<sup>44</sup> See for example Jordan to Meyer-Abich, October 31, 1941, NAMA, Ba 38 (“the very limited possibilities for [safe] storage here [i.e. at Jordan’s military base] oblige me to destroy everything that is expendable immediately.”), and Jordan to Harald von Rautenfeld, July 4, 1948, BB, 010 (“In these lively times you should not keep any letters. Please destroy this one after sufficient perusal.”)

<sup>45</sup> Personal conversation with Pascual Jordan (grandson of Pascual Jordan), May 13, 2016. A collection of wartime letters from Jordan to his wife may remain in the hands of the widow of Jordan’s eldest son; I was unable to access this correspondence, if it does exist.

evidence that the two met in person in 1959 or 1960—but Jordan’s *Nachlass* contain no trace of Dicke.<sup>46</sup> Some of this may have been lost in the “editing process” detailed above. But my impression is also that Jordan simply was not one who saved all his correspondence, even from his closest colleagues. It seems that this was due to Jordan’s habit of reusing any available paper, including correspondence, for scratch work: “Whenever I visited Jordan at 132 Ise Strasse [sic]...” noted his former student Engelbert Schücking in 1999, “he supplied me with stacks of scratch paper consisting of letters he had received whose backs were blank. Peeking at those letters, I gathered that a major part of Jordan’s income was apparently derived from honoraria for talks to all sorts of societies, church groups, and adult education centers—about physics and God, society, the universe.”<sup>47</sup> Schücking’s description squares exactly with the state of the Jordan *Nachlass* today. For the historian, though, there is a silver lining: through this reused paper we can gain a picture of his incoming mail, which apparently included a newsletter on the postwar situation in Eastern Europe, *Der aktuelle Osten*, among other curiosities.<sup>48</sup>

In short, the *Nachlass* contains virtually nothing relating to Jordan’s personal or political life before, during, and even after the war. Given the history of the collection, it must be seen as a compromised source, albeit one that remains useful in proper context. With this realization, I have supplemented the *Nachlass* with Jordan-related sources from dozens of other archives. These can be divided into several categories. The first stems from Jordan’s scientific milieu, and is comprised of

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<sup>46</sup> Jordan to Robert Dicke, February 8, 1960, RDP, Box 2, Folder 2. Correspondence between Dicke and Jordan is scattered throughout the Dicke Papers, which are arranged chronologically. The two corresponded from around 1960 onward.

<sup>47</sup> Engelbert L. Schücking, “Jordan, Pauli, Politics, Brecht, and a Variable Gravitational Constant,” *Physics Today* 52, no. 10 (October 1999): 28. Jordan may have developed this habit of paper reuse during the paper shortage in the immediate aftermath of World War I, when he would have been a teenager; there was another paper shortage during and especially after World War II. Nevertheless, the result is that Jordan’s personality and personal opinions remain tough to discern through the materials available in the *Nachlass*.

<sup>48</sup> For partial copies of *Der aktuelle Osten*, see NPJ, Nr. 1, Folder 1, and Nr. 1185, Folder 2.

the personal archives of his scientific colleagues. In this category, I have consulted the collections of physicists Max Born, Werner Heisenberg, Albert Einstein, Niels Bohr, Max von Laue, Eugene Wigner, James Franck, Carl Friedrich von Weizsäcker, Otto Hahn, Walther Gerlach, Wolfgang Gentner, Robert Dicke, and Samuel Goudsmit, among others, along with the papers of biologists Linus Pauling, Max Delbrück, Adolf Butenandt, and Adolf Meyer-Abich, those of mathematician John von Neumann, and those of philosophers of science Hans Reichenbach and Otto Neurath.<sup>49</sup> In these collections, I primarily looked for correspondence between these named individuals and Jordan, but also attempted as well, whenever possible, to locate letters and documents in which Jordan was mentioned.

Perhaps surprisingly, of all these collections, the *Nachlass* of little-known biologist Adolf Meyer-Abich proved to be the most revealing. Located in the Hamburg State and University Library, this collection contains a series of letters written by Jordan to Meyer-Abich (though sadly not Meyer-Abich's responses to Jordan) from 1941 to 1946, i.e. during World War II. Up to now, Jordan's wartime activities have remained the most mysterious part of his life. While much still remains unknown about what he did during this period, this set of letters from the Meyer-Abich collection help us to understand Jordan's aims under Nazism. As will be detailed in Chapter 3, Jordan's goals were, in short, to create a large-scale "big science"-style enterprise under Nazi control, with he and Meyer-Abich at the top. This rich set of letters, previously unknown to scholars of Jordan, provides the evidentiary backbone for this dramatic saga.<sup>50</sup> Files pertaining to Jordan in physicist Walther Gerlach's *Nachlass* serve a similar, though somewhat smaller, role in Chapter 5.

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<sup>49</sup> Only the more notable scientific colleagues of Jordan's are listed here; for a full list of personal archival collections consulted, along with the locations of each collection, see the bibliography and list of abbreviations.

<sup>50</sup> On this topic, see also my article in *Isis*, Ryan Dahn, "Big Science, Nazified? Pascual Jordan, Adolf Meyer-Abich, and the Abortive Scientific Journal *Physik*," *Isis* 110, no. 1 (March 2019): 68–90. In English-language

The second set of unpublished sources consists of files pertaining to Jordan from the various universities at which he worked. Personnel files from the University of Rostock, the University of Berlin (now the named Humboldt University; then, when Jordan was appointed in 1944, known as the Friedrich Wilhelm University), and the University of Hamburg all survive. The Hamburg file is certainly the largest—comprising some ten individual folders—and it seems that much of it was not accessible to previous researchers. (The Rostock and Berlin files have been available for some time.) Jordan’s personnel file from the Academy of Sciences and Literature in Mainz, which he joined shortly after it was founded in the late 1940s, is also in this category. Finally, Jordan’s personnel file from his time as an assistant in Göttingen also falls into this category; this includes those files relating to his dissertation defense and the defense of his *Habilitation* thesis.<sup>51</sup> (Then as now, in Germany academics must write a second thesis, the *Habilitation*, which is more detailed and extensive than the dissertation, to be granted the “license to teach” at the university level.) Finally, Jordan’s application file to the Rockefeller Foundation, which awarded him an International Education Board fellowship in 1927 so he could study with Niels Bohr in Copenhagen, can be placed here as well.

The third category of unpublished archival sources consists of other official—particularly governmental—files relating to Jordan. This includes his Nazi Party file, which is very small, as well as reports and letters he wrote to the Reich Ministry of Education about various international conferences during the Third Reich. It also includes Jordan’s official denazification file, which I

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scholarship, it was Kevin Amidon who first took notice of the vast and highly detailed Meyer-Abich *Nachlass*; see Kevin S. Amidon, “Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology,” *Biological Theory* 3, no. 4 (2008): 357–70.

<sup>51</sup> Again, for a full list of unpublished sources, including archival call numbers and signatures, see the bibliography and the list of abbreviations.

uncovered, though it was thought to be lost.<sup>52</sup> As will be seen, this highly revealing file provides the backbone of Chapter 4. This denazification file contains all of the affidavits and testimonials—colloquially known as *Persilscheine*, or whitewash documents, after a German brand of laundry detergent—written on Jordan’s behalf. Falling into this category as well are files from former East Germany. First are the documents pertaining to the East German attempt to recruit Jordan as a scientist, directly after the war, located in the Archive of the Berlin-Brandenburg Academy of Science. Second are files from the East German secret police, the *Stasi*—as will be seen in Chapter 5, Jordan ultimately decided to stay in West Germany and eventually reentered politics as a Cold Warrior, attracting the eye of the East German security service. As they did with many former Nazi Party members who were active in West German politics, the *Stasi* attempted to discredit Jordan by publicizing information about his past. They even recruited a prominent East German physicist, Hans-Jürgen Treder, as an informant, largely so that he could spy on Jordan at international conferences.<sup>53</sup> This will also be discussed in Chapter 5.

The fourth category consists of Jordan’s correspondence with friends in politics, as well as the various political organizations he was affiliated with (aside from the Nazi Party). This includes the archives of the West German Christian Democratic Union (CDU), the political party that Jordan joined and served with in the West German Parliament, the *Bundestag*, in the 1950s. The CDU archives in Sankt Augustin, outside Bonn, contain some material relating to Jordan’s time as an elected representative.<sup>54</sup> They also hold a small collection of Jordan’s personal papers, pertaining to

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<sup>52</sup> It is located in the Hamburg State Archive.

<sup>53</sup> To my knowledge, up to now, it was not known that Treder had been an informant for the *Stasi*. Again, see the bibliography for archival signatures and call numbers.

<sup>54</sup> Surprisingly, in general, the CDU archives hold little material on the party’s activities during the 1950s.

his political activities after the war.<sup>55</sup> Also falling into this category is the archive of the CDU's sister party, the Christian Social Union (CSU), which houses the personal papers of Franz Josef Strauss, long-time Minister-President of Bavaria (and leader of the CSU) and one-time candidate for West German Chancellor, who served as defense minister while Jordan was in the *Bundestag*. These documents helped broaden my understanding of Jordan's postwar political activities, though it must be said that there was not as much to be found as I had initially hoped.<sup>56</sup>

Much more interesting, though, are archival materials relating to Jordan's political career prior to 1945, limited as they may be. As noted above, one of the most important findings to emerge from Richard Beyler's 1994 dissertation on Jordan was the revelation that Jordan published articles under the pseudonym "Ernst Domeier" in the *völkisch*, nationalist, and anti-Semitic cultural-political journal *Deutsches Volkstum* (German Heritage) from 1930-1932, i.e. before Hitler came to power in 1933.<sup>57</sup> As Beyler discovered, Jordan was on personal terms with the magazine's editor, *völkisch* activist Wilhelm Stapel; their correspondence extended into the postwar years.<sup>58</sup> Stapel was an important figure on the *völkisch* far-right wing. He counted Ernst Jünger and Carl Schmitt among his correspondents, and held a key position at *Deutsches Volkstum's* publishing house, the *Hanseatische Verlagsanstalt*.<sup>59</sup> Stapel's *Nachlass* has now been deposited at the German Literary Archives in

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<sup>55</sup> This small collection on Jordan also seems to have been donated by his wife, Hertha, after Jordan's death; it too seems to have been curated haphazardly.

<sup>56</sup> Strangely enough, Jordan's *Nachlass* contains little related to his postwar political career; the collection of his at the CDU archives is similarly limited.

<sup>57</sup> The German word *Volkstum* is difficult to translate. The title could be translated also as "German Folklore," "German Nationhood," or "German Ethnicity"; the word *Volk* was meant in the mystical sense. See Chapter 1 for more on *völkisch* ideology.

<sup>58</sup> Beyler, "From Positivism to Organicism," 207. Stapel's letters to Jordan, 1932-1950s are located in NPJ, Nr. 610.

<sup>59</sup> For more on Stapel, see Heinrich Keßler, *Wilhelm Stapel als politischer Publizist: Ein Beitrag zur Geschichte des konservativen Nationalismus zwischen den beiden Weltkriegen*. (Nürnberg: Spindler, 1967); Gary D. Stark, *Entrepreneurs of Ideology: Neoconservative Publishers in Germany, 1890-1933* (Chapel Hill: University of North Carolina Press, 1981); Siegfried Lokatis, *Hanseatische Verlagsanstalt: Politisches Buchmarketing im "Dritten Reich"*



Marbach, and while the correspondence with Jordan in the collection is fragmentary, these letters, along with other material in his archive shed further light on their relationship, as will be seen in Chapter 1.<sup>60</sup> In this vein, material from Ernst Jünger’s collection—namely one revealing letter from Jordan—as well as letters from Jordan located in the papers of long-forgotten *völkisch* author Erwin Guido Kolbenheyer, also proved revealing.<sup>61</sup>

Similarly, the records of the *Baltische Bruderschaft* (Baltic Brotherhood), a Weimar-era *völkisch* conservative group for Baltic Germans (ethnic Germans from the Baltic states) also contain valuable information pertaining to Jordan. Amazingly, despite having no personal connection to the Baltic Germans (Jordan’s family was from Hannover, in the west of Germany) Jordan became involved with this group in the early 1930s. His involvement with the Baltic Brotherhood seems to have stemmed from his interest, typical for the *völkisch* right wing, in ethnic Germans in the “east.” Jordan ultimately wrote several pamphlets attempting to interest Germans from the German Reich in joining the group.

In this category, though, certainly the most revealing discovery of all was that “Ernst Domeier” was far more prolific than Beyler and other historians realized.<sup>62</sup> As it turns out, in addition to *Deutsches Volkstum*, Domeier’s articles appeared in at least four other far-right *völkisch* journals: *Blut und Boden* (Blood and Soil), *Deutsches Adelsblatt* (German Nobles’ Paper), *Die Kommenden*

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(Frankfurt am Main: Buchhändler-Vereinigung, 1992); Thomas Vordermayer, *Bildungsbürgertum und völkische Ideologie: Konstitution und gesellschaftliche Tiefenwirkung eines Netzwerks völkischer Autoren (1919-1959)*, Quellen und Darstellungen zur Zeitgeschichte 109 (Berlin: Walter de Gruyter, 2016).

<sup>60</sup> To my knowledge, these letters were heretofore unknown to researchers.

<sup>61</sup> Jünger remains world-famous to this day. On Kolbenheyer, see also Vordermayer, *Bildungsbürgertum und völkische Ideologie*.

<sup>62</sup> One might object that the “Domeier” pseudonym might have been a joint pseudonym, used by multiple authors. However, multiple conclusive pieces of evidence exist which demonstrate that “Domeier” was solely used by Jordan. As will be seen in Chapter 1, letters directly tying Jordan to the pseudonym are extant in several locations; moreover, the pseudonym “Ernst Domeier” itself was a reference to Jordan’s own family. Finally, the writing style of the “Domeier” texts clearly comes from one person.

(The Forecomers), and *Der Ring* (The Ring).<sup>63</sup> While Jordan—as “Domeier”—published only one article in *Die Kommenden* and two in *Deutsches Adelsblatt*, Domeier contributed regularly to *Blut und Boden*, and several extant letters prove that he was on good terms with the journal’s editor, a *völkisch* radical named August Georg Kenstler.<sup>64</sup> These newly discovered Domeier articles are often more radical than those published in *Deutsches Volkstum*, with one article in particular openly celebrating the National Socialist “revolution” in 1933 and actively calling for German territorial expansion in the east.<sup>65</sup> In addition to the “dog-whistle” style of anti-Semitism common in *völkisch* texts, these Domeier articles also contain a type of crude, blatant anti-Semitism not seen before in Jordan’s writings. These articles make clear that Jordan shared the racist views of his *völkisch* compatriots.<sup>66</sup>

That they were published in a journal titled *Blut und Boden* is fitting: the journal’s title became one of the most infamous Nazi slogans. It served as a kind of house journal for both the *Artamanenbewegung* (*Artaman* Movement), a *völkisch* “back-to-the-land” offshoot of the German youth movement whose goal was to strengthen German farmers in the east, thereby “defending” Germany from Slavic (i.e. Polish) elements, as well as the *Landvolkbewegung*, a right-wing *völkisch* peasants’ movement in the northern German province of Schleswig-Holstein. The *Artamanen* were closely

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<sup>63</sup> For a full list of “Domeier’s” publications, or at least all of those known today, see the bibliography. On *Die Kommenden*, see Stefan Breuer and Ina Schmidt, *Die Kommenden: Eine Zeitschrift der Bündischen Jugend (1926-1933)*, Edition Archiv der deutschen Jugendbewegung 15 (Wochenschau Verlag, 2010), 220. *Kommenden* is a similarly difficult German word to translate. The title could also be translated as “The Comers,” or “The Arrivers.” It too was meant in a mystical-religious sense—the titular “forecomers” were the members of the *völkisch* movement.

<sup>64</sup> For more on Kenstler, see Johann Böhm, “August Georg Kenstler, Herausgeber der Monatsschrift ‘Blut und Boden’ und aktiver Vorkämpfer der nationalsozialistischen Agrarpolitik,” *Halbjahresschrift für südosteuropäische Geschichte, Literatur, und Politik* 15, no. 1 (2003): 19–43.

<sup>65</sup> Ernst Domeier, “Das Gesetz der Geschichte,” *Deutsches Adelsblatt* 51, no. 30 (July 22, 1933): 517–19; an abridged version was reprinted as Ernst Domeier, “Das Gesetz der Geschichte,” *Blut und Boden: Monatsschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 8 (August 1933): 340–44.

<sup>66</sup> Anti-Semitism is present particularly in Ernst Domeier, “Um Luthers Erbe,” *Blut und Boden: Monatsschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 4, no. 9 (September 1932): 388–91. This Domeier essay is discussed at length in Chapter 1.

aligned with the Nazis—the movement was coopted into the Hitler Youth in 1935—and they played a crucial role in shaping two future Nazi leaders, Heinrich Himmler and Richard Walther Darré, both former *Artamanen* themselves.<sup>67</sup> The *Landvolkbewegung* also laid the groundwork for Nazism in northern Germany.<sup>68</sup> Both the newly discovered Domeier articles and the fragmentary correspondence between Jordan and *völkisch* figures provide important context to understanding Jordan’s political radicalization. They demonstrate that Jordan, under the Domeier alias, was a fairly well-known figure in the *völkisch* right wing during the final crisis of the Weimar Republic.

Finally, in addition to these considerable unpublished sources, many of which were previously unknown to scholars, I also consider Jordan’s published works themselves. Jordan was a prolific writer in many areas—to date, there is no complete bibliography of his oeuvre, scientific or political.<sup>69</sup> Jordan’s works are voluminous, and include purely political tracts (which almost always mentioned science in some way), popular scientific works (which often subtly reinforced his political program), as well as the scientific works themselves (which often make political analogies or references). These published sources form the final important pillar of my analysis; here too, though, I often draw heavily on unpublished sources to better understand the motives behind Jordan’s

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<sup>67</sup> Michael H. Kater, “Die Artamanen: Völkische Jugend in der Weimarer Republik,” *Historische Zeitschrift* 213, no. 3 (December 1971): 577–638, here 620–621.

<sup>68</sup> On the *Landvolkbewegung*, see Alexander Otto-Morris, *Rebellion in the Province: The Landvolkbewegung and the Rise of National Socialism in Schleswig-Holstein* (Frankfurt am Main: Peter Lang, 2013).

<sup>69</sup> I hope to construct a full list of Jordan’s publications at a later date. The closest we have to such a list was compiled by Wolf Beiglböck in the 2000s and can be found in the proceedings of a 2003 conference on the centenary (actually 101<sup>st</sup> anniversary) of Jordan’s birth. However, this list misses all of the new Domeier articles, along with many newspaper articles published by Jordan, and it is riddled with typographical errors, making it hard to find some publications. Locating Jordan’s writings is made more complicated by the fact that many German newspapers to which Jordan contributed have not yet been digitized, making a search for articles by him very time consuming. See Wolf D. Beiglböck, ed. “Pascual Jordan: Schriftenverzeichnis,” in *Pascual Jordan (1902–1980): Mainzer Symposium zum 100. Geburtstag*, ed. Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 239 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007), 175–206.

articles and monographs.<sup>70</sup> (This is particularly true for the Nazi period, when Jordan often published articles in attempts to further his political program, yet only subtly alluded to his that program itself in the articles themselves.) With this source base, I present a fuller picture of Jordan than ever before—though, as will be seen, he nevertheless remains enigmatic in many ways.

### **Jordan's Scientific Career: A Brief Synopsis**

This dissertation focuses on Jordan's life, that of a single scientist during the majority of the twentieth century. It is biographical by its very nature, yet each chapter is also its own episodic microhistory. All of them use Jordan's life as a window through which to explore the intersection of politics, culture, and science during Germany's tumultuous twentieth century—amid the Weimar Republic, under the Nazi regime, and in postwar West Germany. Moreover, Jordan's image in historical memory—why he has come to be remembered the way he is today—will be analyzed as much as Jordan's life and actions themselves. Thus, Jordan's contributions to physics themselves—an internalist history of his career—will not be the focus of the dissertation. (As noted above, the story of Jordan's contributions to physics is well told in internalist-oriented scholarly literature, even if it is little known among the broader public.) As it remains nevertheless crucial for the reader to understand what made Jordan a world-renowned physicist, I will now present a brief synopsis of his career in physics.

Born in Hannover in 1902, Jordan became interested in science at a young age. Initially interested in biology and zoology, he quickly gravitated to physics. After attending *Gymnasium* from 1909 to 1921 at the *Bismarckschule* in his hometown, Jordan spent two semesters at the Technical

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<sup>70</sup> See for example Chapter 3, which uses the correspondence with Meyer-Abich to understand the motivations behind the bizarre scientific journal *Physis* that Jordan (and Meyer-Abich) co-founded during World War II.

Institut in Hannover (*Technische Hochschule Hannover*, now the Technical University of Hannover). (This was so that he could live at home, probably because the family apparently lost most of its money during the war and the hyperinflation that followed.) In spring 1922, unhappy with the quality of instruction in physics in Hannover, Jordan moved to the University of Göttingen, one of the great mathematics and physics centers of its day.<sup>71</sup> There, he very quickly came into contact with several renowned professors—theoretical physicist Max Born, experimental physicist James Franck, and mathematician Richard Courant.<sup>72</sup> By summer 1924, still only 21, he had completed and defended his dissertation, a heavily mathematical tract on radiation in Bohr’s quantized model of the atom.<sup>73</sup>

What became known as the “quantum revolution” began the next year. In summer 1925, Werner Heisenberg published a paper that signaled a new direction for theoretical physics, yet it remained obscure and difficult to understand.<sup>74</sup> Jordan’s adviser, Max Born, who had a strong

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<sup>71</sup> See Jordan’s interview with Thomas Kuhn, June 17, 1963, p. 6, AHQP. On the mathematics and physics tradition in Göttingen, see Friedrich Hund, “Die Geschichte der Physik an der Universität Göttingen,” in *Die Geschichte der Verfassung und der Fachbereiche der Georg-August-Universität zu Göttingen*, ed. Hans-Günther Schlotter, Göttinger Universitätsschriften: Serie A, Schriften 16 (Göttingen: Vandenhoeck & Ruprecht, 1994), 160–72; Erwin Neuenschwander and Hans-Wilhelm Burmann, “Die Entwicklung der Mathematik an der Universität Göttingen,” in *Die Geschichte der Verfassung und der Fachbereiche der Georg-August-Universität zu Göttingen*, ed. Hans-Günther Schlotter, Göttinger Universitätsschriften: Serie A, Schriften 16 (Göttingen: Vandenhoeck & Ruprecht, 1994), 141–59; Friedrich Hund, *Die Geschichte der Göttinger Physik*, Göttinger Universitätsreden 80 (Göttingen: Vandenhoeck & Ruprecht, 1987). See also the discussion in Beyerchen, *Scientists under Hitler*, 6. Finally, for a retrospective look at the University of Göttingen from someone who taught there during its golden age, see also Hermann Weyl, “Universities and Science in Germany,” in *Gesammelte Abhandlungen*, ed. K. Chandrasekharan, vol. IV (Berlin: Springer-Verlag, 1968), 537–62.

<sup>72</sup> All three were German Jews who would be forced to emigrate after the Nazi takeover in 1933.

<sup>73</sup> It was published that fall in the *Zeitschrift für Physik*, the premier German physics journal of the day. See Pascual Jordan, “Zur Theorie der Quantenstrahlung,” *Zeitschrift für Physik* 30 (1924): 297–319. Jordan passed his oral dissertation examination (i.e., his defense), on July 23, 1924. See Jordan’s dissertation defense file, UAG, Math.Nat.Prom.Spec.J.II, file for Pascual Jordan.

<sup>74</sup> For Heisenberg’s paper, see Werner Heisenberg, “Über quantentheoretische Umdeutung kinematischer und mechanischer Beziehungen,” *Zeitschrift für Physik* 33 (1925): 879–93. This paper was famously tough to parse, and scholars continue to debate its meaning; see for example Ian J. R. Aitchison, David A. MacManus, and Thomas M. Snyder, “Understanding Heisenberg’s ‘Magical’ Paper of July 1925: A New Look at the Calculational Details,” *American Journal of Physics* 72, no. 11 (November 2004): 1370–79.

mathematical background, recognized Heisenberg's complicated equations as matrix calculus in a different form, and invited Jordan to collaborate with him on a paper expanding on Heisenberg's.<sup>75</sup> Though Jordan was invited later, his contributions to the collaboration were vital; historians have determined that five of the seven "new ideas" put forth in the Born-Jordan paper came from Jordan.<sup>76</sup> Heisenberg, Born, and Jordan then followed up this work with another paper, known as the *Dreimännerarbeit*, or three-man paper, which outlined the fundamentals of modern quantum theory as we know them today.<sup>77</sup> Jordan's contributions were again critical to the three-man paper, which was submitted to the *Zeitschrift für Physik* in November 1925 but only appeared in early 1926. Following this breakthrough work, Jordan completed his *Habilitation*—the second doctorate required to teach at the university level, mentioned above—in November 1926, at only age 24.

Aside from a six-month sojourn in Copenhagen as a fellow of the American-based Rockefeller Foundation, where he worked with Niels Bohr, Jordan continued on in Göttingen as Born's assistant. In summer 1928, Jordan moved to Hamburg as the assistant to theoretical physicist Wilhelm Lenz, yet this proved to be only a brief interlude, for Jordan was named a professor at the University of Rostock in fall 1929. Rostock was not Jordan's first choice; it was considered a backwater for physics as a small university, and he found the city provincial.<sup>78</sup> But it had served a springboard for many physicists—theorists Lenz, Otto Stern and Friedrich Hund all spent a year or two in Rostock before being called to more prestigious universities. Yet the promised call to a physics metropole like Leipzig, Munich, or Berlin never came for Jordan, in large part due to

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<sup>75</sup> Max Born and Pascual Jordan, "Zur Quantenmechanik," *Zeitschrift für Physik* 34 (1925): 858–88.

<sup>76</sup> van der Waerden, *Sources of Quantum Mechanics*, 38–39.

<sup>77</sup> Born, Heisenberg, and Jordan, "Zur Quantenmechanik II."

<sup>78</sup> As he wrote to Hans Reichenbach, who was forced to flee Germany during the Nazi purge of Jewish scientists, in January 1934, and who found refuge in Istanbul: "I don't know whether or to what extent Istanbul's reality corresponds with the quite romantic ideas that I make of it here, but it will certainly be more interesting than Rostock!"; see Jordan to Hans Reichenbach, March 1, 1934, HRP, Box 13, Folder 17.

discrimination he received due to his severe stutter, as will be discussed in Chapter 1. (Another factor was likely the Nazi takeover of power, which caused chaos in the ministry responsible for university education and delayed appointments for years.<sup>79</sup>) It was during his time in Rostock that Jordan married Hertha Stahn, in 1930; the marriage produced two sons, Pascual in 1931, and Michael in 1935.

From the late 1920s into the 1930s, Jordan continued his work in quantum physics, making crucial contributions, as scholars have shown, to the fledgling field of quantum field theory. As with quantum mechanics, these contributions by Jordan went largely unrecognized for many years—Jordan was a pioneer in developing the mathematical formalism termed “second quantization.”<sup>80</sup> Jordan’s interest in quantum theory perhaps culminated in an advanced-level textbook he published in 1936, titled *Anschauliche Quantentheorie* (Intuitive Quantum Theory), which presented the theory in a form that remains recognizable to physics students today.<sup>81</sup> During the course of these deeper explorations into quantum theory, believing that a new mathematical formalism could provide a way to further generalize quantum physics, Jordan—with assistance from mathematician John von Neumann and physicist Eugene Wigner—ended up discovering a new branch of non-associative algebras, which would later be termed “Jordan algebras.”<sup>82</sup> (Because non-commutative algebras, in

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<sup>79</sup> See for example Beyerchen, *Scientists under Hitler*, 37–39, 168–76; Gerhard Rammer, “Die Nazifizierung und Entnazifizierung der Physik an der Universität Göttingen” (Universität Göttingen, 2004), 36–70.

<sup>80</sup> See again Schweber, *QED and the Men Who Made It: Dyson, Feynman, Schwinger, and Tomonaga*, 5; Dittrich, “The Cofounder of Quantum Field Theory.”

<sup>81</sup> Pascual Jordan, *Anschauliche Quantentheorie: Eine Einführung in die moderne Auffassung der Quantenerscheinungen* (Berlin: Verlag von Julius Springer, 1936). On this textbook, whose content connected both to Jordan’s philosophical and political programs, see in particular Howard, “Quantum Mechanics in Context: Pascual Jordan’s 1936 *Anschauliche Quantentheorie*.”

<sup>82</sup> It is interesting that Jordan was memorialized for his contributions in mathematics, with “Jordan algebras,” yet ironically received no similar commemoration in physics. (Nearly all of his collaborators in physics have their names attached to a discovery, method, or principle—see e.g. the Heisenberg uncertainty principle, the Born-Oppenheimer approximation, Pauli exclusion principle, etc.) Unsurprisingly, it is easy for a scientist to be forgotten in their field when they have no eponymous theorem or discovery for students to learn.

the form of matrix algebra, had been a critical component to the first quantum revolution of the 1920s, Jordan believed that non-associative algebras could provide a path forward for quantum field theory.) Though Jordan algebras ultimately proved inapplicable in physics, they continue to be an object of study for mathematicians to this day.<sup>83</sup>

Despite this continued work on quantum theory, Jordan's primary focus as a physicist gradually began to shift in the early 1930s; like many physicists of his generation, he became increasingly fascinated by biophysics in this period.<sup>84</sup> During the 1930s and 1940s, Jordan attempted to found what he termed "quantum biology," essentially a biophysics before the founding of molecular biology. Quantum biology centered on Jordan's own pet "amplifier theory" (*Verstärkertheorie*), through which certain "steering centers" in an organism would "amplify" quantum interactions on the microscopic level into macroscopic free will.<sup>85</sup> Norton Wise, among others, notes that this theory had a fascist analogy—the steering center in the organism is like the *Führer* "steering" the *Volk*.<sup>86</sup> Nevertheless, in his characteristically idiosyncratic manner, one of the groups Jordan attempted to win over to his theory was the largely left-leaning Vienna Circle.<sup>87</sup> Ultimately,

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<sup>83</sup> For more on Jordan algebras and the story behind their discovery, see Chapter 2. For a mathematical history and overview of Jordan algebras, see Kevin McCrimmon, *A Taste of Jordan Algebras* (New York: Springer, 2004).

<sup>84</sup> This began in 1932; see Pascual Jordan, "Die Quantenmechanik und die Grundprobleme der Biologie und Psychologie," *Die Naturwissenschaften* 20, no. 45 (November 4, 1932): 815–21. Other famous physicists who became interested in biology include Max Delbrück—who changed fields completely, becoming a molecular biologist—and Erwin Schrödinger, who published the famous *What Is Life?* in 1944. See for example Schrödinger, *What Is Life?* (Cambridge, England: Cambridge University Press, 1944)?

<sup>85</sup> Beyler's dissertation remains the most extensive study of Jordan's biophysical theories; see in particular Beyler, "From Positivism to Organicism," 310–96; see also Beyler, "Targeting the Organism."

<sup>86</sup> Wise, "Pascual Jordan: Quantum Mechanics, Psychology, National Socialism," 237–40.

<sup>87</sup> Jordan was almost certainly the only member of the Nazi Party to publish in the Vienna Circle's house journal, *Erkenntnis*; see P. Jordan, "Quantenphysikalische Bemerkungen zur Biologie und Psychologie," *Erkenntnis* 4 (1934): 215–52; P. Jordan, "Ergänzende Bemerkungen über Biologie und Quantenmechanik," *Erkenntnis* 5 (1935): 348–52. However, the Vienna Circle was not very receptive to his theories; they largely considered Jordan's ideas as an attempt to "save" vitalism, even if Jordan denied being a vitalist; see Edgar Zilsel, "P. Jordans Versuch, den Vitalismus quantenmechanisch zu retten," *Erkenntnis* 5 (1935): 56–64. But despite their political and scientific differences, Jordan and the Vienna Circle remained in friendly contact up



though, Jordan is most remembered in biology for having stimulated scientific development by proposing theories now considered to be “wrong.”<sup>88</sup> (For more on the political aims of Jordan’s biophysical theories, see Chapter 3.) At the very end of the war, in 1944, after the Nazi government had been won over to support modern physics—much more will be said on this in Chapters 2 and 3—Jordan was finally named to a prestigious post, as the successor to Max von Laue at the University of Berlin. Yet with German defeat apparent to all, it was no longer such a plum position. Jordan was evacuated to Göttingen with his research laboratory in early 1945 (see Chapter 4).

After World War II, despite attempts by Soviet occupation authorities to recruit Jordan to work in a biophysical institute in what would become East Berlin (see again Chapter 4), Jordan—as of 1947, professor in Hamburg—turned rather quickly in the late 1940s to another completely different field of physics: general relativity and astrophysics. He focused almost exclusively on general relativity after about 1950, and was one of the only physicists in West Germany to work on the topic during the field’s “renaissance” in that decade. Characteristically, Jordan’s work in general relativity was highly mathematical and again idiosyncratic; his main contributions to the field’s resurgence came in what is known as scalar-tensor theory. He independently developed a version of what would later be known as Brans-Dicke (or Jordan-Brans-Dicke) theory, an alternative to Einstein’s general relativity in which the gravitational constant,  $G$ , is allowed to vary.<sup>89</sup> (The idea that  $G$  could vary, first posited by Paul Dirac in his 1937 “Large Numbers Hypothesis,” was what

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to the start of the war; see Chapter 2. He resumed collegial relations with many of them after the war, too; see for example Reichenbach to Jordan, February 23, 1950, HRP, Box 37, Folder 28.

<sup>88</sup> See for example Linus Pauling and Max Delbrück, “The Nature of the Intermolecular Forces Operative in Biological Processes,” *Science* 92, no. 2378 (July 26, 1940): 77–79, which was prompted by articles by Jordan.

<sup>89</sup> On scalar-tensor theories, see in particular Hubert Goenner, “Some Remarks on the Genesis of Scalar-Tensor Theories,” *General Relativity and Gravitation* 44, no. 8 (August 2012): 2077–97, here particularly 2078–2083. See also the reflections by Carl H. Brans, “Scalar-Tensor Theories of Gravity: Some Personal History,” *AIP Conference Proceedings* 1083 (December 4, 2008): 34–46.

interested Jordan in general relativity in the first place. He actually first began working in this direction in the late 1930s and returned to it again at the very end of the war.<sup>90</sup>)

In the 1960s and 1970s, Jordan's interest in general relativity led him into geophysics; one consequence of his theory of varying gravity implied that the Earth would theoretically expand—albeit at an extremely slow rate.<sup>91</sup> While today this may seem like an outlandish theory, at the time the idea of the “expanding Earth” was seen as a possible alternative to continental drift in explaining the planet's formation. Ultimately, as noted above, Jordan never succeeded in convincing geophysicists to take his theories seriously.<sup>92</sup> Indeed, the expanding Earth hypothesis has been ruled out today. In the end, Jordan's greatest contribution to general relativity after the war was probably training a generation of West German physicists in Hamburg who later became influential in the field, particularly Jürgen Ehlers, Engelbert Schücking, and Wolfgang Kundt. He was made professor emeritus in Hamburg in 1970, but Jordan remained relatively active in his retirement, publishing further on the expanding Earth. As with many scientists, in the twilight of his life, Jordan also published works reminiscing about friends and colleagues during the quantum revolution.<sup>93</sup> He died in Hamburg in 1980.

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<sup>90</sup> Pascual Jordan, “Die physikalischen Weltkonstanten,” *Die Naturwissenschaften* 25, no. 32 (August 6, 1937): 513–17; Pascual Jordan, “Zur empirischen Kosmologie,” *Die Naturwissenschaften* 26, no. 26 (July 1, 1938): 417–21; Pascual Jordan, “Bemerkungen zur Kosmologie,” *Annalen der Physik* 428 (1939): 64–70; Pascual Jordan, “Über die Entstehung der Sterne: I. Grundlagen der Theorie,” *Physikalische Zeitschrift* 45, no. 7/8 (October 1944): 183–90; Pascual Jordan, “Über die Entstehung der Sterne: II. Veränderliche Sterne,” *Physikalische Zeitschrift* 45, no. 13–15 (January 1, 1945): 233–44. For Dirac's original article on the Large Numbers Hypothesis, see P. A. M. Dirac, “The Cosmological Constants,” *Nature* 139, no. 3512 (February 20, 1937): 323.

<sup>91</sup> Pascual Jordan, *Die Expansion der Erde: Folgerung aus der Diracschen Gravitationshypothese*, Die Wissenschaft 122 (Braunschweig: Friedrich Vieweg & Sohn, 1966); an English translation was published as Pascual Jordan, *The Expanding Earth: Some Consequences of Dirac's Gravitation Hypothesis*, trans. Arthur Beer, International Series of Monographs in Natural Philosophy 37 (New York: Pergamon Press, 1971).

<sup>92</sup> Kragh, “Pascual Jordan, Varying Gravity, and the Expanding Earth”; Kragh, *Varying Gravity*.

<sup>93</sup> See for example Pascual Jordan, *Begegnungen* (Hamburg: Stalling, 1971).

## **Intervention I: Jordan's Image in Historical Memory**

In this dissertation there will be two simultaneous narratives, which are difficult—sometimes impossible—to disentangle from each other. The first is Jordan's life itself, “as it really was,” in the sense of Leopold von Ranke's prescription for historians to tell history as it actually was at the time it happened. Much of Chapters 1 to 3 fall exclusively into this category, along with some of Chapter 4 and 5. (Of course, even this aspect of the dissertation is far more than a simple narrative history of Jordan's life; it uses his life to make arguments about the nature of science under authoritarianism, the structure of the Nazi state, science under Nazism, and discrimination in the early-twentieth century scientific community. See below for more on these historiographical interventions.)

But this dissertation also tells a second story, one which is just as—if not more—important than the first: namely, the tale of how it was that Jordan received the image he still holds in historical memory today, that of an unrepentant, remorseless Nazi, as the bad apple among the heroic quantum physicists. In particular, I argue that Jordan has gone down in historical memory as a villain largely due to his decision to reenter politics in the late 1950s. It was only then that Jordan viciously attacked colleagues in physics who spoke out against possible West German nuclear armament, deriding them as naïve fools. Stridently supporting Konrad Adenauer's Christian Democratic Union, Jordan was elected to the West German parliament. Yet his colleagues responded by unearthing and disseminating Jordan's writings from the Nazi period, exposing them to a new postwar audience. Without relativizing Jordan's decisions and writings during the Third Reich, I thus demonstrate that actions taken long after Hitler's death often dictated who is collectively remembered as an “unapologetic Nazi.”

For what is so interesting and revealing about the Jordan case is that among academic physicists, it was Jordan—and Jordan alone—who received this reputation.<sup>94</sup> In contrast, other academic physicists who remained in Germany under National Socialism, including Werner Heisenberg, Carl Friedrich von Weizsäcker, and Walther Gerlach, among others—who followed the same prescription for science and scientists under Hitler espoused by Jordan (see Chapter 2)—maintained mostly-pristine reputations into the 1990s and 2000s. Many of these figures still have a coterie of defenders today. Yet they all worked on the highly controversial German nuclear project during World War II; after the war they all—to varying degrees—attempted to subtly reinforce the conspiracy theory that German scientists had “chosen” to deny nuclear weapons to Hitler.<sup>95</sup> For them, Jordan was a convenient counterexample of an “unrepentant Nazi.” At a time when many of these scientists were crystallizing and reinforcing their reputations as secret “resisters” to the Nazi regime, Jordan was a convenient scapegoat.

When I do delve into questions of historical memory, though, it is crucial to keep in mind that I am at no point attempting to “rehabilitate” Jordan or claim that he is some falsely maligned hero or “resister” to Nazism. (Chapters 1 to 3 should make this very clear.) As I note in Chapters 3, 4, and 5, Jordan was certainly a Nazi, and he was complicit in the regime’s crimes. This has been known for a long time—as I note in Chapter 5, since the late 1950s.<sup>96</sup> With this analysis of historical

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<sup>94</sup> As will be seen in Chapter 4, the movement of virulently anti-Semitic Nazi physicists known as *deutsche Physik*, who wished to ban the teaching of relativity theory and quantum mechanics as “Jewish physics,” are also remembered as unapologetic Nazis. Yet they were hacks who used science to advance a political program; Jordan, as an academic physicist, falls into a different category than the *deutsche Physiker*. For more on the aims of *deutsche Physik*, a group united more than anything by its hatred of Einstein and deep anti-Semitism, see Chapters 2 and 3.

<sup>95</sup> Unlike these colleagues, for reasons that are unclear, Jordan was never involved with the nuclear project—perhaps because he and Heisenberg had an uneasy relationship.

<sup>96</sup> For an expose of Jordan’s crimes in the scholarly literature, see for example Wise, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism.”

memory, I probe deeper than the surface-level hero/villain dichotomy: namely, I attempt to piece together what exactly about Jordan people—his colleagues and historians—chose to remember, and what about him—and about themselves—they chose to forget.<sup>97</sup> In this, I take inspiration from what historian Alan Beyerchen wrote 25 years ago:

Scientists are assumed to be those called to partake of the rarefied atmosphere of lasting achievement beyond our vale of socially changeable circumstances. When they reveal unpleasantly human traits such as moral compromise or opportunism, it can seem that they have betrayed a special moral trust... Yet it should be unsurprising that scientists are no more worthy than military officers, bureaucrats, industrialists, clergymen, journalists, or members of any other professional group one could name... Scientists take no oath requiring a special moral consciousness—professional integrity is just expected to reflect some degree of personal integrity, even though lasting contribution to science can actually demand very little of either. Future study of Nazism and science ought perhaps to focus less on condemnation, as important as it remains...<sup>98</sup>

Simply put, I use Jordan's image in historical memory to tell the story of a field's self-invention—and how Jordan became practically the sole “fall guy” for German physicists.<sup>99</sup>

### **Intervention II: Authoritarian Regimes Can Support “Good” Science**

The second major historiographical intervention made by my dissertation is its conclusive demonstration that authoritarian regimes can produce “good,” top quality science—equivalent to that produced by the scientific enterprise in a liberal democracy. This is admittedly not a new intervention. This evidence is consistent with the conclusions of revisionist scholars who, since the 1990s and 2000s, have demonstrated that there is no correlation between liberal democracy and a successful scientific enterprise.<sup>100</sup> Much of this work has focused on the many successes of the well-

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<sup>97</sup> For this formulation of the dichotomy between Rankean history and historical memory, I am indebted to a passing line in a review by historian Alan Allport. See Alan Allport, review of *Britain's War: Into Battle, 1937–1941*, by Daniel Todman, *The Journal of Modern History* 90, no. 3 (September 2018): 696–98, here 697.

<sup>98</sup> Beyerchen, “What We Now Know About Nazism and Science,” 634.

<sup>99</sup> Again, I am not including *deutsche Physik* here, because this group falls into a different category.

<sup>100</sup> Yakov M. Rabkin and Elena Z. Mirskaya, “Science and Totalitarianism: Lessons for the Twenty-First Century,” in *Science and Ideology: A Comparative History*, ed. Mark Walker (New York: Routledge, 2003), 17–34.

developed scientific enterprise in the Soviet Union, using records that were opened after the fall of communism.<sup>101</sup> (These revisionist scholars were arguing against a Cold War-era claim that democracy was inherently better for science than authoritarian political systems like Nazism and communism.<sup>102</sup>)

My study of Jordan extends this revisionist hypothesis to the Nazi regime as well, where the idea—abetted after the war, as we will see, by German physicists themselves—that the Nazis strangled science has persisted. The impact of Nazi racist policies on the German scientific enterprise should not be underestimated; the purge of Jewish scholars caused immeasurable damage to German science. Yet many highly competent scientists remained in Germany—Jordan being a case in point. And many of these world-class scientists—again, including, Jordan—were more than willing to work with the regime. Jordan, for example, consistently attempted to convince the regime that science could help Germany win wars and was thus worthy of lavish financial support.

Moreover, I extend this revisionist claim to not just science itself, but theories of how the scientific enterprise should be organized. As I show in Chapter 3, Jordan, a member of the Nazi Party and a committed German nationalist—who agreed with the vast majority of the Party’s platform—conceptualized the structure of scientific organization that we would now term “big

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<sup>101</sup> David Holloway, *Stalin and the Bomb: The Soviet Union and Atomic Energy, 1939-56* (New Haven: Yale University Press, 1994); Alexei B. Kojevnikov, *Stalin’s Great Science: The Times and Adventures of Soviet Physicists* (London: Imperial College Press, 2004).

<sup>102</sup> See for example Samuel A. Goudsmit, *Alsos* (1947; repr., Woodbury, NY: AIP Press, 1996). This same argument—that science functions best under democracy—was actually first used in reaction to fascism and Nazism; see for example Henry E. Sigerist, “Science and Democracy,” *Science & Society* 2, no. 3 (1938): 291–99; Robert K. Merton, “A Note on Science and Democracy,” *Journal of Legal and Political Sociology* 1 (1942): 115–26. These authors were reacting to the *deutsche Physik* movement; as we will see, this group’s influence waned dramatically during the war years. As revisionist historians have noted, this argument that democracy was “better” for science was inherently political, made to demonstrate the supposed superiority of the “Western” system over communism. See for example Alexei B. Kojevnikov, *Stalin’s Great Science: The Times and Adventures of Soviet Physicists*, *History of Modern Physical Sciences* 2 (London: Imperial College Press, 2004), xi–xvi.

science” in the middle of World War II. This shift in the nature of science would ultimately emerge in the United States during and after the war.<sup>103</sup> (The Manhattan Project to build an atomic weapon is often viewed as the first incidence of modern-day “big science.”) As I note, Jordan even came to the same conclusions about the type of research that should be emphasized in such a system as the Americans did after the war: so-called “basic” science, or science performed without thought of its possible applications, should be preferred over “applied” science.<sup>104</sup>

Yet Jordan’s ideas for science came with a Nazi veneer; they were coded in Nazi-speak. They were part of Jordan’s attempts to woo regime support for science and position himself as a suitably Nazified leader for a science befitting the “Greater German Reich.” (Again, see Chapter 3 for more details on this remarkable story.) And while the Nazi regime failed to act on Jordan’s plan—and the course of the war fortunately turned against Germany—I conclude that this failure was more contingent than it may seem. Something along Jordan’s lines—i.e., scientific research on a grandiose scale, with military applications—might have well been constructed in Europe under the Nazis, had a few things gone differently. The fact remains that Jordan, a committed opponent of democracy (at least before 1945), presciently foresaw this massive shift in the scientific enterprise, thus providing another troubling example that there is nothing irreconcilable between science and authoritarianism.

### **Intervention III: “Failed Collaboration”**

My dissertation makes a third historiographical intervention, one about the nature of the Nazi regime itself. Since the 1990s, historians have deconstructed, and demolished, the formerly prevalent paradigm of Germans as either resisters or collaborators with the Nazi regime. As many

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<sup>103</sup> For the article that coined the term “big science,” see Alvin M. Weinberg, “Impact of Large-Scale Science on the United States,” *Science* 134, no. 3473 (July 21, 1961): 161–64.

<sup>104</sup> Jordan used the term “pure [*reine*]” instead of “basic”; the idea was the same. See Pascual Jordan, “Naturwissenschaft im Umbruch,” *Deutschlands Erneuerung* 25, no. 9 (September 1941): 452–58, here 453-454.

have shown—and as will be seen in Chapter 4 for the physics community—the resistance/collaboration binary is a false dichotomy, one which was often employed by Germans after the war as a way to foist the blame on a small group of criminals. Historian Ian Kershaw, in particular, has emphasized how there was a wide spectrum of possible responses to the Nazi regime, delineating three categories. First is *resistance*, which he limits solely to those engaged in “organized attempts to work against the regime.”<sup>105</sup> This was an extremely small group of people, many of whom were murdered by the regime itself. Second, Kershaw identifies *opposition*, sort of a catch-all for all non-conforming activities under Nazism. Crucially, those who “opposed” Nazism in some ways often were unhappy only with parts of the regime, or the reality of the regime in practice; often opposition came from “individuals or groups broadly sympathetic towards the regime and its ideology.”<sup>106</sup> Finally, there is *dissent*, by far the largest category, the “frequently spontaneous” expressing of “discontent” which ran “counter” to Nazism in any way.<sup>107</sup> Kershaw succinctly sums up the relationship between the three categories: “‘Dissent’ could become ‘opposition’ but did not necessarily do so; while ‘resistance’ was ‘opposition’ of a distinctive and fundamental kind, separable from all other forms.”<sup>108</sup>

As we will see, in Chapters 2 and 3, Jordan clearly fell into the category of “opposition” to the Nazi regime. While he was unhappy with some elements of Nazi rule, particularly the ejection of “good” Jewish scientists like his mentors Max Born and James Franck, this was never enough to make him oppose the regime. (Chapters 1 and 2 will make clear the many ways in which Jordan’s

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<sup>105</sup> Ian Kershaw, *Popular Opinion and Political Dissent in the Third Reich: Bavaria 1933-1945* (Oxford: Clarendon Press, 2002), 3.

<sup>106</sup> Ibid.

<sup>107</sup> Ibid., 3–4.

<sup>108</sup> Ian Kershaw, *The Nazi Dictatorship: Problems and Perspectives of Interpretation*, Bloomsbury Revelations Edition (London: Bloomsbury, 2015), 240.



agenda harmonized with that of the Nazis.) In fact, from the moment the Nazis took power until the final stages of World War II, Jordan attempted to convince the Nazis that science could win wars and was thus worthy of support—hinting in print at the potential for tremendous weaponry through science.<sup>109</sup> As unpublished documents make clear, Jordan’s ultimate goal with these attempts at persuasion was to be named a sort of *Führer* of physical sciences in the Third Reich; ever the elitist, he was mostly disappointed that the regime was not listening to him.<sup>110</sup> (What made it even worse was that they often seemed to listen to scientific hacks, the group of virulently anti-Semitic Party members known as *deutsche Physik*, who wished to ban the teaching of relativity theory and quantum mechanics as “Jewish physics.”)

Yet though the regime eventually began to support academic physicists during the war, Jordan’s pleas went unanswered. He remained on the periphery of the regime, for he was never able to find a power base in the polycratic Nazi regime that would support his plans and his personal career ambitions.<sup>111</sup> (Of course, this proved fortunate for him after the war.) Jordan was thus left what I term a “failed collaborator.” This category—a subset of Kershaw’s definition “opposition” to Nazism—should be applicable far beyond Jordan. It seems particularly fitting for many cases in the conservative, nationalist elite who distrusted the Nazi “rabble” yet agreed with many of their aims. Their disillusionment with the regime largely stemmed from the fact that it refused to listen to them.<sup>112</sup>

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<sup>109</sup> See for example Pascual Jordan, *Physikalisches Denken in der neuen Zeit* (Hamburg: Hanseatische Verlagsanstalt, 1935).

<sup>110</sup> See Chapter 3.

<sup>111</sup> Peter Hüttenberger, “Nationalsozialistische Polykratie,” *Geschichte und Gesellschaft* 2, no. 4 (1976): 417–42.

<sup>112</sup> Martin Heidegger and Carl Schmitt could also be termed “failed collaborators” under this definition. Their disillusionment also stemmed from the fact that the regime refused to listen to them. For more on disappointment with Nazism from conservative or *völkisch* intellectuals, see Chapter 2; see also Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 273–337.

#### Intervention IV: Jordan's Career-Hampering Stutter

Other historians of science have noted that Jordan had a speech impediment, a severe stutter. Yet this is often noted in passing or only briefly. Beyler, for example, in his dissertation, concludes that the “verdict” about the stutter was “mixed,” and that it was unclear if it had truly hampered his career.<sup>113</sup> With additional evidence unavailable to prior scholars, I argue that Jordan’s stutter was, in fact, a severe detriment to his career, particularly in the prewar years. Discrimination against those with a stutter was rampant in stodgy German academia before 1945. Given the nature of the scientific world in the early twentieth century, I argue that the stutter made it very difficult for him to build an international reputation in the years before the war. Namely, a large part of scientific reputation-building before the age of airplane travel was embarking on long trips to give guest lectures at foreign universities. This was a crucial part of scientific networking in the early twentieth century; Heisenberg, for example, made several lecture tours in the United States before World War II. Jordan was rarely invited to speak, and never crossed the Atlantic before the war; it is highly likely that many international scientists were unaware of him.

In emphasizing Jordan’s stutter, I use—to a limited extent—a disability studies framework, though even in that field, little attention has been given to “communicative disabilities” like stuttering.<sup>114</sup> Whether or not a stutter should even be viewed as a disability was, for a long time, viewed as an open question by many scholars.<sup>115</sup> (This debate now seems mostly settled, with the understanding that communicative disabilities are indeed disabilities, even if the experience of such a disability is far different from the experience of disability that is physical in nature.) But the

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<sup>113</sup> Beyler, “From Positivism to Organicism,” 35.

<sup>114</sup> See in particular Joshua St. Pierre, “The Construction of the Disabled Speaker: Locating Stuttering in Disability Studies,” *Canadian Journal of Disability Studies* 1, no. 3 (2012): 1–21.

<sup>115</sup> As St. Pierre puts it: the stutterer has a “liminal nature...[as one] who is neither clearly abled nor disabled.” *Ibid.*, 3.

conclusion from the evidence is clear: Jordan's career was hampered at nearly every turn by his communicative disability. Moreover, the ways in which it hampered his abilities to make international connections and build a reputation were part of the reason why he never won the Nobel Prize.

### **Thesis Outline**

This dissertation is comprised of this introduction, a brief conclusion, and five body chapters, which each depicting an epoch of Jordan's life. They are organized roughly in chronological order, but as this dissertation is not simply a chronological telling of Jordan's life, I will occasionally jump back or forth through the years as necessary. Each chapter relates an episode of Jordan's life, yet they work in concert to present the arguments detailed above. I now briefly summarize the body chapters.

Chapter 1, "*An Unbelievably Queer Duck*": *The Outsider Prodigy, 1902-1933*, depicts Jordan's formative years, his rise to fame in the field of theoretical physics, and his political radicalization in the early 1930s. It first describes Jordan's parents, emphasizing the imposing and domineering personality of his father, Ernst Jordan. This Jordan was a landscape painter in the conservative German tradition who vehemently and publicly opposed modernist trends in fin de siècle art. After reconstructing Jordan's adolescent experience at his *Gymnasium*, the *Bismarckschule*, a bastion of Prussian discipline, it then depicts his severe stutter, emphasizing the pervasive and life-long discrimination Jordan faced from this disability. Above all else, it was the stutter that made Jordan a life-long outsider in his field of theoretical physics; it probably cost him a chance at the Nobel Prize. The chapter then turns to Jordan's political radicalization in the late 1920s and early 1930s. Employing newly-discovered articles published by Jordan under the pseudonym "Ernst Domeier" in far-right publications like *Blut und Boden*, along with private correspondence between Jordan and

various *völkisch* intellectuals—also previously unknown to scholars—this section details his extensive connections with the anti-democratic German *völkisch* far-right before 1933. In this way, this section also details Jordan’s anti-Semitism.

Chapter 2, *Accommodations, Alliances, and Representations, 1933-1939*, describes how Jordan experienced the first Nazi years. Elated when Hitler took power in early 1933, Jordan quickly joined the Party; yet this early infatuation with the regime soon gave way to private disillusionment, as he realized that the Nazis would not provide the mystical ‘renewal’ of German society he longed for. Moreover, in Jordan’s own field, the Nazis chose to elevate a group of Party hacks—the opponents of relativity and quantum theory known as *deutsche Physik*—to positions of great power. Though Jordan was bitterly disillusioned with the regime’s realities and despised *deutsche Physik*, he nevertheless approved of most regime aims and continued to hold out hope that Hitler’s state could be convinced to support science if its military value were demonstrated. It was for this reason that Jordan—like many of his *völkisch* intellectual friends—continued to actively and publicly propagandize for Nazi Germany. Jordan nevertheless managed to play a delicate game, convincing his friends abroad—including German-Jewish émigrés—that he only joined the Party to protect science; the final section of this chapter details how the international physics community largely accepted this explanation and continued to see Jordan as a member in good standing until and even into the war years.

Chapter 3, *A Failed Collaborator: Jordan, the Third Reich, and Dreams of Big Science, 1939-1945*, uses a detailed case study to shed light into Jordan’s complex negotiations with the Nazi state during the war years. As the regime radicalized exponentially, Jordan’s strategy largely remained the same: he believed that if he convinced the appropriate high-ranking Nazis that the mathematical sciences had military and propaganda value, they would see the light and reward science financially. As the

one who “enlightened” them and revealed the treachery of *deutsche Physik*, Jordan would then be in a position to steer scientific administration in the “new Germany.” Using an extensive and deeply revealing collection of wartime correspondence with biologist Adolf Meyer-Abich previously unknown to scholars, I examine this strategy through the case of the abortive scientific journal *Physis*. This journal, founded by Jordan and Meyer-Abich in late 1941 when Nazi Germany appeared victorious, was intended to be a premier international journal for all sciences suitable for the new “German-led Europe” forged by conquest. Yet the journal was simultaneously a vehicle for institutionalizing Jordan’s remarkably prescient vision of the future of the scientific enterprise in Nazi Germany—a vision nearly identical to what is now termed “big science,” yet with an added infusion of the regime’s ideology. Accompanied by a campaign of intrigue behind the scenes, this chapter describes how the two attempted—and failed—to find a patron for *Physis* and big science in various areas of the Nazi state. Ultimately, these attempts to wield the regime’s power in his favor failed miserably, as did the Nazi gambit at European conquest, leaving Jordan as a “failed collaborator.”

Chapter 4, *Denazification, Rehabilitation, and Rejuvenation, 1945-1957*, illustrates the canny ways in which Jordan rehabilitated himself after the war, in large part by playing the occupying powers against each other. Left unemployed in 1945, it seemed at first as if Jordan might end up in East Berlin, where the educational authorities in the Soviet occupation zone avidly attempted to recruit him; this chapter analyzes this episode in never-before-seen detail. Yet Jordan ultimately ended up settling in the West, where he was exonerated after a long and drawn out process of legal “denazification.” I analyze Jordan’s denazification in detail on the basis of the files of the proceeding, which were long thought to be lost. I then turn to an analysis of how Jordan managed to exculpate himself in the eyes of his colleagues and friends who had emigrated to avoid Nazi

persecution. Most of them eventually came to believe Jordan's explanation that he joined the Nazi Party to save physics; they had no knowledge of his wartime actions or his pseudonymous "Domeier" articles published before 1933. By the mid-1950s, Jordan had successfully reentered the international scientific community, becoming a major player in the emerging field of general relativity.

Chapter 5, *The Belated "Birth" of a Nazi: Jordan, the Cold War, and Remembrance, 1957-1970*, depicts how Jordan reemerged on the political scene in the late 1950s in West Germany as a Cold Warrior supporting West German Chancellor Konrad Adenauer. In 1957, against the advice of friends, Jordan reentered politics and attacked his colleagues who spoke out against possible West German nuclear armament in the "Göttingen Manifesto," denouncing them as political fools. These colleagues retaliated by disseminating Jordan's Nazi-era writings praising the regime; the ensuing outcry ensured that Jordan would always be remembered as a Nazi. Yet as I demonstrate, many of these same colleagues had followed the same course of action—if somewhat less vocally—as Jordan during the Third Reich; they too had justified science on its military potential under Hitler. I demonstrate that for these colleagues, Jordan "became" an "unrepentant Nazi" only when he denounced them at the height of the Cold War. The final section of this chapter details how Jordan's postwar political career led him into the crosshairs of the East Germans, who now saw Jordan as an example par excellence of the reactionary West German government—even though they too had tried to recruit him immediately after the war. Using newly released files from the East German intelligence service, the infamous *Stasi*, I demonstrate that Jordan's reputation as an unrepentant fascist—how he is usually remembered today—was formed on both sides of the Iron Curtain.

## Chapter 1: “An Unbelievably Queer Duck”: The Outsider Prodigy, 1902–1933

“[H]e was really an unbelievably queer duck with tics and mannerisms and...apparent brutalities, which put people off very much...”

–J. Robert Oppenheimer, about Pascual Jordan in the 1920s<sup>1</sup>

We know next to nothing about Pascual Jordan’s childhood, his upbringing, and his school years. Only three sources even address this formative period in Jordan’s life: two short autobiographical essays by Jordan dating from the 1970s, as well as the comments Jordan made to Thomas Kuhn on his education in physics during his 1963 interview for the Archive for the History of Quantum Physics project.<sup>2</sup> No contemporary records directly relating to Jordan, i.e. grades or reports on his progress from his *Gymnasium*, the *Bismarckschule*, seem to exist.<sup>3</sup> As outlined in the Introduction, little from this period seems to have survived aside from a few photographs and documents, all of which are in the hands of Jordan’s family.

In this chapter, then, I first reconstruct Jordan’s family life—his father, also named Ernst Pascual Jordan, was a relatively famous painter.<sup>4</sup> Then, using records available in Hannoverian archives, I reconstruct what Jordan’s time in *Gymnasium* may have resembled. In both of these two sections, as we have few sources, I allow myself a certain historical creativity when reconstructing what Jordan’s life probably looked like. I then turn to Jordan’s rise to fame in the field of quantum physics, arguing that his stutter severely hampered his career. And in the closing section of this

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<sup>1</sup> Interview of Robert Oppenheimer by Thomas S. Kuhn, November 20, 1963, AHQP.

<sup>2</sup> Interviews of Pascual Jordan by Thomas S. Kuhn on June 17, 18, 19, and 20, 1963, AHQP; Pascual Jordan, “Frühe Liebe zum Mond,” in *Begegnungen* (Oldenburg: Stalling, 1971), 115–22; Pascual Jordan, “Pascual Jordan,” in *Philosophie in Selbstdarstellungen*, ed. Ludwig J. Pongratz, vol. 1 (Hamburg: Felix Meiner Verlag, 1975), 194–218.

<sup>3</sup> A search in the *Niedersächsisches Landesarchiv* and the *Stadtarchiv Hannover* revealed no records directly pertaining to Jordan, though, as will be seen, some more general records do exist. An inquiry to the *Bismarckschule* itself regarding historic records went unanswered.

<sup>4</sup> Our Jordan’s name was always spelled Pascual, despite it often being misspelled as Pasqual or Paskual. Some sources, however, list Jordan’s father’s middle name as Pasqual; see below. The family tradition was for the first-born son to be named Pascual or Pasqual, after the founder of the Jordan line; see below.

chapter, I detail Jordan's political radicalization, and the extensive network of contacts he developed on the German *völkisch* far-right during the dying days of the Weimar Republic.

### Early Life and Family

Ernst Pascual Wilhelm Jordan was born on October 18, 1902, into an upper middle-class family in Hannover, Germany. Despite the ordering of his names, Pascual was used as Jordan's given name from birth; Ernst appeared only on official documents (and in his pseudonym, to be discussed below), and Wilhelm was often omitted even on those.<sup>5</sup> Jordan received the first name "Pascual," rare in Germany at the time, according to family tradition: the first-born son was always named Pascual after the family's forefather. This Jordan—who was actually named Pascual Jorda—was originally Spanish, from the area near the southern Spanish city Alcoy, and he fought with the British against Napoleon in the Peninsular War in the early 1800s. At the end of the Napoleonic Wars, this Jorda somehow ended up in Hannover, perhaps because at the time it was also ruled by the British monarchs. At some point, the Spanish name Jorda became Germanized to Jordan, yet the family continued to name their first-born sons Pascual after the founder of the branch.<sup>6</sup>

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<sup>5</sup> Many Germans of Jordan's day—and many to this day—had several given names. As in Jordan's case, the first given name was (and is) often not the *Rufname*, or the name that the person commonly went by in daily life. His father went by Ernst, and the name Wilhelm probably came from the family—or from the German Emperors—and appears only rarely even in official documents. See for example Personalakten Jordan 1, HUA, Bl. 1-2, without the name Wilhelm; or "Fragebogen über die Abstammung," dated February 16, 1942, Personalakten Jordan 1, HUA, Bl. 114, which includes the name Wilhelm. Interestingly, in Jordan's denazification file, he listed a fourth given name—Domeier. Yet this is the only place the name "Domeier" appears; it does not seem that Domeier, his mother's maiden name, was legally part of his name. This seems rather to be an oblique acknowledgement of Jordan's *völkisch* pseudonym, "Ernst Domeier"—a way for him to creatively claim to have acknowledged the pseudonym while not spelling it out entirely for the occupying forces. (The question asked for names "by which you have been known.") See StaH, 221-11, 68600 KAT, "Military Government of Germany, Fragebogen," p. 1. For more on the Domeier pseudonym, see below.

<sup>6</sup> For this family history, see Anita Ehlers, "Pascual Jordan: Versuch eines Lebenslaufs," undated, unpublished manuscript (circa 2004), p. 1–2. I thank Anita Ehlers for sharing this manuscript with me.



Jordan's own father, Ernst Pascual (sometimes written as Pasqual) Jordan (1858-1924), seems to have been the grandson of this first Pascual Jorda who moved from Spain, and he was a domineering personality in his own right.<sup>7</sup> This Jordan—whom I will call Ernst to avoid confusion—was an artist, primarily a painter, who achieved renown in his hometown of Hannover. Born in 1858, Ernst trained at the Hannover School of Decorative Arts (*Kunstgewerbeschule Hannover*) in decorative painting and theater painting.<sup>8</sup> In 1880, he moved to Berlin, where he studied at the Berlin School of Decorative Arts and the Berlin Academy of Arts; he then spent years in Paris and Rome before returning to Hannover in 1887. Surviving paintings from this period demonstrate Ernst's artistic proficiency in depicting landscapes and details in Roman and other classical ruins.

Returning to Hannover, Ernst joined the Hannoverian Artists' Association (*Hannoverische Künstlerverein*), the main organization for local artists, eventually becoming one of its leading members. He became known for his decorative painting of civic buildings, churches, and public theaters in Hannover—many of which would later be destroyed during World War II. By 1897, he was named professor at the *Technische Hochschule* in Hannover, where he taught drawing and architectural painting.<sup>9</sup> In the fin de siècle battle between more avant-garde artists and traditionalists—Hannover had a modern art movement analogous to the secession movements in Berlin, Munich and Vienna—Ernst was firmly in the camp of the conservatives. He was a powerful figure in the Hannoverian Artists' Association, and through this position, retained significant influence in the local artistic sphere until his death in 1924—even after World War I and the collapse

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<sup>7</sup> His full name was Ernst Karl Pascual Jordan. See for example "Fragebogen über die Abstammung," dated February 16, 1942, Personalakten Jordan 1, HUA, Bl. 114. Some sources list Ernst Jordan's middle name as Pasqual; see for example Hugo Thielen, "Jordan, (2) Ernst Pasqual," in *Hannoversches biographisches Lexikon*, ed. Dirk Böttcher et al. (Hannover: Schlütersche, 2002), 189.

<sup>8</sup> The *Kunstgewerbeschule Hannover* was merged into the Hannover University of Applied Sciences and Arts [*Fachhochschule Hannover*] in 1971.

<sup>9</sup> Thielen, "Jordan, Ernst Pasqual."

of the German monarchy in 1918. To the end, Ernst opposed modern trends in art; during World War I, for example, he publicly denounced an attempt to found a sort of proto-secession movement in Hannover.<sup>10</sup> With such actions, Ernst Jordan seems to have earned the enmity of the city's younger avant-garde generation; one member of this group described him as the “chief” of the “[old] guard” in the stodgy Artists' Association, “the biggest pest in the artistic life of the city”; a man, in short, who had “no idea of what living art is.”<sup>11</sup> Another, artist and writer Karl Jacob Hirsch, recalled arriving at the *Kunstgewerbeschule* in Hannover to begin a course in art and being sorely disappointed to find a “stuffy” man who only painted “boring and conservative landscapes” teaching the introductory courses: Professor Jordan.<sup>12</sup>

By all accounts, Jordan was closer with his mother—whom I will describe below—than with his father. Even so—and even though Ernst died in 1924, when our Jordan was only 22—Ernst had a significant influence on Jordan's life. Our Jordan inherited Ernst's conservative political and aesthetic leanings, along with Ernst's willingness to denounce opponents publicly. Our Jordan perhaps also inherited his willingness to court controversy from his father, who did not shy from attacking avant-garde artists. At the very least, it seems no coincidence that our Jordan, under his *völkisch* pseudonym “Ernst Domeier,” attacked modern art and architecture in articles during the early 1930s.<sup>13</sup> (See below for more on the Domeier pseudonym.) It seems plausible that Jordan

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<sup>10</sup> Ines Katenhusen, *Kunst und Politik: Hannovers Auseinandersetzungen mit der Moderne in der Weimarer Republik*, Hannoversche Studien 5 (Hannover: Verlag Hahnsche Buchhandlung, 1998), 222–23.

<sup>11</sup> Christof Spengemann, quoted in *Ibid.*, 222.

<sup>12</sup> Karl Jakob Hirsch, *Quintessenz meines Lebens*, Die Mainzer Reihe 68 (Mainz: v. Hase & Koehler Verlag, 1990), 57.

<sup>13</sup> See for example Ernst Domeier, “Nationalsozialismus und Kulturpolitik,” *Der Ring* 4, no. 13 (March 28, 1931): 237–38.

chose the name “Ernst” as the first name of his outspoken, aggressive alter-ego partially in tribute to his father.<sup>14</sup>

It is unfortunate that despite her great influence on Jordan’s life, we know so little about Jordan’s mother, Eveline (Eva) Fischer (1868-1941).<sup>15</sup> Unlike Ernst Jordan, who as a painter was a figure in public life and as a professor—and therefore a civil servant—left traces in bureaucratic records, like so many women of her day, there is little mention of Eva in the historical record. Eva also painted—she and Ernst actually first met when she took painting lessons with him.<sup>16</sup> According to Jordan’s own recollections, Eva was quite talented mathematically, teaching him fractions and other basic numerical skills.<sup>17</sup> Unlike Ernst, who apparently preferred that his son take up a more practical career, like architecture, Eva encouraged Jordan’s budding desire to pursue mathematics or physics as a career. “She thought that what I wished [to do] would also be the right thing [to do],” said Jordan later in life.<sup>18</sup> Importantly for Jordan’s conservative development, Eva also encouraged Jordan’s deep Protestant faith; Ernst was apparently uninterested in religion.<sup>19</sup> (Aside from a brief stint as a “radical” atheist at *Gymnasium*, sparked by the works of German socialist philosopher Friedrich Albert Lange, Jordan was a believer his entire life.<sup>20</sup>)

Aside from his parents, Jordan also had an older sister, named Frieda. She, though, was about ten years older than he and married at a young age—as was usual at the time—meaning that

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<sup>14</sup> Of course, Ernst was also his actual first given name, likely also after his father.

<sup>15</sup> Her full maiden name was Minna Charlotte Luise Eveline Fischer. She and Ernst married in 1882. See “Fragebogen über die Abstammung,” dated February 16, 1942, HUA, Personalakten Jordan 1, Bl. 114.

<sup>16</sup> Eva was ten years younger than Ernst Jordan; this explains the age difference. See Anita Ehlers, “Pascual Jordan: Versuch eines Lebenslaufs,” undated, unpublished manuscript (circa 2004), p. 2.

<sup>17</sup> Jordan, “Pascual Jordan,” 194–95.

<sup>18</sup> Interview of Pascual Jordan by Thomas Kuhn, June 17, 1963, p. 5-6, AHQP.

<sup>19</sup> Jordan, “Pascual Jordan,” 195.

<sup>20</sup> *Ibid.*, 198.

she was out of the house when Jordan was already quite young.<sup>21</sup> It thus does not seem that they were close.<sup>22</sup> Jordan was close, though, with his maternal grandmother, Anna Domeier, who played a significant role in his upbringing.<sup>23</sup> In his memoir, he recalled her talent at storytelling.<sup>24</sup> She came from the Domeier family, which evidently had a long history of supplying civil servants to various German princes.<sup>25</sup> One suspects that she too, was conservative in outlook, for it must have been no coincidence that Jordan chose “Domeier,” her unmarried name, as the last name of his pseudonym in *völkisch* circles. Unfortunately, aside from Jordan’s own brief description, we know almost nothing about her either.

### **The Fin de Siècle Hannoverian Milieu**

Fueled by commissions from state and private organizations, Ernst Jordan seems to have had a successful artistic career in Hannover. He must have been prosperous, for the family owned an apartment building on the city’s main street, the *Friedrichstrasse* (today named the *Friedrichswall*). Firmly in the burgeoning bourgeois middle-class of the young German Empire, Ernst Jordan’s position in the city’s cultural life is made clear by his house’s location: the building, *Friedrichstrasse* No. 12, stood across the street from Hannover’s imposing City Hall.<sup>26</sup> This state building, which still

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<sup>21</sup> Interview of Pascual Jordan by Thomas Kuhn, June 17, 1963, p. 6, AHQP.

<sup>22</sup> Like with all of Jordan’s family, there is no trace of Frieda in Jordan’s *Nachlass* in the Berlin State Library. One source suggests that Jordan had a second sister, named Anne Marie, who died at age four; as this is not corroborated in another sources, and Jordan did not mention it in any of his autobiographical pieces, it is unclear if this is actually true. For this reference, see Anita Ehlers, “Pascual Jordan: Versuch eines Lebenslaufs,” undated, unpublished manuscript (circa 2004), p. 3.

<sup>23</sup> Her full name was Anna Henriette Luise Mathilde Fischer, neé Domeier. See “Fragebogen über die Abstammung,” dated February 16, 1942, HUA, Personalakten Jordan 1, Bl. 114.

<sup>24</sup> Jordan, “Pascual Jordan,” 195.

<sup>25</sup> Ehlers, “Pascual Jordan, Versuch eines Lebenslaufs,” p. 2.

<sup>26</sup> See for example the city map from 1913, *Plan der Hauptstadt Hannover*, carried out 1913–1938, section SW 301b; available online at <https://www.hannover.de/Leben-in-der-Region-Hannover/Verwaltungen-Kommunen/Die-Verwaltung-der-Landeshauptstadt-Hannover/Dezernate-und-Fachbereiche-der-LHH/Baudezernat/Fachbereich-Planen-und-Stadtentwicklung/Geoinformation/Open-GeoData/Digitale-Stadt Karten/Plan-der-Hauptstadt-Hannover-1-1000-Historisch>.

stands today, was built in Wilhelmine style during Jordan's childhood from 1901-1913. Kaiser Wilhelm II himself was present at the inauguration of the new building, emphasizing Hannover's connection to the German Empire.

Not all in Hannover—both the city itself, and the larger Prussian province of Hannover—felt the same way as Ernst Jordan did about German unification. During the Austro-Prussian War in 1866, the Hannoverian kingdom—which comprised the majority of what is now the German state of Lower Saxony [*Niedersachsen*—sided with the Austrians against Prussia. After the Austrian side's quick defeat, Prussia annexed the entire Kingdom of Hannover, deposing the monarchs of the ruling dynasty, the House of Welf. A portion of the Hannoverian population did not approve of what they believed to be an illegal act, and well into the Weimar Republic, anti-Prussian and pro-Welf sentiment remained present. Despite the fact that the family's forefather had served the Hannoverian monarchy, the Jordan family—particularly Ernst Jordan—evidently supported German unification under Prussian rule. This can be inferred from his many public commissions in the now Prussian-ruled city of Hannover, and from his close relationship with the city director Heinrich Tramm.<sup>27</sup> One final, subtler, signal of the family's political leanings was the fact that Ernst chose to send his son, our Pascual Jordan, to the *Bismarckschule* for his primary and secondary schooling, or *Gymnaisum*. A supporter of Hannoverian independence or autonomy never would have chosen to send their child to a school named after the Prussian chancellor Otto von Bismarck, who as the chief architect of the German unification wars personified Hannoverian annexation.<sup>28</sup>

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<sup>27</sup> On Ernst Jordan's relationship with Hannoverian city director Heinrich Tramm, see Katzenhusen, *Kunst und Politik*, 222–23, 242–48.

<sup>28</sup> I am grateful to Karljosef Kreter for alerting me to the local political context in Hannover during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries.

The family's financial position changed with World War I. One imagines that Ernst Jordan was fiercely patriotic and rallied around the flag upon the outbreak of war in summer 1914. He, like most other Germans, surely thought that the war would be brief and that Germany would be victorious. History, of course, took a different turn—the war was long and bloody, and ended in German defeat. (This experience clearly impacted our young Jordan's early life, as will be seen below.) Moreover, wartime borrowing by the German state sparked an uptick in economic inflation, which would culminate in the famous hyperinflation of the early Weimar era. While direct evidence is again lacking, it seems clear from what survives that the Jordan family was one of many who lost nearly all their savings in the hyperinflation. Perhaps Ernst Jordan had invested in war bonds, which were supposed to be paid off after German victory and thus became worthless after the defeat. Or perhaps the Jordan family, like many others of their class, saw their bank savings become worthless when the German mark lost its value amid the hyperinflation.<sup>29</sup>

In any event, Jordan's father was not able to pay his modest student fees at the University of Göttingen. As our Jordan wrote in a successful application to have his graduating fees waived when defending his dissertation in summer 1924, he was only able to support himself by “assuming various auxiliary work” for his professors.<sup>30</sup> This work mainly consisted of entering formulas into typewritten scientific manuscripts and writing up lecture notes for other students to study from.<sup>31</sup> Jordan's financial situation was so dire, though, that this was not sufficient; several of his professors “generously” gave him “private stipends” from their own funds: “Particularly through the kindness

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<sup>29</sup> The closest Jordan came to elaborating on this was in a letter to Richard Courant's biographer, the American Constance Reid: “I needed to acquire the means to study [by] myself, without the support of my father—[who] found himself then in a time of need.” See Jordan to Constance Reid, October 16, 1975, Cod. Ms. C. Reid. B 44, StbG.

<sup>30</sup> Jordan to the Mathematisch-Naturwissenschaftliche Fakultät of the University of Göttingen, July 2, 1924, p. 1-2, Jordan Promotionsakten, Math.Nat.Prom.Spec.J.II, GUA.

<sup>31</sup> Interview of Pascual Jordan by Thomas S. Kuhn, June 17, 1963, p. 12-13, AHQP.

of Professors [Max] Born and [Richard] Courant was it possible for me to complete my studies.”<sup>32</sup> The family’s financial situation probably worsened when Ernst Jordan died in September 1924. From address books it seems like Eva Jordan supported herself by renting out other apartments in the building. (Fascinatingly, one of her tenants in the 1920s was pianist Walter Giesecking, who would later become world-famous.<sup>33</sup>) Indeed, financial problems would be a constant for Jordan throughout his life.

### **The *Bismarckschule***

Aside from his family life, the main constant in Jordan’s childhood was the *Bismarckschule*, where he attended school from 1909 to 1922. The *Bismarckschule* itself still exists today—it is a short walk from the artificially created lake called the *Maschsee*, which in Jordan’s childhood would still have been marshland. As was typical in the early 20<sup>th</sup> century, the building’s exterior is richly decorated with carvings allegorizing educational motifs: beehives overlook the school entrance, symbolizing the students (as bees) coming to their home (the beehive), while a row of owls, symbolizing wisdom, perches below the bay window of the school director’s suite. The short stone walls surrounding the school’s property are capped at their ends with detailed carvings of watchful Great Danes, the favorite dog breed of the school’s namesake, Otto von Bismarck. The Iron Chancellor’s beloved dogs symbolically “guard” the students while they study.<sup>34</sup>

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<sup>32</sup> Jordan to the Mathematisch-Naturwissenschaftliche Fakultät of the University of Göttingen, July 2, 1924, p. 1-2, Jordan Promotionsakten, Math.Nat.Prom.Spec.J.II, GUA.

<sup>33</sup> Giesecking is listed as living on the third floor of the building owned by Jordan’s mother in the 1925 and 1926 address books; see *Adressbuch von Hannover: Stadt- und Geschäftshandbuch 1925* (Hannover: Berthold Pokranz, 1925), Abteilung II, p. 97; *Adressbuch von Hannover: Stadt- und Geschäftshandbuch 1926* (Hannover: Berthold Pokranz, 1926), Abteilung II, p. 101; Abteilung III, p. 140.

<sup>34</sup> I am very grateful for this information, along with an instructive walking tour of Hannover, from Karjosef Kreter.

This stately school building was under construction when Jordan began at the *Bismarckschule* in spring 1909, and it opened in fall 1911, Jordan’s third year as a student. The “solemn” ceremony consecrating the “radiant,” “splendid” new “monumental building” erected on “modern principles” epitomized how intimately the school—as its namesake prominently indicated—was connected to the late German imperial culture from which it was born.<sup>35</sup> As the invited speaker, the director of the Hannoverian provincial school council, noted in the ceremony, “the monumental impression of the new building...arose from joyful sacrificial [*opferfreudig*] public spirit,” yet there remained the constant “duty [for] all sides, through restless work, to make the school, which carries the name of a national hero, through the generations into a place of affectionate childhood memories and into a planting garden for devout, capable, and patriotic [*vaterländisch*] sentiment.”<sup>36</sup>

The final speech, by the school director, Dr. Adolf Rohrmann, closed with an “enthusiastically received cheer” for Kaiser Wilhelm II, emphasizing the school’s loyalty to the Prusso-German state and the Hohenzollern dynasty.<sup>37</sup> This was no unusual display; as befitting a school named after the Iron Chancellor, the *Bismarckschule* celebrated the emperor’s birthday every year with a school assembly to which parents were also invited, which culminated in all who attended singing the emperor’s personal anthem, “*Heil Dir im Siegerkranz*” (Hail to Thee in Victors’ Crown).<sup>38</sup> The school even observed unofficial patriotic holidays, like “Sedan Day” (*Sedantag*), September 2, the anniversary of Napoleon III’s defeat near the French town of Sedan in the battle that decided the Franco-Prussian War; this martial benediction to the Prussian state was celebrated

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<sup>35</sup> Adolf Rohrmann, *Fünfter Jahresbericht der städtischen Bismarckschule (Realgymnasium nach Frankfurter Lehrplan und Oberrealschule i. E.)*, Hannover (Hannover: Buchdruckerei von Arnold Weichelt, 1912), 12. Copy in HR 16, SB 629, SdtH.

<sup>36</sup> *Ibid.*, 13.

<sup>37</sup> *Ibid.*

<sup>38</sup> Adolf Rohrmann, *Feier des 53. Geburtstages Sr. Maj. des Kaisers Wilhelm II.*, January 27, 1912. [Program of the assembly.] Copy in HR 16, Nr. 706, SdtH.



by a collective gymnastic display (*Schanturnen*) by the entirety of the school's sports club, which numbered in the hundreds.<sup>39</sup>

Despite this Prussian pomp and circumstance, for a state institution, the *Bismarckschule* was considered progressive in its day. As a *Reform-Realgymnasium*, a new type of secondary school introduced in the last decade of the nineteenth century, students at the *Bismarckschule* were no longer required to take Ancient Greek. Nevertheless, the changes in the standard curriculum were not as far ranging as the word “reform” might lead one to believe. Latin remained the most important subject; as late as 1922, students received six hours a week in the ancient tongue, more than any other class.<sup>40</sup> Similarly, instruction in German literature largely focused on the classics of Goethe and Schiller; contemporary texts were rarely assigned, if at all. Finally, Prussian patriotism remained infused into all areas of the curriculum; essay themes for advanced students included topics such as “For what reason can a German be proud of his fatherland?” and “What are our armed forces [*Wehrmacht*] and what do they cost?”<sup>41</sup>

This patriotic education in German history was accompanied by proverbial Prussian discipline. Any “cheeky” behavior, any “unrest” or “inattention,” and even being “unrepentant” could be grounds for a “reprimand” (*tadeln*), which would be recorded in the official class register (*Klassenbuch*).<sup>42</sup> It could also be cause for corporal punishment from the teacher, often delivered with the chalkboard pointer, a “hard bamboo cane” with a “thin iron ring” at the top.<sup>43</sup> Beatings at the

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<sup>39</sup> Adolf Rohrmann, *Dritter Jahresbericht der städtischen Bismarckschule (Realgymnasium nach Frankfurter Lehrplan und Oberrealschule i. E.) in Hannover* (Hannover: Buchdruckerei von Arnold Weichelt, 1910), 9. Copy in HR 16, SB 618, SdtH.

<sup>40</sup> Adolf Rohrmann, *Jahresbericht der städtischen Bismarckschule*, Hannover, 1922, 1. Copy in HR 16, SB 646, SdtH.

<sup>41</sup> Adolf Rohrmann, *Sechster Jahresbericht der städtischen Bismarckschule (Realgymnasium nach Frankfurter Lehrplan und Oberrealschule)*, Hannover (Hannover: Buchdruckerei von Arnold Weichelt, 1913). Copy in HR 16, SB 631, SdtH.

<sup>42</sup> “Auszug aus dem Klassenbuch,” undated (June 1913), HR 16, Nr. 705, SdtH.

<sup>43</sup> Adolf Rohrmann to Königliche Provinzial-Schul-Kollegium, June 19, 1913, 3, HR 16, Nr. 705, SdtH.

*Bismarckschule* could be quite severe. One student reported being struck in the head by his teacher with the pointer, and receiving a “welt on the right temple 4-5 centimeters long, 1.5 to 2 centimeters wide, and red in the middle”; this student, Kurt Ilkenhans, came to the *Bismarckschule*’s Director Adolf Rohrman “crying incessantly and complaining about a severe headache.”<sup>44</sup> Ilkenhans’s mother wrote to the director, claiming that the blow “could have killed [her] son” if it had “hit the temple or an unlucky part of the head.”<sup>45</sup> Ilkenhans, so terrified of another blow to the head, had grabbed the chalkboard pointer out of the teacher’s hand, thus committing a grave infraction of Prussian discipline.<sup>46</sup> Despite the director’s own admission that the teacher’s beating “verged on abuse” and was “impermissible,” and his proposal that Ilkenhans be punished with the “threat of expulsion,” (*Androhung der Verweisung*) the faculty overruled Rohrman, 23 votes to 2, and expelled Ilkenhans.<sup>47</sup> As one teacher stated, if the incident were not punished “harshly,” it could “endanger...overall discipline at the school.”<sup>48</sup>

Rote learning remained the cornerstone of instruction at the *Bismarckschule* in Jordan’s day. Students were expected to memorize lessons and repeat them back, on command, at the lectern, or *Katheders*, to the teacher and the rest of the class. One can imagine that for someone with a stutter, like Jordan, this type of education was traumatic. Being ordered to speak on command likely prompted Jordan to stammer, eliciting derision from both his fellow students and potentially the teacher as well. In all likelihood, Jordan’s experience at the *Bismarckschule* either caused or worsened his stutter.

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<sup>44</sup> Adolf Rohrman to Königliche Provinzial-Schul-Kollegium, June 19, 1913, 3, HR 16, Nr. 705, SdtH.

<sup>45</sup> Frieda Ilkenhans to Adolf Rohrman, June 16, 1913, HR 16, Nr. 705, SdtH.

<sup>46</sup> Kurt Ilkenhans, “Herr Professor Denker beschuldigte mich...,” undated (June 1913), HR 16, Nr. 705, SdtH.

<sup>47</sup> Adolf Rohrman to Königliche Provinzial-Schul-Kollegium, June 19, 1913, 3; Minutes of the Gesamtkonferenz, June 14, 1913, 7-8, both in HR 16, Nr. 705, SdtH.

<sup>48</sup> Minutes of the Gesamtkonferenz, June 14, 1913, 7, both in HR 16, Nr. 705, SdtH.

Instruction in science and mathematics remained “elementary,” as Jordan noted in his 1963 interview with Thomas Kuhn, comprising only four and five hours of instruction a week, respectively.<sup>49</sup> (Students received 32 hours of instruction per week in total.) More advanced areas in these technical subjects, like calculus, were barely touched on at all; as Jordan recalled in the interview, he always excelled in mathematics and physics, but soon exceeded the limits of his school education in these fields. Inspired first by a copy of Walther Nernst and Arthur Schoenflies’s book *Introduction to the Mathematical Approach to the Sciences*, Jordan carried out much of his study privately as the school did not provide him with the advanced instruction he desired.<sup>50</sup> While Jordan was certainly a prodigy, and thus likely would have supplemented his education in any case, he must have found the curriculum at the *Bismarckschule*, with its heavy emphasis on the classics, rather stifling.

During Jordan’s time at the *Bismarckschule*, the student body hovered between 600 to 700 students. Reflecting the Lutheran tinge of the city and region’s population, the vast majority of the school’s students were Protestant. Yet small Catholic and Jewish student populations also existed: in 1919, for example, there were 28 Catholics and 10 Jews enrolled at the *Bismarckschule*.<sup>51</sup> In accordance with the 1871 constitution of the German Empire, which granted legal equality to Germany’s Jewish population, Jewish students received religious instruction in their own religion.<sup>52</sup> Nevertheless, the casual anti-Semitism common in bourgeois circles during the Wilhelmine period seems to have been present to an extent at the *Bismarckschule*. One Jewish student, Ludwig Beck, accused of stealing his class’s grade book, claimed that other students had been responsible for the

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<sup>49</sup> For the general curriculum, see for example Rohrmann, *Fünfter Jahresbericht der städtischen Bismarckschule, Hannover*, 2.

<sup>50</sup> Interview of Pascual Jordan by Thomas Kuhn on June 17, 1963, p. 3–5, AHQP.

<sup>51</sup> Bismarckschule, Hannover, statistical report on student body, dated November 1, 1919, HR 16, Nr. 584, SdtH.

<sup>52</sup> Catholic students also received education in their religion.

infraction and that he had been framed and was a “victim of anti-Semitic agitation.” Though Beck did apparently confess to the theft of the grade book, the evidence against him was relatively thin; according to the report, he made himself “suspicious through various causes [*Sachen*],” while other teachers viewed him as an “unpleasant student.” Would a non-Jewish student be described in this way? Probably not. Beck was ultimately threatened with expulsion for the infraction; would a non-Jewish student have received better treatment? It seems likely. As with the patriotism infused in the school curriculum, in harboring this type of latent-yet-insidious anti-Semitism, the *Bismarckschule* was again a microcosm of late Wilhelmine Germany.

### **War and Postwar at the *Bismarckschule***

The *Bismarckschule* was transformed in 1914, when World War I broke out. Mobilization and the outbreak of war must have left an impression on young Jordan. As the school report for 1914-1915 noted laconically, “[t]he war caused serious disruptions in school operations.” This was no exaggeration—between the July Crisis in 1914 and March 1915, sixteen teachers at the *Bismarckschule*, including Director Rohrman, were called up or enlisted in the military.<sup>53</sup> The enthusiasm for war present across Germany manifested as well at the *Bismarckschule*. The entire senior class of 24 students took their graduation exam (called the *Abitur*) early, in August 1914, and collectively enlisted in the German military. (One chose to enlist instead in the Red Cross.)<sup>54</sup> Many students in the five classes below also enlisted in the military; as of March 1915, 64 students had taken up arms.<sup>55</sup> Jordan, at age 12, would now have been attending a school virtually stripped of older

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<sup>53</sup> Adolf Rohrman, *Achter Jahresbericht der städtischen Bismarckschule (Realgymnasium nach Frankfurter Lehrplan und Oberrealschule)*, Hannover (Hannover: Buchdruckerei von Arnold Weichelt, 1915), 12. Copy in HR 16, SB 642, SdtH.

<sup>54</sup> *Ibid.*, 17.

<sup>55</sup> *Ibid.*, 14–15.

students. He would also have participated in collecting money for the war effort; by March 1915, the students had collected over 40,000 Marks; students were also “reminded” to urge their parents to invest their savings in war bonds.<sup>56</sup> The war’s toll began to be felt already even at this early stage; at the time of the report, 14 students, along with the drawing teacher, Wilhelm Busse, had already died in combat—or as Director Rohrmann described it, in the parlance of the times, in the school’s annual report, “died a heroic death for the fatherland.”<sup>57</sup>

Indeed, the 1914-1915 school report, still printed on the same high-quality paper as before, was the last such account to appear during the war years. (Paper scarcity during the war was likely the reason why further reports were not printed.) Jordan never saw combat in World War I; as he turned 16 in October 1918, only one month before the end of the war, he was barely too young to be drafted. But one can imagine that the war’s impact on the *Bismarckschule* and young Jordan only became more pronounced as the conflict dragged on; older students continued to enlist, more fell in combat, and material shortages became prevalent. His teenage years would have been marked by the wartime economy. On the German home front, food shortages culminated in the “turnip winter” of 1916-1917, when a spoiled potato crop led to turnips being used as ersatz. The experience on the wartime home front would have had a profound impact on young Jordan’s development.

Jordan’s last two and a half years in *Gymnasium* occurred in the nascent Weimar Republic. Though the republic, over time, attempted to reform schooling to cultivate a democratic populace, it seems that at least during Jordan’s years there, these reforms did not penetrate the *Bismarckschule*. Indeed, documents indicate that the faculty at the *Bismarckschule*—like many German civil servants—was very wary of the new republic. Teachers emphasized the “national humiliation” of military

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<sup>56</sup> Ibid., 13.

<sup>57</sup> Ibid., 14.

defeat in their assignments; essay topics in 1921 included “Is it warranted to compare Germany’s present situation with that of Carthage after the two Punic Wars?,” “How did, and how does, the idea of the fatherland grow in us Germans?” and “What prospects exist for the resurgence of Germany?” An English-language assignment, “A comparison of the geographical situation of Great Britain with that of our country,” would inevitably lead students to compare the dominance of the United Kingdom with the current ‘weakened’ Germany.<sup>58</sup> In light of his patriotic education and wartime upbringing, it is not surprising to see that Jordan evolved as an adult into a fierce nationalist with sympathies for *völkisch* ideals. Imbibing a steady diet of jingoistic nationalism from a young age, it was a natural path for him to take.

Increasing anti-Semitism in the postwar period also made its mark on the *Bismarckschule*. On the orders of the democratic Weimar government, the school commemorated the assassination of German-Jewish Foreign Minister Walther Rathenau with a ceremony in late June 1922. Local anti-Semitic extremists were incensed that the students were “forced” to commemorate Rathenau “against their will and their conviction,” and sent a death threat to the director. If Rohrmann were to ever do something similar again, they wrote:

“...you shouldn’t be surprised if *you* are the next to have a hand grenade thrown through your faithless skull.

Traitors to the Fatherland!

Germany for the Germans! Down with the Republic!”<sup>59</sup>

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<sup>58</sup> Adolf Rohrmann, *Jahresbericht der städtischen Bismarckschule*, Hannover, 1922, 6, 11, HR 16, SB 646, SdtH. The limited resources available in the postwar period were even reflected in the physical appearance of this report, the first such official document to appear since 1915. This 1922 report was written on a typewriter, while the prewar reports were typeset and printed on high-quality paper stock.

<sup>59</sup> Anonymous to Adolf Rohrmann, undated, late June 1922, Hann. 130, Nr. 390, NSLA.

Rohrman's reaction to the chilling threat was telling. Forwarding it to the provincial school authorities, he declined to denounce the contents of the message, simply noting that the threat was "evidence of the consequences" that "could happen in the present day" if he were again ordered "by telegraph" to commemorate a figure like Rathenau.<sup>60</sup> Though he was ultimately rebuked by his superior, the incident demonstrates that Rohrman himself was not without some sympathies for radical German nationalists.<sup>61</sup> Jordan finished his studies at the *Bismarckschule* in this changed postwar atmosphere, receiving his *Abitur* in March 1921.<sup>62</sup>

### The Stutter

After two semesters at the local *Technische Hochschule* in Hannover, where the faculty in physics was not particularly distinguished, Jordan—in the tradition of the itinerant German student—moved to the University of Göttingen at the beginning of the summer semester in 1922.<sup>63</sup> Beginning in the Göttingen years, as Jordan began his meteoric career in the field of physics, the source base pertaining to Jordan starts to expand—though here again, it is by no means large. Many of these sources are recollections by Jordan's many famous contemporaries in Göttingen.<sup>64</sup> Regarding young Jordan, one theme remains constant among these memoirs and interviews: Jordan's severe stutter, which marked him as the "other," a strange man in the world of physics.

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<sup>60</sup> Adolf Rohrman to Provinzial-Schulkollegium Hannover, July 1, 1922, Hann. 130, Nr. 390, NSLA.

<sup>61</sup> Provinzial-Schulkollegium Hannover to Rohrman, July 10, 1922, Hann. 130, Nr. 390, NSLA.

<sup>62</sup> Protocol of Jordan's dissertation defense, "Promotionsakten No. 87/808," July 4, 1924, Math.Nat.Prom.Spec.J.II, GUA.

<sup>63</sup> See for example interview of Jordan by Kuhn, June 17, 1963, p. 6-7, AHQP. It is unclear why Jordan first began his studies at the *Technische Hochschule* in Hannover; he evidently planned from the start to move to Göttingen to study physics based on its reputation. (See interview of Jordan by Kuhn, June 17, 1963, p. 6, AHQP.) Perhaps Jordan remained at home because of the family's presumably strapped finances during the hyperinflation of the early Weimar years. Yet that hyperinflation continued into 1923, when Jordan was already in Göttingen.

<sup>64</sup> As memoir-style sources, these sources must admittedly be weighed differently than contemporary documents, but they still hold weight, especially with regard to memories of Jordan's personality.

Indeed, for his entire life, Jordan was isolated, even ridiculed in his field due to his stutter, and yet the impact of this disability on his career and life has often been underappreciated by researchers. In this section, I present the first full-scale examination of the severe discrimination Jordan faced due to his stutter in the ossified early-twentieth century academic world—both inside and outside Germany—and reconstruct how it made Jordan an outsider in his field.

Recent scholarship has emphasized how those who stutter have for centuries been subject to societal ridicule—having a stammer was traditionally seen as a sign of low intelligence. Yet it is only in recent years that stuttering has even been acknowledged as a disability—and only even more recently has it been examined through the lens of modern-day disability studies. Though Jordan was indeed named professor in Rostock at only the age of 26, he faced career-hampering discrimination at every turn. Jordan’s professorship must be seen as the exception that proves the rule, for his brilliance was such that even despite his stutter—a disability that might have ended many other academic careers—German academia could not ignore him. Yet Jordan was denied other opportunities to advance his career and build his reputation—most importantly, he rarely received invitations to travel and give lectures at other universities, a crucial part of scientific networking at this time. Ultimately, the discrimination faced by Jordan due to his stutter, both subtle and overt, was likely a major reason why he never won the Nobel Prize. Denied opportunities to speak and get his name out, many were simply unaware of Jordan’s contributions.<sup>65</sup>

While Jordan’s stutter has been noted, and some speculation has been made as to its effect on his career, there has been no detailed analysis of his disability and the impact it must have had on

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<sup>65</sup> Some have argued that Jordan’s decision to join the Nazi Party in 1933, and his attempts to reconcile modern science with Nazi ideology, were the reason why he never won the Nobel Prize. My research indicates that though this may have been a factor, the stutter was likely more damaging to his prospects. Namely, as I show below, even before 1933 and therefore any potential political considerations, Jordan was never even nominated for the prize.



his life.<sup>66</sup> This is unsurprising, as the relevance of the disability studies approach and its theoretical framework has only recently started to be recognized by historians of science. Perhaps more surprisingly, even in the field of disability studies itself, until very recently little scholarly attention was given to “communicative disabilities” like stuttering.<sup>67</sup> Whether or not a stutter should even be viewed as a disability was, for a long time, viewed as an open question by many scholars.<sup>68</sup> As will be evident, Jordan almost certainly would never have willingly termed himself disabled. But the discrimination he faced was so clear and overt, and the experience of being a stutterer so clearly left a mark on his personality and his life, that I draw on literature from both history and disability studies in this analysis of his experience as a stuttering physicist.

### **Early Career Discrimination**

The stutter certainly impacted Jordan most at the beginning of his career. Most recollections from fellow students and colleagues in Göttingen mention Jordan’s stutter to some extent. Physicist Leon Rosenfeld, a few years younger than Jordan, recalled Jordan giving a lecture on quantum statistics that was “extremely good [and] very illuminating...[i]n spite of his stuttering.”<sup>69</sup> The Hungarian physicist Eugene Wigner similarly recalled Jordan’s stutter in an interview, even going so far as to imitate it in conversation with the interviewer.<sup>70</sup> (Notably, Wigner was one of Jordan’s best

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<sup>66</sup> For example, in Beyler’s dissertation on Jordan, he mentions the stutter on only three pages; he concludes that the verdict was “mixed” on whether or not it impacted his career. See Graham Farmelo, *The Strangest Man: The Hidden Life of Paul Dirac, Mystic of the Atom* (New York: Basic Books, 2009), 124. Others mention it only in passing; see Wise, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism,” 224.

<sup>67</sup> See in particular St. Pierre, “The Construction of the Disabled Speaker.”

<sup>68</sup> As St. Pierre puts it: the stutterer has a “liminal nature...[as one] who is neither clearly abled nor disabled.” *Ibid.*, 3. This debate now seems mostly settled, with the understanding that stuttering, along with other communicative disabilities, are indeed disabilities, even if the experience of such a disability is far different from the experience of disability that is physical in nature.

<sup>69</sup> Interview of Leon Rosenfeld by Thomas S. Kuhn and John L. Heilbron, July 19, 1963, AHQP, available online at <https://www.aip.org/history-programs/niels-bohr-library/oral-histories/4847-2>.

<sup>70</sup> Interview of Eugene Wigner by Thomas S. Kuhn, December 14, 1963, AHQP, available online at <https://www.aip.org/history-programs/niels-bohr-library/oral-histories/4963-3>.

friends in physics.) Some found Jordan's stutter to be "alienating" or difficult to listen to, even if they otherwise liked him; they intimated that this was why he was a bit of a loner. American physicist Robert Oppenheimer, who later became famous as the scientific director of the Manhattan Project during World War II, and who also completed his Ph.D. in Göttingen in the 1920s, described Jordan in this way. For Oppenheimer, Jordan was "really an unbelievably queer duck with tics and mannerisms and...apparent brutalities, which put people off very much." The stutter was, according to Oppenheimer, "difficult to get through," but nevertheless he clearly held Jordan in high regard scientifically, even translating Jordan's inaugural *Habilitation* lecture into English for publication in *Nature*.<sup>71</sup> As theoretical physicist Friedrich Hund later recalled: "[Jordan] was somewhat inhibited [*gehemmt*] by his speech defect. He also had different living habits than we did...We took our hikes in the mountains, Jordan did not. So we had relatively little contact with Jordan."<sup>72</sup> That every description of Jordan as what we would now term a 'loner' comes in connection with his stutter seems to be no coincidence; the stutter scared people off and made them feel uneasy. Jordan must have known this himself.

Jordan's mentors at the University of Göttingen were extremely concerned about the impact the stutter would have on his career. As Jordan was in dire financial straits and could not afford to pay for any treatments himself, his teachers James Franck and Max Born raised money for him to see a psychotherapist in an attempt to find a 'cure' for the stutter. Jordan apparently first saw a therapist in Göttingen. Then, aided by 500 *Reichsmarks* contributed by Niels Bohr, Jordan embarked

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<sup>71</sup> Interview of Robert Oppenheimer by Thomas S. Kuhn, quoted in Graham Farmelo, *The Strangest Man: The Hidden Life of Paul Dirac, Mystic of the Atom* (New York: Basic Books, 2009), 124. For the inaugural lecture, see Pascual Jordan, "Philosophical Foundations of Quantum Theory," trans. Robert Oppenheimer, *Nature* 119, no. 2998 (April 16, 1927): 566–69.

<sup>72</sup> Interview of Friedrich Hund by Thomas S. Kuhn, June 25, 1963, AHQP.

on a quest in summer 1926 toward what Franck termed “freeing [Jordan] from his speech defect.”<sup>73</sup> Franck’s remarks to Bohr make clear how worried they were about the impact the stutter could have on his career: “I only ask you [i.e. Bohr] because I know your great love for humanity and I really believe myself to know that in Jordan, [the money] could potentially benefit someone worthy.”<sup>74</sup> Ultimately, Jordan apparently visited the renowned psychotherapist Alfred Adler in Vienna that summer, but the quest for a ‘cure’ was evidently unsuccessful.<sup>75</sup> He continued to seek therapeutic help for his stutter into the 1960s.<sup>76</sup>

Perhaps the clearest example of the pervasive discrimination Jordan faced on account of his stutter comes, ironically, in the case of an award Jordan received—a fellowship from the Rockefeller Foundation’s International Education Board (IEB). This prestigious American fellowship was intended for talented young scientists, granting funds to enable them to travel to study with famous scholars in their field. In the 1920s and 1930s, it was perhaps the most important catalyst for international scientific person-to-person exchange in physics and the mathematical sciences.<sup>77</sup> Jordan received the IEB fellowship in 1927, using it to travel to Copenhagen to study with perhaps the most famous physics pedagogue of the day—Danish theoretical physicist Niels Bohr.<sup>78</sup>

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<sup>73</sup> Franck to Niels Bohr, July 29, 1926, Box 1, Folder 5, JFP.

<sup>74</sup> Franck to Niels Bohr, July 9, 1926, Box 1, Folder 5, JFP.

<sup>75</sup> Jordan to Niels Bohr, July 29, 1926, Folder 158, Item 1, BSC. In this letter Jordan notes only that he planned on visiting Adler, though it is potentially unclear if he followed through or if he then saw a different psychotherapist. It seems plausible that he actually did see Adler.

<sup>76</sup> See for example letters from Jordan dated July 21 and September 22, 1964 in Jordan’s personnel file in Hamburg, StaH, 361-6, IV 2076, Folder 9.

<sup>77</sup> For an examination of role the Rockefeller Foundation played in a field adjacent to physics, see Reinhard Siegmund-Schultze, *Rockefeller and the Internationalization of Mathematics Between the Two World Wars: Documents and Studies for the Social History of Mathematics in the 20th Century*, Science Networks: Historical Studies 25 (Boston: Birkhäuser Verlag, 2001).

<sup>78</sup> For an examination of Bohr’s influence on Jordan and others, see John L. Heilbron, “The Earliest Missionaries of the Copenhagen Spirit,” *Revue d’histoire des Sciences* 38, no. 3–4 (1985): 195–230.

Like many awards of the time, IEB fellowships were at this time largely given out via recommendations from an old boys' network of senior scholars in the field. Fortunately for Jordan, his teachers Max Born and James Franck were very much members of this group; many talented students in Göttingen, including Werner Heisenberg, received IEB fellowships in much the same way.<sup>79</sup> In the eyes of a sympathetic evaluator from the Rockefeller Foundation, W. E. Tisdale, Jordan's brilliance made up for his stutter. In a note accompanying the application, Tisdale noted that Jordan had a "very imperceptible impediment in his speech but is otherwise very keen, attractive and unusually intelligent."<sup>80</sup> Even this remark, though, makes clear that Tisdale normally considered a stutter to be a sign of low intelligence.

Yet Jordan probably got lucky when he was interviewed by the Foundation's representatives, as Tisdale was evidently one of the more forgiving. (Several representatives of the IEB regularly traveled through Germany to evaluate scientific talent and meet their recommenders in person in the field.) In a second evaluation of Jordan made by another IEB representative after Jordan finished his fellowship and returned to Göttingen from Copenhagen, a far different verdict was reached. This evaluator, Augustus Trowbridge, admitted in his notes that if he had first evaluated Jordan, the stutter would likely have cost Jordan the fellowship:

The man [i.e. Jordan] is afflicted with the most frightful case of stuttering A.T. [Augustus Trowbridge] has ever heard. [Max] Born says that arrangements are being made at Hamburg, so that Jordan's work will be entirely with very advanced students, in order that he should not have to lecture – he certainly should not. (Interesting question here: if A.T. had

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<sup>79</sup> Times have certainly changed—Jordan's application for the IEB fellowship was only four pages long, and his "detailed" description of his planned project in Copenhagen was "theoretical researches on statistical foundation of new quantum mechanics"! See Jordan's application, dated February 19, 1927, IEB Records, Series I, Subseries 3, Box 52, Folder 819, RFA.

<sup>80</sup> W. E. Tisdale to Wickliffe Rose, President of the IEB, March 1, 1927, IEB Records, Series I, Subseries 3, Box 52, Folder 819, RFA.

interviewed Jordan, we would have probably turned him down on his terrible impediment in speech – yet he appears to be intellectually one of the best appointments we made!)<sup>81</sup>

Trowbridge’s remarkably candid, flippant, and off-the-cuff admission of personal bias is highly revealing—it shows that many older members of the scientific gentry on both sides of the Atlantic would likely have dismissed Jordan out of hand after hearing him speak. It meant Jordan must have faced an uphill battle for awards and academic positions, even against candidates whose scientific work was inferior to his. Trowbridge, a member of the old guard, clearly felt this way; when evaluating another fellowship candidate, Leon Rosenfeld, whom he considered to be scientifically much less talented than Jordan, he noted that “on [the] personal side, [Rosenfeld] made an extremely good impression on A.T., he has no defect of manner to fight against as has the really very brilliant Jordan.”<sup>82</sup> In other words, Jordan had to ‘overcome’ his stutter in order to receive equal recognition.<sup>83</sup>

Similar verdicts were passed in the stodgy halls of early twentieth century German academia. Jordan was appointed to a professorship at an exceptionally young age, a few weeks before he turned 27. Yet even here Jordan faced behind the scenes opposition—he was, in fact, not the first choice of the Rostock faculty members tasked with making suggestions for the appointment. Though they freely recognized that “with respect to scientific productivity and talent [Jordan] stands definitively at the top [of the field],” he nevertheless was placed as second choice solely due to his

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<sup>81</sup> GEB Records, Series 12, Box 26, Logs 1-2, p. 124, RFA.

<sup>82</sup> GEB Records, Series 12, Box 26, Logs 1-2, p. 124, RFA.

<sup>83</sup> From their remarks, it is clear that many of Jordan’s colleagues shared Tisdale and Trowbridge’s implicit viewpoint that Jordan’s stutter reflected poorly on his intelligence: as theoretical physicist Isador I. Rabi recalled years later: “There was one gentleman with an enormous stutter. He tried to tell me his name, and I tried to help...when he came up with his name, it was Pascual Jordan, who later on became a professor and lecturer. *And how he ever did it I don’t know*, except that he did not have this stutter when he had enough beer in him, or when he spoke English.” [emphasis mine] See Isidor Isaac Rabi, “Stories From the Early Days of Quantum Mechanics,” ed. R. Fraser Code, *Physics Today* 59, no. 8 (August 2006): 38.

stutter: “Despite this pedagogical talent, after hesitating for a long time, we have placed him only in the second position, because when agitated, he has a noticeable speech defect (stuttering).”<sup>84</sup> (Two other candidates—astrophysicists Albrecht Unsöld and Fritz Zwicky—were listed jointly in the first position, meaning that Jordan was really the Rostock faculty’s third choice.)

It seems likely that the educational ministry chose to call Jordan, the faculty’s second (or really third) choice, to the professorship because Jordan was living in Hamburg, while at the time Unsöld and Zwicky were both working in the United States. In an age when letters took two weeks to cross the Atlantic, this meant that Jordan—in Hamburg—was far more easily accessible.<sup>85</sup> That Jordan was nevertheless named professor in Rostock at such a young age, in spite of his stutter, must be recognized a triumph over discrimination, a fight he won against long odds.

Moreover, the fact that Jordan, unlike several of his immediate predecessors, never received a quick promotion to a more prestigious post—Rostock was a backwater in physics—was at least in part due to his stutter. After Max Born was forced to emigrate due to the Nazi anti-Semitic purge in 1933, the University of Göttingen—Jordan’s alma mater—needed to fill the chair that Nazi racism had left vacant. Four options were raised for Born’s replacement: theoretical physicists Heisenberg, Friedrich Hund, Richard Becker, and Jordan. As always, Heisenberg was the first choice. But again, Jordan—despite all his scientific contributions—was listed third, and last. (Again, he was actually fourth; Hund and Becker were listed equally in the second position on the list.)

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<sup>84</sup> Personalakten Jordan (PA J069), Bd. I, p. 15-16, HUA.

<sup>85</sup> The Rostock faculty, at one point, even suggested dropping negotiations with Jordan and instead recruiting “one of the candidates” in America. See Phil. Fak. 22, Fakultätssitzungsprotokolle Bd. II, minutes from August 8, 1929, RUA, as well as Franz Honkamp [Dekan der Philosophische Fakultät] to Mecklenburg-Schwerinische Ministerium für Unterricht, August 9, 1929, Personalakten Jordan (PA J069), Bd. I, p. 20, HUA.

The university rector, philologist Friedrich Neumann, alluded to Jordan's stutter between the lines when forwarding the faculty's suggestions for Born's replacement to the Reich Education Ministry, noting that "even though Jordan has a name in science," that "for instruction," the faculty "would favor younger forces [i.e. physicists] over him."<sup>86</sup> Ironically, amid internal faculty discussions about recommendations for the chair, the rector seems to have alluded to Jordan's stutter as a potential point in his favor, remarking that Jordan would "never be called away" to another university—presumably because his stutter made him unappealing. If Jordan, the stutterer, were appointed to the position, Göttingen would not have to worry about losing him to a rival university like Berlin or Munich. One of the Göttingen physicists, Georg Joos, quickly shot down this backhandedly pragmatic—yet still discriminatory—line of thinking down with a retort: "it would be unfortunate if Jordan were to come [to Göttingen]."<sup>87</sup>

In their recommendation to the rector, though, also sent along to the Ministry, the mathematics and physics faculty was more direct in expressing Joos's sentiment: "It would not be easy for [Jordan], who is hampered by a small speech defect [*Sprachfehler*], to come into closer contact with the students, while the other men named [i.e. Heisenberg, Becker, and Hund] are known as thrilling teachers." Despite his "important accomplishments" in science, Jordan—the stammerer—was simply unsuited for the Göttingen position, traditionally home to leaders in German physics.<sup>88</sup> In other words, German academia could stomach a deviant in provincial Rostock, but not in physics metropolises like Göttingen, Berlin, or Munich. Jordan's call to a more prestigious position would only come in 1944, when the war was lost. Even after the war, in 1946, when physicists at the

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<sup>86</sup> Rektor Friedrich Neumann to REM, August 24, 1935, GUA, Rek. 3206b.

<sup>87</sup> Georg Joos, noted in minutes of the Sitzung des Fakultätsausschusses, August 21, 1935, GUA, Math.-Nat. Protokollbuch III, 1927-1946.

<sup>88</sup> Dekan Max Reich to REM, August 23, 1935, GUA, Rek. 3206b.

University of Hamburg attempted to convince higher administrators to bring on Jordan as a guest professor for three years, they were forced to admit that he could not “quite suppress a certain speech defect.”<sup>89</sup> As will be detailed in Chapter 4, the process of turning Jordan’s postwar guest professorship in Hamburg into a permanent one lasted until 1953; though there is no direct evidence, perhaps again the stutter was a factor in this extended process.

### **Lack of Opportunities to Build a Reputation**

There is also evidence of subtler—but no less career-hampering—discrimination against the “deviant” Jordan. As noted above, most of the “concerns” raised about hiring Jordan in an academic position were based on the premise that Jordan would “struggle” to give lectures with such a bad stutter. As all German professors were civil servants, and their formal employment contracts obligated them to give lectures to large classes, this was an easy excuse for denying Jordan, the deviant stutterer, a job. There were two ways in which the stutter was a problem, according to these detractors. Either Jordan would simply be unable to get through the material due to his stutter, or—more insidiously—the harshness of the stutter would ‘offend’ or ‘alienate’ the audience, and that alienation would make it impossible for them to understand the concepts he was communicating. (Again the “othering” effect of the stutter can be seen in this second supposed reason for discrimination.) Either way, as they perceived it, Jordan would be ‘unable’ to fulfill the duties of his professorial position in the civil service, and therefore could not be hired.<sup>90</sup> (Hence remarks like Trowbridge’s: Jordan could work with advanced students in smaller groups, but could not lecture.)

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<sup>89</sup> Wilhelm Lenz to Rektor Emil Wolff, August 6, 1946, StaH, 361-6, IV 2076, Folder 3.

<sup>90</sup> The civil service during the Weimar era was quite conservative, for it was filled largely by *Beamten* appointed before the founding of the Weimar Republic in 1919. As Detlev Peukert notes, though some such efforts were made in the state of Prussia, the first German democracy did not survive long enough for serious reform of the civil service to occur. See Detlev Peukert, *The Weimar Republic: The Crisis of Classical Modernity*, trans. Richard Deveson, 1st American ed. (New York: Hill and Wang, 1992), 225–26.



Thus, though it is admittedly hard to document directly, discrimination veiled behind the concern that Jordan could not lecture due to his stutter was likely the main reason Jordan was rarely invited to give guest lectures at other universities, both inside and outside Germany. While a lack of opportunities for guest lecturing might seem like a relatively minor career problem to academics and scientists today, in the early twentieth century, formally presenting one's theories, advances, and pedagogy at other universities—both domestically and abroad—in a “guest lecture” was a crucial part of building an international reputation in science.<sup>91</sup> This was doubly true in the small, insular physics community. Guest lectures served as the formal introduction of a colleague who had previously only been met in writing, forging a personal relationship that could then be continued via letters.<sup>92</sup>

Indeed, giving guest lectures was a crucial counterpart to letter exchanges. In an age when international travel was expensive and extremely time-consuming, making conference attendance abroad a rare ordeal, a scientist might put together a series of guest lectures in foreign countries.

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<sup>91</sup> Little has been written on the reputation-building function of guest lectures in the early twentieth century scientific world, though their role in nineteenth century science is well established. Recent biographies of famous nineteenth century figures such as Hermann von Helmholtz and Emil du Bois-Reymond, for example, emphasize how they built their reputations by lecturing widely both in Germany and abroad; see David Cahan, *Helmholtz: A Life in Science* (Chicago: The University of Chicago Press, 2018); Gabriel Finkelstein, *Emil du Bois-Reymond: Neuroscience, Self, and Society in Nineteenth-Century Germany*, Transformations: Studies in the History of Science and Technology (Cambridge, Massachusetts: The MIT Press, 2013). My analysis of Jordan's stutter indicates that guest lecturing served a similar function well into the first half of the twentieth century, yet in this period, the practice is normally seen solely as a vehicle for disseminating new knowledge or new theories. Niels Bohr's 1922 famous lectures on quantum theory in Germany, for example, are often portrayed as the means by which the new quantum gospel spread to that country; see Jagdish Mehra and Helmut Rechenberg, *The Quantum Theory of Planck, Einstein, Bohr, and Sommerfeld: Its Foundation and the Rise of Its Difficulties, 1900-1925*, The Historical Development of Quantum Theory 1, Part 1 (New York: Springer-Verlag, 1982), 344–46.

<sup>92</sup> While Jordan did have an extensive network of correspondents in physics, including Born, Heisenberg, Wolfgang Pauli, Paul Dirac, Niels Bohr, John von Neumann, and Eugene Wigner, among many others, he largely met these colleagues during his years in Göttingen and Hamburg, two centers of international scientific activity. In Rostock, a comparative backwater on no one's usual scientific lecture circuit, Jordan was increasingly isolated in the physics community—and lack of opportunities for him to guest lecture elsewhere compounded this isolation.

This was a chance to meet old colleagues and make new connections. Due to the expense of travel, especially when traveling intercontinentally—ships took nearly a week to cross the Atlantic—a scientist would often spend an entire semester solely giving guest lectures abroad. Werner Heisenberg, for example, made his first intercontinental trip in 1929, first coming to the United States and lecturing at Chicago and MIT, and traveling on to speak in Japan and India.<sup>93</sup> The lecture series he gave at the University of Chicago that year became the basis for an influential textbook on quantum theory published in English by the University of Chicago Press—a book which would help him build an international reputation.<sup>94</sup> While these lectures might have eventually been published in English, without this international trip—and the opportunity to build a relationship with the university press—Heisenberg’s work would surely not have appeared in English so quickly. In short, while Heisenberg was already famous before this eight-month trip, it certainly cemented his “worldwide reputation as a leader of the quantum revolution.”<sup>95</sup>

Similarly, theoretical physicist Enrico Fermi embarked in 1934 on a South American lecture tour sponsored by the Italian government, giving lectures in Brazil, Uruguay, and Argentina to large audiences.<sup>96</sup> Even the notoriously taciturn and unknowable Paul Dirac was invited to the United States multiple times to give lectures, notably including a six-month stay in Princeton in 1931. Fellow theoretical physicist Wolfgang Pauli, himself a world-traveling lecturer, who accompanied Dirac for part of this trip, described their arrival in Princeton as a “first national attraction.”<sup>97</sup> Pauli was a notorious braggart, but there was truth in what he said: such a trip was truly exceptional

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<sup>93</sup> Cassidy, *Beyond Uncertainty*, 184–85.

<sup>94</sup> For the textbook, see Werner Heisenberg, *The Physical Principles of the Quantum Theory*, trans. Carl Eckart and Frank Clark Hoyt (Chicago: The University of Chicago Press, 1930). On its influence in physics, see again Cassidy, *Beyond Uncertainty*, 184–85.

<sup>95</sup> Cassidy, *Beyond Uncertainty*, 186.

<sup>96</sup> Emilio Segrè, *Enrico Fermi, Physicist* (Chicago: University of Chicago Press, 1970), 77–78.

<sup>97</sup> Farmelo, *The Strangest Man*, 194.

before the era of airplane travel. In this way, even attending a guest lecture could be awe-inspiring. As a student, one had heard of these figures only from the page; a guest lecture was a chance to see them speak in person. Friedrich Hund, one of Jordan's fellow students in Göttingen in the 1920s, recalled the atmosphere surrounding a guest lecture by Niels Bohr in 1922 as having a "glamor that...cannot be communicated in words today; for us it was as brilliant as the Händel Festival of those days..."<sup>98</sup>

Unlike contemporaries like Heisenberg, Pauli, Dirac, and Fermi, who were often invited to give guest lectures in Europe and beyond as early as the 1920s, Jordan does not seem to have received similar offers before the war. He received occasional one-off invitations to lecture in the Netherlands or Switzerland, for example, but these were for a few lectures at most, not extended tours. Moreover, Jordan was often unable to follow through on these invitations.<sup>99</sup> While he attended some conferences in Europe before the war—most famously the 1936 Copenhagen conference on theoretical physics—Jordan never gave an extended lecture tour outside Germany until after World War II. Indeed, unlike the contemporaries named above, Jordan never traveled outside Europe until after the war. This meant that physicists in the United States, whose scientific community was rapidly growing, had little opportunity to meet Jordan in person.

Not all of this was due to the stutter. Jordan was doubly unlucky here, for the administration of the University of Rostock also seems to have been particularly skeptical of foreign travel. When

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<sup>98</sup> Friedrich Hund, quoted in Mehra and Rechenberg, *The Quantum Theory of Planck, Einstein, Bohr, and Sommerfeld*, 345.

<sup>99</sup> For the invitation to Switzerland in 1938, from physicist Paul Scherrer, to speak at the *Eidgenössische Technische Hochschule* in Zürich, and from Carl Jung to speak at Jung's "Psychological Club," see Jordan to Rektor Ernst Ruickoldt, November 25, 1938, Personalakten Jordan (PA J069), Bd. I, Bl. 85v, HUA. This trip was ultimately delayed and does not seem to have come to pass; see Jordan to Rektor Ruickoldt, March 29, 1939, Personalakten Jordan, Bl. 27, RUA. Jordan had to call off a planned 1933 lecture in Groningen, the Netherlands, because of illness; see Jordan to Rektor Kurt Poppe, February 14, 1933, Personalakten Jordan (PA J069), Bd. II, Bl. 13, HUA.

he received an invitation to speak in Kharkov in the Soviet Union in 1930, for example, the faculty voted down Jordan's petition to attend. Jordan was furious, and his protest is revealing: "practically all well-regarded theoretical physicists in Germany have held short or long lecture series at foreign universities," he wrote. He indicated that such opportunities had contributed to the reputation of German theoretical physics, noting in particular the then-recent lecture tours by theoretical physicists Friedrich Hund and Otto Stern.<sup>100</sup> What went unsaid was what these types of guest lectures would have contributed to his own reputation. Rostock was one of the most conservative German universities—Jordan had received a similar invitation while an *Assistant* in Hamburg the previous year, and the university there had given him no problems with traveling to the Soviet Union.<sup>101</sup> Thus, from surviving evidence—which is fragmentary, as much material was lost or destroyed during the war—it seems that Jordan missed opportunities for international recognition because of his stutter and the Rostock faculty's xenophobia regarding foreign trips.

Things did not improve for Jordan in this regard during the Nazi period, despite his decision to join the Party. As Nazi rule progressed, Germans who traveled abroad came under increasing restriction. By the late 1930s, scientists required permission both from their university rector along with that of the Reich Ministry of Education (REM) to travel and give lectures abroad; such approval was often denied for political reasons. In Jordan's case, as he was constantly short of funds, his applications for funding to travel abroad were often turned down because the Nazi regime had no foreign currency. Yet amid this approval process there are also signs that Jordan was often passed over for travel approval and support in favor of others due to his stutter. A case in point is a

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<sup>100</sup> See Jordan to Dekan Ernst Hohl, February 22, 1930, and March 5, 1930, Personalakten Jordan, Bl. 93-98, RUA.

<sup>101</sup> See for example Albrecht von Wrochem to Hermann Terdenge, Auswärtiges Amt, May 13, 1929, Personalakten Jordan, Bd. 1, Bl. 16, 361-6, IV 2076, StaH, which noted that the Hamburg faculty endorsed Jordan's trip.

conference on microbiology in New York, planned for September 1939, at which Jordan was personally invited to give a talk by the American organizers. In his formal endorsement of Jordan's request to the REM, the Rostock university rector, pharmacologist Ernst Ruickoldt, claimed to have "no reservations" about Jordan traveling abroad to participate in the conference. But Ruickoldt qualified this seeming endorsement with a curious, and serious reservation: "I must add, however, that in personal conversation or in discussion, Prof. Jordan does not appear suited in his demeanor [*Aufreten*] to exhibit the assurance, assertiveness, and finesse [*Sicherheit, Bestimmtheit, und Gewandtheit*] which may be required of him in such a situation."<sup>102</sup> Ruickoldt was, of course, euphemistically referencing Jordan's stammer, which the leader of the local Nazi lecturers' organization had warned him about, noting that even though the stutter was "not noticeable" during lectures, it was "extremely disturbing in conversation."<sup>103</sup>

The responsible officer at the Reich education ministry clearly understood what Ruickoldt was implying, for he underlined this quotation and annotated the rector's letter with forceful strokes of the pen: "He stutters!"<sup>104</sup> Indeed, hesitance toward having a stutterer represent the 'new' Germany abroad was likely the reason why Jordan was placed in the lowest of five categories for funding priority when the final list of potential attendees was determined. And when the promised funds for travel to New York dried up, leaving money for only a few scientists to cross the Atlantic, Jordan did not make the list, likely in large part due to his stutter.<sup>105</sup> Similarly, during the war, in 1942,

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<sup>102</sup> Ernst Ruickoldt, Rektor, University of Rostock to REM, December 8, 1938, BAB, R 4901/2907, Bl. 325.

<sup>103</sup> Heinrich Gißel, *Dozentenbundführer* to Ernst Ruickoldt, December 5, 1938, Personalakten Jordan, Bl. 37, RUA.

<sup>104</sup> Handwritten annotation, almost certainly in the hand of Dr. Dahnke, an adviser in the REM, written on Ernst Ruickoldt, Rektor, University of Rostock to REM, December 8, 1938, BAB, R 4901/2907, Bl. 325.

<sup>105</sup> Ironically, after over a year of bureaucratic wrangling with the REM and multiple other Nazi bureaucracies—something that was not uncommon in the byzantine Nazi state—the outbreak of World War prevented any of the scientists from making the trip to New York. Three German scientists who happened to

a Swiss colleague of Jordan's, Kurt von Neergaard, remarked flippantly to one of Jordan's friends that Jordan's "lecturing technique," a not-so-subtle reference to his stutter, would potentially cause problems if he attempted to invite him to give a guest lecture in Zürich in front of a large audience.<sup>106</sup> It does not seem that Neergaard had even met Jordan personally at this point, so the fact that he knew about Jordan's stutter is telling.

Because the stutter made it difficult for Jordan to build an international reputation, it seems plausible to speculate that it may have—albeit indirectly—cost Jordan a shot at the Nobel Prize. Indeed, Jordan was the most prominent member of the founding generation of quantum mechanics not to win the coveted award, and there has been much debate about why he never received it.<sup>107</sup> The continued public allure and prestige of the Nobel Prize—unrivaled among academic awards—has assuredly contributed to this speculation.<sup>108</sup> Much of this debate has revolved around Jordan's political activities; namely, several historians and physicists have suggested that that Jordan's decision to join the Nazi Party and actively propagandize for the regime cost him a chance at the prize after the war.<sup>109</sup>

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be the United States at the time, though, did participate. See report by Giesecke, undated (likely 1940), BAB, R 4901/2907, Bl. 517-526.

<sup>106</sup> Kurt von Neergaard to Adolf Meyer-Abich, November 23, 1942, NAMA, Ba 58. Neergaard was admittedly more concerned with what he termed the "political sections in [Jordan's] book," i.e. portions where Jordan was praising the Nazi regime, than the stutter. (See Chapter 3.) But the flippant way in which Neergaard referred to the stutter makes it clear that it presented a 'problem' to potential audiences that often went without saying: "We wanted to have Jordan come talk about quantum biology. But, *aside from his lecturing technique*, when sounding it out, [the responses] were so energetically negative because of the political sections in his book, that we had to give up [on the plan]." Emphasis added.

<sup>107</sup> On Jordan being the most prominent of the generation not to win the Nobel, see for example Howard, "Quantum Mechanics in Context: Pascual Jordan's 1936 Anschauliche Quantentheorie," 267.

<sup>108</sup> On the Nobel Prize, see Robert Marc Friedman, *The Politics of Excellence: Behind the Nobel Prize in Science* (New York: Times Books, 2001).

<sup>109</sup> See for example Jeremy Bernstein, "Max Born and the Quantum Theory," *American Journal of Physics* 73, no. 11 (2005): 1004–6, particularly 1006. Bernstein speculates—without evidence, as he admits—that Born won the 1954 Nobel Prize for work of lesser importance than he did alone, i.e. without Jordan, so that the Nobel Committee would avoid honoring Jordan. See also Bert Schroer, "Pascual Jordan, biographical notes, his contributions to quantum mechanics, and his role as a protagonist in quantum field theory," in *Pascual Jordan*

But while this speculation is understandable, evidence suggests that the story is more complicated. Even if Jordan's Nazi associations cost him a chance at the prize after the war, one would expect to see Jordan's name among those nominated for the Nobel Prize before World War II—or at least before the Nazi takeover of power in 1933. (In particular, the 1932 and 1933 prizes were given to Heisenberg and—jointly—to Erwin Schrödinger and Paul Dirac, respectively, for discoveries relating to quantum theory.) Along these lines, it has been claimed that Albert Einstein proposed Jordan for the Nobel Prize, along with Max Born and Heisenberg, for their collaborative work on the foundations of quantum theory in 1928 or 1932, depending on the source.<sup>110</sup> But while Einstein broached the possibility in a 1928 letter to the Nobel Committee, this recommendation was—for reasons unknown—not considered a nomination by the Nobel Committee.<sup>111</sup> Jordan was not nominated for a Nobel Prize until 1951—and from the records currently opened to researchers, he was only nominated one other time, in 1961.<sup>112</sup>

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(1902-1980): *Mainzer Symposium zum 100. Geburtstag*, ed. Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 329 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007), 55–56; Dieter Hoffmann and Mark Walker, “Der gute Nazi: Pascual Jordan und das Dritte Reich,” in *Pascual Jordan (1902-1980): Mainzer Symposium zum 100. Geburtstag*, ed. Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 329 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007), 111.

<sup>110</sup> Abraham Pais's biography of Albert Einstein seems to be the source of most of these claims. Pais quotes a letter from Einstein dated September 25, 1928, where Einstein at one point proposes a potential prize for Max Born, Werner Heisenberg, and Jordan. This three-man proposal was not considered a “nomination” by the Nobel Foundation; perhaps the letter was never sent. See Abraham Pais, *Subtle Is the Lord: The Science and the Life of Albert Einstein* (New York: Oxford University Press, 1982), 515. For the letter itself, see Einstein to Nobel Committee for Physics, September 25, 1928, AEA, document 30-067.

<sup>111</sup> Personal communication with Nobel archivist Karl Grandin, June 28, 2016.

<sup>112</sup> Personal communication with Nobel archivist Karl Grandin, June 28, 2016. The Nobel Archive makes records about prizes and nominations available 50 years after the year in question, meaning that any Nobel records pertaining to Jordan between 1968 and 1980 are still sealed. Others certainly nominated Jordan during this time; Eugene Wigner apparently nominated him in 1979. See in particular Wigner to Jordan, March 28, 1979, NPJ, Nr. 641. For a list of Nobel nominations in physics between 1901 and 1950, confirming Jordan's absence, see Elisabeth Crawford, *The Nobel Population 1901-1950: A Census of the Nominators and Nominees for the Prizes in Physics and Chemistry*, Uppsala Studies in the History of Science 30 (Tokyo: Universal Academic Press, 2002).

In the end, Heisenberg alone won the 1932 prize for the work on which Jordan and Born had collaborated with him.<sup>113</sup> In this case, it is clear why Jordan did not share the prize. The bylaws of the Nobel Foundation prevent one from receiving the prize if one was not personally nominated—even if the prize were to be shared with a second person (i.e. Heisenberg) who were themselves nominated.<sup>114</sup> In other words, a candidate must have at least one nomination to their own name in order to receive even a share of the prize. Thus, because Jordan was not nominated in 1932, the Nobel bylaws made it impossible for him to share the prize that year with Heisenberg. It is likely that Jordan was not nominated because he was not well known internationally—which led to the underappreciation of his contributions to the collaborative work with Born and Heisenberg. And given that this lack of renown in international physics was at least partially due to stutter-based discrimination—recall, Jordan was rarely invited to lecture abroad because of the stammer, giving him little chance to build a reputation—it seems plausible that Jordan’s stutter was a significant factor in why he never won (or shared) a Nobel Prize.<sup>115</sup>

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<sup>113</sup> Heisenberg seems to have felt bad about this, and wrote letters to Born and Jordan telling them that they should have shared the prize with him. For the letter to Born, dated November 25, 1933, see Nancy Thorndike Greenspan, *The End of the Certain World: The Life and Science of Max Born* (New York: Basic Books, 2005), 191. Jordan’s receipt of a similar letter, in which Heisenberg told Jordan that he had a “bad conscience” about not sharing the award, is implied by a passage in a letter he wrote to Jordan in 1934; see Heisenberg to Jordan, June 6, 1934, p. 2, NWH, Nr. 1515/2. This prior letter from Heisenberg to Jordan is lost.

<sup>114</sup> Greenspan, 190–94. See also the discussion in Rajinder Singh and Falk Riess, “Belated Nobel Prize for Max Born FRS,” *Indian Journal of History of Science* 48, no. 1 (2013): 79–104. Unfortunately this article is extremely difficult to parse due to its poor grammar and lack of copy-editing.

<sup>115</sup> The question as to why Jordan never won the prize *after* World War II is thornier, and one which I will return to at a later date. But based on discussions in the following chapters, it seems plausible to surmise that lack of reputation due to the stutter continued to play a role in Jordan’s lack of nominations, along with the fact that the Nobel Committee had now already given out awards—like Heisenberg’s 1932 Prize—for the discoveries in which Jordan took part.



## Jordan and Weimar-era *Völkisch* Groups

That Pascual Jordan himself suffered from discrimination due to his stutter makes the great contradiction of his life—his affinity toward radical *völkisch* politics and his decision to join the Nazi Party in 1933 (see Chapters 2 and 3), along with his subsequent attempts to reconcile modern science with the regime’s ideology and goals in various books and articles—all the more difficult to comprehend. How could someone who suffered from what we would now consider a disability sympathize with an ideology predicated on violent discrimination against minorities of all types?<sup>116</sup> More broadly, why was it that Jordan—who collaborated and was friends with many Jewish scientists—was so attracted to anti-Semitic political movements?

As noted in the introduction, Richard Beyler was the first to uncover evidence that Jordan’s decision to join the Nazi Party in 1933 did not come about in a vacuum—on the contrary, Jordan was active on what is known as the “*völkisch*” spectrum in Weimar-era Germany as early as 1930.<sup>117</sup> Beginning that year, Jordan published articles under the pseudonym “Ernst Domeier” attacking liberal culture and the “weak” Weimar state in the *völkisch* cultural-political periodical *Deutsches Volkstum*. (The title roughly translates to “German Heritage,” yet was meant with a mystical overtone.) As I have discovered, though, “Ernst Domeier” was far more prolific than previously

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<sup>116</sup> Despite the discrimination, it seems clear that Jordan did not consider himself to be disabled. As one scholar of stuttering has written, “a stutterer is not clearly perceived as abled or disabled. Many stutters resist the term ‘disabled’ because of the associated stigma...” Jordan likely drew this distinction; in his view, he was different, but he was certainly not *behindert*. See St. Pierre, “The Construction of the Disabled Speaker,” 17. This type of seeming contradiction about a disability was not unique to Jordan, and nor was it limited to communicative disabilities. Most famously, Joseph Goebbels had a club foot, which did not hamper his fanaticism.

<sup>117</sup> See Beyler, “From Positivism to Organicism,” 207–24; Beyler, “Jordan Alias Domeier.” Ironically, had Jordan not left direct evidence of his pseudonym in his otherwise rather curated *Nachlass* (in the form of a letter acknowledging the pseudonym to the son of the editor of *Deutsches Volkstum*, Wilhelm Stapel) in the Berlin State Library, the Domeier identity might have remained a mystery. For this letter, see Jordan to Henning Stapel, June 30, 1973, NPJ, Nr. 782, along with Henning Stapel’s answer, Henning Stapel to Jordan, July 7, 1973, NPJ, Nr. 609.

realized, and he published widely across the *völkisch* spectrum. In short, Jordan’s radicalization as a member of the *völkisch*, anti-democratic right wing was extensive; in this section, I examine Jordan’s Weimar-era liaisons with what is known as the *völkisch* right-wing in Germany.<sup>118</sup>

What has become known as the “*völkisch*” movement started around the turn of the century in Germany and Austria. (*Volk* means “people” in German, and its literal English cognate is “folk”; this etymology hints at the rustic, traditional overtones the word evokes in German.) The *völkisch* movement united traditional pan-German nationalism with the virulent, racially based anti-Semitism that began to surface around 1890 in the German-speaking lands. To this was added a flavor of mystical millenarianism about the supposed mission of the German *Volk*—which it claimed was destined to be “reborn” and rule over much of Europe. During World War I, members of the *völkisch* movement clamored for Germany and the Central Powers to impose a draconian peace on the Allies—including large indemnities to be paid and vast territories to be ceded—and when Germany lost the war, *völkisch* groups laid the groundwork for the infamous “stab-in-the-back legend” (*Dolchstoßlegende*), that Jews, Social Democrats, and Communists had stabbed the German army in the back in 1918 just as it was about to win the war.

The *völkisch* movement, which was always divided into dozens of various groups, regarded the Weimar Republic as weak and ineffectual, saw it as a tool of the victorious powers in World War I, and believed it to be propped up by what they claimed to be Jewish capitalist interests. Various *völkisch* groups carried out assassinations against democratic politicians like Walther Rathenau, the German-Jewish Foreign Minister, and Matthias Erzberger, who had signed the Treaty of Versailles

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<sup>118</sup> For a detailed examination of Jordan’s relationship with the Nazi regime, see Chapters 2 and 3.

on behalf of Germany. In short, *völkisch* groups laid the intellectual groundwork for the Nazi Party.<sup>119</sup>

In a vacuum, it is not surprising that Jordan was attracted to *völkisch* ideals. As we have seen, he was raised in an extremely conservative household, and he came of age among World War I, German defeat, and the chaos and violence that ensued. In many ways, he was a natural candidate for this type of radicalization. Jordan probably first connected with *völkisch* groups during his year-and-a-half stint as a *Privatdozent* in Hamburg, from May 1928 to October 1929. It seems that it was there that he became acquainted with *Deutsches Volkstum* and its editor—the writer and *völkisch* intellectual and activist Wilhelm Stapel—who lived in Hamburg, where the journal was published.<sup>120</sup> Perhaps he found *Deutsches Volkstum* on a newsstand, or was given it by a friend, or perhaps he went to one of Stapel’s lectures in Hamburg and fell in with his circle. Another possibility is that one of the physicists in Hamburg with whom Jordan was friendly, Paul Peter Koch, who later became a notorious Nazi, perhaps provided Jordan with the journal.<sup>121</sup> In any case, *Deutsches Volkstum* was Jordan’s entryway into the *völkisch* political spectrum, for as he wrote to Stapel in 1932, “*Deutsches Volkstum* was the first magazine with which I became acquainted 3 or 4 years ago [i.e. 1928 or 1929], as I finally turned back to political life after long years of complete absorption in scientific work.”<sup>122</sup> (In other words, during his time as a quantum pioneer in Göttingen, Jordan had completely ignored political concerns—meaning that he was radicalized around 1928 or 1929.)

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<sup>119</sup> The definitive work on the *völkisch* movement remains George L. Mosse, *The Crisis of German Ideology: Intellectual Origins of the Third Reich* (New York: Schocken Books, 1964).

<sup>120</sup> On the journal’s publisher, the conservative, *völkisch*-leaning *Hanseatische Verlagsanstalt*, see Lokatis, *Hanseatische Verlagsanstalt*.

<sup>121</sup> For Koch’s friendship with Jordan, see two letters from Koch to Jordan, dated September 16, 1929, and November 6, 1929, NPJ, Nr. 523. Koch, though, may have been a sheer opportunist in joining the Party; he fondly mentions Wolfgang Pauli and Walter Gordon—Jewish colleagues—in the latter letter to Jordan and it is unclear if he held such political views prior to 1933.

<sup>122</sup> Jordan to Stapel, October 26, 1932, Nachlass Stapel, DLA.

By 1930, Jordan was deeply involved across the *völkisch* scene, beginning to publish under the “Domeier” pseudonym. It was in that year that his first two articles appeared in *Deutsches Volkstum*. Both addressed questions of education, demonstrating Jordan’s trademark elitism. Despite the fact that he was himself highly educated and clearly relished the intellectual exchanges he had with other brilliant physicists, Jordan believed that German *Gymnasiums* were overcrowded with students. The main goal of Weimar-era social democratic school reform, wrote Jordan, was to make “all limbs of our *Volk* into life-long students.”<sup>123</sup> Efforts to bring more students into higher education, wrote Domeier—speaking perhaps from personal experience as a professor and instructor—had only led to an “appalling decline” in the quality of the students at universities.<sup>124</sup> In a follow-up article that appeared the next month, Jordan argued that attempting to bring education to the masses was doomed to failure, for most people were simply uninterested or incapable of being educated. As he put it, the “*natural condition* of the simple person [*einfachen Menschen*],” is “to think little and to think slowly.”<sup>125</sup> Despite his own advanced education in physics, he proclaimed allegiance to *völkisch* ideals of education, terming it “no question of the brain” but a “matter of the person and his style of life,” dependent on an “instinctual semiconscious connection to a tradition of blood [*blutmässige Tradition*].”<sup>126</sup> In that same year, Jordan also began to put his political ideas into practice. He proudly informed *völkisch* author Erwin Guido Kolbenheyer in March 1930 that he was

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<sup>123</sup> Ernst Domeier, “Überschulung und Bürokratie,” *Deutsches Volkstum* 12, no. 3 (March 1930): 177.

<sup>124</sup> *Ibid.*, 178.

<sup>125</sup> Ernst Domeier, “Überschulung und Klassenkampf,” *Deutsches Volkstum* 12, no. 4 (April 1930): 273. Emphasis in original.

<sup>126</sup> *Ibid.*, 272.

“already attempting to make some connections with national-politically interested circles [*nationalpolitisch interessierten Kreisen*] in the student body.”<sup>127</sup>

Nevertheless, though readers of *Deutsches Volkstum* would certainly have seen the anti-Semitic undertones of denunciations of “propaganda literati” (*Propagandaliteraten*) and “cultural Bolshevism” (*Kulturbolschewismus*), Jordan’s essays as Domeier were largely free of the more overt anti-Semitic claims and attacks common in these journals. (There was one major exception to this, which will be detailed below.) Yet this did not mean that Jordan did not share the more extreme racist views of his *völkisch* compatriots—in that same 1930 letter to Kolbenheyer, for example, Jordan proclaimed his “full agreement” with a 1929 essay by Kolbenheyer that denounced the “niggerization [*Verniggerung*] of art.”<sup>128</sup> Jordan was so influenced by this racist essay, which called on universities, as the intellectual leaders of the nation, to fight this supposed trend of degeneration in Germany and to uphold “good” German art, that over a year later he was informing Kolbenheyer about how he “still kept it in mind” when attempting to effect change in Rostock.<sup>129</sup> As we will see, tacit, behind-the-scenes approval of racist policies would remain a constant for Jordan through the Nazi era, when he was ultimately willing to turn a blind eye to Nazi anti-Semitic policies that culminated in genocide. (See Chapters 2 and 3)

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<sup>127</sup> Jordan to Erwin Guido Kolbenheyer, March 14, 1930, NEK. On Kolbenheyer (1878–1962), whose *völkisch* works were embraced by the Nazis and are largely forgotten today, see in particular Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 36–38, 115–130, 170–224, 294–299, 347–358, 364–380.

<sup>128</sup> Erwin Guido Kolbenheyer, “Wo bleiben die Universitäten?,” *Der Kunstwart* 43, no. 2 (November 1929): 84. For Jordan’s opinion on the essay, see Jordan to Kolbenheyer, March 14, 1930, NEK. Kolbenheyer’s essay is shockingly racist even for its day. One typical quote reads: “Look at ourselves [i.e. Germany]. What appeals, what allures, what finds reception in all circles of the *Volk*? Reduced to a formula: the nigger plays and they dance to his tune [*Spiel*]. Nigger, meaning the supremacy of primitive sexuality, of primitive nutrition in the literal and the figurative sense.” See *Ibid.*, 82.

<sup>129</sup> Jordan to Kolbenheyer, July 6, 1931, NEK. At this point, nearly two years into his appointment in Rostock, Jordan reported having made “some contact with student national-political work, which is developing quite pleasingly (particularly in relation to paramilitary sports [*Wehrsport*], etc.).”

Much like Kolbenheyer, Domeier/Jordan was extremely interested in questions of art and culture—interests he inherited from his father, Ernst. He jumped into an ongoing 1930-1931 debate in *Der Ring* [The Ring], another *völkisch* conservative organ based in Berlin, about modern art: one reader, an “A. H.,” had written into the journal, responding to an article about cultural politics with a letter attacking Nazi functionaries in the state of Thuringia (where the party had come to power in 1930 elections), for denouncing modern art. Alluding to Italian fascists, who embraced the futurist movement—and anticipating an inter-Party debate about modern art that would occur after Hitler’s takeover, A. H. concluded that the Nazis should embrace modern art as a reflection of the “convulsion of the nation” after World War I.<sup>130</sup> The art that the Nazis claimed was truly “German”—conservative artists painting in traditional realist fashion—wrote A. H., was “ridiculous kitsch.”<sup>131</sup>

Domeier was incensed by A. H.’s concessions to what he saw “artistic Bolshevism.” The modern art of Picasso, Kandinsky, Klee, and Kokoschka, he wrote, was valuable only as “cultural-historical documents of a period of decay and of decomposition (and as psychiatric study material).” Klee, for example, “systematically emulates the drawing style of three-year-old children,” while Oskar Kokoscha “unrestrainedly smears all colors of the palette in confusion.”<sup>132</sup> In Domeier/Jordan’s eyes, this was not art that conservatives could ever endorse. The vast majority of modern artists and art critics—which he termed the “propaganda literati”—wrote Domeier, “*uniformly*” endorsed the liberal revolution of 1918-1919 in Germany, and they now “*monopolized art*

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<sup>130</sup> A. H., “Nationalsozialismus und Kulturpolitik,” *Der Ring* 4, no. 2 (January 11, 1931): 80–81, here 80. Another reader largely agreed with A. H.’s assessment of modern art; see Dr. M., “Nationalsozialismus und Kulturpolitik,” *Der Ring* 4, no. 12 (March 21, 1931): 222. On later attempts to convince the Nazis that modern art was in line with regime ideology, see for example Jonathan Petropoulos, *Artists under Hitler: Collaboration and Survival in Nazi Germany* (New Haven: Yale University Press, 2014).

<sup>131</sup> A. H., “Nationalsozialismus und Kulturpolitik,” 81.

<sup>132</sup> Domeier, “Nationalsozialismus und Kulturpolitik,” 237.

*criticism* [Kunsturteil]” in the Weimar republic.<sup>133</sup> Nazi measures to promote “good” art—at least in Jordan’s eyes—was thus to be commended; the only thing he regretted was that the “conservative movement” had not seized the “initiative” in the art debate.<sup>134</sup>

Indeed, it was no coincidence that Jordan drew this distinction between himself and the journal to which he wrote in—*Der Ring*—on the one hand and the Nazi movement on the other.<sup>135</sup> Jordan and his friends on the *völkisch* political spectrum viewed themselves as closely related—yet clearly distinct—from the National Socialists, whose popularity and vote share had skyrocketed after the beginning of the Great Depression in 1929. To be sure, they were certainly not monarchists advocating for a return of the Hohenzollern dynasty in Germany. For Jordan, as for many of his *völkisch* contemporaries, there was a clear difference between the “reactionaries,” who wished to “perpetuate” a specific historical moment, be it Wilhelmine Germany or the Holy Roman Empire, and “conservatives,” who recognized that times change and that in history there are “ongoing transformations” which require life to be “lived and fought in new forms.”<sup>136</sup> Reactionaries did not recognize that the forms would change over time, while the liberals of the Weimar parliamentary government thought that these changes necessarily meant that rationality and progress would prevail

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<sup>133</sup> Ibid., 237, 238.

<sup>134</sup> Ibid., 238. One might have expected Jordan, as one of the founders of quantum mechanics and a believer in relativity theory—both clearly modern sciences—to be on the side of modern art, but in a later Domeier essay, he rejected any comparisons or analogies drawn between the two: “Out of incomprehensible physics one knew to reach very comprehensible, even *moral* conclusions. Hurray! *Everything is relative*. Einstein proved that nothing is *absolute*. – What good fodder for a mentally unstable time!” See Ernst Domeier, “Scharlatanerie,” *Deutsches Volkstum* 14, no. 1 (1932): 74–77, here 75. Emphasis in original.

<sup>135</sup> On *Der Ring*, a weekly political magazine with *völkisch* leanings connected to anti-republican organizations in Berlin, see Berthold Petzinna, *Erziehung zum deutschen Lebensstil: Ursprung und Entwicklung des jungkonservativen “Ring”-Kreises 1918-1933* (Berlin: Akademie Verlag, 2000), particularly 241–286. On this circle of right-wing intellectuals, see also Claudia Kemper, *“Das Gewissen” 1919-1925: Kommunikation und Vernetzung der Jungkonservativen*, Ordnungssysteme: Studien zur Ideengeschichte der Neuzeit 36 (Munich: Oldenbourg Verlag, 2011).

<sup>136</sup> Ernst Domeier, “Was heißt ‘konservativ?’,” *Die Kommenden* 5, no. 26 (September 5, 1930): 423–24.

over time.<sup>137</sup> Nevertheless, despite sharing similar aims as the Nazis—namely, the destruction of the Weimar Republic, the removal of Jews from German intellectual life (along with other anti-Semitic measures), along with territorial expansion of the German state into an ethnonationalist “Greater Germany”—*völkisch* theorists like Wilhelm Stapel were skeptical of the Party because they saw the Nazis as common rabble, not fit to rule the new Germany. These *völkisch* conservatives were elitists to the bone, as Jordan-as-Domeier’s essays on education discussed above make clear. They were often disgusted by the average German.<sup>138</sup> In short, Jordan, Stapel, and their friends viewed themselves as part of an intellectual vanguard who would bring the new German *Reich* into being, and were ultimately bitterly disappointed when the Nazis did not turn to them for help after they took power in 1933.<sup>139</sup> (See Chapter 2)

It was through *Deutsches Volkstum* and the efforts of Stapel that Jordan’s star became known on the *völkisch* political spectrum. It was apparently something of an open secret in *völkisch* circles that “Ernst Domeier” was actually Pascual Jordan. Stapel in particular seems to have had Jordan’s permission to inform friends and colleagues that “Domeier” was willing to contribute to their journal. As late as 1944, for example, he informed Carl Schmitt—who was now Jordan’s neighbor in Berlin—that Jordan had published in *Deutsches Volkstum* as Domeier in “times passed.”<sup>140</sup> As Jordan

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<sup>137</sup> Ibid., 423.

<sup>138</sup> For intellectuals claiming to speak for the *Volk*, Jordan, Stapel, and others did not hold a high opinion of the common German. Wilhelm Stapel described a wartime experience inside a large air raid bunker in Hamburg, where he had been forced to seek shelter with the masses, in withering terms: “I was—for the first time—in a bunker, as I was inside the city just then. No more bunkers! One feels downgraded cooped up in a scared mob. I pushed my way out into the open [i.e. out of the bunker]. Better to die from a bomb than [among] such a disgusting *Volksgemeinschaft*.” Stapel to Carl Schmitt, March 29, 1945, reprinted in Siegfried Lokatis, ed., “Wilhelm Stapel und Carl Schmitt. Ein Briefwechsel,” in *Schmittiana: Beiträge zu Leben und Werk Carl Schmitts*, vol. 5 (Berlin: Duncker & Humblot, 1996), 89.

<sup>139</sup> Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 283–84, 328–37.

<sup>140</sup> Stapel to Carl Schmitt, April 11, 1944, reprinted in Siegfried Lokatis, ed., “Wilhelm Stapel und Carl Schmitt. Ein Briefwechsel,” in *Schmittiana: Beiträge zu Leben und Werk Carl Schmitts*, vol. 5 (Berlin: Duncker & Humblot, 1996), 27–108, here 84. Interestingly, Schmitt responded that he “hoped to call on Prof. Jordan



knowingly wrote in a birthday letter to Stapel in 1932, on the eve of the Nazi takeover of power:

“Ernst Domeier’ would also like to join here with his thanks for all of the personal support that he has received from you.”<sup>141</sup> Other *völkisch* journal editors informed members of the *völkisch* movement who inquired about Domeier that it was actually Jordan’s pseudonym.<sup>142</sup>

Already in 1930, Jordan-as-Domeier had published in another *völkisch* organ beyond *Deutsches Volkstsum*: an article on the nature of conservatism appeared in a September issue of *Die Kommenden* (“The Vanguard,” or “The Forecomers,” also with a mystical overtone), a magazine geared toward members of the German youth movement edited by Ernst Jünger, among others.<sup>143</sup> By 1931, though, his essays in *Deutsches Volkstsum* attracted the attention of another *völkisch* leader, August Georg Kenstler, an ethnic German originally from Romania who edited his own journal, titled *Blut und Boden* (Blood and Soil).<sup>144</sup> Kenstler wrote to Jordan—perhaps after asking Stapel who Domeier was—asking him to contribute to *Blut und Boden*. Jordan responded, saying that he would “happily” contribute to the journal.<sup>145</sup>

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sometime soon.” See Schmitt to Stapel, April 15, 1944, *Ibid.*, 84. Jordan did indeed meet Carl Schmitt, either toward the end of the war or afterward, though the extent of their acquaintance seems to have been limited. Schmitt mentions Jordan in several 1948-1949 entries in his postwar diary, the *Glossarium*; see Carl Schmitt, *Glossarium: Aufzeichnungen aus den Jahren 1947 bis 1958*, ed. Gerd Giesler and Martin Tielke, *Erweiterte, berichtigte und kommentierte Neuauflage* (Berlin: Duncker & Humblot, 2015). Moreover, Jordan apparently sent some of his works to Schmitt; see Dirk van Laak and Ingeborg Villinger, *Nachlass Carl Schmitt: Verzeichnis des Bestandes im Nordrhein-Westfälischen Hauptstaatsarchiv* (Siegburg: Respublica-Verlag, 1993), 587.

<sup>141</sup> Jordan to Stapel, October 26, 1932, *Nachlass Stapel*, DLA.

<sup>142</sup> See for example August Georg Kenstler (editor of *Blut und Boden*, discussed below) to Werner Henneke, November 4, 1931, *Nachlass Kenstler*, Nr. 17, SAG. See also Harald von Rautenfeld to Fritz Worms, November 15, 1949, BB, 010/2.

<sup>143</sup> This article was mentioned above; see Domeier, “Was heißt ‘konservativ?’” On *Die Kommenden*, which served as a unifying journal for all of the various German youth groups, see Breuer and Schmidt, *Die Kommenden*.

<sup>144</sup> On Kenstler (1899–1941), see Böhm, “August Georg Kenstler, Herausgeber der Monatsschrift ‘Blut und Boden.’”

<sup>145</sup> Jordan to Kenstler, July 30, 1931, *Nachlass Kenstler*, Nr. 5, SAG.

Indeed, over the next three years, Jordan published eleven articles in *Blut und Boden*. The title “Blood and Soil,” is striking by itself, as it would become an infamous Nazi slogan, yet the subtitle is just as revealing: “Monthly Journal for Strong-Rooted Peasantry, German Nature, and National Freedom! (*Monatsschrift für wurzelstarkes Bauerntum, für deutsche Wesensart und nationale Freiheit!*)” The tripartite subtitle can be decoded as follows: “Strong-Rooted Peasantry” corresponded to a radical back-to-the-land pro-farmer program deeply wary of corrupting influences in the cities; “German Nature” was the familiar euphemism for copious amounts of anti-Semitism, and “National Freedom” was a code word for the rabid *völkisch* desire to revise the supposed “dictat” of the Versailles treaty. Notably, it was actually Kenstler who coined the slogan *Blut und Boden*, which was later seized on by the Nazis.<sup>146</sup> It was in this appropriately dark journal that Jordan/Domeier’s most radical and hateful thoughts were printed. His first essay in *Blut und Boden* appeared in the November 1931 issue of the journal, or, in *völkisch* parlance, *Nebelung* (“fogginess” or “fog-month”) 1931, for the journal used the “old Germanic” names of the months instead of the Roman calendar to emphasize its supposed connection to the *Volk*.

This essay, simply titled “Radicalism,” was as Jordan described, originally written for his “own intellectual clarification,” and it was as extreme as its title suggested. It advocated for Germany to completely withdraw from the world economy and all its “interrelations.”<sup>147</sup> The “governing system of international finance” was “frail,” wrote Jordan, a “sign of revolution.”<sup>148</sup> But this would not be a workers’ revolution as traditionally construed by the left wing. No, wrote Jordan, it would

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<sup>146</sup> Ironically, Kenstler himself was sidelined in the Nazi regime, and *Blut und Boden* was banned, because the “Reich Farmer Leader” Richard Wilhelm Darre apparently saw Kenstler and his journal as a threat. But Kenstler remained a member of the NSDAP until his death from complications of diabetes in 1941. See Böhm, “August Georg Kenstler, Herausgeber der Monatsschrift ‘Blut und Boden,’” 32–34.

<sup>147</sup> Jordan to Kenstler, July 30, 1931, Nachlass Kenstler, Nr. 5, SAG.

<sup>148</sup> Ernst Domeier, “Radikalismus,” *Blut und Boden: Monatsschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 3, no. 11 (November 1931): 313, 314.

be directed against urban city-dwellers; as he proclaimed, “the revolution of blood and soil is a revolution directed *against* the proletariat” and those who live in the “asphalt wastes” (*Asphaltwüste*).<sup>149</sup> (The irony of course was that Jordan himself was a city-dweller through and through, born in Hannover and now living in Rostock; moreover, his profession certainly was not living off “blood and soil.”) Concomitant with these fears was a deep skepticism of technology. Jordan as Domeier seemed to envision Germany returning to a neo-feudal state based on mostly agrarian and artisan labor.<sup>150</sup>

The one exception of this extreme aversion to technology, though, was in the military sphere. A healthy skepticism of cities and technological advancement, wrote Domeier, “must not lead” to thinking that we “do not need to cultivate technology at all anymore. It is *war* that exerts the absolute force of technology and its continuation.” This technological dichotomy, wrote Jordan, was one of the “great problems” of the coming “German revolution,” which, as he claimed, stemmed from “radicalism of blood”: “Separation from technology, where it threatens to kill off the nuclei of bloodish [*bluthaft*] life with its mechanized constraints. Approval and acceleration of technology where it must forge the weapons of militant assertion.”<sup>151</sup> These seemingly paradoxical views were characteristic of the entire *völkisch* movement, famously characterized by Jeffrey Herf as “reactionary

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<sup>149</sup> Ibid., 317.

<sup>150</sup> Here, Jordan was in line with the journal, which promoted two *völkisch* offshoots: the radical *Artaman* movement, and the *Landvolkebewegung* [Peasants’ Movement]. On the *Artaman* movement, a *völkisch* “back-to-the-land” offshoot of the German youth movement whose goal was to strengthen German farmers in the east, thereby “defending” Germany from Slavic (i.e. Polish) elements, see Kater, “Die Artamanen.” On the Peasants’ Movement, see Otto-Morris, *Rebellion in the Province*. Both groups, though distinct from Nazism, served as incubators for Nazi thought.

<sup>151</sup> Domeier, “Radikalismus,” 317.

modernism”: namely, a deep suspicion of the influence of technology on society paired at the same time with an obsession with its destructive potential in war.<sup>152</sup> Jordan exemplified this paradox.

Other essays by Domeier in *Blut und Boden* denounced Weimar-era efforts to reform criminal justice and called for a dramatic increase in the usage of the death penalty, rejoiced at the dismissal of Prussian Minister-President Otto Braun and his social democratic government in summer 1932, and railed against the ruination of individual German farmers by the oppressive capitalist system.<sup>153</sup> But the most revealing is a 1932 article, titled “For Luther’s Legacy,” which contains overtly anti-Semitic passages unparalleled in any of Jordan’s other writings. Much of the essay is standard Domeier fare with a religious tinge: railing against technology, “progress” and liberalism as attempts to deny the existence of eternal sin, and denouncing materialism as a denial of God’s creation. It is in the final section of the essay, on the crucifixion of Christ, that Jordan turns to a classic anti-Jewish trope, that the Jews killed Jesus. For its unique importance as anti-Semitic rhetoric in Domeier writings, it is worthy of quotation at length:

...[T]he Jewish people long awaited the arrival of the foretold Messiah. Nevertheless, Juda, in a fateful mistake, *did not acknowledge Christ*, but *killed* him. This egregiously wicked deed [*Freveltat*], incomparable to any other example, made Juda into a people cursed above all peoples. There are actually Protestant pastors today who think that “anti-Semitism” is “un-Christian”; but they only demonstrate through this that they *do not know* Christianity (and that they mistake it for *humanism*, the religious substitute of the freemasons). There can actually be no *deeper* “anti-Semitism” than the Christian [kind], which rests on the knowledge of the unatonable wicked deed [*unsühnbaren Freveltat*] of the Jewish people and the indelible curse imposed on Jewish blood.

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<sup>152</sup> Herf identifies Ernst Jünger, and Oswald Spengler, both of whose works deeply influenced Jordan, as exemplars of this trend. See Jeffrey Herf, *Reactionary Modernism: Technology, Culture, and Politics in Weimar and the Third Reich* (Cambridge: Cambridge University Press, 1984), particularly 49-108.

<sup>153</sup> Respectively, Ernst Domeier, “Die Todesstrafe,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 5 (May 1933): 229–33; Ernst Domeier, “Militärstaat und Polizeistaat: Otto Braun zum Abschied,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 4, no. 8 (August 1932): 369–71; Ernst Domeier, “Die Zerletzung des Eigentums,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 1 (January 1933): 7–10.

For Juda, however, there is only *one* (albeit *mistaken*) hope to release this curse: it must show that Christ was actually a *false* Messiah and that his crucifixion was *righteous*. Therefore, Juda is the irreconcilable enemy of those who believe in Christ: the deep religious meaning [i.e., goal] of global Jewish politics is that *Christianity should be wrested once more from the Christian peoples*. A primary means for this is the support and dissemination of all doctrines that deny eternal sin and preach “progress” (parliamentary democracy, pacifism, Marxism, liberalism, psychoanalysis).<sup>154</sup>

In this passage we see how Jordan’s hatreds intertwined. The liberal Weimar Republic was itself a product of “world Jewry.” This fallacious government—based on a denial of Christ, according to Jordan—had placed its faith in another false (Jewish) messiah, technology, instead of trusting in God. There was no hope for betterment for the masses; Jordan’s view was that they simply had to place faith in religion. All liberal or left-wing political systems were attempts to undermine Christianity.<sup>155</sup> Even with an understanding of Jordan’s *völkisch* milieu and the anti-Semitic overtones of his other articles under the Domeier pseudonym, it is still jarring to think that the same man who wrote these hateful passages happily collaborated with and befriended Jewish scientists.<sup>156</sup> Perhaps the religious nature of Jordan’s anti-Semitism meant that he did not discriminate against German Jews who had converted to Christianity, as many of his Jewish friends had done. (If so, this would have been an extremely uncommon view among the *völkisch* right-wing, who saw the Jews as a separate “race.”) More likely is that Jordan was anti-Semitic, particularly against newer Jewish immigrants from Eastern Europe, yet made exceptions in his own mind for those “good” German Jews who had fought for Germany during World War I. This seemingly paradoxical view was not

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<sup>154</sup> Ernst Domeier, “Um Luthers Erbe,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 4, no. 9 (September 1932): 388–91, here 391. Emphasis in original.

<sup>155</sup> The reference to psychoanalysis is particularly fascinating, as Jordan had sought therapeutic help for his stutter in the mid-1920s.

<sup>156</sup> It was not as if Jordan had stopped collaborating with Jewish scientists. As will be seen in Chapter 2, shortly after this article was published in *Blut und Boden* in 1932, Jordan began to collaborate with Eugene Wigner and John von Neumann—both Hungarian Jews who fled Germany after 1933—on a mathematical article. These relationships were ongoing, and continued until the late 1930s.

unknown among even some *völkisch* thinkers. In any case, he clearly shared the anti-Semitism of his political milieu.<sup>157</sup>

### **Conclusion: The Baltic Brotherhood**

But what exactly did Jordan hope for from a future German state? What would the future *Reich* look like? One final group he was affiliated with, almost as obscure as the circles surrounding *Blut und Boden* in the early 1930s, gives us some clues. This was the *Baltische Brüderschaft* (Baltic Brotherhood), an organization for ethnic German émigrés from the Baltic states. Prior to 1914, the traditional nobility in the Russian-ruled Baltic states—particularly modern-day Latvia and Estonia—was ethnically German. After the Russian Revolution, with the toppling of the nobility and the independence of the Baltic states, many of these Baltic Germans, as this group became known, began to move to Germany proper. The Baltic Brotherhood was thus founded as a sort of fraternal organization for Baltic Germans, with membership originally limited only to those from the Baltic states. However, in typical *völkisch* style, this group was more than a place to reminisce; it claimed also to stand for the Germans still present in the Baltic states—and it also propagated German expansionism in the East.<sup>158</sup>

Jordan, of course, was born in Hannover, in western Germany, nowhere near the Baltic States, and had no familial connection to the ethnic German community there. Yet beginning in 1931, he was somehow drawn to this organization. It seems that he came into contact with Baltic Germans during his time in Rostock. Like many *völkisch* thinkers, Jordan was deeply concerned

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<sup>157</sup> The essays Jordan wrote under the Domeier personality are so vitriolic and so distinct from his scientific publications and personal correspondence that one wonders if Jordan himself saw “Ernst Domeier” as an angry alter-ego with a specific style.

<sup>158</sup> On the Baltic Brotherhood, see in particular Bastian Filaretow, “Die Baltische Brüderschaft. Wider den Zeitgeist?,” in *Deutschbalten, Weimarer Republik, und Drittes Reich*, Baltikum in Geschichte und Gegenwart 1 (Köln: Böhlau Verlag, 2001), 11–50.

about apparent “encroachment” of other races onto German territory in the east, so perhaps this was the reason the Baltic Brotherhood spoke to him.<sup>159</sup> It also appears that the deeply religious, Protestant nature of the Brotherhood appealed to his religious *völkisch* side. (Jordan deeply opposed the attempts of some more mystical *völkisch* “thinkers” to create a neo-pagan “Germanic” religion to oppose Christianity.<sup>160</sup>) So the Brotherhood’s combination of *völkisch* thought, Christianity, and ethnonationalist territorial expansion attracted Jordan. He was admitted to the group in 1931, apparently one of the first Germans from Germany proper to be admitted as a member.<sup>161</sup> From 1931 until the group’s dissolution by the Gestapo in 1936, Jordan was active in the group, attempting to recruit more Germans born in the “*Reich*” into the Baltic Brotherhood.

Jordan, ever the elitist, seems to have believed that the Baltic Brotherhood, a pseudo-religious nationalistic order, was an example for what would be needed to “renew” Germany in the *völkisch* sense. Similar organizations founded along lines similar to the Brotherhood were necessary; the country needed “not only a *Führer*, but also a leading class [*Führungsschicht*],” and both would charismatically steer the “new Germany” back to greatness.<sup>162</sup> It was unclear how one would develop

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<sup>159</sup> Jordan mentions “settlement questions” in one of the two extant letters to Kenstler, and it occasionally came up in his articles; see Jordan to Kenstler, July 30, 1931, Nachlass Kenstler, Nr. 5, SAG, as well as Domeier, “Das Gesetz der Geschichte,” July 22, 1933. (For more on this essay, see Chapter 2.)

<sup>160</sup> These *völkisch* elements—including Erich Ludendorff’s wife, Mathilde—argued that because Jesus was himself a Jew, Christianity was inherently a “creation of Judaism.” The anti-Semitic passages in Jordan’s “Um Luthers Erbe” essay quoted above attempted to “demonstrate” that this was wrong. See Domeier, “Um Luthers Erbe,” 391.

<sup>161</sup> Jordan is listed as a member beginning with a newsletter in 1931; see Rundschreiben Nr. 4 des Inneren Ringes der Baltischen Bruderschaft, October 15, 1931, p. 3; BB, 004/10, III,17.

<sup>162</sup> Pascual Jordan, “Von der Baltischen Bruderschaft,” typeset manuscript with annotations, summer 1933, p. 5, BB, 004/05. This manuscript was written after Hitler took power, and contains suggestions as to how the Baltic Brotherhood could fit into the Nazi state. (See Chapter 2 for a discussion of these passages.) It is nevertheless my contention that this pamphlet outlines the mystical-elitist ideals Jordan formulated during the final years of the Weimar Republic and that at the time the pamphlet was written, he was simply adapting his ideas for a future German state in a way that he believed could work under Nazi rule. (As will be seen in Chapter 2, this obviously did not happen.) There is evidence that this essay accurately represents Jordan’s pre-1933 beliefs; many passages in the 1933 pamphlet were directly incorporated into a pseudonymous 1950 book by Jordan, *Das Problem der Elite*, written under a new pseudonym, Erwin Rack. Among many other similarities,

such a leading class. Political clubs for the upper class were a start, but ultimately such a group was too loose to form the necessary bonds. Yet one could not create organizations too tightly bound or the leading personalities would be hampered and crushed by bureaucracy. The “secret” to what would characterize the leading class, though, was clear: it was a mixture of “highest stock [Zucht]...indissoluble bonds, and tightest discipline of attitude” combined with “freedom of personality which not only *permits*, but *promotes* constant readiness and daring initiative.”<sup>163</sup> Groups like the Baltic Brotherhood would thus serve in the “new Germany” as a “strong, enduring support for elite [*oberschichtlich*] leadership”—a place to “consolidate” all “elite forces.”<sup>164</sup>

Amazingly enough, Jordan seemed to think that the mystical mission of groups like the Baltic Brotherhood could be realized on a broader scheme. Indeed, surprising as it may seem today, Jordan, a theoretical physicist, truly seems to have believed that the resurrection of religious orders held the solution to Germany’s problems. What would happen, though, when the Weimar Republic, so hated by Jordan, was actually toppled—not by *völkisch* intellectuals like Jordan, but by the Nazi Party, whom they alternately envied and looked down upon? How would Jordan react to Nazi rule? It is to this topic that we turn to in Chapter 2.

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p. 2–3 of the Baltic Brotherhood manuscript are largely identical with p. 54–58 of *Das Problem der Elite*, and p. 5–6 of the manuscript are clearly the basis for p. 14–16 of *Das Problem der Elite*. This Rack book was written while Jordan and others were attempting to restart the Baltic Brotherhood as the *Brüderliche Kreis* [Brotherly Circle], and members of the Baltic Brotherhood were involved with the publication; see for example Harald von Rautenfeld to Fritz Worms, November 15, 1949, BB, 010/2. For the postwar book itself, see Erwin Rack, *Das Problem der Elite* (Hamburg: H. H. Nölke Verlag, 1950). The *Brüderliche Kreis* still exists today.

<sup>163</sup> All quotes from Pascual Jordan, “Von der Baltischen Bruderschaft,” typeset manuscript with annotations, summer 1933, p. 6, BB, 004/05. Emphasis in original.

<sup>164</sup> Pascual Jordan, “Von der Baltischen Bruderschaft,” typeset manuscript with annotations, summer 1933, p. 7, BB, 004/05.



## Chapter 2: Accommodations, Alliances, and Representations, 1933-1939

*“The National Socialist revolution constitutes a watershed [moment] in the course of German history, to which in view of its scope and meaning [Tragweite und Bedeutung] only a few other events of earlier periods can be compared.”*  
–Ernst Domeier [Pascual Jordan], July 22, 1933<sup>1</sup>

*“This is no place for national kitsch—in the sense of a laughable and bogus claim that alleged ideological concerns should be placed in the way of scientific factfinding. It does not matter if our airplane designers have a ‘German-looking’ [deutschartig-schauende] concept of nature (or whatever the con may be called); but it is essential that their education and their ingenuity allow them to build airplanes that are faster, more reliable, more sustainable, and superior at climbing than [the airplanes] they have abroad.”*  
–Pascual Jordan, March 5, 1938<sup>2</sup>

What was it that drew Jordan to National Socialism; why did he join the Party in May 1933?<sup>3</sup> Setting aside what his colleagues believed—or what he led his colleagues to believe—what were Jordan’s actual aims under Hitler? What did he expect from National Socialism and the fall of the Weimar Republic? These questions have been the crux of scholarly debates surrounding Jordan for decades. On one side are historians such as Norton Wise, who views Jordan as a Nazi to the bone, characterizing his worldview as one based on a “willingness to manipulate other people and their ideas in the greater interest of justifying power.”<sup>4</sup> Others style Jordan as a political naïf: “In spite of his bizarre political activities, he was personally a shy and kind man,” wrote Jordan’s former student

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<sup>1</sup> Domeier, “Das Gesetz der Geschichte,” July 22, 1933.

<sup>2</sup> P. Jordan, “Nationalsozialistische Wissenschaft — Aufgabe ohne Kompromiß!,” *Wille zum Reich: Halbmonatsschrift für Politik und Kultur* 13, no. 5 (March 5, 1938): 55.

<sup>3</sup> It is important here at the outset to note that a person’s membership in the Nazi Party was not in and of itself a signifier that they were fervently attached to the regime or its ideology. Many people, particularly civil servants, joined for careerist or opportunistic reasons, or were essentially forced to join at some point. (Many who joined in early 1933 joined for careerist reasons.) Meanwhile, many who deeply sympathized with the Party’s *völkisch*, expansionist, and radically anti-Semitic project never formally joined the Party for various reasons. Jordan’s friend Wilhelm Stapel, the man who introduced him to the *völkisch* political spectrum, is an example of someone who remained outside the Party yet agreed with many of its aims. As will be seen, though, Jordan was not a careerist or an opportunist; he formally joined the NSDAP because he agreed with the vast majority of Nazi policies.

<sup>4</sup> Wise, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism,” 254.

Engelbert Schücking in 1999.<sup>5</sup> In this chapter, I describe what in the Nazi movement appealed to Jordan, sketch out his aims for scientific policy under Hitler, and provide an outline of his complex relationship with the international scientific community after the Nazi takeover in 1933.

There was a reason that Jordan, though highly active in German *völkisch* far-right political networks from about 1930, did not join the Nazi Party before 1933: his views and those of the groups he associated with were fiercely elitist—almost intellectually aristocratic—in a way that Nazism was not. Jordan’s allies on the *völkisch* spectrum—Wilhelm Stapel and his journal *Deutsches Volkstum*, August Georg Kenstler and his journal *Blut und Boden*, the circle surrounding *Der Ring*, and the Baltic Brotherhood—had varying aims and motivations, as discussed in Chapter 1, but they shared a belief that they were the intellectual forerunners of the “new Germany.”<sup>6</sup> These far-right apostles—including Jordan—assumed that they, the enlightened *völkisch* elite, would lead cultural policy in any future Germany. Jordan’s friend Stapel epitomized this elitism in a 1932 essay, urging the Nazis, if and when they took control of Germany, not to give “posts [solely] on the basis of [Nazi] party membership,” but instead on “actual accomplishments.”<sup>7</sup> Jordan agreed with Stapel wholeheartedly. The implication was obvious to Stapel or Jordan: after all, who had more *völkisch* credentials than they? In other words, Jordan and his far-right allies were not opposed to any particular Nazi policies, and in fact agreed with most of them; all their future frustration with

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<sup>5</sup> Engelbert Schücking, “Jordan, Pauli, Politics, Brecht...and a Variable Gravitational Constant,” in *On Einstein’s Path: Essays in Honor of Engelbert Schücking*, ed. Alex Harvey (New York: Springer, 1999), 3.

<sup>6</sup> From January to April 1933, Jordan was a member of the German National People’s Party [*Deutschnationale Volkspartei*, DNVP]. This was traditionally a home of monarchist forces, and though Jordan was not in this group, many *völkisch*, anti-democratic thinkers nevertheless favored the long-established elitist DNVP, seeing it as a higher-class alternative to the Nazi ‘rabble.’ For Jordan’s membership in the DNVP, see StaH, 221-11, 68600 KAT, Fragebogen p. 8. On the DNVP more generally, see for example D. P. Walker, “The German Nationalist People’s Party: The Conservative Dilemma in the Weimar Republic,” *Journal of Contemporary History* 14, no. 4 (1979): 627–47.

<sup>7</sup> Quoted in Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 282.

Hitler's regime stemmed from the firm, unwavering belief that they, the *völkisch* intellectual vanguard, deserved to be in charge of the "new Germany" instead of the "rabble" in the Nazi ranks.

In 1933, though, these intellectuals still believed that they could steer intellectual life and policy in the "new Germany." Surely, Jordan and his friends believed, the higher-ups in the Nazi Party would realize their brilliance, their "actual accomplishments," and place them in leading positions in the Third Reich. If Jordan and his *völkisch* compatriots continued to look down on much of the low-class Nazi proletariat, they were more than willing to see past these more "distasteful" elements of the Party and eager to work with the new state. For Jordan personally, as we will see, his preferred authoritarian state might have looked somewhat different, yet he was happy to work with the one that did come to fruition, Hitler's Nazi state. After all, there were many policies advocated by the Nazis that Jordan clearly approved of, including their aggressive foreign policy, their autarkic economic policies, and, crucially, the virulent pan-German ethnonationalism central to the Party's identity.<sup>8</sup>

Recent research by German historian Thomas Vordermayer has emphasized how Jordan was far from alone in this way. Much of his *völkisch* elitist far-right milieu also came out openly for the Nazis in 1932 or 1933, attempting to steer policy in the "new Germany" by positioning themselves as its intellectual forerunners. As Vordermayer details, these attempts failed miserably, as the Nazis had no interest in listening to intellectuals they often viewed as arrogant. Thus Jordan, Stapel, and their ilk were by and large quickly disillusioned with the reality of everyday life under the regime. Yet this did not mean that they stopped supporting it, or withdrew from public life and retreated into what became known as "inner emigration." Believing that the Nazi state was the best they could

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<sup>8</sup> See Chapter 1 for more on Jordan's worldview during the Weimar Republic and his place in the *völkisch* cultural-political spectrum.

hope for, and continuing to agree with many of Hitler's policy aims, these *völkisch* intellectuals, including Jordan's friend Wilhelm Stapel, continued to openly propagandize for the regime.

Vordermayer clarifies this apparent dichotomy, characterizing it as a “parallel process of private experiences of disillusionment and public willingness to propagandize for the regime.”<sup>9</sup> This seemingly paradoxical “parallel process” described by Vordermayer can also be applied to Jordan's relationship to the Nazi state. Unlike Stapel, though, who was completely disenchanted, Jordan held out hope well into the war that by continuing to propagandize for the regime and inject ideology into his science, the Nazis would eventually come around and see that science could be valuable to the regime. Even if the Nazi state did not live up to the millenarian hopes Jordan held for the ‘new Germany’ during the Weimar Republic, and turned out to be flawed and corrupt, well into the war, Jordan believed that the regime could potentially be convinced to financially support scientific research on a grandiose scale. When the winds finally turned in his favor, Jordan believed that as the regime's loyal servant, he would be rewarded with a position of power directing science policy in the Third Reich and occupied Europe, while the natural sciences and physics in particular reined in boundless funding for research.

### **1933: Euphoria for the “National Socialist Revolution”**

Despite what he claimed after the war, newly discovered articles written under the Domeier pseudonym make clear that in 1933, Jordan greeted the Nazi takeover with acclaim and experienced the same “*Führer* euphoria” as many of his German compatriots. These articles, many published in *Blut und Boden*, make clear that Jordan's hopes for the new regime extended far beyond the scientific realm—and make apparent why he would later be disenchanted with the regime. One attacked

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<sup>9</sup> Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 273–337, here 337.

economists and economic theory for attempting to regulate the entire German economy; the Great Depression could be solved, Jordan believed, if one only listened to farmers and not “unrealistic theories.”<sup>10</sup> Another urged a massive expansion of the death penalty as the only way to “avenge” a crime, and attacked “liberal criminal law reformers” of the Weimar period for attempting to alter an “inner law of blood.”<sup>11</sup> A third focused on one of Jordan’s favorite topics: the necessity for Germany to attain economic autarky, particularly in its food supply, so that in case of a future war, Germany could be self-sufficient and survive a blockade. (According to Jordan, liberal Weimar-era governments had encouraged foreign imports of cheaper food, which had ruined the livelihoods of German farmers and lowered Germany’s chances at winning another war.<sup>12</sup>) Helping farmers would rescue the country from “proletarianization and urbanization [*Vergroßstädtisierung*]”; as he noted, the “entire city is an area where the *Volk* dies off [*völkische Absterbegebiet*].”<sup>13</sup> Perhaps more importantly, though, Jordan argued that economic autarky was a precondition for the “profound spiritual renewal [*seelische Erneuerung*]” necessary for Germany’s mystical *völkisch* rebirth.<sup>14</sup>

Another, longer article from July 1933—i.e. after the Nazi purge of Jewish and left-wing academics had begun—was published in both *Blut und Boden* and *Deutsches Adelsblatt* (German Nobles’ Paper), the paper of the German nobility, and is worthy of closer examination. In this piece, influenced by the thought of Oswald Spengler, the famous prophet of Western decline, we see

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<sup>10</sup> Ernst Domeier, “Mangel an Verstand als Ursache der Wirtschaftskrise,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 4 (1933): 184–85, on 185.

<sup>11</sup> Ernst Domeier, “Die Todesstrafe,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 5 (1933): 229–33, on 232. The death penalty, wrote Jordan, is the kernel of the state’s power: “the right of the state to impose the death penalty gives the state its distinction as judgmental authority.” See *Ibid.*, 233.

<sup>12</sup> Ernst Domeier, “Bauernstand, Mittelstand und Nationalwirtschaft,” *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 4 (April 1933): 162.

<sup>13</sup> *Ibid.*, 163.

<sup>14</sup> *Ibid.*, 167. Jordan shared this belief with many of his friends on the *völkisch* far-right wing.

Jordan, the *völkisch* far-right conservative, coming to terms with the Nazi movement and ultimately giving it his blessing.<sup>15</sup> True conservatives, wrote Domeier/Jordan, understood the Spenglerian “*law of history*”: historical “themes” remained constant, while the “forms” in which these characteristic themes manifested changed with the times. “With weapons adequate for the age of technology and the masses,” Jordan proclaimed, “we come to a new path in the struggle with the thousand-year-old problems of German history.”<sup>16</sup> Thus Germany would always be locked in combat with France, and would always be attempting to expand in the East: these were thousand-year-old themes of German history that were simply unavoidable. National Socialism, wrote Jordan, was the form in which these themes would flow in the present day, a “resumption of the thousand-year-old tradition of the *German idea of the Reich* [*Reichsgedanken*].”<sup>17</sup> With this Spenglerian theory of conservatism in mind, Jordan concluded: “In the National Socialist movement Adolf Hitler is not only the highest, but also the—in the true sense of the word—most conservative *Führer*.”<sup>18</sup>

Jordan wrote all of these articles under the Domeier pseudonym; even in the new atmosphere, they were perhaps too radical to appear under the pen of a university professor. However, it seems likely that Jordan also used the pseudonym because he did not want his Jewish and left-wing friends and colleagues—now persecuted and on the run—to know his true thoughts. For these Domeier articles from early 1933 lead to only one conclusion about Jordan’s true feelings

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<sup>15</sup> Spengler’s magnum opus, *The Decline of the West*, published in two volumes in German in 1918 and 1922, prophesied the inevitable decline of Western culture. It greatly influenced *völkisch* intellectuals in Germany. For the English translation, see Oswald Spengler, *The Decline of the West*, trans. Charles Francis Atkinson, 2 vols. (New York: A. A. Knopf, 1926–1928). On Spengler, see John Farrenkopf, *Prophet of Decline: Spengler on World History and Politics* (Baton Rouge: Louisiana State University Press, 2001).

<sup>16</sup> Ernst Domeier, “Das Gesetz der Geschichte,” *Deutsches Adelsblatt* 51, no. 30 (July 22, 1933): 517–19, on 518. This article was printed in *Blut und Boden* in a shortened form in the August 1933 issue; see Domeier, “Das Gesetz der Geschichte,” August 1933.

<sup>17</sup> Domeier, “Das Gesetz der Geschichte,” July 22, 1933, 518–19.

<sup>18</sup> *Ibid.*, 518.

during that fateful year: like many other Germans, Jordan applauded the Nazi takeover. His decision to formally join the Party—which he did on May 1, 1933, the day a temporary moratorium on new Party members came into effect—was one made not for opportunistic reasons, but out of an apparently sincere belief that Nazism would “renew” Germany.<sup>19</sup> Put more plainly, as outlined in Chapter 1 and above, Jordan sympathized with the majority of Nazi aims.

Amid his euphoria in 1933, Jordan also outlined what exactly he wished to see from the “new Germany,” and how he envisioned the new polity developing. By analyzing Jordan’s desires in the *völkisch* moment of triumph, we can see how and why he became dismayed with the eventual reality of the Nazi regime. I now attempt a brief reconstruction of his expectations. At the conclusion of his article in *Deutsches Adelsblatt*, Jordan urged the nobility to take inspiration from the medieval Teutonic Knights, and return to the “concept of the [religious] order.” Religious orders, he believed, would be the Spenglerian “form” in which the “valuable, vibrant forces of the German nobility” would be properly employed in the “service” of the Third Reich.<sup>20</sup>

This brief hint at Jordan’s true hopes for the “new Germany” was elaborated in full form in a pamphlet Jordan wrote for the Baltic Brotherhood in summer 1933.<sup>21</sup> Designed to explain the

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<sup>19</sup> Jordan’s NSDAP membership number was 2,810,642. See BAB/NSDAP-Mitgliederkartei, Roll K0111, Jordan, Pascual. Another Nazi Party source lists his admission date into the Party as April 28, 1933. Either way, it seems that Jordan, like many Germans, rushed to get in his NSDAP application before the temporary moratorium on accepting new Party members took effect on May 1. See BAB/NSLB-Kartei, Roll B0013, Jordan, Pascual. This ban on new members was intended to halt the entry of “opportunists” into the Party, and thus placate long-time Nazis, who saw the millions who applied to join the Party in spring 1933 (including Jordan!) as insincere careerists. See for example Björn Weigel, “‘Märzgefallene’ und Aufnahmestopp im Frühjahr 1933: Eine Studie über den Opportunismus,” in *Wie wurde man Parteigenosse? Die NSDAP und ihre Mitglieder*, ed. Wolfgang Benz (Frankfurt am Main: Fischer Taschenbuch Verlag, 2009), 91–109.

<sup>20</sup> Domeier, “Das Gesetz der Geschichte,” July 22, 1933, 519. Jordan had already published an article hinting at the need to return to the concept of the religious order in *Deutsches Adelsblatt* in early January 1933, before Hitler was named chancellor. See Ernst Domeier, “Führung oder Herrschaft,” *Deutsches Adelsblatt* 51, no. 1 (January 1, 1933): 5–6.

<sup>21</sup> For more on the Baltic Brotherhood [*Baltische Brüderschaft*], see Chapter 1.

mission of the group to potential new members, in the pamphlet Jordan declared that the Baltic Brotherhood—founded in the Weimar Republic—was a “forerunner” of what other orders in the Third Reich would look like.<sup>22</sup> Groups like the Baltic Brotherhood would be where elite leaders for Nazi Germany were trained and cultivated. For the Party was a “movement of millions,” meaning that by sheer math, not all everyday Party members would be qualified to lead the various areas of the country. Thus the most important task now facing the “national revolution” was to find the “leading elite *within* this movement...to extract the highest [qualified people] from those [i.e. millions] available.” Again, due to the size of the Party, this was a problem that even Hitler, the “genius *Führer*...whose tremendous spark of leadership is capable of tearing us upward out of the abysses” could not solve alone.<sup>23</sup> For if this truly select class of leaders were not properly identified, Jordan worried that the victories of the “national revolution” would likely be lost as the new regime stabilized. Instead of the elite leading class, Party hacks and incompetent functionaries would gain control of the levers of power. In effect, one would then be swapping one set of apparatchiks for another, and the longed-for “total state” created during the revolutionary period would then become a terrifying, *Volk*-crushing “*total bureaucracy*.”<sup>24</sup> As this bureaucracy was far more all-encompassing than that of the liberal Weimar era, it would actually prove more damaging to the health of the *Volk* than its liberal predecessor.

Of course, as it turned out, the Nazis had little interest in the Baltic Brotherhood. Jordan’s model organization for mystical-religious orders in the Third Reich was ultimately banned in 1936 as

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<sup>22</sup> Pascual Jordan, “Von der Baltischen Brüderschaft,” galley proof manuscript with annotations, summer 1933, p. 7, BB, 004/05.

<sup>23</sup> All quotes from Pascual Jordan, “Von der Baltischen Brüderschaft,” galley proof manuscript with annotations, summer 1933, p. 6, BB, 004/05. Emphasis in original.

<sup>24</sup> Pascual Jordan, “Von der Baltischen Brüderschaft,” galley proof manuscript with annotations, summer 1933, p. 6, BB, 004/05. This is again an allusion to Ernst Jünger.



a result of an internal party struggle.<sup>25</sup> Moreover, the regime never listened to conservative intellectuals like Stapel or Jordan, nor did it come close to placing them in positions of power. Instead, Jordan's worries in the pamphlet proved prescient—incompetent Party functionaries (in Jordan's eyes, at least) ended up being the ones with power in the Nazi state. Moreover, after toppling the hated republic, instead of creating the mystical *Volksgemeinschaft* [people's community] and spurring the spiritual renewal of the *Volk*, Nazi leaders largely proved to be crassly materialistic and corrupt—they became a new class of fat cats, like those that Jordan so despised in the Weimar Republic. In Jordan's eyes, the Nazi regime thus ultimately became a form of mob rule. As he would write under a pseudonym after the war: “The regime of the great demagogue [i.e. Hitler]” was, in reality, “one of the most complete examples of rule by the masses unleashed.”<sup>26</sup>

Here it is crucial to emphasize that Jordan's disillusionment with the Nazi regime—much like that of his friend Wilhelm Stapel—had nothing to do with Hitler's expansionist foreign policy or Nazi racism. Like the article in *Deutsches Adelsblatt*, the Baltic Brotherhood pamphlet also contained long passages lamenting Germany's Weimar-era fate as a “*Volk ohne Raum*” (people without space) and advocating for the accession and “colonial development” of “new *Lebensraum*” in the East: “What we need is *colonial settlement*, a fight for new soil...which must also be fertilized with blood to become *Heimat*.” Here, though, he went further, writing that the colonial fight for German supremacy in the east was the nation's historic mission, one with worldwide implications: the future global “conflict” between the “white race and the coloreds” could only be won by Europe if it were

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<sup>25</sup> On the Baltic Brotherhood, see Filaretow, “Die Baltische Brüderschaft.” The Nazis similarly had little interest in the old German aristocracy, aside from ensuring the nobility's loyalty to the regime. Indeed, the Party largely disdained traditional elites; see Stephan Malinowski, *Vom König zum Führer: Deutscher Adel und Nationalsozialismus*, *Die Zeit des Nationalsozialismus* (Berlin: Fischer Taschenbuch Verlag, 2004).

<sup>26</sup> Erwin Rack [i.e. Pascual Jordan], *Das Problem der Elite* (Hamburg: H. H. Nölke Verlag, 1950), 39.

led by Germany and its “historical tradition.”<sup>27</sup> In short, Jordan approved of most Nazi war aims in World War II, even if he may have preferred the occupied peoples in the East received marginally better treatment. His disillusionment with the Nazi regime thus came not from its militaristic aims—which he backed—but from the fact that those in charge of the German nation under Hitler, Jordan came to believe, were corrupt rabble who could never bring about a *völkisch* renewal of Germany. As it was for his *völkisch* intellectual friends, Jordan’s disappointment in Hitler’s state was ultimately rooted in resentment: Jordan could never understand why the Nazis never gave him and his compatriots, the true renewers of the *Volk*, the reins of societal control.

### **Scientific Optimism, the Purge of Jewish Scientists, and *deutsche Physik***

The euphoria Jordan experienced upon the Nazi takeover in early 1933 also encompassed a belief that the Nazi government would quickly come to appreciate German science’s potential contributions to the new state. Though little of Jordan’s private correspondence survives from this period, Domeier articles from early 1933 indicate that he believed the Nazis could be rather easily convinced to fund science. To be sure, it would require a little effort to appeal to Nazi ideologues, but by reframing the value of science in Spenglerian language, Jordan believed it could be done. As he wrote in an April 1933 essay titled “The Future of Science” in *Deutsches Volkstum*, it was understandable that many youth thought science was an “expression of a *bygone* intellectual approach,” for most scientists were “more or less infused with true liberal spirit.”<sup>28</sup> Yet natural science needed to be seen as a Spenglerian success story, as it truly sought to best describe nature, and not to explain it entirely; thus science was a “form of the will to power that is most sublime,

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<sup>27</sup> All quotes from Pascual Jordan, “Von der Baltischen Brüderschaft,” galley proof manuscript with annotations, summer 1933, p. 4, BB, 004/05.

<sup>28</sup> Ernst Domeier, “Die Zukunft der Wissenschaft,” *Deutsches Volkstum* 15 (1933): 320–21.

most subtle, and certainly filled with almost brutal vitality.” Moreover, the mathematical sciences were not just of value in the “realm...of the scholar”; they also led to technological advances critical to the “true historical formation of power [*wirklichen historischen Machtgestaltung*].”<sup>29</sup> In other words, they provided a significant advantage in power politics. In a “new Germany” founded on the expansionist goal of overthrowing the Treaty of Versailles, the hint therein at the military potential of science—potentially tremendous weapons capable of winning wars—would be unmistakable, Jordan thought.

In a second spring 1933 article appearing in a different publication, *Volk im Werden* (*Volk* in the Making, again with a mystical overtone), a new journal founded by high-ranking Nazi educational reformer Ernst Krieck that year, Jordan expanded on these plans for a reorganization of higher education.<sup>30</sup> In this semi-official organ, Jordan called for the *Technische Hochschulen*, technical institutes where professionals and engineers were trained, to focus exclusively on preparing the nation’s technical professionals for war: “*The Technische Hochschule must become the intellectual center for the total mobilization of technology.*”<sup>31</sup> Germany could do without technology intended to make life easier, increase comfort, or save work, Jordan argued. Instead, students needed to focus on developing a decentralized distribution system for electricity that could withstand enemy bombing, for example, or technologies that would improve German air defenses. In short, the engineer needed to become the “*technical soldier of the nation.*”<sup>32</sup> This new mission for the *Technische Hochschule* would

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<sup>29</sup> Ibid., 325.

<sup>30</sup> On Krieck and his journal, see Gerhard Müller, *Ernst Krieck und die nationalsozialistische Wissenschaftsreform: Motive und Tendenzen einer Wissenschaftslehre und Hochschulreform im Dritten Reich*, Studien und Dokumentationen zur deutschen Bildungsgeschichte 5 (Basel: Beltz, 1978).

<sup>31</sup> Ernst Domeier, “Landesverteidigung und Technische Hochschule,” *Volk im Werden* 1, no. 3 (1933): 32. All emphasis in original.

<sup>32</sup> Ibid., 31.

also play a role in the mystical renewal of the *Volk*, for it would rejuvenate Germany's latent masculinity: "*technology as a weapon* remains undimshingly compelling for the male mind."<sup>33</sup>

There are also signs that these early 1933 articles under the Domeier pseudonym were simultaneously accompanied by a private campaign behind the scenes, a two-pronged tactic which would prove to be a staple of Jordan's efforts during the Nazi era. In particular, Jordan evidently wrote to the new Prussian Educational Minister, high-ranking Nazi Bernhard Rust, explaining that "Ernst Domeier" was his political pseudonym and sending Rust a copy of his essay, "The Future of Science," as an example of his ideas for science in the Third Reich. In this letter, Jordan apparently also informed Rust that he planned to publish several additional articles in this vein under his pseudonym, which would demonstrate the "possibilities and necessities" of a renewal of German universities in accordance with the Nazi "revolution."<sup>34</sup> In short, it seems to have been nothing less than an attempt to demonstrate to Rust that Jordan was eager to help reconstitute and rebuild universities in the Nazi state. It is highly likely that this was not the only letter Jordan sent to members of the Nazi hierarchy, and that he also attempted to contact other areas of power in the budding state.<sup>35</sup> In early 1933, then, Jordan was ready and willing to help the new government and enlist science in Germany's rebirth.

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<sup>33</sup> Ibid., 32.

<sup>34</sup> Jordan never did publish these additional articles in *Deutsches Volkstum*, likely because he already began to see that the regime was not listening; see below for more on his disillusionment.

<sup>35</sup> Jordan's letter to Rust itself has not surfaced. What I have located is a 1966 letter from the East German *Zentralarchiv* in Merseburg to the archive of the East German security service, the *Stasi*, which found its way into one of Jordan's *Stasi* files. In this letter, the *Zentralarchiv* administrators inform the *Stasi* archivists of Jordan's letter to Rust, but do not note the date of the letter or any archival call numbers for the document. After German reunification, the holdings of the former East German *Zentralarchiv* were merged into the *Bundesarchiv*, the Prussian Privy State Archives in Berlin, and several other (former) West German institutions. Due to this archival chaos, I have unfortunately not yet been able to locate Jordan's letter to Rust. For the letter in the *Stasi* files, see Kaufhold, Leiter der Forschungsgruppe, Deutsches Zentralarchiv, II. Abteilung, Merseburg to Staatliche Archivverwaltung im Ministerium des Innern, July 18, 1966, BStU, Archiv der Zentralstelle, MfS HA IX/11 PA Nr. 2697, Bl. 33.

Yet nothing came of these attempts by Jordan to interest Rust, the Prussian Education Ministry, or other power centers in the regime in what science had to offer to the new state. Given what we now know about the functioning of the Nazi regime, it was highly improbable that the NSDAP, where longtime Party membership was valued above almost all else, would listen to an intellectual who, as noted above, only joined the Party in May 1933.<sup>36</sup> Jordan would have been seen as one of the opportunistic civil servants who joined the Party only after its rise to power was secure.<sup>37</sup> The Nazis would have been equally suspicious of Jordan's *völkisch* credentials, for, as detailed above, they were wary of intellectuals who before 1933 had attempted to steer the Party's direction from outside. Jordan's effort in 1933 was thus likely doomed to failure. Instead, Nazi educational reformers chose to place several of Jordan's bitter enemies in positions of academic power: the group of highly vocal, extremely anti-Semitic, long-time Party members collectively remembered as *deutsche Physik* (or the Aryan physicists).

The seeds of this group were sown well before 1933, when in the early years of the Weimar Republic, anti-Semitic attacks on Albert Einstein and his relativity theory began to circulate. These attacks reached a crescendo in 1920, as recent research has shown, briefly forcing Einstein to flee his house in Berlin.<sup>38</sup> Though these attacks largely subsided during the 1920s, a small group led by

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<sup>36</sup> The Nazi regime, with varying power centers competing for influence, has been characterized as a "polycracy"; see Hüttenberger, "Nationalsozialistische Polykratie."

<sup>37</sup> This group was termed by long-time Nazi Party members as the *Märzgefallene*, the "March victims." This is a reference to the outbreak of the 1848 revolutions, when, in March, police in Berlin and Vienna fired upon demonstrators agitating for liberal freedoms. In the parlance of longtime Nazi Party members, the *Märzgefallene* in 1933 were those who joined the NSDAP after the March 1933 election, where the Nazis won 43.9% of the vote and formed a majority government with their coalition partners, Jordan's DNVP. Here it was meant as an ironic insult to those too cowardly to join the Party before victory was assured; indeed, as noted above, it was for this reason that on May 1, 1933, a temporary ban on accepting new NSDAP members was enacted.

<sup>38</sup> On the early anti-Einstein campaign, see Hubert Goenner, "The Reaction to Relativity Theory I: The Anti-Einstein Campaign in Germany in 1920," *Science in Context* 6, no. 1 (1993): 107–33.

Nobel Prize winning physicists Philipp Lenard and Johannes Stark (both of whom joined the Party well before 1933) nevertheless continued to denounce Einstein and propagate a racially determined vision of physics.<sup>39</sup> Lenard and Stark denounced relativity theory and quantum mechanics as “Jewish physics,” supposedly “dogmatic” theories with no grounding in reality. They contrasted these “theories” with what they termed *deutsche Physik*, a “pragmatic” physical science based on what they claimed were empirical facts and real experiments. This group has been the subject of much study—particularly, as we will see, for the way in which it was used after the war to “exonerate” modern physics and place the blame for all regime crimes on the Nazis—and this is not the place to detail its history extensively. It is sufficient here to state that for all their talk about dogmatism versus pragmatism, the scientific theories presented by *deutsche Physik* in the 1920s and 1930s were largely incoherent; the group was mainly united by their deep hatred of Einstein and their anti-Semitism.<sup>40</sup> Historian Mark Walker rightfully terms *deutsche Physik* a “political movement composed of scientists using the rhetoric of science.”<sup>41</sup>

Before 1933, *deutsche Physik* remained irrelevant, sidelined and ignored by nearly all academic physicists. Hitler’s rise to power in early 1933 changed the situation dramatically. Despite widespread expectations that the Nazis would temper their anti-Semitic platform now that they were in power, they quickly disabused any doubters of their true intentions. On April 7, 1933, only weeks after the creation of Hitler’s dictatorship, the Nazi government promulgated the Civil Service Law, one of the first two discriminatory laws aimed at Jews and political opponents. The law’s official title, the “Law

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<sup>39</sup> Lenard joined the Party in 1924, defending Hitler while he was on trial for the failed Beer Hall Putsch, while Stark joined in 1930. While members who joined the Party after 1933 often had varying motivations for membership and varying degrees of attachment to Party ideology, those who like Stark and Lenard joined during the Weimar years were nearly always fanatical adherents to Hitler.

<sup>40</sup> The best history of *deutsche Physik* remains Beyerchen, *Scientists under Hitler*, 79–168.

<sup>41</sup> Walker, *Nazi Science*, 13.

for the Restoration of the Professional Civil Service Law,” cynically implied that Jews and the left wing had disgraced the German civil service in some way.<sup>42</sup> Because German universities are public institutions, all university professors are civil servants. (This is still true even today.) The law thus provided legal cover for the Nazi government to dismiss Jewish and left-wing professors.<sup>43</sup> In the following months, the Nazi government initiated a large-scale purge of Jewish and politically non-conforming academics from universities.<sup>44</sup>

The natural sciences and mathematics—including Jordan’s own field of physics—were hit particularly hard by the purge, for it was in these fields that Jewish scholars had been able to push past traditional anti-Semitism in German academia during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. Among those Jewish scientists dismissed were Jordan’s dissertation adviser, Max Born, along with mathematician Richard Courant. James Franck, with whom Jordan had co-written his first book, chose to resign rather than take advantage of the clause in the law allowing those Jewish scientists who fought in World War I to remain in their posts.<sup>45</sup> Of the younger generation of scientists—Jordan’s contemporaries—those dismissed included Jordan’s friends Edward Teller, Eugene Wigner, John von Neumann, and Leo Szilard, among many others.

With the purge and the dismissals, dozens of professorships in physics suddenly became vacant in summer 1933. Ready and waiting to fill these empty chairs sat the forces of *deutsche Physik*, who now attempted to capitalize on their standing as long-time Party members. This group now

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<sup>42</sup> The other initial anti-Semitic law, passed the same day as the Civil Service Law, barred Jews from practicing law in Germany.

<sup>43</sup> Because of pressure from Reich President Paul von Hindenburg, a war hero from the First World War who came from the conservative monarchist tradition, an exception was included in the law for Jewish civil servants who were veterans of the war. For the text of the law see “Gesetz zur Wiederherstellung des Berufsbeamtentums,” Reichsgesetzblatt (1933), 175-177.

<sup>44</sup> On the purge see in particular Beyerchen, *Scientists under Hitler*, 15–50.

<sup>45</sup> Franck’s courageous act was virtually unique that spring. The clause allowing veterans to stay on was inserted at the express request of Reich President Paul von Hindenburg, as mentioned in the above footnote.

began a campaign against theoretical physics, denouncing prominent physicists to the Education Ministry. (One of those denounced, in 1934, was Jordan himself.<sup>46</sup>) When the Nazis founded a Reich-wide educational ministry as part of their goal to centralize administration in Germany, several members of the *deutsche Physik* circle were given key roles in the ministry.<sup>47</sup> By late 1933, the academic field of physics looked to be under serious threat, as *deutsche Physiker* often aimed to ban the study of certain mathematical fields entirely. Moreover, while the vast majority of German physicists accepted Einstein's relativity theory and the newly developed quantum mechanics as proven scientific fact, and saw *deutsche Physik* as buffoonish, many were afraid of their political influence; few would fight as loudly and aggressively against them as Jordan would in the years after 1933.<sup>48</sup> And for the *deutsche Physiker*, Jordan was an obvious target: he was one of the founders of quantum mechanics and had studied with famous Jewish scientists like Max Born.<sup>49</sup> Next to Jordan, probably only Werner Heisenberg, famously denounced in the SS newspaper as a "white Jew," was subjected to fiercer and more consistent attack from the ranks of *deutsche Physik*.<sup>50</sup> Jordan's initial attempts at convincing the regime that theoretical physics could be of benefit had failed, and his bitter opponents, the *deutsche Physiker*, now appeared ascendant. A new strategy would be needed.

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<sup>46</sup> See Karl Lothar Wolf to Franz Bachér (Reich Education Ministry), October 10, 1934, BAB, R 4901/24866, Bl. 13.

<sup>47</sup> The ministry's official title was the "Reich Ministry for Science, Education, and National Culture" [*Reichsministerium für Wissenschaft, Erziehung, und Volksbildung*].

<sup>48</sup> See for example Jordan, *Physikalisches Denken in der neuen Zeit*, 7–9, 56–59.

<sup>49</sup> Jordan and his works were repeatedly denounced in the house journal of the *deutsche Physik* movement, the *Zeitschrift für die gesamte Naturwissenschaft* [Journal for All Natural Sciences]. See for example Rembert Ramsauer, review of *Physikalisches Denken in der neuen Zeit*, by Pascual Jordan, *Zeitschrift für die gesamte Naturwissenschaft* 1, no. 8 (1935): 342–43; Hugo Dingler, "Die 'Physik des 20. Jahrhunderts': Eine prinzipielle Auseinandersetzung (zu einem Buche von P. Jordan)," *Zeitschrift für die gesamte Naturwissenschaft* 3 (1937): 321–35.

<sup>50</sup> On the Heisenberg affair, see Beyerchen, *Scientists under Hitler*, 156–63; Walker, *Nazi Science*, 130–38.



## Jordan's Strategy for Science: Persuasion through Accommodation

As early as late 1933 or early 1934, then, Jordan began to feel disillusioned with the reality of the Nazi regime. As outlined above, there were two reasons why Jordan's initial euphoria quickly faded. The first was Jordan's deep *völkisch* disappointment with Hitler and the Nazis, who he believed had failed to initiate the spiritual renewal of Germany. (Jordan was not alone in this feeling; many of his *völkisch* intellectual friends, as Vordermayer details, also gave up hope of a *völkisch* rebirth from Hitler's state around this same time.<sup>51</sup>) The second reason pertained to scientific policy: Jordan was deeply disappointed that the regime failed to act on his early proposals for restructuring universities and funding scientific research. Worse still, the regime had instead chosen to listen to the *deutsche Physiker*, who Jordan despised and believed were Party hacks. Yet it was nevertheless clear to Jordan that the Nazi state was only consolidating power and that Hitler and his Party would be a fact of life in Germany for the foreseeable future. How would German science and German scientists deal with this new government, which had carried out a massive purge of academics in 1933 and seemed to be growing ever more hostile to science? How could they carve out a place for their field? Deeply disillusioned with the *völkisch* potential of Nazism, Jordan nevertheless remained a patriotic, nationalistic German conservative who wished to aid the country's cause on the international stage. It was in this capacity that Jordan now developed a new strategy for science and scientists under the Nazi regime—one he would follow and advocate for both publicly and privately—until the regime's collapse.

As detailed at length in the introduction, the vast majority of Jordan's private writings and correspondence during the Nazi era are lost, which makes parsing his exact motives often quite

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<sup>51</sup> Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 328–52.

difficult. Fortunately for the historian, though, a long, dense, and often-cryptic letter to Werner Heisenberg from June 1934 survives, which when read between the lines provides the clearest extant elucidation of Jordan's plan of action for physicists under Nazi rule, which by that point seemed to threaten the existence of their very profession.<sup>52</sup> As this document was written for private consumption, it gives a unique window into what Jordan hoped to gain from the regime in the scientific realm at a point when he had already given up on a broader societal renewal from Nazism; it is thus deserving of a detailed analysis.

At its core, the letter outlined a strategy based on a practical argument. Given the vehement opposition in fervent Nazi circles to Einstein and modern physics, along with the threat posed by the *deutsche Physiker*, Jordan believed that German physicists needed to follow their Soviet counterparts and emphasize the potentially enormous military value of physics. In his view, a military-based argument would be unimpeachable to the Nazis:

My conception of the present situation in physics is the following: if [Abram] Joffé was able to demonstrate the positive significance of physics to the Soviet folks, so too should one (due to a sort of [political] reflection principle) not despair, in spite of Lenard-Stark, of the possibility of ultimately [i.e. in Germany] rehabilitating the [official, i.e. Nazi] assessment of physics here too. Of course, as things stand, this [i.e. this rehabilitation] can only be made possible by highlighting those facets of physics and its meaning that offer favorable opportunities to fit into the total conception of cultural, public, etc. life in place today; that is, for prospects of a favorable understanding [with the Nazis], the intellectual-theoretical values of our science cannot be propagated here, but rather their practical results, above all in terms of military technology. The fact that a single [Fritz] Haber was worth more to us during the war than an entire army corps might give even those contemporaries still only capable of thinking quantitatively at least a hint of the real hierarchy. And the fact that today only such a nation that also marches at the front in atomic physics can in the long run be at all capable of making the most of the arms options available to it in a manner equivalent to one of the scientifically "better armed" states, might actually be the deciding argument when attempting to obtain careful treatment for and favorable appraisal of physics.<sup>53</sup>

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<sup>52</sup> The letter is dated June 6, 1934. It was thus written three weeks before elements of the SS purged the leadership of the *Sturmabteilung* on Hitler's orders, in what would later be termed the Night of the Long Knives.

<sup>53</sup> All emphasis in original.

In their political extremism and their wariness of science, wrote Jordan, the Nazis were much like the Soviets, so he believed that the Nazis could—like the Soviets—be convinced to support physics. In fear of the censors, Jordan did not make this claim completely explicit, alluding to it vaguely through what he termed a “reflection principle,” implying that the Nazis were the far-right equivalent of the far-left Soviet regime.<sup>54</sup> Given this reality, then, like their colleagues in the Soviet Union, German scientists needed to market their science in a way palatable to the new regime—by emphasizing its military potential. The way to appeal to the regime, according to Jordan, was by informing the Nazis that science could help Germany—still limited militarily by the terms of the Treaty of Versailles—catch up to rival nations on the battlefield. Jordan even seems to have believed that the Nazis could be convinced that patriotic German-Jewish scientists like Fritz Haber—the pioneer who led the development of German chemical weapons in World War I—should be allowed to remain in Germany and stay at their posts, for they could help win the war to come.

Reading between the lines, the next paragraph clarifies all of these points:

Do you actually know [Theodor] Vahlen? I read with great relief that [Joachim] Haupt was finally cut away – unfortunately only a year too late, and after an act whose consequences will likely take longer than our lifetime to correct. I don’t know if Vahlen is any better. It would already be a blessing if perhaps with him [i.e. Vahlen], [Philipp] Lenard were relieved of the control he has had up to now over all appointments in physics and mathematics; here for us he recommended (as the successor to [Gerhard] Thomsen) a man (whose name I always forget) who won immortal fame for himself through a “Mathematical Collection of Formulas” for the *Sammlung Göschel* (he had no other scientific contributions to show [for himself]). This collection of formulas was pulped by the publisher because the percentage of correct formulas contained within distinguished itself all too little from zero. And compared

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<sup>54</sup> From what survives of his correspondence during the Nazi period, it becomes apparent that Jordan often used technical terminology from physics when attempting to avoid the eye of the censors and communicate between the lines. This usage of “reflection principle” [*Spiegelungsprinzip*], a term that comes from stochastic probability theory, is thus characteristic for Jordan. In this passage, “situation” [*Lage*, which could also be translated as position], “assessment” [*Einschätzung*, which could also be translated as “estimate”], and even “appraisal” [*Bewertung*, which could be translated as “valuation”], are similarly used in physics and mathematics.

to such an idiot the few really good (even outstanding) people still available are tabled and basically barred from appointments.

Jordan's vague allusion to an "act whose consequences will likely take longer than our lifetime to correct," was a reference to the April 1933 Civil Service Law and the purge of left-wing and German-Jewish academics that followed. As the passage makes clear, Jordan opposed this act, finding it idiotic. Indeed, his prediction that the consequences of the purge would be far-reaching and long-lasting proved to be prescient; the purge crippled German science, while accelerating a trend that had already begun: the mid-20<sup>th</sup> century shift of leadership in science from Germany (and Europe) to the United States. In Jordan's eyes, the man most responsible for the purge was the man he mentioned in the letter, Nazi functionary Joachim Haupt in the Reich Education Ministry (REM), who was responsible for determining the lists of professors to be fired in the 1933 purge. Expressing hope that Haupt's successor, Theodor Vahlen, would be better, Jordan thus made it clear to Heisenberg that he hoped and believed that an accord could still be reached with the Nazis.<sup>55</sup>

Hints of what Jordan envisioned as a potential *modus vivendi* between natural science and the Nazi state are present in the subsequent passage, which lauded—between the lines, of course—the recently deceased professor of mathematics in Rostock, Gerhard Thomsen:

Actually, did you know our dear Thomsen? He was, if not a second [David] Hilbert, still a gifted and capable man, unusually brave and honest, and of rare purity of scientific enthusiasm; yet unfortunately also somewhat mentally unstable. In any case, the problems which I was able to speak with you about in Warnemünde exceeded his stability limits; after he—with downright sensational bravery—stood up to certain record quantities of lack of

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<sup>55</sup> For more on Vahlen, who on April 6, 1934 was named head of the higher education division [*Hochschulabteilung*] of the Prussian Cultural Ministry—which in May 1934 became the Reich Education Ministry [REM]—see Reinhard Siegmund-Schultze, "Theodor Vahlen—zum Schuldanteil eines deutschen Mathematikers am faschistischen Mißbrauch der Wissenschaft," *NTM Schriftenreihe für Geschichte der Naturwissenschaften, Technik und Medizin* 21, no. 1 (1984): 17–32; Kyra T. Inachin, "Märtyrer mit einem kleinen Häuflein Getreuer?: Der erste Gauleiter der NSDAP in Pommern Karl Theodor Vahlen," *Vierteljahrshefte für Zeitgeschichte* 49, no. 1 (2001): 31–51.

character [*gewisse Rekordgrösse der Charakterlosigkeit*] at the local university shortly before the Christmas break, he allowed himself to be run over by an express train in January.

The act of “downright sensational bravery” that Jordan alluded to vaguely in the letter can be identified as a lecture given by Thomsen to Rostock physics and mathematics students on November 22, 1933, titled “On the Danger of Repression of the Exact Natural Sciences in Schools and Universities.” In the speech, a veritable call to arms, Thomsen argued for the reconciliation of science and Nazism, stating in no uncertain terms in the ideological vocabulary of the regime that supporting and funding the exact sciences would help Nazi foreign policy aims.

Thomsen admitted that during the Weimar Republic, literature, the arts, and even some of the sciences had “carried all the signs of the decadence of the liberal age.” Yet in contrast to what many claimed, Thomsen said, mathematics and the natural sciences had shown no signs of “such decadence... In contrast, it was a period of incredible blossoming, of a kind rarely seen in world history [*wie... die Weltgeschichte kaum je gesehen*].” Those who, like Thomsen and Jordan, came of age in this scientific golden age had thus spent their “entire life” amid the “tremendous cultural impact” of this intellectually intoxicating atmosphere, one analogous to Weimar in Goethe and Schiller’s day.<sup>56</sup> One could not help but be inspired to pursue scientific discovery when studying in the presence of figures like mathematician David Hilbert, the mathematical equivalent of Goethe, no “weak willed intellectual,” but an example of “the will of that which possesses the true magnitude of genius, this unconsumed intellectual power of the best East Prussian race.”<sup>57</sup> In short, Thomsen was attempting to establish to the regime the credentials and value of his field by employing the ideological vocabulary of the Nazis. Surely, Thomsen thought, Nazi functionaries would lap up this language;

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<sup>56</sup> The speech was delivered on November 22, 1933, and reprinted after Thomsen’s suicide in 1934, see Gerhard Thomsen, “Über die Gefahr der Zurückdrängung der exakten Naturwissenschaften an den Schulen und Hochschulen,” *Neue Jahrbücher für Wissenschaft und Jugendbildung* 10 (1934): 170.

<sup>57</sup> *Ibid.*, 171.

with the value of his field thus outlined in Nazi terms, the regime would reverse course, call off the attacks from *deutsche Physik*, and financially support the true German patriots in science and mathematics. As will be seen, this general conviction espoused by Thomsen was shared in its entirety by Jordan, who held out hope well into the war that such an arrangement between the regime and the exact sciences could be made.

For as Thomsen emphasized, those who like Jordan and himself had entered the field in the star-crossed years of the early 20<sup>th</sup> century—a golden age in science that seemed unending—were more than willing to contribute to the ‘new Germany.’ All the new regime needed was to support science, and it would find a cohort of intelligent patriots ready to help Germany regain its glory. More nationalistic German scientists certainly be cultivated, if only the regime made the right decisions in education, starting from elementary school: “[O]ne of the most important tasks for National Socialist popular education, alongside physical education, [is] to train intellectual concentration...begin[ning] even at a young age, when the mind is still completely fresh [*frisch*]...”<sup>58</sup>

If the regime followed this path, it would reap benefits in war:

For students in the field [i.e. the exact sciences], along with physical [education] and martial schooling, there must be schooling of the intellectual abilities, brain training and also schooling, for example, in geometrical intuition. We also need athletics fields and training grounds and drill grounds [*Exerzierplätze*] for the schooling of the mind and concentration training for the intellectual field-soldiers [*Fachsoldaten*] of the Third Reich. We must understand that in a future war an inventive mind who devises a new weapon can be more important than a thousand soldiers.<sup>59</sup>

In short, Thomsen was expressing the same sentiment that Jordan would advocate throughout Hitler’s twelve years in power: science, when properly funded, could decide a future war in

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<sup>58</sup> Ibid., 169–70.

<sup>59</sup> Ibid., 168.

Germany's favor.<sup>60</sup> However, as Jordan mentioned to Heisenberg, the speech seems to have attracted the attention of the regime, and in apparent fear of being arrested, Thomsen committed suicide on January 4, 1934.

Jordan, for his part, was presenting himself as the model image of a Nazi, as he described to Heisenberg at the beginning of the letter:

Rumor has it that you participated with élan at a military camp for lecturers [*Dozenten-Wehrlager*]. Assuming this rumor is true, I see with pleasure that you are attempting to practically handle the problems we discussed earlier in Warnemünde in a very similar way as I am. For my part, since last fall I have attempted to rejuvenate myself through SA service (together with the entire physical institute here, [Christian] Füchtbauer excepted).<sup>61</sup>

The “military camp for lecturers” Jordan referred to were weekend or week-long excursions to campgrounds in the wilderness, set up by the Party throughout 1933 and 1934 for university professors and instructors. Similar camps were set up for members of other professions such as lawyers and doctors; out in the woods, the normal social hierarchy would be ignored and the entire group would practice survival and military skills. These camps were intended to build camaraderie, and awareness of the *Volk*; they were a part of the Nazi Party's mystical—near utopian—effort to build a so-called *Volksgemeinschaft*, or “people's community.” (Of course, the utopian people's community excluded Jews, other minorities, and left-leaning thinkers.) Participation was officially voluntary (at first), but highly encouraged—not attending was an implication that one did not approve of the ‘new Germany.’<sup>62</sup>

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<sup>60</sup> Jordan published an article in the same issue of the magazine in which Thomsen's speech appeared; it seems plausible to think that Jordan may have suggested the editors publish the lecture after Thomsen's suicide. For Jordan's article, see Pascual Jordan, “Die Kausalitätsproblem in der modernen Physik,” *Neue Jahrbücher für Wissenschaft und Jugendbildung* 10 (1934): 74–83.

<sup>61</sup> Jordan to Heisenberg, June 6, 1934, NWH, Nr. 1515/2.

<sup>62</sup> In his memoir of the pre-war Hitler years, Sebastian Haffner, then a young jurist, describes the experience of his mandatory visit to a similar camp for lawyers. See Sebastian Haffner, *Defying Hitler: A Memoir*, trans. Oliver Pretzel, 1st American ed. (New York: Farrar, Straus and Giroux, 2002), 258–83.

So, when Jordan complemented Heisenberg for “participating with élan” on one of these excursions, he was implying that Heisenberg was also attempting to fit into the ‘new Germany,’ in a “similar way” as Jordan—by presenting himself as someone ready and willing to conform with Nazi expectations. Jordan’s method of showing his willingness to conform with the new political climate—in addition to officially joining the Nazi Party in May 1933—was by “rejuvenat[ing]” himself through service in the Stormtroopers, or SA. Here again, Jordan was citing Nazi propaganda, which presented service in the Nazi SA, the infamous Brownshirts who incited street violence and harassed Jews during the waning days of the Weimar Republic, as a path toward “rejuvenation” or *Verjüngung*—a way to keep the body and the *Volk* healthy.<sup>63</sup>

Jordan’s strategy for compromising with National Socialism can thus be encapsulated as one of attempting to influence from within. As the letter from Heisenberg demonstrates, Jordan believed that his strategy would work not only for him, but for the field of physics and the natural sciences as a whole. If German scientists proved their nationalist bona fides and showed some amount of support for Nazi policies—whether or not that was participating in a Nazi military camp for lecturers, joining the Party itself, or joining the SA—Jordan believed that science and scientists would be handsomely rewarded. In 1933 and 1934, Jordan still believed that the regime could quickly be persuaded to support science if given pragmatic arguments about the military value of physics and natural sciences. Moreover, this letter additionally demonstrates that Jordan entered into this unwritten contract with full knowledge of the damage that had been dealt to German science by the Nazi purge of Jewish scientists. Put more bluntly, though he may have lamented the purge and

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<sup>63</sup> On the concept of *Verjüngung* from the 19<sup>th</sup> century into the Third Reich, see Heiko Stoff, *Ewige Jugend: Konzepte der Verjüngung vom späten 19. Jahrhundert bis ins Dritte Reich* (Köln: Böhlau, 2004); on Nazi *Verjüngung*, see particularly 264–65.



would have preferred that his colleagues stayed on—and even attempted to help some colleagues find support abroad—Nazi anti-Semitic policies were by no means a deal-breaker for him. (As outlined in Chapter 1, Jordan indeed held many anti-Semitic beliefs himself, and made exceptions only for “good,” assimilated, patriotic German Jews.) As will be seen, the general paradigm outlined here—justify science on its military value, blend in/assimilate into Nazi public life, and reap the eventual rewards—would hold true for Jordan throughout the Nazi period, well into the war, even as the regime’s anti-Semitic policies shifted from discrimination and expulsion to extermination.

### **The Public Face of Compromise**

As hinted above, the campaign to win the generous treatment from Hitler’s state Jordan believed the natural sciences deserved had a critical second component. After a scientist established their Nazi and nationalist bona fides through membership in Party organizations, participation in military camps for lecturers (*Dozenten-Wehrlager*), or the like, thereby making their credentials unimpeachable, they needed to publicly advocate for the natural sciences in the ideological language of the Nazis. Jordan made this explicit to Heisenberg in the June 1934 letter: directly after lauding Heisenberg for attending the military camp for lecturers and stating that he was similarly “rejuvenat[ing]” himself through SA service, Jordan noted that a “small publication I wrote last spring” was also meant in the “same sense” as these actions.<sup>64</sup> Here Jordan was referencing an article he published in the May 1933 issue of the Rostock university student magazine, titled “The

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<sup>64</sup> In this letter, Jordan refers multiple times to a discussion the two had—presumably about how German scientists should deal with the new Nazi government—in the seaside Rostock district of Warnemünde. It seems highly likely that this discussion took place in November 1933, while Heisenberg traveled through Warnemünde on the way to Stockholm, where he was to receive the Nobel Prize. Jordan to Heisenberg, June 6, 1934, NWH, Nr. 1515/2.

Conversion of the University” (*Die Wandlung der Universität*).<sup>65</sup> This article, which appeared in an issue about reform in higher education, outlined how the university could be “converted” to conform with what Jordan termed the “governmental upheaval,” namely, the Nazi takeover and consolidation of power in spring 1933.<sup>66</sup> Inspired by the thought of Ernst Jünger and other conservative intellectuals, Jordan described how the Nazis now laid a “*claim of totality*” upon all of Germany. This meant that all aspects of society, including universities—which Jordan termed the “intellectual center[s] of national life”—needed to be reorganized in accordance with the Nazi state’s demands.

This would not happen overnight, conceded Jordan, but would take “long, urgent, and well thought out work.” Ultimately, he argued, what was needed was the “*urgent conversion of all university work to the military-political [wehrpolitischen] tasks of the present.*”<sup>67</sup> As Jordan noted, “modern war is a technical war,” which would be fought also with “*economic weapons*”—after all, as he claimed, Germany had lost World War I primarily because the country was unprepared for the economic blockade the British Navy imposed on Germany in the North Sea.<sup>68</sup> In the era of “total mobilization,” wrote Jordan, again citing Ernst Jünger:

every area of life and almost every science has some kind of relationship to war, and nearly every area of science has possibilities on its part to contribute to the explosive developments that stand before us in the not too distant future; and we must not allow for a moment the domestic atmosphere of victory to belie their [i.e. the explosive developments] terrifying seriousness [*Ernst*].

This passage was a between-the-lines slight at the *deutsche Physiker*, who were beginning to make their mark on the Party bureaucracy. In science, one could not afford to suffer fools, wrote Jordan, for the danger of lagging behind competitors was simply too great. Indeed, the “explosive

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<sup>65</sup> P. Jordan, “Die Wandlung der Universität,” *Rostocker Universitäts-Zeitung*, May 9, 1933, 3–5. Emphasis in original.

<sup>66</sup> *Ibid.*, 3.

<sup>67</sup> *Ibid.*

<sup>68</sup> *Ibid.*, 4.

developments” in science alluded to by Jordan were meant both figuratively and literally. As he would on several occasions under Hitler, Jordan was hinting here at the potential for atomic weapons; arguing, in essence, that science could singlehandedly win wars. He concluded the article with bravado in a line that would come to haunt him after the war: “the goal of our life [i.e. in Germany] does not lie in pension rights, but rather in the cratered field of no man’s land.”<sup>69</sup>

This early 1933 article was admittedly written during the brief period when Jordan still believed that the Nazis could be quickly persuaded to fund science, but the arguments emphasized in this essay—based on science’s value in military conflict—would take center stage after his initial euphoria faded. Indeed, “The Conversion of the University” was in many ways a prelude to the key statement of Jordan’s Nazi-era strategy for science: a short monograph he published in fall 1935, titled *Physikalisches Denken in der neuen Zeit* (Physical Thought in the New [i.e. Nazi] Era). This brief sixty-page text, partially serialized in Wilhelm Stapel’s *Deutsches Volkstum* earlier that year, epitomizes the ways in which Jordan, in the very ways he outlined to Heisenberg in the June 1934 letter, now subtly changed his tone to appeal to a regime he now believed threatened science.<sup>70</sup> Gone were the paeans to the mystical rebirth of the *Volk* present in other essays from early 1933; in their place were arguments based on science’s military value coupled with blunt attacks against the *deutsche Physiker*.

Jordan’s vague allusions to how discoveries in modern physics could lead to the development of tremendously powerful weapons were now made explicit. In layman’s terms, Jordan outlined the structure of the atom, its nucleus (*Kern*), and the shell (*Hülle*) of electrons that surrounded it. Contrary to what many had long assumed, wrote Jordan, cutting-edge techniques

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<sup>69</sup> Ibid., 5.

<sup>70</sup> The first two chapters of this book appeared—under Jordan’s real name, not the Domeier pseudonym—in May and September 1935 in *Deutsches Volkstum*. See Pascual Jordan, “Wandlungen des physikalischen Denkens,” *Deutsches Volkstum* 17 (1935): 362–68; Pascual Jordan, “Die biologischen Perspektiven der neuen Physik,” *Deutsches Volkstum* 17 (1935): 682–89.

were now beginning to allow researchers to artificially split the atom (*Kernspaltung*). Though this might seem to be academic small potatoes, Jordan wrote, it was actually a matter of national importance, because the forces that held together atomic nuclei contained tremendous amounts of energy<sup>71</sup>:

A not too distant future might therefore command energy sources that make a Niagara Power Plant seem insignificant; and *explosive materials* which make today's [weapons] seem like harmless toys.<sup>72</sup>

(Jordan was perhaps himself unaware how prescient his prediction would prove to be.) This, he wrote, was the true meaning of science: its ability to create new geopolitical facts on the ground in war, which through the ages had proven to be the “normal form of new creation [*Neuschaffung*] in history.”<sup>73</sup> Science would be valued by European statesmen who wished to succeed, for it would help them in the only arena that mattered: armed conflict. Thus, the now-apparent “*connection between science and technological military armaments* [*technische Kriegsrüstung*]” would “now and in the future be the *main cause for an increase [in] appreciation and evaluation of scientific research*” among leaders—like, perhaps, Hitler—and nations alike. After all, Jordan concluded, “increasingly, modern research laboratories have become *power factors of [capable] of deciding wars.*”<sup>74</sup>

This bold reformulation of science's societal value, one based purely on a Spenglerian cultural pessimism that society would inevitably and always be at conflict, was written in terms designed to attract the attention of Nazi propagandists. It was an attempt to, as Ian Kershaw has written, “work toward the *Führer*” in the scientific realm. Yet even if Jordan laid the rhetoric on rather thick, he clearly meant the vast majority of what he said, for he had been making similar

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<sup>71</sup> This is due, of course, to Einstein's famous equation of mass-energy equivalence, which Jordan did not cite—probably because of the Nazi hatred of Einstein.

<sup>72</sup> Jordan, *Physikalisches Denken in der neuen Zeit*, 49. Emphasis in original.

<sup>73</sup> *Ibid.*, 51.

<sup>74</sup> *Ibid.*, 46. Emphasis in original.

arguments under the Domeier pseudonym even in the Weimar years. Jordan's earnestness in the work is made clear from a letter he wrote describing the monograph to the figure who influenced it most, conservative author Ernst Jünger:

In my work I, among other things, have attempted to underline the (little liked) fact that decisive scientific developments still and again are dependent on the genius researcher; so that the strange fact emerges that the decisive contributions to scientific-technological military armament of nations are delivered by people who (in most cases) are completely uninterested in political battles. The problem that arises here is now this: if we acknowledge the inescapability of free research being superseded by a hierarchical system of intellectual work and intellectual leadership, the necessity results of fashioning this hierarchy such that the researching genius also finds his place therein; — the countless scientific workers, who are admittedly indispensable as a whole, but are interchangeable as individuals, present of course no such serious problem. For this, however, there is, of course, no recipe and no system; but what matters is alone the rank of leadership.<sup>75</sup>

Jordan, ever the elitist, clearly believed himself to be one of those genius researchers who could provide Germany with weapons that could singlehandedly win wars—if only the Third Reich were willing to install him in such a position. Again we see that Jordan's disappointment with the regime was rooted in its refusal to place him—in his mind, the image of a patriotic German scientist—in control of scientific policy.

Returning to the monograph itself, it was no coincidence that Jordan followed up his paean to science's military value with a vicious attack on *deutsche Physik*, which by 1935 only seemed to be gaining steam. While admitting some Spenglerian differences between antique mathematics and mathematics of the present day, Jordan explained that the results of modern (i.e. Western, in Jordan's mind) mathematics held true in all lands in the "Western cultural sphere," no matter if it were performed in Germany, France, the United States, or even Japan. (Japan counted as part of the Western sphere, noted Jordan, because it had "adopted European technology and European

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<sup>75</sup> Jordan to Ernst Jünger, November 11, 1935, A: Ernst Jünger 94.9, DLA. It is unclear if Jünger responded to this letter; as in so many other cases, no correspondence from Jünger survives in Jordan's *Nachlass* in Berlin. Jünger was a *völkisch* conservative author whose writings deeply impacted Jordan.

warfare.”) In typical bravado, Jordan epitomized his point with a martial example: “The differences between German and French mathematics are no more significant than the differences between German and French machine guns.”<sup>76</sup> This “machine gun principle,” as Norton Wise has termed it, could be applied to all of the sciences: if they were capable of producing inventions applicable in combat, they were inherently objective and applicable to all nations.<sup>77</sup> Without naming names or citing any articles, Jordan thus took an implicit shot at *deutsche Physik* and its equivalent movements in the other sciences in language he thought high-ranking Nazis would respond well to. The centerpiece of Jordan’s strategy for convincing the Nazis to support science and to sideline *deutsche Physik* was thus this militaristic argument: science could win wars, and neglecting science would inevitably give the other side an advantage over Germany.

This short 1935 pamphlet announced Jordan’s program under Nazism in essentially its final form. Nevertheless, the years immediately following its publication proved to see *deutsche Physik*’s greatest political triumphs, as several members of the movement received prestigious chairs at German universities.<sup>78</sup> Instead of seeing this as an indication that his new strategy was not working, and that the regime was not listening to his arguments, Jordan seems to have viewed it as evidence that he needed to double down on the plan. Indeed, as the 1930s wore on, Jordan gradually began to employ an ever shriller tone in both the various essays he wrote in regime organs as well as the denunciations he issued in private against members of *deutsche Physik*. Simultaneously, he attempted to place support of science in service of whatever trend seemed to be capturing the imagination of leading Nazis at a given moment. A December 1936 article in the Rostock university student

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<sup>76</sup> Jordan, *Physikalisches Denken in der neuen Zeit*, 57.

<sup>77</sup> On the “machine gun principle” of science, see Wise, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism,” 225–26.

<sup>78</sup> On the mid-1930s triumphs of *deutsche Physik*, see in particular Beyerchen, *Scientists under Hitler*, 141–67.

magazine compared international competition in science to the recent Olympic Games in Berlin, denouncing *deutsche Physik*—again without naming it directly—as “obsolete theories and moldy hypotheses from the last century trotted out anew and declared to be specifically contemporary” to which “the only appropriate answer is healthy laughter.”<sup>79</sup> Attempting to latch onto a recent propaganda success abroad—the infamous 1936 Olympics in Berlin—Jordan proclaimed that science was international in the same way as sports. Just as Germany had supposedly proven its superiority on the athletic fields in Berlin, so too could it show its valor in the laboratory: “We have won the Olympics of sports. Now we must win the Olympics of science!”<sup>80</sup>

By 1938, with attacks on academic physics only increasing, Jordan was attacking his antagonists by name in both published essays and private denunciations. Attempting to now place science in the service of Nazi efforts at German economic autarky—namely, the “Four Year Plan” for economic self-sufficiency and rearmament announced in 1936, a key pillar of late 1930s Nazi rhetoric—Jordan now emphasized that “political independence in peace” could only be defended when “technology and science are able to seize an advantage in all areas of industry and agriculture.” Of course, science was also invaluable in war, he reiterated, noting that astute observers today were “obliged to see all chemical-physical-mathematical scientific disciplines as part of military science.” This essay, titled “National Socialist Science—No Compromises!” was published in *Wille zum Reich* [Will to Empire], an organ for youth groups. Like the others, it coupled this paean to autarky and militarism with a denunciation of one of the key figures in *deutsche Physik*, Hugo Dingler. Rather than deal with Dingler’s scientific theories on their own merits, Jordan instead chose to personally attack

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<sup>79</sup> Pascual Jordan, “Olympiade der Wissenschaft,” *Der Student in Mecklenburg-Lübeck* W.S. 1936/37, no. 15 (December 5, 1936): 8.

<sup>80</sup> *Ibid.*, 9. Though the Olympic metaphor took center stage as Jordan attempted to attach science to that recent propaganda triumph, he also reiterated in his text his constant refrain that science could win wars.

Dingler on anti-Semitic grounds, because of Dingler's Weimar-era writings that praised Judaism. "Herr Dingler has now decided to act the part of the philosophical savior of the Aryans," wrote Jordan, despite "enthusiastically venerating Talmudism" in his works before Hitler came to power.<sup>81</sup> Dingler was an opportunist, according to Jordan, implicitly positioning himself as the "true" Nazi.

And as the years wore on, Jordan proved ever more eager to insert Nazi slogans into works that were less overtly political, like his popular scientific works, attempting to "work toward the *Führer*" in science itself.<sup>82</sup> Whereas in 1936, Jordan still credited Einstein with the discovery of relativity theory, albeit while minimizing his contributions by asserting that other researchers certainly would have discovered relativity around the same time even "had Einstein never lived," in 1941, he added a footnote to that essay, "clarifying" that "[h]istorical investigations... hopefully soon [to] be published" had proven that Henri Poincaré had actually discovered the "most essential" elements of the theory.<sup>83</sup> By this time, Jordan was also writing Max Born's contributions to quantum

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<sup>81</sup> Jordan cited a 1919 book by Dingler, *Die Kultur der Juden: Eine Versöhnung zwischen Religion und Wissenschaft* [The Culture of the Jews: A Reconciliation between Religion and Science], which he claimed was positively reviewed by the Chief Rabbi of Vienna. See Jordan, "Nationalsozialistische Wissenschaft — Aufgabe ohne Kompromiß!," 55. He repeated these denunciations to officials at the University of Rostock; see Jordan to Rektor Ernst Ruickoldt, February 23, 1938, Bl. 54v, Personalakten Jordan, Bd. 2, HUA. Interestingly, Jordan's colleague Carl Friedrich von Weizsäcker chose to respond to attacks from Dingler on scientific grounds, far more diplomatically, without resorting to Nazi rhetoric; as we will see later on, it was often Jordan's form of attack that came back to haunt him after the war. See Carl Friedrich von Weizsäcker, "Methode der Physik," *Die Tatwelt: Zeitschrift für Erneuerung des Geisteslebens* 14, no. 2 (1938): 97–103.

<sup>82</sup> On some level, everything can be considered political, especially in the case of works written under Nazism. However, the works detailed above, like *Physikalisches Denken in der Neuen Zeit*, the articles in the Rostock University student magazine, and "National Socialist Science—No Compromises!" were written in an attempt to directly influence Nazi policymakers. (As detailed above, they failed in doing so.) Regarding "popular science," I use the traditional definition: publications attempting to elucidate recent advances in science to a non-specialist audience. Popular scientific works are often subtly political, and they certainly were in Jordan's case, yet they are not overtly political as with the works cited above. On "working toward the *Führer*," see Ian Kershaw, "Working Towards the Führer: Reflections on the Nature of the Hitler Dictatorship," *Contemporary European History* 2, no. 2 (1993): 103–18.

<sup>83</sup> Pascual Jordan, *Die Physik und das Geheimnis des organischen Lebens*, Die Wissenschaft: Sammlung naturwissenschaftlicher und mathematischer Monographien 95 (Braunschweig: Vieweg, 1941), 172, 173. The original essay from 1936 is Pascual Jordan, "Gibt es eine 'Krise' der modernen physikalischen Forschung?," *Die Tatwelt: Zeitschrift für Erneuerung des Geisteslebens* 12 (1936): 59–68.



theory out of history. Describing the quantum revolution of the 1920s, Jordan now claimed that the key discoveries had been made by a “group of very young physicists under the leadership of Werner Heisenberg.”<sup>84</sup> (Of course, as detailed in Chapter 1, Born had been a crucial figure in the quantum revolution; he, Jordan, and Heisenberg indeed coauthored the pivotal paper together.) The 1941 book containing these efforts at revising scientific history, *Die Physik und das Geheimnis des organischen Lebens* (Physics and the Secret of Organic Life) was, as the title indicates, a popular work outlining Jordan’s attempts to export the quantum revolution in physics to biology. Written at a point when Germany seemed on the verge of winning the war—German troops occupied all of Western Europe and the United Kingdom stood alone against Hitler—this book reveled in Nazi triumphs. In the middle of an essay about his quantum biological ideas, Jordan included an aside characterizing Hitler as a man gifted with the “power of a volcano”; a leader suitable for an era “distinguishe[d]” by “authoritarian and dictatorial forms of government.”<sup>85</sup> As he proclaimed emphatically, “[t]he parliamentary-democratic concept no longer lives.” Indeed, in the book’s introduction, Jordan explicitly tied this popular scientific work to his political project, describing it as a “practical example” of the thesis he had unveiled in 1935 in *Physikalisches Denken in der neuen Zeit*, namely “that the deepest impulse of research, as [the] will to power, does not oppose, but is related and essentially similar to the motive forces of grand historic revolutions and new developments [i.e. the apparent

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<sup>84</sup> Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941, 16. This essay originally appeared as Pascual Jordan, “Jahrhundert der Atome,” *Das XX. Jahrhundert* 1, no. 5 (August 1939): 289–93.

<sup>85</sup> Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941, 108. This aside was prompted by a discussion of Jordan’s “amplifier theory,” which envisioned “steering centers” in the cell that “amplified” reactions and governed its biological processes. Jordan believed that an analogous “amplifier theory of the organism” would be found. This theory contains an obvious Nazi metaphor—the *Führer* “steering” the body of the *Volk*—and Jordan eagerly jumped on the analogy with the aforementioned passages. Norton Wise discusses the “amplifier theory” in his book chapter on Jordan, see Wise, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism,” 237–40.

German victory in World War II].”<sup>86</sup> As we will see in Chapter 3, Jordan only continued to amplify this strategy during the later war years.

In the late 1930s, Jordan’s continued willingness to “work toward the Führer” in his publications went hand in hand with an increasing eagerness to engage in the intrigue and back-biting characteristic of the polycratic Nazi regime. He attempted to forge contacts in areas of the regime he believed to be influential, and then denounce his opponents to these apparent new allies. (Jordan’s intriguing reached its heights during the war years, as will be seen in Chapter 3.)

Whereas—as detailed above—in 1934, Jordan was the one being reported to the Reich Education Ministry (REM), as the decade wore on he began to denounce his opponents in kind, with relish and equal vigor. As an example, in late 1937, Jordan was target of an attack by physicist and philosopher Hugo Dingler in the house journal of *deutsche Physik*, the *Zeitschrift für die gesamte Naturwissenschaft* (Journal for All Natural Sciences), a publication sponsored by the Reich Student League’s scientific office (*Amt Wissenschaft*)—and which thus carried official Party imprimatur.<sup>87</sup>

Jordan sent fiery letters to key figures at the University of Rostock he believed would be sympathetic to him: surgeon Heinrich Gissel, local Rostock leader of the Nazi Lecturers’ League, historian Heinz Maybaum, dean of the philosophical faculty and thus Jordan’s direct superior, and the university rector (equivalent to an American university president) Ernst Ruickoldt. Dingler had attempted to “ideologically defame a Party comrade and a storm trooper [i.e. Jordan],” wrote Jordan, and it was a “disgrace” that Dingler was able to publish such an article with official protection in a

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<sup>86</sup> Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941, 10.

<sup>87</sup> The attack came in the form of a review of Jordan’s 1936 popular scientific work, *Die Physik des 20. Jahrhunderts*. See Dingler, “Die ‘Physik des 20. Jahrhunderts’: Eine prinzipielle Auseinandersetzung (zu einem Buche von P. Jordan).”

Party journal.<sup>88</sup> Jordan also sent a letter to the journal’s editor, Fritz Kubach, protesting the inclusion of Dingler’s article in the periodical. Like many of Jordan’s attempts at intrigue (see Chapter 3 for a far more in-depth examination), his attempt to sideline Dingler failed miserably. Someone at the University of Rostock must have betrayed Jordan, for Kubach somehow got word of the vociferous letter Jordan wrote to his superior, the historian Maybaum, and responded to Jordan directly with an angry letter of his own, informing him that he “fundamentally refuse[d] to tolerate” how Jordan spoke about him in the letter to Maybaum, and that he (i.e. Kubach) awaited an “immediate explanation” for the tone Jordan used in his denunciation.<sup>89</sup> Jordan eventually responded to Kubach, but could not depose Dingler; the attempt at backchannel dealing had failed.<sup>90</sup>

Jordan’s strategy for physics, natural science, and scientists under Nazism—developed in late 1933—thus remained largely constant into the war years, even as the tone of his articles and denunciations became shriller as time went on. (As we will see in Chapter 3, it remained essentially unchanged until 1945; Jordan only continued to double down on the strategy during the later war years.) Science was to be justified first and foremost on its military value, as Jordan emphasized to Heisenberg in the 1934 letter. By joining the Party or, at the very least, actively participating in activities that signified approval of the Nazi “renewal” of German society, scientists would prove their bona fides to the regime. By continually publishing propaganda articles pushing science and denouncing *deutsche Physik*, scientists would eventually prove their loyalty to the regime; grateful Nazis would then strike down their hated enemies. In attempt to appeal to specific areas of the multipolar Nazi hierarchy, in these propaganda pieces Jordan often aimed to identify favored themes

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<sup>88</sup> Jordan to *Gaudozentenbundführer* Heinrich Gißel, February 10, 1938, Personalakte Pascual Jordan, UA/HU UK J069, Bl. 56v, HUA; Jordan to Heinz Maybaum, February 11, 1938, Personalakte Pascual Jordan, UA/HU UK J069, Bl. 58v, HUA.

<sup>89</sup> Kubach to Jordan [copy], March 3, 1938, Personalakte Pascual Jordan, UA/HU UK J069, Bl. 59r, HUA.

<sup>90</sup> Jordan to Kubach, March 28, 1938, reprinted in Hoffmann, “Der gute Nazi,” 147–48.

of the various power centers in the Nazi government—the Olympics, the Four-Year Plan, or economic autarky—and place science in service of whichever trope currently seemed most pertinent.<sup>91</sup> Yet however it was clothed, the centerpiece of his strategy always remained the same: an attempt to prove that—due to its military potential—modern physics was, as he wrote in 1936, “*an integral part of the unfolding new world of the twentieth century*,” one which was “pervasive and renewing [for] all areas of culture, people, economy, and state,” and had been realized “first and foremost” in Germany.<sup>92</sup> In short, Jordan was attempting to position his science as the best possible ideological fit for the Nazi regime. And while he may have amplified the rhetoric somewhat, in the end—given what he wrote before 1933 under the Domeier pseudonym—Jordan truly believed that his science fit perfectly into the Nazi worldview. For him, there was no contradiction.

At the core of the Nazi worldview, however, was always the regime’s virulent anti-Semitism. Indeed, throughout the entire prewar period, Nazi discrimination against the Jews, which began in 1933, only continued to accelerate. The Nuremberg Laws in 1935 deprived German Jews of German citizenship, while Kristallnacht in November 1938 signaled the beginning of their systematic persecution. Yet despite his many Jewish friends and colleagues who emigrated, and despite the increasingly harsh discriminatory measures promulgated by the Nazis, who aimed at the total exclusion of German Jews from society, Jordan’s strategy for science remained the same. For Jordan, this likely was not a difficult decision; given his pre-1933 anti-Semitic writings, he almost

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<sup>91</sup> The Nazi state has been termed a “polycracy,” as one of its characteristic features was the many areas of power constantly conflicting with each other in attempts to “work toward the *Führer*.” Career advancement in Nazi Germany was often based on making successful connections with one of these power bases. Yet the interests of the Nazi state were amorphous and constantly changing—and remained solidly anti-intellectual—so it is unsurprising that Jordan’s efforts in the 1930s went unheard. (See Chapter 3 for more on polycracy.) On the concept of Nazi polycracy, see Hüttenberger, “Nationalsozialistische Polykratie.”

<sup>92</sup> Pascual Jordan, *Die Physik des 20. Jahrhunderts: Einführung in den Gedankeninhalt der modernen Physik*, Die Wissenschaft 88 (Braunschweig: Freidrich Vieweg & Sohn, 1936), vii.

certainly agreed on some level with many of these Nazi exclusionary measures. (Though of course, had Jordan been in charge, he would likely have made exceptions for “good” German Jews like his adviser, Max Born.) Yet even if he did disagree with some aspects of Nazi racial laws, the regime’s anti-Semitism was never a deal breaker for Jordan in his attempts to secure regime support for science. On the contrary, Jordan saw the regime as a potentially powerful ally that could be secured for science if approached correctly (i.e. with his strategy). As we will see again in Chapter 3, this too remained constant into the war years—even as Nazi persecution of the Jews transformed into genocide on a continental scale.

### **Jordan and the Émigrés: Maintaining Connections**

But how did Jordan’s Jewish émigré colleagues—as well as other foreign scientists—view him during these prewar years? Was he shunned due to his associations with the Nazi regime? Having depicted Jordan’s feelings about Nazism and his partial disillusionment with the regime, along with his strategy for science under Hitler, I now turn to his relations with the international scientific community between 1933, when the Party took power, and the outbreak of war in 1939. Historians have commonly portrayed the Nazi years for those scientists who, like Jordan, chose to remain in Nazi Germany—at least those who did not openly sympathize with the party or its scientific aims—as a time of “endless loneliness,” as Werner Heisenberg put it in his memoirs.<sup>93</sup> In this depiction, those who remained in Hitler’s state quickly lost contact with emigres and colleagues abroad. Similarly, it is often stated that those who emigrated consciously disavowed their colleagues who stayed, viewing them as supporters of a criminal regime.

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<sup>93</sup> Werner Heisenberg, *Der Teil und das Ganze: Gespräche im Umkreis der Atomphysik* (München: R. Piper, 1969), 226.

In Jordan's case, piecing together contemporary opinions of his actions in the 1930s is even more difficult, for, as will be seen in Chapter 5, due to his actions at the height of the Cold War, many of Jordan's colleagues wishfully claimed in the 1950s and 1960s that they had known Jordan was an "unrepentant Nazi" from the start in 1933, and that they had thus immediately cut ties with him. But while the Nazi takeover certainly impacted Jordan's relations with both Jewish émigré colleagues and other foreign scientists, extant evidence strongly refutes any notion that Jordan was immediately ostracized from the international scientific community in 1933. The true story is far more complex. Many émigrés were certainly suspicious of Jordan's intentions, and his foreign contacts indeed made him suspect at times in the eyes of the Nazi regime. Yet Jordan remained in close contact with many German-Jewish émigrés as well as other foreign colleagues right up to the start of the war in 1939. In short, his case demonstrates that the common picture of Germany as completely isolated from the rest of the international scientific community after 1933 is far too simplistic; relations were not immediately cut, and communication—even collaboration—remained possible between German and non-German scientists until the outbreak of war.

Epitomizing this far more complicated story is a paper Jordan coauthored in 1934 with Eugene Wigner and John von Neumann, which described a new type of algebras that would later be named after Jordan.<sup>94</sup> The peculiarities of this particular collaboration boggle the mind: the path-breaking paper was drafted in early 1933, just as Wigner and von Neumann, both Hungarians of Jewish origin, were fired from their positions in Germany as part of Hitler's anti-Semitic purge of the civil service.<sup>95</sup> The two quickly made plans to permanently emigrate from Europe to the United

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<sup>94</sup> Pascual Jordan, John von Neumann, and Eugene Wigner, "On an Algebraic Generalization of the Quantum Mechanical Formalism," *Annals of Mathematics* 35, no. 1 (January 1934): 29–64.

<sup>95</sup> From 1930 to 1933, both Wigner and von Neumann had a unique arrangement in which they spent half the year in Princeton, and half in Europe—largely in Berlin and Budapest. Wigner taught at the *Technische Hochschule* in Berlin, while von Neumann was at the University of Berlin. Though von Neumann was

States, uprooting their entire lives almost overnight. Meanwhile, Jordan, whose initial insight and outreach sparked the collaboration, was proclaiming his allegiance to the regime; as noted above, he ultimately joined the Nazi Party in May 1933. What started as a simple collaboration among friendly colleagues in Germany became an intercontinental collaboration between a card-carrying Nazi and two Jews; as a consequence, a paper originally drafted in German and intended for a provincial mathematical journal in Germany was ultimately published in English in the American journal *Annals of Mathematics*. As a result, it was discovered by American mathematicians, and ignored by those in Germany. In this section, I use the complicated tale of Jordan's eponymous algebra as a case study to demonstrate that Jordan remained a member in good standing of the international scientific community well after Hitler took power, even as he began publishing pro-Nazi paeans. In doing so, I demonstrate that—at least in the early years of the Nazi regime, but in some cases even into the early war years—international scientific collaboration between Germans and émigrés remained possible in the 1930s despite seemingly unbridgeable ideological differences.

### **Non-Associative Algebras: The Mathematical Three-Man Paper**

In December 1932, Jordan published a short article in a field seemingly distant from his own—abstract algebra. “Deliberations in physics, about which I would like to report elsewhere,” Jordan announced, “have led me to the following mathematical problem.”<sup>96</sup> In the following seven

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apparently already making plans to move to the United States permanently, and never considered himself a “refugee scholar,” the Nazi persecutions caused him to abandon a lecture class in summer 1933, and certainly hastened his departure. See Ulf Hashagen, “Johann Ludwig Neumann von Margitta (1903–1957) Teil 2: Ein Privatdozent auf dem Weg von Berlin nach Princeton,” *Informatik-Spektrum* 29, no. 3 (June 2006): 227–36.

<sup>96</sup> P. Jordan, “Über eine Klasse nichtassoziativer hyperkomplexer Algebren,” *Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen, Mathematisch-Physikalische Klasse*, 1932, 569–75. Jordan had been speculating about non-associative algebras since the early 1930s; in particular, Russian physicist Igor Tamm reported having discussed them extensively with Jordan during a visit to Rostock in summer 1931. See Alexei B. Kojevnikov, ed., *Paul Dirac and Igor Tamm Correspondence, Part 1: 1928-1933* (Munich: Max-Planck-Institut für Physik, 1993), 56–58.

pages, Jordan sketched out a completely new form of non-associative algebras, which, though generally non-associative, retained a weaker form of the associative principle, the power-associativity of exponents. Published in the house journal of the Göttingen Academy of Sciences's Division for Mathematical and Physical Sciences, the *Göttinger Nachrichten* (officially titled the *Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen, Mathematische-Physikalische Klasse*), a second-tier publication that was past its heyday, Jordan's article was brief and essentially unfinished—so much so that the eighth and final theorem enumerated in the paper was only a “conjecture,” and not actually proven.<sup>97</sup> Tantalizingly hinting again in the conclusion at the “question of the physical meaning of these results and problems,” Jordan vaguely suggested he would “discuss [those] elsewhere.”<sup>98</sup> The article appeared incomplete because it was: Jordan had rushed to print what he had ready in the age-old academic fear of being scooped. As he wrote to his former teacher Max Born when submitting the manuscript, “after I have toiled over these problems now for over four years, I would not like to let anything get snatched away from me.”<sup>99</sup> Jordan followed through on his promise to address the physical implications of his new algebra only two weeks later, submitting a manuscript detailing such possibilities to the major German physics journal of the day, the *Zeitschrift für Physik*.<sup>100</sup> A further note by Jordan elaborating on how his mathematics could provide a method for generalizing the

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<sup>97</sup> Jordan, “Über eine Klasse nichtassoziativer hyperkomplexer Algebren,” 574.

<sup>98</sup> *Ibid.*, 575.

<sup>99</sup> Jordan to Max Born, November 28, 1932, Archiv der Max-Planck-Gesellschaft, Ia. Abt., Rep. 38, Nr. 10. Jordan's rival was the Hamburg mathematician Max August Zorn, who had published an article in 1930 that came tantalizingly close to Jordan's result and who was continuing to work along similar lines. See Max Zorn, “Theorie der alternativen Ringe,” *Abhandlungen aus dem Mathematischen Seminar der Universität Hamburg* 8 (1930): 123–47.

<sup>100</sup> P. Jordan, “Über die Multiplikation quantenmechanischer Größen,” *Zeitschrift für Physik* 80, no. 5–6 (1933): 285–91. Though the article was published in early 1933, it was received by the journal on December 17, 1932.



mathematical formalism of quantum mechanics appeared in the *Göttinger Nachrichten* in March 1933.<sup>101</sup>

Eager to pursue the idea further, but recognizing that his own mathematical talents were not up to the task, Jordan wrote to one of his friends in physics who was so inclined—the mathematical physicist Eugene Wigner. The two had met during their student days in Göttingen in the 1920s and had coauthored an article in 1928.<sup>102</sup> Writing to Wigner in December 1932, Jordan asked if they could meet to discuss what Jordan termed his “thoughts about a generalization of current quantum mechanics – it is perhaps only a useless mathematical dalliance; but it really interests me.”<sup>103</sup> Knowing that Wigner and von Neumann were close, and also knowing full well of von Neumann’s prodigious mathematical talents, Jordan also asked Wigner for the whereabouts of his Hungarian compatriot.<sup>104</sup>

Several letters must have passed between the two, for by late April 1933, Jordan was sending a detailed letter to Wigner on his algebraic ruminations, along with reprints of the three articles he had recently published on the topic.<sup>105</sup> Wigner must have invited Jordan to give a lecture in Berlin on his new algebra, but Jordan had to decline the invitation because of the “miserable” state of his

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<sup>101</sup> P. Jordan, “Über Verallgemeinerungsmöglichkeiten des Formalismus der Quantenmechanik,” *Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen, Mathematisch-Physikalische Klasse*, 1933, 209–17.

<sup>102</sup> P. Jordan and E. Wigner, “Über das Paulische Äquivalenzverbot,” *Zeitschrift für Physik* 47, no. 9–10 (1928): 631–51.

<sup>103</sup> Jordan to Wigner, undated (likely December 1932), EWP, Box 96, Folder 5. Unfortunately for the historian, in the 1930s, Jordan had a habit of leaving letters undated, so I rely on inferences based on textual references to papers published and laws passed when dating these letters.

<sup>104</sup> Jordan and von Neumann had also become acquainted in the 1920s; they got to know each other well personally in 1929 when they were both *Privatdozenten*, or lecturers, in Hamburg.

<sup>105</sup> Sadly for the historian, much of the correspondence that fueled this collaboration is quite obviously lost. Six letters survive in the Eugene Wigner Papers in Princeton, as does one relevant letter in the John von Neumann papers in the Library of Congress. Sadly, as is often the case with Jordan, no letters to Jordan have survived; all we have are the letters from Jordan which he sent to others. The three articles are the ones mentioned above on non-associative algebras, namely Jordan, “Über eine Klasse nichtassoziativer hyperkomplexer Algebren”; Jordan, “Über die Multiplikation quantenmechanischer Größen”; Jordan, “Über Verallgemeinerungsmöglichkeiten des Formalismus der Quantenmechanik.”

finances.<sup>106</sup> Moreover, as he wrote, “...I would much rather not give a lecture on my non-associative speculations [in algebra], but instead privately chat about it with you and “J” [von Neumann]...”<sup>107</sup> Jordan hoped that Wigner and von Neumann could help him determine if “non-trivial semi-simple r-number systems” existed. (What Jordan termed ‘r-number systems’ would later be termed a Jordan algebra.<sup>108</sup>)

Toward the end of the letter, though, Jordan remarked on a distinctly non-mathematical subject that was consuming the German academic world at the time, one described earlier in this chapter: the Nazi purge of Jewish scholars at German universities. As it happened, Hitler had been named chancellor that January, that is, only one month after Jordan initially reached out to Wigner and published his first two articles on non-associative algebras in December 1932. By late April, when Jordan sent Wigner the reprints of his articles on non-associative algebras, the Nazi purge of Jewish and left-wing scholars from German universities was in full swing. Throughout that spring and summer, Nazi academic authorities issuing waves of dismissals in a reign of chaos.<sup>109</sup> It was in this atmosphere of tumult that Jordan wrote to Wigner:

Here in [Rostock] the mineralogical assistant Dr. [Gunter] Nagelschmidt has been suspended; otherwise no mathematicians, physicists, or chemists have been affected. Do you know how it stands with [physicist Walter] Gordon and the mathematician [Max] Zorn in Hamburg? I have no idea.<sup>110</sup>

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<sup>106</sup> A chronic lack of money was a problem that plagued Jordan for his entire life. As noted in Chapter 1, his family seems to have lost all its savings in the post-World War I hyperinflation; Jordan’s teachers Max Born and James Franck paid his tuition at Göttingen as he could not afford it. As late as the 1970s Jordan was declining invitations because he could not afford to travel.

<sup>107</sup> Jordan to Wigner, undated (likely late April 1933), EWP, Box 96, Folder 5. This letter must date from after April 7, 1933, when Hitler promulgated the Civil Service Law, for as will be seen, Jordan mentions the dismissals of Jewish scholars at the University of Rostock in the letter.

<sup>108</sup> It seems that the first person to name Jordan algebras after Pascual Jordan was the American mathematician A. Adrian Albert, in 1946. See A. A. Albert, “On Jordan Algebras of Linear Transformations,” *Transactions of the American Mathematical Society* 59, no. 3 (1946): 524–55.

<sup>109</sup> See for example Beyerchen, *Scientists under Hitler*, 1–50.

<sup>110</sup> Jordan to Wigner, undated (likely late April 1933), EWP, Box 96, Folder 5.

The turmoil unleashed by the Civil Service Law was so chaotic that in Rostock, Jordan had “no idea” what was happening in Hamburg, only about 100 miles away.<sup>111</sup> Jordan’s tone, though matter of fact, again seems to indicate that he lamented the Nazi purge.

One wonders why Jordan did not see fit to inquire about Wigner or von Neumann’s own positions. In 1930, the two had agreed to a unique arrangement by which they spent half the year as visiting professors in Princeton, and the other half teaching in Berlin. (Wigner taught at the *Technische Hochschule*, while von Neumann was at the University of Berlin.) As Hungarian Jews, the two were also hit by the Nazi purge; Wigner was officially dismissed in September 1933.<sup>112</sup> Considering the gaps in the correspondence, it is possible that Jordan expressed concern in a letter that was lost; it is also possible, however, that Wigner simply informed Jordan matter-of-factly in one of his letters, none of which have survived. It is also possible that in spring 1933, when privacy of the mail was being regularly violated in Germany, Jordan did not want to express sympathy for a Jewish colleague who was about to lose his job—because he himself was in the process of joining the Nazi Party. After all, it would surely look bad for an aspiring Nazi to sympathize in writing with a Jewish professor who had been dismissed. Nevertheless, Jordan’s affection for his colleagues shines through as he continued:

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<sup>111</sup> Gordon and Zorn (Jordan’s rival on non-associative algebras) were indeed both dismissed in 1933. The main reason why Rostock was comparatively unscathed by the purge compared to other universities was that the university was already extremely anti-Semitic prior to 1933 and had rarely hired Jews even then, meaning that there were simply very few Jewish professors who could be dismissed at all.

<sup>112</sup> According to the now-*Technische Universität Berlin*’s catalog of professors, Wigner’s license to teach was revoked in 1933 (presumably in April or May), and he was officially dismissed from the university on September 6, 1933. See “Eugene Paul Wigner,” *Catalogus Professorum: Professorinnen und Professoren der TU Berlin und ihrer Vorgänger*, 2016, <https://cp.tu-berlin.de/person/2275>. As noted above, von Neumann had already informed the University of Berlin in February 1933—i.e. before the Nazi dismissals—that he was planning to accept an offer at the Institute of Advanced Study as of October 1933. Yet he was certainly influenced to move to the United States permanently by the rise of the Nazis. See Hashagen, “Johann Ludwig Neumann von Margitta (1903–1957) Teil 2,” 233–35.

It is really very sad that we have so little prospect of seeing each other within the foreseeable future; there are so many things I would like to talk with you about. But I am fighting a desperate struggle [*Verzweiflungskampf*] against the inclination of my financial deficit to grow monotonically.

Many warm greetings, not only to you, but also to J. [von Neumann], [Leo] Szillard [sic], and all other common friends!

As always yours,  
P. Jordan.

It is notable that in the summer of 1933, Jordan expressed well-wishes to Jewish colleagues like von Neumann and Leo Szilard, with whom he hoped to remain in touch. It is clear that he held them in high esteem. From his tone with Wigner, one gets the sense that some of the many “things” which Jordan wished to discuss with Wigner was the dismissal policy. This friendly—even concerned—private correspondence with his Jewish colleague Wigner was, of course, in stark contrast to Jordan’s public persona, which greeted the Nazi takeover with acclaim. Indeed, this letter was sent at almost the exact same time as Jordan’s infamous May 1933 article in the Rostock university student magazine.<sup>113</sup> Again it can be seen that Nazi anti-Semitism was never a deal-breaker for Jordan; even as colleagues whom Jordan clearly cherished, like Wigner, were being dismissed and forced into exile, he vociferously proclaimed his allegiance to the regime in print and formally joined the Party.

Amazingly, though, neither the anti-Semitic purge of Jewish academics from German universities initiated by the Civil Service Law—which made it clear to Wigner and von Neumann that their future lay in the United States—nor Jordan’s decision to join the Nazi Party had any discernable impact on their ongoing mathematical collaboration. After Wigner asked Jordan for more details on his speculations, Jordan responded with further comments on one of his

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<sup>113</sup> This article, quoted extensively above, proclaimed that “[i]t is no longer a discussion today whether a reform of the university to assimilate in accordance with the National Socialist state *should happen or not*; it is instead a matter of determining the forms and ways in which such an incorporation must happen.” See Jordan, “Die Wandlung der Universität,” 3.

mathematical proofs.<sup>114</sup> (This time Jordan did not comment on the ongoing dismissals at German universities.) And it was at this point that John von Neumann entered the collaboration, perhaps because Wigner showed him some of Jordan's letters. (It seems likely that Jordan wrote to von Neumann earlier, after Wigner gave him von Neumann's address, but no earlier correspondence between the two survives.) In any case, von Neumann must have been in touch with Jordan by summer 1933, for Jordan wrote von Neumann a four-page letter in late July, elaborating on his mathematical musings at length in the hopes that von Neumann could help Jordan prove the existence of what he termed "higher grade" systems. Things were proceeding so rapidly that in this letter Jordan made a proposal to publish a "three-man paper" together, "upon a certain conclusion of our work," so long as the work did not take so long that Wigner and von Neumann's departure for America that fall caused "technical complications" that making such collaboration impossible.<sup>115</sup> (This was, of course, a between-the-lines reference to the political situation in Germany.)

The collaboration continued throughout the summer through letters which are now lost; by late summer 1933, probably in August, Jordan sent a partial manuscript—in German—of the proposed paper, titled "*Über eine Verallgemeinerung des quantenmechanischen Formalismus*," (On a Generalization of Quantum Mechanical Formalism) to Wigner and von Neumann.<sup>116</sup> A considerable amount of Jordan's manuscript, including most of the introduction and Part I, was carried over into

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<sup>114</sup> Jordan to Wigner, undated (likely May-June 1933), EWP, Box 96, Folder 5. The comments were on one of the proofs in Jordan, "Über Verallgemeinerungsmöglichkeiten des Formalismus der Quantenmechanik."

<sup>115</sup> Jordan to von Neumann, undated (likely late July 1933), p. 3-4, EWP, Box 96, Folder 5. Jordan mentioned that he was responding to a letter of von Neumann's dated July 18, which has not survived, meaning that this letter must have been written in late July.

<sup>116</sup> Two copies of the manuscript (one handwritten, with formulas, and one typewritten, without formulas), along with what are apparently notes for Jordan's correspondence with von Neumann, are extant in Jordan's *Nachlass* in the Berlin State Library, NPJ, Nr. 124. (The notes and manuscripts for this three-man paper are some of the very few documents in the Jordan collection that predate the Second World War. Sadly, no letters from the period to or from Wigner are extant in the collection, and the notes themselves are very hard to follow.)

the final paper in direct English translation.<sup>117</sup> The manuscript's title page carried a subtle indication of the tumult in Germany that summer: von Neumann and Wigner were described as being "currently in Budapest."<sup>118</sup> Ironically, despite the fervent German nationalism he trumpeted in print, when Wigner and von Neumann suggested submitting the paper to an American journal, *Annals of Mathematics*, Jordan showed no loyalty to Germany in the realm of scientific publishing. On the contrary, Jordan was "very pleased" by the suggestion, as the American journal promised to publish quickly.<sup>119</sup>

Significantly, Jordan's trust in the two was great enough that he gave them carte blanche to shepherd the paper through the submission process at the Princeton-based *Annals*, and to make whatever changes they deemed necessary without his prior approval. But what comes through in the letters exceeded simple collegial admiration; Jordan truly revered his two collaborators. He wrote excitedly to his Hungarian-Jewish colleagues, full of eager mathematical questions and repeatedly expressing his wish to speak with them in person. The affection was mutual, for Wigner and von Neumann again invited Jordan to visit Berlin so the three could work together finishing the paper in person. While this never came to pass, because Jordan could not afford the trip, Jordan deeply

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<sup>117</sup> It seems that Part I of the final paper ("Structure of the  $r$ -number [i.e. Jordan] algebras") was authored largely by Jordan, as it is largely a direct translation of Jordan's original German manuscript held in the Berlin State Library. (Wigner and von Neumann surely amended it, however, and added the section on interchangeability, p. 44-46 in the final paper) Similarly, Part II and Part III of the paper were authored almost entirely by Wigner and von Neumann. Jordan approved of the addition of the section on interchangeability—in German, "Vertauschbarkeit"—in a late summer letter. See Jordan to von Neumann and Wigner, undated (likely August 1933), p. 1, EWP, Box 96, Folder 5.

<sup>118</sup> NPJ, Nr. 124, Bl. 27.

<sup>119</sup> As he wrote to them, "Had already thought myself that a mathematical journal would be preferable, however besides the Hamburg [journal] (probably barely in consideration?), I did not know of any that publishes in any reasonable time [*innerhalb endlicher Zeit*]." The Hamburg journal referenced by Jordan was the *Abhandlungen aus dem mathematischen Seminar der Universität Hamburg* (Papers from the University of Hamburg Mathematical Seminar). One wonders if the reason why it was "barely in consideration" was that Jordan realized that von Neumann and Wigner probably had little interest in supporting a German journal given the events of 1933. See Jordan to von Neumann and Wigner, undated (likely August 1933), p. 2-3, EWP, Box 96, Folder 5.

lamented missing the opportunity: “Unfortunately! it is only very doubtful that I can still make it possible to come to Berlin before September 7...If it doesn’t work, then we really must certainly see each other on your next visit to Europe!!, and if possible not just briefly, but for a long time!”<sup>120</sup> The liberal use of exclamation points makes Jordan’s personal affection for von Neumann and Wigner plainly apparent. (Jordan apparently never did meet von Neumann or Wigner in person while the three-man paper was drafted in 1933.<sup>121</sup>)

As it turned out, von Neumann and Wigner realized soon after they arrived in Princeton in September or October 1933 that higher dimensional non-associative algebras, which Jordan hoped would allow generalization of the formalism of quantum mechanics, did not in fact exist.<sup>122</sup> So it was that the paper submitted to the *Annals of Mathematics* was, despite its title—“On an Algebraic Generalization of the Quantum Mechanical Formalism”—essentially purely mathematical in content.<sup>123</sup> While Jordan was disappointed that his hopes for a physically relevant algebra were dashed, philosophically noting that “naturally it is pointless to regret that mathematics is as it is—for the opposite would only be true at the cost of its consistency,” his admiration for the two colleagues again shined through: “...I finally would like to express how much I am delighted and relieved that

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<sup>120</sup> Jordan to von Neumann and Wigner, undated (likely August 1933), p. 4, EWP, Box 96, Folder 5. All punctuation in original.

<sup>121</sup> Jordan to Richard Becker, undated (likely early September 1933), EWP, Box 96, Folder 5. This letter was sent to Becker, physicist at the *Technische Hochschule* in Berlin—and Wigner’s doctoral adviser—as Wigner was planning to stay with him there from September 3 to 7, 1933. Though addressed to Becker, Jordan noted that he was “writing now for Mr. Wigner and for [John von Neumann] about two questions regarding our paper,” and indeed wrote with suggestions for the manuscript. (Jordan clearly knew he could reach Wigner via Becker; one had to know these things in an era before email.)

<sup>122</sup> For a good technical overview of the reasons why Jordan algebras proved unhelpful in physics that is still readable for non-mathematician, see McCrimmon, *A Taste of Jordan Algebras*, 1–5, 39–50.

<sup>123</sup> Jordan, von Neumann, and Wigner, “On an Algebraic Generalization of the Quantum Mechanical Formalism.”

you [i.e. von Neumann and Wigner] completely settled and resolved the matter in such a fantastically short time. Alone, it would have taken me years—if ever—to come up with it.”<sup>124</sup>

And in Princeton, the story of Jordan’s algebra took another turn. As Wigner and von Neumann were preparing the manuscript for publication, the classification of a specific case of Jordan’s “ $r$ -number algebras” gave them particular trouble. They turned to a young visiting fellow at the Institute of Advanced Study, American mathematician A. Adrian Albert, to see if he could solve the problem.<sup>125</sup> With some assistance from von Neumann, Albert successfully resolved the issue, and his paper outlining the solution was published directly following the Jordan-Wigner-von Neumann three-man paper January 1934 issue of the *Annals of Mathematics*.<sup>126</sup> For Albert, this was the start of a life-long interest in “ $r$ -number algebras,” which he dubbed “Jordan algebras” later in the 1940s.<sup>127</sup> He published many articles on the subject and advised several doctoral theses Jordan algebras, sparking interest throughout the American mathematical community.<sup>128</sup> One wonders: if not for this chance interaction between von Neumann and Wigner, refugees from Hitler’s Germany, and the young mathematician, would Jordan algebras have taken root so strongly in American community? Might they instead have flourished in Germany?

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<sup>124</sup> Jordan to von Neumann, undated (likely September-October 1933), JvNP, Box 4.

<sup>125</sup> Jordan, von Neumann, and Wigner, “On an Algebraic Generalization of the Quantum Mechanical Formalism,” 64.

<sup>126</sup> “Neumann has cooperated with me in obtaining the present elegant proof.” See A. Adrian Albert, “On a Certain Algebra of Quantum Mechanics,” *Annals of Mathematics* 35, no. 1 (January 1934): 65–73. The Jordan-von Neumann-Wigner *Dreimännerarbeit* was received on November 10, 1933, while Albert’s paper was received November 14, 1933.

<sup>127</sup> It seems that the name “Jordan algebra” was popularized in Albert, “On Jordan Algebras of Linear Transformations.” But Albert had already termed them “Jordan algebras” as early as 1942, as had one of his doctoral students, Gerhard Karl Kalisch. See A. A. Albert, “Non-Associative Algebras: I. Fundamental Concepts and Isotopy,” *Annals of Mathematics* 43, no. 4 (1942): 685; Gerhard Karl Kalisch, “On Special Jordan Algebras” (The University of Chicago, 1942).

<sup>128</sup> Including Kalisch, three of his students wrote their dissertations on Jordan algebras. Nancy E. Albert, *A<sup>3</sup> & His Algebra: How a Boy from Chicago’s West Side Became a Force in American Mathematics*, Rev. ed. (New York: iUniverse, 2005), 267–69.



Similarly, it is hard not to wonder what might have been different between the three original collaborators—Jordan, von Neumann, and Wigner—had the Nazi takeover not intervened. While it did not prevent their collaboration in 1933, which began while von Neumann and Wigner were in Europe, and it did not prevent them from exchanging friendly letters both before and after World War II, one wonders if further three-man collaborative works in algebra or elsewhere would have emerged had the two been able to maintain their half-year positions in Germany—and thereby their connections to the German-speaking academic world. (Jordan and von Neumann did collaborate again on a mathematical paper in 1935, but it was a brief article.<sup>129</sup>) As Jordan wrote to Neumann in 1933, “...if you feel like pursuing the matter further in any direction, I would obviously be very happy,” but he admitted that continuing their work would be “problematic,” almost certainly because of the distance involved.<sup>130</sup> The Nazi takeover made what could have been a longer-term collaborative partnership practically impossible.

### **Jordan and the International Scientific Community**

Nevertheless, the Jordan-Wigner-von Neumann three-man paper exemplifies how Jordan’s membership in the Nazi Party did not seriously hamper his relations with the international scientific and mathematical community prior to the outbreak of war in 1939. It bears repeating: even as he was in the process of joining the Nazi Party in spring 1933, Jordan actively sought out two Jewish colleagues to collaborate on a three-man paper which was ultimately published in the United States. The same could be said for Wigner and Neumann: they felt no apparent qualms about collaborating with Jordan; though the two were likely unaware of Jordan’s decision to join the party, they certainly

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<sup>129</sup> Pascual Jordan and John von Neumann, “On Inner Products in Linear, Metric Spaces,” *Annals of Mathematics* 36, no. 3 (July 1935): 719–23.

<sup>130</sup> Jordan to von Neumann, undated (likely September-October 1933), JvNP, Box 4.

knew that he planned to remain in Hitler's Germany. In spite of all the political and personal turmoil occurring in Germany that year, collaboration remained possible.

Amazing as it may seem, this was not an unusual occurrence for Jordan. During the early Nazi period, Jordan coauthored another article with von Neumann, which was also published in English in the American *Annals of Mathematics*, in 1935. Similarly, he coauthored an article with the Dutch physicist Ralph de Kronig in 1936.<sup>131</sup> Jordan also published two articles in the house journal of the Vienna Circle, *Erkenntnis*, in 1934 and 1935, and remained in friendly contact with several members of the group until 1939.<sup>132</sup> Hans Reichenbach even invited Jordan to give a lecture at the Vienna Circle's first conference on scientific philosophy in Paris in 1935, but Jordan declined because he could not afford to make the trip.<sup>133</sup> On the whole, Jordan's informal personal network of correspondents seems to have been largely unharmed by his decision to remain in Germany and join the Nazi Party. Intercontinental distances certainly made communication more difficult, as letters took much longer to arrive, but Jordan remained in touch with much of the international physics and mathematics community. He continued corresponding with von Neumann into the late 1930s—the two apparently even met in person in Cologne in 1936, when Neumann was visiting Europe—and he similarly continued exchanging letters with Max Born, Maurice Pryce, Otto

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<sup>131</sup> Jordan and Neumann, "On Inner Products in Linear, Metric Spaces"; P. Jordan and R. de L. Kronig, "Lichtquant und Neutrino," *Zeitschrift für Physik* 100, no. 9–10 (1936): 569–83. De Kronig also invited Jordan to visit him in Groningen in 1936, though it does not seem that Jordan ever made it to the Netherlands. See Jordan to Ralph de Kronig, undated (likely May 1936), NMB, Nr. 409.

<sup>132</sup> Jordan, "Quantenphysikalische Bemerkungen zur Biologie und Psychologie"; Jordan, "Ergänzende Bemerkungen über Biologie und Quantenmechanik."

<sup>133</sup> See Hans Reichenbach to Jordan, July 17, 1935, and Jordan to Reichenbach, September 21, 1935, both in HRP, Box 13, Folder 17.

Neurath, and others until the start of the war.<sup>134</sup> Incredibly enough, Jordan was corresponding with Max Delbrück in California as late as November 1940.<sup>135</sup>

It is likely that many of these correspondents were unaware that Jordan had joined the Nazi Party and attempted to reconcile Nazism and modern physics. After all, during the 1930s, an age when information traveled much more slowly, there was no centralized database of known Nazi Party members. The vociferous articles detailed earlier in this chapter, in which Jordan attempted to convince the Nazis that modern science could help win wars, were largely published in organs that did not circulate far outside Germany. Similarly, the political sections added to Jordan's popular scientific works during the 1930s may have been viewed as the type of pandering necessary to get a book published in Nazi Germany.

When asked about his pro-Nazi writings, Jordan sent cryptic explanations in return, which often employed the vocabulary of physics to draw analogies with the political situation in Germany. A 1934 letter to Niels Bohr, in which Jordan attempted to explain the motives behind his infamous May 1933 article in the Rostock student magazine, is a case in point:

I attempted therein to deliver a contribution [*Beitrag*] to the proof of the general theorem that the value of physics is a quantity that in magnitude and sign is invariant with respect to very general transformations of the external coordinate system. To this end it should be shown that the sign of this quantity can also be proven as positive with a system of axioms that stands in a relationship of complementary exclusion to those axioms from which one would otherwise [be accustomed to] derive this sign.<sup>136</sup>

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<sup>134</sup> See NMB, Nr. 353 for letters from Jordan as late as 1937; in his letters to von Neumann, Jordan mentions being in contact with Pryce several times, though these letters do not seem to have survived. For such a reference see Jordan to von Neumann, undated (likely early 1937), JvNP, Box 4; for Jordan's correspondence with Otto Neurath from 1937 to 1939 see ONN, Nr. 250.

<sup>135</sup> Jordan to Delbrück, November 13, 1940, MDP, Box 12, Folder 13.

<sup>136</sup> Jordan to Niels Bohr, undated (likely early 1934), NBC, Folder 158, Item 21. Note again Jordan's use of vocabulary from physics, characteristic of his Nazi-era writings.

Translating tortured physics analogies into regular English, Jordan was essentially telling Bohr that he was attempting to prove that physics could still be valuable to an authoritarian government such as the Nazi dictatorship.

And despite what many claimed after the war, evidence suggests that these lines of explanation by Jordan held water among many émigrés at the time. Bohr responded to Jordan's letter with a similarly cryptic note, but stayed in touch with Jordan, even inviting him to a conference in 1936. Similarly, after Jordan pleaded his case to James Franck in person (again regarding the Rostock student magazine article), Franck accepted Jordan's explanation. In a letter, Franck advised Max Born to do the same: "I would not take Jordan's gaffe [*Entgleisung*] seriously...Among other things, he and his wife also visited us in Göttingen shortly before our departure [i.e. from Germany]." <sup>137</sup>

If physics analogies did not work, Jordan would also excuse his actions by pointing to the city where he lived and taught from 1929 to 1944: ur-conservative Rostock, which already had a reputation as being rabidly pro-Nazi even in the Weimar years. As with the obtuse physics analogies, this explanation was often persuasive. German-Jewish émigré Otto Stern, for example, reported confronting Jordan in 1936 about his actions, to which Jordan responded: "Listen, you were in Rostock, right. You know what it's like there, I couldn't live there if I didn't do this [i.e. join the Party and propagandize]." Stern, who had taught in Rostock in the early 1920s, told a postwar interviewer that he agreed "completely" with Jordan's assessment of local Rostock politics. Moreover, Stern said, one "couldn't blame him" for his staying in Germany and publishing pro-Nazi

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<sup>137</sup> James Franck to Max Born, April 18, 1934, JFP, Box 1, Folder 7.

texts. After all, Stern added, Jordan had few career prospects elsewhere due to his “awful stutter.”<sup>138</sup> Thus, until the start of the war, even those in the international community who were aware of Jordan’s decision to join the Nazi Party—and again, many probably simply did not know of it—largely accepted it as a concession he needed to make to continue advocating for modern physics or saw it as excusable due either to Rostock’s conservative atmosphere or the difficulties he faced due to his stutter.

### Conclusion

Broadly considered, the fact that Jordan’s relations with foreign scientists during the late interwar period continued to be collegial, and even friendly, demonstrates that our understanding of the international scientific community at that time must be revised. Hitler’s ascension to power clearly caused a shift in the international scientific and mathematical community that cannot be underestimated, as the exodus of scholars from continental Europe largely landed in English-speaking countries and particularly the United States. (And this shift was not limited to the sciences—the purge of German universities deeply impacted the social sciences and humanities as well.) But despite an increasingly anti-intellectual environment at home, German scientists were not immediately cut off from the rest of the world in 1933, and they were neither shunned by the majority of German-Jewish émigrés nor the international community as a whole.<sup>139</sup> It was known that some Germans with anti-Nazi reputations, like physicist Max von Laue, maintained their

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<sup>138</sup> Stern had held Jordan’s chair in Rostock from 1921 to 1922, so he had first-hand knowledge of the situation. See the interview of Otto Stern by Res Jost, November 25, 1961, quoted in Horst Schmidt-Böcking, Alan Templeton, and Wolfgang Trageser, eds., *Otto Sterns gesammelte Briefe – Band 1: Hochschullaufbahn und die Zeit des Nationalsozialismus* (Berlin: Springer-Verlag, 2018), 57.

<sup>139</sup> This began to change with Kristallnacht in November 1938, but as Jordan’s case shows, Germans were able to maintain connections with international colleagues up to the outbreak of war in August 1939; in the case of those countries that at first remained neutral, like the United States, these relationships were maintained even into the war years.

connections to the rest of the scientific world; yet it says something else entirely that a figure like Jordan, who continually sought to define science in terms friendly to the Nazi state, remained a member in good standing of the international scientific community well into the late 1930s.<sup>140</sup>

Returning to Jordan's case in particular, all evidence suggests one conclusion: he truly believed the vast majority of what he wrote during the Nazi period. Yes, Jordan may have added rhetorical flourishes in some of his writings in attempting to appeal to Nazi propagandists, but the Domeier articles, the 1934 Heisenberg letter, and the 1935 letter to Ernst Jünger all demonstrate that he really did want to place science in the service of the Nazi state. He believed in a militaristic redefinition of science's societal value. When Jordan told his international colleagues that his vociferously pro-Nazi writings were meant to defend science, he was telling them at best a half-truth; at worst, he was explicitly lying. The disillusionment Jordan felt with the Nazi regime stemmed not from its expansionist foreign policy or its anti-Semitic backbone, but from the state's refusal to give him and his *völkisch* intellectual friends the reins of power. In Jordan's mind, by denying power to the true "renewers" of the *Volk*—like himself—the Nazis proved themselves to be fools.

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<sup>140</sup> As personal papers of mid-20<sup>th</sup> century scientists on both sides of the Atlantic continue to open to researchers, historians should pay special attention to personal networks and personal relationships in the international community during the 1930s. Based on this examination of Jordan, one would expect to find that, contrary to what might be expected, most German mathematicians and scientists, including those who joined the Nazi Party and spoke out in its favor, remained "upstanding" in the eyes of the international scientific community and were viewed as full equals. Accordingly, in this revised picture, it seems likely that the only Germans actually shunned by the international community between 1933 and 1939 were those who, like the *deutsche Physiker*, attempted to completely subvert science to Nazi ideology. Again, there were always exceptions, and this general picture began to change in the late 1930s, as Nazi anti-Semitic measures became ever more extreme, but it is clear that there was certainly no immediate boycott of German science in 1933. As we will see with Jordan's case in Chapter 5, after the war, many claimed they had immediately recognized Jordan for the villain they now believed him to be, and stated that he had been cast out from the community in 1933. I suspect it will be found that Jordan was not the only scientist who remained in Nazi Germany who was the subject of such a wishful—yet, from the perspective of the émigrés, completely understandable—reinvention of the interwar past.

Yet despite this private disappointment on the mystical-spiritual level, throughout the 1930s Jordan—ever the nationalist—nevertheless continued to hold out hope that the regime could be convinced to come around and fund scientific research. Jordan’s strategy of blending in and “working toward the *Führer*” in the scientific realm rested on successfully locating and appealing to the right power center in the Nazi polycracy, one that would prove amenable if petitioned appropriately. As we will see in Chapter 3, Jordan did not change his strategy on the outbreak of war in 1939. On the contrary, the conflict only encouraged him to double down on these attempts, and to attach them to a grandiose vision for science like few had ever envisioned before. It is to this wartime story that we now turn.

### Chapter 3: A Failed Collaborator: Jordan, the Third Reich, and Dreams of Big Science, 1939–1945

“...[O]ne first has to attempt to develop a certain foundation of trust for cooperation between science and the present-day [i.e. Nazi] state...”

—Pascual Jordan to Adolf Meyer-Abich, September 22, 1941

“For it is certain today that holism [Ganzheit] is the bridge that leads across physics to biology and vice versa. Everything wanting to successfully work toward the synthesis of the sciences must march over this bridge...”

—Adolf Meyer-Abich, 1942<sup>1</sup>

“...[T]hrusting technocrats and scientists seeking to extend power and influence through jumping on the bandwagon of technological experimentation and modernization...were, through their many and varied forms of collaboration, at least indirectly ‘working towards the Führer.’”

—Ian Kershaw, 1993<sup>2</sup>

In the summer of 1942, as German troops pushed toward Stalingrad, a curious new scientific journal appeared on the home front. Entitled *Physis: Beiträge zur naturwissenschaftliche Synthese* [Physis: Contributions to Natural Scientific Synthesis], and spearheaded by two scientific mavericks—Jordan and the holist biologist Adolf Meyer-Abich (1893–1971)—this new organ fiercely championed a highly heterodox vision of science: one founded on the basis of biological holism [*Ganzheit*]. Its willingness to polemicize the issue was established from page one: the first essay, written by the prime mover behind *Physis*—Meyer-Abich—boldly proclaimed the “collapse” of the “mechanistic ideal of knowledge,” that had governed the natural sciences for a century.<sup>3</sup> In place of this failed paradigm, wrote Meyer-Abich, would be *Ganzheit*: “Nature as such is neither an entity nor a multiplicity, but rather a genuine, real *whole*.”<sup>4</sup> Developments since the fin de siècle in both physics and biology had augured the arrival of *Ganzheit*; indeed, the two fields were now beginning to merge

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<sup>1</sup> Adolf Meyer-Abich, “Naturwissenschaftliche Synthese,” *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 12.

<sup>2</sup> Kershaw, “‘Working Towards the Führer’: Reflections on the Nature of the Hitler Dictatorship,” 117.

<sup>3</sup> Meyer-Abich, “Naturwissenschaftliche Synthese,” 5.

<sup>4</sup> *Ibid.*, 6.



into a greater “synthesis...a new holistic natural science,” marking a turn away from the mechanistic ideal that had led science astray.<sup>5</sup>

Although its scientific content seems anodyne to modern readers, *Physis* was actually a highly risky endeavor when properly viewed in the context of the late Nazi state. The journal championed several theories deemed ideologically suspect by certain factions in the Party: holism, biophysics, and quantum mechanics. Under Hitler, as prominent exponents of these theories, both Jordan and Meyer-Abich had been explicitly denounced and publicly attacked by their opponents. How, then, in the middle of a global conflict, did such a radical and polemical new scientific journal make it to print?<sup>6</sup> To answer this question, one must delve into how exactly the abortive project fit into the Nazi scientific and political hierarchy.

New documents in Meyer-Abich’s *Nachlass* in Hamburg, opened to researchers only recently, detail how Jordan and Meyer-Abich carefully sought to find protection for their project among powerful entities in the bewilderingly vast hierarchy of the Nazi state.<sup>7</sup> These documents make it clear that *Physis* was much more than just an everyday scientific publication, and that what made it so radical was not so much theories *per se* but, rather, the way it conscripted science in what Ian Kershaw has termed “working toward the *Führer*.”<sup>8</sup> In this way, *Physis* exemplifies how Jordan’s

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<sup>5</sup> Ibid., 10.

<sup>6</sup> *Physis* has received some attention from historians of science for its heterodox scientific content; see Beyler, “From Positivism to Organicism,” 397–479; Amidon, “Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology.”

<sup>7</sup> As described in Chapter 2, historians have termed the power structure of the Nazi state *polycratic*, for Hitler’s Germany was a highly factional multipolar entity riddled with intrigue. The *Physis* saga presented here is an example of the ways scientists attempted to secure support and protection for their disciplines amid this complex and opaque political system. On the polycratic thesis, see Hüttenberger, “Nationalsozialistische Polykratie.” For more on the Meyer-Abich collection in Hamburg, see the Introduction.

<sup>8</sup> Kershaw uses this concise metaphor to illustrate how collaboration with the regime was motivated by the desire to act in “anticipation of Hitler’s presumed wishes and intentions,” so as to be rewarded for successfully divining the *Führer*’s aims. This paradigm can be applied to all forms of complicity. One could “work toward the *Führer*” in a direct sense, as the SS did in carrying out the Holocaust; one could also do so,

strategy for navigating the Nazi regime—which he developed in late 1933 and early 1934, as detailed in Chapter 2—remained largely the same even as the regime radicalized exponentially during the war years. For as noted above, despite his own personal disappointment with the regime’s failure to initiate the mystical “renewal” of German society he longed for, as well as the regime’s indifference—even opposition—to science, Jordan continued to believe that an accord could be struck between science and the Nazi state. He maintained hope that by establishing his credentials as a patriotic German and loyal Party member, he could find a receptive power base in the Nazi polycracy that would—if properly “enlightened”—come to understand the military potential of science and fund it commensurately.<sup>9</sup>

In accordance with Jordan’s strategy, *Physis* was just the public-facing vehicle of he and Meyer-Abich’s drive to institutionalize their particular conception of science as orthodoxy in the ‘new’ Germany—or as Jordan termed it in a letter to Meyer-Abich in September 1941, to present a “positive program of scientific renewal in the National Socialist sense.”<sup>10</sup> Jordan’s program of “scientific renewal” was remarkably prescient for its time; he had identified a dramatic shift in the scale of the scientific enterprise, one that ultimately emerged in the United States during and after

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as Kershaw emphasizes, in a more indirect—and often less overtly ideological—sense, in which the “objective function of the actions was nevertheless to further the potential for implementation of the goals which Hitler embodied.” Jordan and Meyer-Abich were attempting via *Physis* to “work toward the *Führer*” in this second, indirect sense. See Kershaw, “Working Towards the Führer’: Reflections on the Nature of the Hitler Dictatorship.”

<sup>9</sup> As emphasized in Chapter 2, Jordan’s personal disappointment with the Nazi regime occurred solely on this mystical level. He approved of with the regime’s expansionist foreign policy, subscribed to the *völkisch* ideal that the Germans were a “master race” destined for supremacy in Europe, and was in favor of general anti-Semitic measures—even if he personally deplored the genocidal “Final Solution,” as will be discussed below. For these reasons, he remained ready and willing to propagandize for the regime; in this way, as noted above, Jordan was much like his *völkisch* intellectual friends; again, see Vordermayer, *Bildungsbürgertum und völkische Ideologie*, 273–337, esp. 337.

<sup>10</sup> Jordan to Meyer-Abich, September 22, 1941, NAMA, Ba 38, p. 1.

the war and was later termed “big science.”<sup>11</sup> As early as 1942, he envisioned an “entirely new organizational form for scientific research,” massive—and costly—institutes employing armies of researchers collaboratively attacking scientific problems on an industrial scale.<sup>12</sup> Unlike the big science that developed after the war, though, in this vision the enterprise would be suitably Nazified so as to attract funding from Hitler’s state—and Jordan and Meyer-Abich would be in charge.

The journal itself was thus the mouthpiece for a large-scale plan, and behind the scenes, it was accompanied by a multipronged campaign of political intrigue. Articles were published in propaganda journals, angry denunciations were sent to Party functionaries, and feelers were extended to potential backers in the various power centers of the Nazi state. Thinking that they were smarter than their opponents, Jordan and Meyer-Abich attempted to harness the power of the Nazi regime for their own professional and personal aims. If they succeeded in finding a patron and bending the regime in their favor, their enemies would be sidelined. And with the political power of the regime at their fingertips, and their Nazi credentials suitably burnished, Jordan and Meyer-Abich would be in a position to steer the organization of big science in the “new Germany” and the “new Europe.”

This chapter tells the story of this attempt by Jordan and Meyer-Abich to use the regime to their advantage their favor and institutionalize big science, using it as a case study to illustrate how Jordan’s strategy to secure regime support for science—a blueprint that, again, remained constant even as the regime grew ever more violent, destructive, and genocidal—ultimately led both he and Meyer-Abich into varying degrees of complicity with regime crimes. In the end, Jordan’s wartime

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<sup>11</sup> For the article that coined the term “big science,” see Weinberg, “Impact of Large-Scale Science on the United States.”

<sup>12</sup> P. Jordan, “Zukunftsaufgaben quantenbiologischer Forschung,” *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 65.

attempt to institutionalize big science failed in almost every conceivable way. The first issue of *Physis* did appear, outlining Jordan's vision of Europe-wide big science under German control. But a patron for the gargantuan enterprise could not be found, despite repeated entreaties to power centers across the regime: first to the office of the Reich Student Leader, then to the Foreign Office, and finally to the Wehrmacht. Big science under Nazism never came to pass. Without a protector to vouch for their work, repeated attempts by Jordan and Meyer-Abich to get a second issue of *Physis* through to print were denied. Trying to outsmart the regime and use it for their own ends, Jordan and Meyer-Abich found that the Nazis remained indifferent to their efforts to "work toward the *Führer*" in the scientific realm. And in their search for backers of big science, Jordan and Meyer-Abich came into alliance with some of the most unsavory characters in the Nazi state. Thinking that they could use the regime, in the end, Jordan and Meyer-Abich only ended up as failed collaborators.

### **Adolf Meyer-Abich, Holism, and a Fledgling Scientific Alliance**

Even compared to Jordan, the biologist, philosopher, and historian of science Adolf Meyer-Abich remains little-studied.<sup>13</sup> Born in 1893 in the northern German city of Emden, Meyer-Abich studied in Göttingen and Jena, receiving his doctorate in 1916 and then serving in the German army during World War I. During the mid-1920s, Meyer-Abich worked at the Hamburg State and University Library while pursuing further studies, ultimately receiving his *Habilitation* in Hamburg in 1926 with a thesis on theoretical biology.<sup>14</sup> Inspired by Alexander von Humboldt's travels, Meyer-

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<sup>13</sup> An important bibliographical note about Meyer-Abich: he was known and published under his birth name, Adolf Meyer, until 1938; after this, he added the suffix "-Abich," his maternal family's name. Here I use Meyer-Abich for simplicity, but library catalogs still list his works under both names.

<sup>14</sup> On Meyer-Abich's scientific career, see Amidon, "Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology"; Felix Brahm, "Meyer-Abich, Adolf," in *Hamburgische Biografie: Personenlexikon*, ed. Franklin Kopitzsch and Dirk Brietzke (Göttingen: Wallstein Verlag, 2006), 254–55; Manfred D. Laubichler, "Mit oder ohne Darwin? Die Bedeutung der Darwinschen Selektionstheorie in der Konzeption der Theoretischen Biologie in Deutschland von 1900 bis zum Zweiten Weltkrieg," in *Darwinismus und/als Ideologie*,

Abich spent considerable time in Latin America both before and after the war; he was based in Hamburg after 1945, and his interests increasingly turned toward history of science as he remained on the German academic periphery.<sup>15</sup>

Throughout his career, Meyer-Abich fervently and consistently campaigned for a turn toward analyzing organisms as a whole; indeed, he was the leading proponent of biological holism in mid-twentieth century Germany.<sup>16</sup> Yet Meyer-Abich's commitment to *Ganzheit* extended far beyond his own field of biology. For him, holism was a unifying philosophy applicable to all scientific disciplines, one that offered a solution to what he perceived as the great failure of mechanism: its splintering of science into innumerable disparate disciplines, fields, and subfields. A holistic science, pursued in all fields, would build toward an understanding of nature in its entirety, thereby reuniting the fractured scientific enterprise. Indeed, this deep, life-long fidelity to *Ganzheit* is almost certainly the reason why Meyer-Abich has largely gone unnoticed, as his case is the classic story of a scientist whose work and ideas are, in the conventional telling, proven wrong and sacrificed on the altar of scientific progress. For as it turned out, the mid-20<sup>th</sup> century proved to be the age in which mechanism was at its most ascendant in biology; it was also an era when scientific disciplines and

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ed. Uwe Hoßfeld and Rainer Brömer, *Verhandlungen zur Geschichte und Theorie der Biologie* 6 (Berlin: Verlag für Wissenschaft und Bildung, 2001), 247–51. Meyer-Abich's own recollections are also worthy of note; see Adolf Meyer-Abich, "Atlantische Existenz," in *Wege zur Wissenschaftsgeschichte: Lebenserinnerungen von Franz Hammer – Joseph E. Hofmann – Adolf Meyer-Abich – Martin Plessner – Hans Schmiank – Johannes Stedel – Kurt Vogel*, ed. Bernhard Sticker and Friedrich Klemm, *Beträge zur Geschichte der Wissenschaft und der Technik* 10 (Wiesbaden: F. Steiner, 1969), 39–73, particularly 51–63.

<sup>15</sup> Amidon, "Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology," 358; Brahm, "Meyer-Abich, Adolf," 255.

<sup>16</sup> Meyer-Abich actually imported the term holism (as *Holismus*) into German, translating two of John Scott Haldane's foundational works on holism from the English. See John Scott Haldane, *Die philosophischen Grundlagen der Biologie: Donnellan-Vorlesungen, im Jahre 1930 an der Universität Dublin*, trans. Adolf Meyer[-Abich] (Berlin: Prismen-Verlag, 1932); John Scott Haldane, *Die Philosophie eines Biologen*, trans. Adolf Meyer[-Abich] (Jena: Fischer, 1936).

subfields proliferated and became ever more specialized.<sup>17</sup> We therefore see little mention of Meyer-Abich in the literature.<sup>18</sup> As detailed in the Introduction, Meyer-Abich's massive *Nachlass* only recently became available to researchers, making clear what had already been apparent to those few who looked: politically, he was a staunchly conservative German nationalist.<sup>19</sup> Indeed, Meyer-Abich apparently sought to join the Nazi Party after Hitler took power, but his application was turned down, likely because he had been a member of the German Democratic Party during the Weimar years and been active as a Freemason in Chile.<sup>20</sup>

The wartime collaboration between the two began when Meyer-Abich wrote to Jordan in March 1941, extending him an invitation to help him launch and coedit a new interdisciplinary scientific journal—*Physis*—thereby sparking an intense correspondence that would last through the end of the conflict.<sup>21</sup> Jordan quickly and enthusiastically accepted Meyer-Abich's invitation to coedit

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<sup>17</sup> Cell biology, for example, enjoyed massive midcentury success by reducing and explaining cells in terms of their constituent parts, or mechanisms; see William Bechtel, *Discovering Cell Mechanisms: The Creation of Modern Cell Biology* (New York: Cambridge University Press, 2006).

<sup>18</sup> Meyer-Abich appears fleetingly in Anne Harrington's classic work on German holism, and in Beyler's dissertation on Jordan's biological theories; see Anne Harrington, *Reenchanted Science: Holism in German Culture from Wilhelm II to Hitler* (Princeton: Princeton University Press, 1996), 179–99; Beyler, "From Positivism to Organicism," 82–91, 171–75, 397–479 .

<sup>19</sup> The Meyer-Abich collection comprises 56 boxes of material covering the 1910s through to 1970, with no obvious wartime gaps. It is thus one of the most complete collections of personal papers from a mid-20<sup>th</sup> century German biologist extant today. Yet the only scholarly works that draw on this collection are Amidon, "Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology"; Felix Brahm, "Das Deutsch-Dominikanische Tropenforschungsinstitut 1937-1940. Basis für eine deutsche Kolonie in der Dominikanischen Republik oder 'Experimentierfeld' für koloniale Aufgaben in Afrika?," in *Der Nationalsozialismus und Lateinamerika: Institutionen – Repräsentationen – Wissenskonstrukte I*, ed. Sandra Carreras, IBERO-ONLINE.DE 3, I (Berlin: Ibero-Amerikanisches Institut Preußischer Kulturbesitz, 2005), 35–56.

<sup>20</sup> Brahm, "Meyer-Abich, Adolf," 255; Brahm, "Das Deutsch-Dominikanische Tropenforschungsinstitut," 41.

<sup>21</sup> Aside from a single abandoned letter draft from Jordan to Meyer-Abich on the reverse side of a page of lecture notes (dated April 30, 1969, NPJ, Nr. 179, Bl. 2v), there are no extant letters to or from Meyer-Abich in Jordan's *Nachlass* in the Berlin State Library. This is unsurprising; the vast majority of Jordan's pre-1945 papers do not survive, as outlined in the introduction. Thus all of the letters cited here come from the Meyer-Abich collection. Yet Meyer-Abich did not keep copies of all his outgoing correspondence, so with a single exception (one carbon copy letter from Meyer-Abich to Jordan, dated May 22, 1941), all surviving letters in the Meyer-Abich collection are from Jordan, meaning only one side of the correspondence survives.

the periodical.<sup>22</sup> From there, things moved quickly; on April 24, Jordan was sent a contract for his coeditorship from the journal's publisher, *Hippokrates-Verlag*.<sup>23</sup> Meyer-Abich, for his part, was already soliciting articles for the new journal from his diverse network of correspondents across Europe.<sup>24</sup> By mid-May, Jordan and Meyer-Abich were meeting to discuss *Physis* in person in Bremen, where Jordan was stationed with the *Luftwaffe*, and before the end of that month, Jordan had sent Meyer-Abich the manuscript for his first article in *Physis*.<sup>25</sup>

This new, promising collaboration deepened the professional relationship between Meyer-Abich and Jordan into a closer friendship.<sup>26</sup> Crystallizing the budding alliance was a growing realization that the two were comrades of a sort. Jordan and Meyer-Abich both considered themselves proud German nationalists, and both had declared allegiance to the new regime in part by outlining how their scientific theories were compatible with National Socialism. Yet their reward for professing loyalty to Hitler had not been gratitude but, rather, a seemingly unending stream of

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<sup>22</sup> Jordan to Meyer-Abich, March 27, 1941 and March 29, 1941, NAMA, Ba 38. Jordan and Meyer-Abich likely became acquainted in the late 1930s, when Jordan turned toward biophysics; nevertheless, these are the earliest extant letters between the two.

<sup>23</sup> *Hippokrates-Verlag Marquardt & Cie.* (hereafter *Hippokrates-Verlag*) to Jordan, April 24, 1941, NAMA, Ba 38.

<sup>24</sup> See for example Meyer-Abich to Kurt von Neergaard, April 18, 1941, p. 2 (copy), NAMA, Ba 58.

<sup>25</sup> The meeting probably took place on May 11. Jordan to Meyer-Abich, May 6, 1941, Jordan to Meyer-Abich, May 24, 1941, both NAMA, Ba 38. Jordan published two essays in the 1942 *Physis* issue; the one referenced here was almost certainly the manuscript for the first essay, an overview of Jordan's 'quantum biology,' P. Jordan, "Begriff und Umgrenzung der Quantenbiologie," *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 13–26.

<sup>26</sup> There was a third coeditor of *Physis*, anatomist Hans Petersen (1885–1946), yet his role in the *Physis* story was minimal. Petersen nearly resigned as coeditor before the journal got off the ground due to serious health issues; Meyer-Abich had to beg him to remain on. He does not seem to have solicited contributions for *Physis*, meaning that his only contribution to the journal was the article he authored in the 1942 issue, an extended meditation on holism and philosophy of biology. Forgotten for years, Petersen's name has resurfaced in recent research into the gruesome trade in cadavers of Nazi victims executed at prisons in Germany during the Third Reich. See Petersen to Meyer-Abich, May 3, 1941, Petersen to Meyer-Abich, May 12, 1941, and Meyer-Abich to Petersen, May 14, 1941, all NAMA, Ba 64; for his *Physis* article see Hans Petersen, "Was heißt ganzheitliche Betrachtungsweise?," *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 27–51. On Petersen and the cadaver trade, see Mathias Schütz, "Das Strafgefängnis Stadelheim als zentrale Hinrichtungsstätte im Nationalsozialismus: Entwicklungen und Opfer," *Zeitschrift für Geschichtswissenschaft* 64, no. 10 (October 2016): 854–75. I thank Sabine Hildebrandt for alerting me to this paper.

denunciations and personal attacks from virulent elements in the Nazi Party. These attacks were all the more painful for Jordan and Meyer-Abich because they were rooted in ideological insinuations that the scientific theories they cherished were somehow “un-German” and therefore irreconcilable with National Socialism.

In Jordan’s case, as described in detail in Chapter 2, these enemies were the infamous proponents of *deutsche Physik*, the group of radical Party members who denounced and attempted to ban the teaching of relativity theory and quantum mechanics as ‘Jewish physics.’ Centered on the physicists Philipp Lenard and Johannes Stark, who had attacked Albert Einstein in the 1920s and joined the Party well before 1933, this group itself proffered scientific theories that were largely incoherent; they were united chiefly by their deep hatred of Einstein and their anti-Semitism.<sup>27</sup> While the vast majority of German physicists accepted Einstein’s relativity theory and the newly developed quantum mechanics as proven scientific fact, and saw *deutsche Physik* as buffoonish, many were afraid of these figures’ political influence, and few fought as loudly and aggressively against them as Jordan.<sup>28</sup> And for the *deutsche Physiker*, Jordan was an obvious target: he was one of the founders of quantum mechanics and had studied with famous Jewish scientists like Max Born.<sup>29</sup> Next to Jordan, probably only Werner Heisenberg, famously denounced in the SS newspaper *Das Schwarze Korps* as a “white Jew,” was subjected to fiercer and more consistent attack from *deutsche Physik*.<sup>30</sup>

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<sup>27</sup> As Mark Walker writes, *deutsche Physik*, sometimes termed “Aryan physics,” was a “political movement composed of scientists using the rhetoric of science.” See Walker, *Nazi Science*, 13. On *deutsche Physik*, see also Beyerchen, *Scientists under Hitler*, 79–168.

<sup>28</sup> See for example Jordan, *Physikalisches Denken in der neuen Zeit*, 7–9, 56–59.

<sup>29</sup> Jordan and his works were repeatedly denounced in the house journal of the *deutsche Physik* movement, the *Zeitschrift für die gesamte Naturwissenschaft* (Journal for All Natural Sciences). See for example Ramsauer, “Physikalisches Denken in der neuen Zeit”; Dingler, “Die ‘Physik des 20. Jahrhunderts’: Eine prinzipielle Auseinandersetzung (zu einem Buche von P. Jordan).” At one point, Jordan was even denounced to the Reich Education Minister; see Karl Lothar Wolf to Franz Bachér (Reich Education Ministry), October 10, 1934, BAB, R 4901/24866, Bl. 13.

<sup>30</sup> On the Heisenberg affair, see Beyerchen, *Scientists under Hitler*, 156–63; Walker, *Nazi Science*, 130–38.



Meyer-Abich was perhaps under even more political scrutiny than Jordan: an attempt at gaining a professorial chair in Jena in 1936 had failed in the face of fierce opposition by virulent Nazi racial theorists who dominated the university's faculty; they claimed that holism ran contrary to "scientific" racial theory.<sup>31</sup> These powerful opponents had an even more formidable ally in the form of official Nazi Party ideologist Alfred Rosenberg and his office, which attacked holism in confidential Party journals as a "cunning trick of Roman Catholic science" aimed at undermining "German factual research, exact science, and the foundations of our racial theory"; Meyer-Abich was its "chief apostle."<sup>32</sup> Jordan and Meyer-Abich's "mutual effort in service of German science," as Jordan termed the *Physis* project in a December 1941 letter, was forged from their long years as ideological outcasts.<sup>33</sup>

### **"Germany's Renewal" and Big Science**

Friendly ties now firmly established, in late 1941 Jordan and Meyer-Abich began to conceive of a larger strategy for *Physis*. In this greater vision, the journal itself would be accompanied by a private campaign aimed at "enlightening" certain Nazi leaders as to the pernicious—even traitorous—impact of the *deutsche Physiker* on the German war effort. (Naturally, "true" German science had proved its worth on the battlefield.) With their enemies smashed and exposed as frauds, Jordan and Meyer-Abich hoped that a grateful regime would then grant them free rein to determine science policy in the new "Greater German Reich." *Physis* would reap the rewards, emerging as a leading interdisciplinary scientific journal in "German-led" Europe.

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<sup>31</sup> See Amidon, "Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology," 364–65.

<sup>32</sup> "Der Holismus (Ganzheitslehre)," *Mitteilungen zur weltanschaulichen Lage* 41, no. 2 (November 27, 1936), reprinted in Projectgruppe "Volk und Gesundheit," ed., *Volk und Gesundheit: Heilen und Vernichten im Nationalsozialismus* (Tübingen: Tübinger Vereinigung für Volkskunde e. V., 1982), 40–44.

<sup>33</sup> Jordan to Meyer-Abich, December 27, 1941, NAMA, Ba 38.

Kicking off this campaign was a September 1941 article by Jordan in the cultural-political periodical *Deutschlands Erneuerung* [Germany's Renewal] titled "Science in Revolution."<sup>34</sup> Beginning by reprising themes he had emphasized in various publications since Hitler's takeover of power in 1933 (again, see Chapter 2), Jordan first not-so-subtly derided "egotistical strivers who attempt to hide their own lack of scientific achievement through utter busybodyness [*äußere Geschäftelhuberei*]," a thinly veiled shot at the *deutsche Physiker*.<sup>35</sup> Meanwhile, he proudly proclaimed that true scientific research was an "expression of the 'will to power' [*Wille zur Macht*]," which inevitably led to the "development of powerful military technology [*waffentechnischen Machtentfaltung*]."<sup>36</sup> His Nazi bona fides well-established, Jordan then proceeded to outline a completely new idea, one not mentioned in his prewar essays: a vision of science operating on an industrial scale—what would later be termed "big science." The size, scope, and breadth of modern scientific problems, as Jordan wrote, increasingly exceeded the "power and possibilities" of an individual researcher working on his own.<sup>37</sup> Future research would require massive teams of scientists from various fields to work together on a single project in large, dedicated institutes, or in Nazi-speak, "deploy[ing] the forces of various fields in comradely group-like poolings [*die Kräfte verschiedenster Fachgebiete in kameradschaftlicher gruppenmäßiger Zusammenfassung einzusetzen*]." In practice, Jordan noted, this "necessity" had already begun to "assert

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<sup>34</sup> On *Deutschlands Erneuerung*, see Mosse, *The Crisis of German Ideology*, 224; Johannes Leicht, "Deutschlands Erneuerung," in *Handbuch der Antisemitismus: Judenfeindschaft in Geschichte und Gegenwart*, ed. Wolfgang Benz, vol. 6: Publikationen (Berlin: Walter de Gruyter, 2013), 145–46.

<sup>35</sup> Jordan, "Naturwissenschaft im Umbruch," 455. Klaus Hentschel posits that this passage "hints at resentment" against Jordan's former collaborator Heisenberg. This is incorrect; the statement is aimed at the *deutsche Physiker*, as Jordan's letters to Meyer-Abich make clear. Moreover, while Jordan and Heisenberg were not close, Jordan had immense respect for Heisenberg's scientific abilities. See Klaus Hentschel, ed., *Physics and National Socialism: An Anthology of Primary Sources*, Science Networks: Historical Studies 18 (Boston: Birkhäuser Verlag, 1996), 272.

<sup>36</sup> Jordan, "Naturwissenschaft im Umbruch," 453.

<sup>37</sup> *Ibid.*, 456.

itself.”<sup>38</sup> One wonders whether the megalomaniacal atmosphere of “Greater Germany” inspired Jordan to amplify his vision—with German victory in Europe seemingly assured, did he think that a grandiose plan for science would appeal to the Nazis?

Meyer-Abich was particularly taken with a question raised in the last section of Jordan’s essay: who would lead these massive big science-style research institutes, and who would choose what to investigate? It was crucial that those at the top be truly visionary; otherwise, the funds, manpower and equipment invested would be wasted. Jordan was sketchy on the details, but he seemed to envision some governmental authority that would be responsible for identifying “genius individuals.” These brilliant luminaries would then be provided with the necessary personnel and funding, thereby making it “as easy as possible for leading [*führend*] minds” to “attack” the problems that they saw as critical.<sup>39</sup> Such a shift, both “necessary for the present condition of natural science” and made “possible through National Socialism,” would lead “not to constriction, but on the contrary to the higher freedom of the genius.”<sup>40</sup> In a letter to Meyer-Abich, Jordan elaborated on the article’s purpose:

From the outset, I avoided going into all too delicate things in my article – one first has to attempt to develop a certain foundation of trust for cooperation between science and the present-day [i.e. Nazi] state [*eine Zusammenarbeit Wissenschaft-beutiger Staat*]. My struggle [*Mein Kampf*], which I have led now for years, aims at its core straight at this problem: to maintain untouched the responsible freedom of the researcher, not letting it be marred through deference to the non-scientific thought of the day. Therefore my fanatical fight against that clique that claims, for example, that relativity theory must be judged from ideological [*weltanschauliche*] viewpoints – instead of from the alternative, to be pursued imperturbably: “true or false”! I am glad that in your so concise and trenchant formulation you describe exactly why we German physicists must fight so hard against the scientifically impotent yet

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<sup>38</sup> Ibid., 457. Ironically, Jordan was unaware how prescient this statement truly was; even as he was writing, his theoretical plan for scientific organization on the industrial level was being realized by American scientists working on the Manhattan Project.

<sup>39</sup> Ibid., 457–58. Note the militaristic terminology, chosen to allure to Nazi propagandists.

<sup>40</sup> Ibid., 458. This envisioned plan closely resembles the “Harnack principle,” which remains today the basis of the Max Planck Society: find brilliant individuals around whom to build an institute and give them the funds to do whatever research they like.

externally so powerful and influential group that concentrates itself around the notorious *Zeitschrift gegen die gesamten* [sic] *Naturwissenschaften*. I find it difficult to hide my temper or my gall when I think about these gangsters of science.<sup>41</sup>

According to Jordan, scientists needed to present the state with a palatable alternative in order to defeat *deutsche Physik* (and presumably the racial theorists): “I hold it...to be absolutely necessary to finally offer from physics a positive program of scientific renewal [*Wissenschaftserneuerung*] in the National Socialist sense – otherwise impostors and traffickers in professorships [*Hochstapler und Lehrstuhl-Schieber*]...with their campaign of defamation directed against German science will always remain on top.”<sup>42</sup> This letter is perhaps the clearest expression of the goals behind the *Physik* campaign—amazingly, despite eight years of personal attacks from Party elements, Jordan still believed that he could turn the regime to his advantage by “working toward the *Führer*.” Jordan held out hope that, if he demonstrated the grand scope of his scientific vision and its military potential, the regime would then strike down the “scientific gangsters” of *deutsche Physik* and instead implement his program of big science-style research installations across “German-led Europe.”<sup>43</sup> As he put it in a 1942 letter to Meyer-Abich: “I have the impression now that the wind is gradually becoming more favorable, and so I hope that after the long years of public defamation of my field as such and my person in particular, at last to soon find...more favorable working conditions.”<sup>44</sup>

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<sup>41</sup> Jordan to Meyer-Abich, September 22, 1941, NAMA, Ba 38, p. 1-2. Emphasis in original. The *Zeitschrift gegen die gesamten* [sic] *Naturwissenschaften* (Journal Opposed to All Natural Sciences) is a play on the title of the house journal of *deutsche Physik*, the *Zeitschrift für die gesamte Naturwissenschaft* (Journal for All Natural Sciences).

<sup>42</sup> Jordan to Meyer-Abich, September 22, 1941, NAMA, Ba 38, p. 1.

<sup>43</sup> Jordan was not the only physicist who used these types of arguments against the *deutsche Physiker*. Heisenberg, for example, published an article arguing along similar lines in 1943; see Werner Heisenberg, “Die Bewertung der ‘modernen theoretischen Physik,’” *Zeitschrift für die gesamte Naturwissenschaft* 9 (1943): 201–12. And the German Physical Society highlighted the military applications of physics in its successful wartime campaign against *deutsche Physik*. See Beyerchen, *Scientists under Hitler*, 183–91.

<sup>44</sup> Jordan to Meyer-Abich, September 29, 1942, NAMA, Ba 38.

## A Campaign of Intrigue

The article in *Deutschlands Erneuerung* proved to be a turning point in Jordan and Meyer-Abich's "collaborative effort[s]."<sup>45</sup> In late September, the two met again in Bremen to discuss a new possibility.<sup>46</sup> As it happened, Meyer-Abich was friends with one Heinrich Kunstmann, a naturopathic doctor and mid-level Party functionary in Hamburg, who himself was a longtime friend of the high-ranking Nazi leader Gustav Adolf Scheel, Reich Student Leader and *Gauleiter* (regional Nazi Party leader) of Salzburg.<sup>47</sup> The plan hinged on leveraging this fortuitous network of personal friendships: Meyer-Abich and Jordan would use Kunstmann as an intermediary to send a denunciation directly to Scheel.<sup>48</sup> They could not mail the letter, because Jordan was denouncing one of Scheel's chief lieutenants, Fritz Kubach, and the risk that Kubach himself would intercept it would presumably have been far too high. Kubach was an SS member in charge of scientific matters in Scheel's Reich Students League as well as one of the editors of the infamous house journal of *deutsche Physik*, the *Zeitschrift für die gesamte Naturwissenschaft*.<sup>49</sup> The letter would then carry the extra

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<sup>45</sup> Jordan to Meyer-Abich, October 26, 1941, NAMA, Ba 38.

<sup>46</sup> The meeting probably took place on September 29, see Jordan to Meyer-Abich, September 17, 1941, September 22, 1941, October 26, 1941, and October 27, 1941, all in NAMA, Ba 38.

<sup>47</sup> On Kunstmann (1900–1964), see Michael Grüttner, "Kunstmann, Heinrich," in *Biographisches Lexikon zur nationalsozialistischen Wissenschaftspolitik*, Studien zur Wissenschafts- und Universitätsgeschichte 6 (Heidelberg: Synchron Wissenschaftsverlag, 2004). On Scheel (1907–1979), who organized the deportation of Jews in occupied Alsace in 1940–1941, see Birgit Arnold, "'Deutscher Student, es ist nicht nötig, daß Du lebst, wohl aber, daß Du Deine Pflicht gegenüber Deinem Volk erfüllst': Gustav Adolf Scheel, Reichsstudentenführer und Gauleiter von Salzburg," in *Die Führer des Provinz: NS-Biographien aus Baden und Württemberg*, ed. Michael Kißener and Joachim Scholtyseck, Karlsruher Beiträge zur Geschichte des Nationalsozialismus 2 (Konstanz: Universitätsverlag Konstanz, 1997), 567–94.

<sup>48</sup> Kunstmann and Scheel probably became acquainted at the University of Heidelberg in the early 1930s. See Arnold, "Gustav Adolf Scheel, Reichsstudentenführer..." 573–74; Grüttner, "Kunstmann, Heinrich," 105.

<sup>49</sup> On Kubach (1912–1945), see Michael Grüttner, "Kubach, Fritz," in *Biographisches Lexikon zur nationalsozialistischen Wissenschaftspolitik*, Studien zur Wissenschafts- und Universitätsgeschichte 6 (Heidelberg: Synchron Wissenschaftsverlag, 2004), 102. According to Beyerchen, it was known in physics circles in the 1930s that Scheel evidently "did not share [Kubach's] infatuation" with *deutsche Physik*; perhaps this is why Jordan thought Scheel could be convinced to turn on one of his deputies; see Beyerchen, *Scientists under Hitler*, 162.

weight of endorsement from a close friend, and there would be no chance of its being intercepted by a stray supporter of *deutsche Physik* in the Party bureaucracy.

Jordan sent his denunciation to Kunstmann in November 1941. Writing both “as a representative of German science and as a National Socialist and *SA-Mann*,” Jordan portrayed himself as acting out of concern for Scheel’s best interest.<sup>50</sup> Since 1933, he asserted, the “clique” of *deutsche Physik* had been able in an “astonishing manner” to “misuse by methodical deception for their own goals no small number of honest anti-Semitic Party members [*Parteigenossen*]” in a campaign of “scientific sabotage.” Against this, good German physicists, who were occupied with “productive work” and had “no time for intrigue...stood powerless for years.” But now, with Germany at war, this clique’s malicious activities were no longer negligible; scientific sabotage now was “cross[ing] the border...into *Wehrmacht* sabotage.” For this reason, “circles in aeronautics and in the arms industry” had made a decision to mop up the affair.<sup>51</sup> Scheel, wrote Jordan, had an inherent interest in the matter, as his loyal lieutenant Kubach was one of those who had been deceived, letting “all warnings sent his way from honorable comrades in the Party, the SA, and the SS go unheeded.” If Scheel did not “induce as soon as possible a visible, firm distancing of comrade Kubach” from the forces of *deutsche Physik*, Kubach’s “incrimination” in the “imminent...winding up” of the case would be unavoidable, and Scheel himself could be implicated by association. Jordan

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<sup>50</sup> Jordan to Heinrich Kunstmann (copy), November 26, 1941, NAMA, Ba 38, p. 1.

<sup>51</sup> Jordan to Kunstmann (copy), November 26, 1941, NAMA, Ba 38, p. 1-2. Emphasis in original. Jordan is here referring to the detailed memorandum composed by the leadership of the German Physical Society in fall 1941, which detailed the damage dealt to Germany by *deutsche Physik*. This memo was sent to the Reich Education Ministry and the Reich Aviation Ministry in early 1942, and ultimately led to the downfall of *deutsche Physik*; see Beyerchen, *Scientists under Hitler*, 183–88. Jordan knew about this further intrigue; see Heisenberg to Jordan, July 31, 1942, NWH, Nr. 1968/3.

was thus “convinced that the Reich Student Leader would be highly grateful if he could be supplied in good time with detailed information” on the situation.<sup>52</sup>

In letters to Meyer-Abich, Jordan described the grander aims of the denunciation. Simply “neutralizing” Kubach was just the start; the ultimate goal would be for Jordan to “attain a positive advisory function with Scheel regarding natural scientific questions,” that is, to take Kubach’s place in Scheel’s inner circle.<sup>53</sup> With the backing of an ambitious rising star in the Party, Jordan would have immense power to organize science as he saw fit in the “new Germany.” In this position, Jordan would be able to realize and institutionalize the program of big science sketched in his *Deutschlands Erneuerung* article and expanded on in *Physis*. Sending along a copy of that article—in case Meyer-Abich wanted to have a “pre-orientating consultation” with Kunstmann before the denunciation arrived—Jordan cautioned his friend, revealingly noting that the essay “would be best read on the part of Kunstmann not without a certain commentary on your part – the many trains of thought therein only hinted at in telegraphic style [*telegrammstilartig*] will really be only fully understandable in connection with the synthesis efforts [*Synthese-Bestrebungen*] pursued in *Physis*...”<sup>54</sup> From the start, the campaign of intrigue, the new journal, and the vision of Europe-wide big science suitably Nazified to secure financial support were part of a unified effort by Jordan and Meyer-Abich to twist the regime in their favor—namely, the same strategy Jordan had devised at the start of Hitler’s rule. And in a sign of what was to become of *Physis* itself, this attempt at intrigue failed

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<sup>52</sup> Jordan to Kunstmann (copy), November 26, 1941, NAMA, Ba 38, p. 1-2. Emphasis in original.

<sup>53</sup> Jordan to Meyer-Abich, October 27, 1941, NAMA, Ba 38.

<sup>54</sup> Jordan to Meyer-Abich, October 31, 1941, NAMA, Ba 38, p. 1. Jordan listed additionally one final piece of the puzzle, his new book *Die Physik und das Geheimnis des organischen Lebens* (Physics and the Secret of Organic Life), which appeared in fall 1941. Given its “certain programmatic importance” for their campaign, as Jordan put it, it was reviewed—glowingly, of course—by Meyer-Abich on Jordan’s express request in the 1942 *Physis* issue. See Jordan to Meyer-Abich, October 27, 1941, NAMA, Ba 38, and Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941; Adolf Meyer-Abich, review of *Die Physik und das Geheimnis des organischen Lebens*, by Pascual Jordan, *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 97–101.

miserably. Kunstmann declined to send Jordan's denunciation on to Scheel directly, making only a small remark about the matter in a longer letter to Scheel. Jordan feared that this would not serve to convince Scheel of the "nature and severity" of Kubach's compromised position.<sup>55</sup> His fears were borne out, for it seems that Kubach heard tell of the intrigue and fired off a letter to Kunstmann, shutting down the conspiracy for good.<sup>56</sup>

### The Journal Itself

The mouthpiece for Jordan and Meyer-Abich's grand vision—the journal *Physis* itself—faced entrenched opposition even before the first issue appeared in print. The first voice of opposition was perhaps the most surprising: even Meyer-Abich's publisher at *Hippokrates-Verlag*, one Herr Marquardt, seems to have viewed the venture as risky.<sup>57</sup> A friend to whom Marquardt sent an advance copy of the *Physis* issue in June 1942 responded with seven pages of complaints—largely scientific, but some also ideological—about the journal's contents. This anonymous friend of the publisher was particularly incensed by Hans Petersen's article on philosophy of biology, finding it unscientific; he feared that such publications would "damage...the reputation of the publisher."<sup>58</sup> Meyer-Abich was able to assuage Marquardt's fears by spinning the detailed critique as an indication that the provocative statements had been well digested: "If *Physis* is capable of making someone that furious, then I take it as a good sign that we are on the right path!"<sup>59</sup>

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<sup>55</sup> Jordan to Meyer-Abich, December 27, 1941, NAMA, Ba 38.

<sup>56</sup> Kunstmann received a letter from Kubach; see Jordan to Meyer-Abich, February 19, 1942, NAMA, Ba 38.

<sup>57</sup> It remains unclear how much of the company archive of the former *Hippokrates-Verlag* survives today. The publisher was bought by *Thieme Verlagsgruppe* in 1980 and an inquiry to *Thieme* on the matter was inconclusive.

<sup>58</sup> "Polemik: 'Unbekannt' gegen *Physis*" ("Polemic: 'Anonymous' against *Physis*") [this title written in Meyer-Abich's handwriting], entry June 23, 1942, NAMA, Bd 38.

<sup>59</sup> Meyer-Abich to Marquardt, August 4, 1942, p. 1, NAMA, Bd 38.



More threatening to the journal's future, though, was the trouble *Physis* evidently faced in receiving approval from certain Nazi authorities. The issue hinged on the question of "paper allocation" (*Papierbewilligung*, *Papierzuteilung*, or *Papiergenehmigung*), that is, the provision of the physical paper stock on which the issue would be printed. The war indeed brought about a serious shortage of paper in Germany, but the paper rationing measures that were introduced quickly became an additional tool for censorship—tellingly, they were based out of the Propaganda Ministry. While there was a list of works officially banned by the Nazi state, during the war far more books were simply denied paper allocation for very nebulous reasons, leaving the author (or editors) in the dark as to how—or even if—they had run afoul of Nazi censorship laws.<sup>60</sup> Meyer-Abich, as the managing editor of *Physis*, was in charge of getting the issue through to print. A savvy political operator, he cleverly emphasized the journal's international audience in his plea for *Physis*.<sup>61</sup> This dazzled Jordan, and apparently impressed the necessary Nazi functionaries as well, as they approved the application; with the road clear, Meyer-Abich and Jordan hoped to see the first issue in print in the fall of 1941.<sup>62</sup>

Despite Jordan and Meyer-Abich's optimistic hopes for quick publication in 1941, the first issue of *Physis* appeared only after a relatively long delay, in late June or early July 1942. Perhaps there was more behind-the-scenes opposition to the journal, or maybe the delay was simply due to the war's impact on the already slow-moving publishing industry. Whatever the reason for the

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<sup>60</sup> By the end of 1941, paper rationing was a primary means of censorship; see Paul Hövel, "Die Wirtschaftsstelle des deutschen Buchhandels, Berlin 1935 bis 1945: Ein Augenzeugenbericht," *Buchhandelsgeschichte: Aufsätze, Rezensionen und Berichte zur Geschichte des Buchwesens*, no. 1 (1984): B1–B16. On paper allocation, see also Jan-Pieter Barbian, *Literaturpolitik im "Dritten Reich": Institutionen, Kompetenzen, Betätigungsfelder* (Frankfurt am Main: Buchhändler-Vereinigung, 1993), 238–42.

<sup>61</sup> Meyer-Abich's plea for the first *Physis* issue is apparently lost, but it likely resembled a very similar endorsement for the abortive second issue of *Physis*; see Meyer-Abich, "Betrifft: Papiergenehmigungsantrag für "Physis"-Heft 2/3," January 10, 1943, NAMA, Bd 38.

<sup>62</sup> Jordan to Meyer-Abich, July 5, 1941 and August 17, 1941, NAMA, Ba 38. See also Meyer-Abich to Neergaard (copy), June 12, 1941, p. 2, NAMA, Ba 58.

holdup, the final product was a curious beast. Given the journal's role as the vehicle through which Jordan and Meyer-Abich aimed to cement regime support for their science, the journal contained a strange mixture of "normal" scientific articles alongside contributions attempting in varying ways to "work toward the *Führer*." An essay by the Dutch botanist B. H. Danser arguing for a typological species concept rather than a phylogenetic model, for example, could easily have been printed in a contemporary journal on theoretical biology.<sup>63</sup> Similarly, the brief posthumous essay by the zoologist and anatomist Hans Böker, a description of a biological research trip to the Zapata swamp in Cuba, resembles other natural histories of its day.<sup>64</sup> Neither of these articles display discernable ideological influence. Meyer-Abich's opening polemic on synthesis is more characteristic. The essay is filled with fiery anti-mechanistic rhetoric, but remains free of overt paeans to Nazism. Yet in an extended metaphor toward the end, Meyer-Abich strikingly chose to characterize his beloved *Ganzheit* as a "bridge" across which "all" efforts toward scientific synthesis necessarily needed to "march." With German troops parading across Europe, this choice of phrase would not have been missed by readers.<sup>65</sup>

Meyer-Abich's second essay was far less subtle. Originally delivered in May 1941 as a lecture to the advisory board [*Beirat*] of the newly-reestablished Colonial Institute at the University of Hamburg—a nexus of Nazi colonial fantasies in Africa—it presupposed the "obvious" fact that a victorious Germany would soon reacquire the colonies it had lost in the Treaty of Versailles.<sup>66</sup> Meyer-Abich urged eager colonizers to avoid "the capitalist way of doing business" practiced

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<sup>63</sup> Benedictus Hubertus Danser, "Typologie und Phylogenie," *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 52–63.

<sup>64</sup> Hans Böker, "Die Gran Cienaga de Zapata (Cuba)," *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 80–84.

<sup>65</sup> Meyer-Abich, "Naturwissenschaftliche Synthese," 12.

<sup>66</sup> On the Colonial Institute and Nazi imperial fantasies in Africa, see Karsten Linne, *Deutschland jenseits des Äquators? NS-Kolonialplanungen für Afrika* (Berlin: Ch. Links Verlag, 2008), 54–56.

“unrestrainedly” in the “English-American possessions and zones of influence,” which only led to “overexploitation” and the destruction of the soil base.<sup>67</sup> Instead of immediately looking to turn the biggest possible profit, American-style, Nazi colonists would do well to heed and fund the research of good German tropical scientists (like himself) and work more appropriately and sustainably with the unique landscape of the tropics. As he concluded, scientific research and practical colonial administration would need to work hand in hand if “the development of our future colonies should take place with the same élan that characterizes all large undertakings of the Greater German Reich.”<sup>68</sup>

Visions of German geopolitical grandeur were similarly present in Meyer-Abich’s review of the Swedish-born Swiss doctor Kurt von Neergaard’s book *Die Aufgabe des 20. Jahrhunderts* [The Task of the Twentieth Century]. Neergaard’s work envisioned a Spenglerian world in which revolutions in science were necessarily coupled with political upheaval. The conclusion, which ruminated on how Switzerland would fit into the “political transformations of our time”—namely, a European continent now ruled by Germany—was singled out by Meyer-Abich for particular praise.<sup>69</sup> Making thinly veiled reference to the popular sympathy among the Swiss for maintaining their traditional neutrality and democracy, Meyer-Abich noted that he hoped the book would be “understood and appreciated by more of [Neergaard’s] countrymen,” for it would then be “a lot easier for Switzerland to sincerely say yes to the new Europe being born out of the tempests and thunderstorms of this

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<sup>67</sup> Adolf Meyer-Abich, “Aufgaben der naturwissenschaftlichen Forschung in den Kolonien,” *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 90.

<sup>68</sup> *Ibid.*, 94.

<sup>69</sup> Kurt von Neergaard, “Selbstanzeige: Die Aufgabe des 20. Jahrhunderts,” *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 103.

world war...<sup>70</sup> Here he was in lockstep with the Nazi line on the subject, which envisioned that Switzerland would eventually join the Reich—whether willingly or by force.

Jordan used similar rhetorical strategies similar to those of Meyer-Abich. He was not afraid to proclaim in his authorial byline that he was “currently [with the] *Wehrmacht*,” thereby implicitly demonstrating his allegiance to the regime.<sup>71</sup> Yet as with Meyer-Abich, Jordan’s first article, outlining how the successes of quantum mechanics could be exported to the biological realm in what he termed “quantum biology,” was largely standard scientific fare.<sup>72</sup> The second contribution, though, exemplified the way in which ideology could find its way into *Physis*—and into the plan for Europe-wide big science—as it was written specifically to pique the curiosity of powerful Nazi power brokers.<sup>73</sup> Titled “Future Tasks for Quantum Biological Research,” it expanded on Jordan’s article in *Deutschlands Erneuerung*, outlining a detailed plan for a massive group of research institutes to investigate Jordan’s quantum biology—essentially prototyping his vision of big science. The “research center” envisioned was so costly and ambitious that “its realization would certainly presuppose the *German victory* as already achieved,” so it would “stand after the German victory as a symbol and representation of the unlimited means of power [*Machtmittel*] of the new Reich.”<sup>74</sup> In charge would be a *Führungsinstitut*, or leading institute, conforming to the Nazi *Führer* principle that a

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<sup>70</sup> Adolf Meyer-Abich, review of *Die Aufgabe des 20. Jahrhunderts*, by Kurt von Neergaard, *Physis: Beiträge zur naturwissenschaftlichen Synthese* 1, no. 1 (1942): 104.

<sup>71</sup> Jordan, “Begriff und Umgrenzung der Quantenbiologie,” 13; Jordan, “Zukunftsaufgaben quantenbiologischer Forschung,” 64.

<sup>72</sup> The only exception is Jordan’s mention of the “amplifier theory of the organism”; Jordan, “Begriff und Umgrenzung der Quantenbiologie,” 17–18. Norton Wise points out that this theory is based on a Nazi analogy; see Wise, “Pascual Jordan: Quantum Mechanics, Psychology, National Socialism,” 237–40.

<sup>73</sup> The article was intended to impress a “Reich office in Berlin...[with] great authority”; see Jordan to Meyer-Abich, November 3, 1941, NAMA, Ba 38.

<sup>74</sup> Jordan, “Zukunftsaufgaben quantenbiologischer Forschung,” 66.

leader should be found in every area.<sup>75</sup> At the end, Jordan slyly tied his proposed institute to another of the Nazis' favorite bugbears, cancer, noting that all quantum biological research opened "new possibilities of attack against the cancer problem."<sup>76</sup>

This wide spectrum of articles makes the deeper designs for *Physis* clear: Jordan and Meyer-Abich aimed to create a new leading (and the analogy to the *Führer* was intended) interdisciplinary, international, scientific organ in the vein of *Nature* or the German *Die Naturwissenschaften*, that would institutionalize Jordan's vision of big science in the 'new Europe.' Demonstrating the quality, loyalty and military value of German science to the Nazi state, *Physis* was to be a vehicle through which Jordan and Meyer-Abich could pull in financial support—and protection—for their monumental plan for a Europe-wide scientific enterprise operating on an industrial scale under German leadership. Hence the odd blend of "normal" scientific papers with grandiose blueprints for Nazified big science; such an ambitious undertaking necessarily required "working toward the *Führer*" if it hoped to fulfill these lofty aspirations.

### **The Failed Second Wartime Issue**

The reaction to *Physis* in the German scientific and popular press was generally positive. Commentators praised the journal's forceful drive to find unity in the seemingly disparate fields of science as a goal worthy of pursuit. "[S]cientific synthesis,' this is really what we are lacking today!" wrote Franz Wetzel in the popular scientific magazine *Natur und Kultur*. Reviewers like Wetzel latched on to the journal's ambition, praising Jordan's vision of big science: "it is to be hoped that

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<sup>75</sup> Ibid., 67. Ironically, a version of Jordan's planned institute would eventually be realized in postwar East Germany. See Beyler, "Targeting the Organism," 270–71.

<sup>76</sup> Jordan, "Zukunftsaufgaben quantenbiologischer Forschung," 78–79. Emphasis in original. On the Nazi obsession with cancer research, see Proctor, *The Nazi War on Cancer*.

Jordan's lavish institute and [scientific] organization plan will be promptly realized after the war."<sup>77</sup>

Even those reviewers who noted that realization of Jordan's hopes was "still very much in the future" were willing to concede that the comprehensive plan for a research installation was "very ideal."<sup>78</sup> An unsigned review in the *Frankfurter Zeitung* summed up the general response to the first issue of *Physis*, endorsing the extensive scientific plans of the journal's editors: "It is a remarkable sign of the vigor of German science that in the middle of our difficult struggle, the first issue of a new journal can appear that...wants to serve far-reaching future goals."<sup>79</sup>

Fortified by this favorable response, Meyer-Abich and Jordan immediately set to work recruiting articles for the second issue of *Physis*, planned for publication in late 1942 or early 1943. As Jordan remained otherwise occupied in the *Luftwaffe*, Meyer-Abich again took the lead, soliciting articles from his extensive network of scientific correspondents across "German-led" Europe. A heavily annotated—and presumably nearly final—outline for the planned second issue survives, and it epitomizes just how tightly *Physis* had become bound to elements of the Nazi enterprise.<sup>80</sup> The new issue was to include, for example, an article on forestry from Kurt Friedrichs, a professor at the newly founded "Reich University of Posen" in occupied Poland—a university designed by the Nazis to be the model institution for the newly annexed Eastern territories.<sup>81</sup> Most telling, though, was a contribution from a personal friend of Meyer-Abich, SS Colonel Joachim Mrugowsky, head of the *Waffen-SS* Hygiene Institute in Berlin. To be titled "Hygiene Research in the Wake of War," the

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<sup>77</sup> Franz Wetzel, "Physis: Beiträge zur naturwissenschaftlichen Synthese," *Natur und Kultur* 39, no. 10 (1942).

<sup>78</sup> M. Braun, "Physis, Beiträge zur naturwissenschaftlichen Synthese," *Süddeutsche Apotheker-Zeitung* 82, no. 67/68 (August 29, 1942): 288.

<sup>79</sup> "Für die Einheit der Naturwissenschaften," *Frankfurter Zeitung* 86, no. 361 (July 18, 1942).

<sup>80</sup> Meyer-Abich, outline for "Physis H. 2/4," undated (likely November or December 1942), NAMA, Bd 38.

<sup>81</sup> On the *Reichsuniversität Posen*, see for example Helmut Wilhelm Schaller, *Die "Reichsuniversität Posen" 1941-1945: Vorgeschichte, nationalsozialistische Gründung, Widerstand und polnischer Neubeginn*, *Symbolae Slavicae* 29 (Frankfurt am Main: P. Lang, 2010).

article would have appeared in a new subsection of *Physis* called “War and Research.”<sup>82</sup> Mrugowsky’s institute was a place where human experimentation on concentration camp prisoners—with often-fatal results—was accepted practice, and from the title of his article, it is clear that he would have been drawing on this type of research.<sup>83</sup> *Physis* would thus have been just one step removed from the regime’s deepest crimes.<sup>84</sup>

Despite this new connection to Mrugowsky, efforts to bring the second issue of *Physis* to print began to stumble in December 1942, just as the tide of the war began to turn against Germany. That month, Marquardt informed Meyer-Abich that the paper allocation request for the new issue had been rejected, and that the responsible authorities at the Propaganda Ministry said that a new application would have to wait until after the war was over.<sup>85</sup> “[B]ehind the rejection [of *Physis*] stand stronger forces than we thought,” he added cryptically; *Physis* had run afoul of elements in the Party.<sup>86</sup> Indeed, the *deutsche Physiker* had made their voices heard at the Propaganda Ministry, which had assigned one of their number to assess *Physis*. This referee’s report was predictably damning, and

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<sup>82</sup> Meyer-Abich, outline for “*Physis* H. 2/4,” undated (likely November or December 1942), NAMA, Bd 38, p. 1. It does not seem that a manuscript copy of Mrugowsky’s article exists.

<sup>83</sup> While it does not seem that Jordan ever met Mrugowsky, he was nevertheless “very interest[ed]” in meeting the SS Colonel “someday” and “perhaps taking a look at his institute”; see Jordan to Meyer-Abich, October 3, 1944, NAMA, Ba 1. I thank Kevin Amidon for his help in locating this letter.

<sup>84</sup> Mrugowsky was ultimately sentenced to death by an American military court for crimes against humanity at the 1946-1947 Doctor’s Trial in Nuremberg, and was executed in 1948. Meyer-Abich submitted an affidavit to the American military court in support of Mrugowsky, claiming that his SS Hygiene Institute was a “purely scientific research establishment.” See Adolf Meyer-Abich, “Affidavit concerning Mrugowsky’s belief in ‘Holism’ and other views,” (Document Joachim Mrugowsky No. 106), dated March 1, 1947, pp. 1–5, here 5, Nuremberg Military Trial 1 (Medical Case: United States of America v. Karl Brandt, et al.), available online at <http://nuremberg.law.harvard.edu/documents/787-affidavit-concerning-mrugowskys-belief>. For more on Mrugowsky, see Florian Bruns, *Medizinethik im Nationalsozialismus: Entwicklungen und Protagonisten in Berlin (1939–1945)*, *Geschichte und Philosophie der Medizin* 7 (Stuttgart: Franz Steiner Verlag, 2009), 131–66; Amidon, “Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology,” 365–66.

<sup>85</sup> Marquardt to Meyer-Abich, December 21, 1942, NAMA, Bd 38.

<sup>86</sup> Marquardt to Meyer-Abich, December 22, 1942, p. 1, NAMA, Bd. 38.

he privately termed *Physis* “simply appalling.”<sup>87</sup> In January 1943, Meyer-Abich received more bad news: the *Völkischer Beobachter*, the official newspaper of the Nazi Party, had declined to review *Physis* and returned its review copy to the publisher.<sup>88</sup> The racial theorists were up in arms as well; in March 1943, a vicious review by Lothar Stengel-von Rutkowski, professor of “racial hygiene” in Jena, appeared in their house journal, *Der Biologe*. It accused Meyer-Abich of being a Catholic-like missionary of an anti-scientific dogma called holism: “it is the altar of wholeness [*Ganzheit*] upon which, if necessary, one is happily prepared to sacrifice scientific impartiality as well as natural scientific truth.”<sup>89</sup>

How were Jordan and Meyer-Abich to combat these opponents? Marquardt suggested asking the Cultural Division in the German Foreign Office for an endorsement of *Physis*, “in view of the foreign importance of the monograph series.”<sup>90</sup> This tactic, emphasizing the journal’s internationalism as a way to win the propaganda war in occupied and neutral states, now assumed center stage. Meyer-Abich and Jordan were certainly interested in attracting quality scientific work from outside “Greater Germany,” yet these contributions were seen to be just as important for their value to the journal’s reputation domestically. Jordan and Meyer-Abich’s case for the journal’s support from the Nazi state *rested* on the idea that their vision of industrial-scale big science—championed by *Physis*—also served the regime’s propaganda aims abroad, that it would be Nazi

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<sup>87</sup> Eduard May to Hugo Dingler, July 16, 1942, p. 1, NHD, Correspondence. Dingler, one of the leaders of *deutsche Physik*, was perhaps Jordan’s biggest enemy during the Nazi period, and May was one of his chief compatriots. The report to the ministry apparently does not survive.

<sup>88</sup> [Granz?], Werbeabteilung, *Hippokrates-Verlag Marquardt & Cie.* to Meyer-Abich, January 21, 1943, NAMA, Bd 38.

<sup>89</sup> Interestingly, though they despised Meyer-Abich, the racial theorists seem to have approved of Jordan’s vision of big science; Rutkowski actually complemented Jordan’s detailed plan for a research installation devoted to quantum biology in his review; see Lothar Stengel-von Rutkowski, “Physis: Beiträge zur naturwissenschaftlichen Synthese,” *Der Biologe* 12, no. 3 (1943): 90–91.

<sup>90</sup> Marquardt to Meyer-Abich, December 22, 1942, NAMA, Bd 38, p. 1.



Germany leading the future of Europe and European science. Meyer-Abich made this explicit in letters to colleagues in neutral countries like Sweden and Switzerland, bluntly asking them to arrange favorable reviews of *Physis* in local newspapers, which Meyer-Abich could then use as evidence of the journal's effectiveness in the war of public opinion.<sup>91</sup>

Meyer-Abich's ultimate appeal to the Foreign Office in January 1943 makes clear how *Physis* was tied to German hegemony on the Continent: "It is the goal of *Physis* to bring to print fundamental contributions of broader impact in all of the natural sciences from leading minds across German-led Europe..." It was a testament to the journal's value as soft propaganda that the editors had even succeeded in recruiting articles from scientists "outside the German-led European community of states"—that is, the neutral countries—which "considering the intellectual movements unfortunately still prevalent in these lands...has not been an easy task." *Physis* in this reading was a way to win over the scientific elite of neutral states, who would eventually also be integrated into the German-led big science enterprise after the war, to the German cause. One of those who had already been won over was the Swedish anatomist Gaston Backman. How would it look, Meyer-Abich asked the Foreign Office, if he had to return Backman's "exceptional" article with the sad explanation that there simply wasn't enough paper stock to print the issue? Not only would it be personally embarrassing for Meyer-Abich, but Backman might then choose to publish the manuscript in a British journal like *Nature*, a move that would push him into the Allied camp.<sup>92</sup>

Despite this paean to the dreams of Nazi propagandists, Meyer-Abich received the same response from his contact in the Foreign Office in March 1943: there simply was no paper available

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<sup>91</sup> See for example Meyer-Abich to Gaston Backman, September 23, 1942, p. 2, and Meyer-Abich to Kurt von Neergaard, September 23, 1942, p. 1-2, both in NAMA, Bd 38.

<sup>92</sup> Meyer-Abich, "Betrifft: Papiergenehmigungsantrag für *Physis*-Heft 2/3," January 10, 1943, NAMA, Bd 38, p. 1.

for printing *Physis*.<sup>93</sup> They prepared a new application in June 1943. This time, Meyer-Abich personally traveled to Berlin to visit both the Propaganda Ministry and the Foreign Office, believing that in both places he had found “complete understanding” for the journal. The new application would be bolstered by an endorsement from the leader of the Hamburg Regional Propaganda Office [*Gaupropagandaamt*], Ernst Schrewe, who had evidently promised Meyer-Abich that he would support *Physis*’s application “most urgently.”<sup>94</sup> The application from Hippokrates-Verlag reiterated *Physis*’s importance to the “self-evident assumption” that Germany needed to “keep the lead in Europe” in the natural sciences, as outlined in Meyer-Abich’s January 1943 memo.<sup>95</sup> Though this effort at one point seemed to be on the verge of success, in the end the application for paper was denied yet again for reasons that remain unclear.<sup>96</sup> *Physis*—and with it, Jordan’s dream of a Europe-wide system of gargantuan scientific institutes under German leadership—was for all intents and purposes dead in the water.

### Final Attempt: *Physis* for Soldiers?

These repeated rebuffs coincided with a turn in the course of the war; the German army, seemingly invincible in 1941, was now on the defensive in 1943. New wartime measures signaled by Joseph Goebbels’s infamous “total war” speech in the Berlin *Sportpalast* in February 1943 led to the near-total shutdown of all activities not deemed vital to the war effort. The publishing industry was

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<sup>93</sup> Rudolf von Wistinghausen, Auswärtiges Amt, to Meyer-Abich, March 3, 1943, NAMA, Bd 38.

<sup>94</sup> Meyer-Abich to Paul Roth, Kulturabteilung des Auswärtigen Amtes, June 7, 1943, NAMA, Bd 38. On Schrewe, see Uwe Schmidt, *Nationalsozialistische Schulverwaltung in Hamburg: Vier Führungspersonen*, Hamburger Historische Forschungen 2 (Hamburg: Hamburg University Press, 2008), 95–106.

<sup>95</sup> Presumably Marquardt, Hippokrates-Verlag to Paetel, Wirtschaftsstelle des deutschen Buchhandels, undated (likely June 1943), NAMA, Bd 38, p. 1.

<sup>96</sup> Jordan was positive about the issue’s prospects at one point in summer 1943, but these hopes came to nothing; see Jordan to Meyer-Abich, June 21, 1943, NAMA, Ba 38.

hit hard, and the prospects for *Physis* looked grim.<sup>97</sup> As Jordan artfully put it to Meyer-Abich in March 1943, because the “external conditions [had been] so radically changed since [the German defeat at] Stalingrad,” *Physis* would “probably only be able to be maintained on a much-reduced scale and at a much slower tempo for the time being.” He tried to remain optimistic, though; with the “successful” first issue, they had defined “the name and form and the general line” and laid “solid ground” for the future.<sup>98</sup>

Jordan and Meyer-Abich’s collaborators in the neutral nations, so crucial to the argument that *Physis* could serve as an instrument of German soft power abroad, were not so sanguine about the journal’s future. With “German-led Europe” looking like a temporary reality at best, many became skittish about lending their names to a project so clearly attached to the regime. When Kurt von Neergaard finally responded late in 1942 to an inquiry from Meyer-Abich about finding friendly Swiss reviewers for *Physis*, he now urged that they “abandon” this effort entirely. Such a review, he suggested in light of the praise in *Physis* for Neergaard’s pro-German sympathies, would, he wrote, “with high probability, given the present situation, have rather unpleasant consequences even for me.”<sup>99</sup> In Switzerland, he wrote, even the term *Ganzheit* had been poisoned by association with Nazism.<sup>100</sup> When Meyer-Abich requested that he contribute an article to the new issue, he quietly demurred. Jordan was just as toxic; Neergaard had to abandon an attempt to invite him to Zürich to

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<sup>97</sup> On the impact of “total war” measures on the publishing industry, see Jan-Pieter Barbian, *Literaturpolitik im NS-Staat: Von der “Gleichschaltung” bis zum Ruin*, *Zeit des Nationalsozialismus* (Frankfurt am Main: S. Fischer Verlag, 2010), 244–50. *Hippokrates-Verlag* was one of 220 publishers allowed to remain open even after summer 1944; see Hans-Eugen Bühler and Edelgard Bühler, *Der Frontbuchhandel 1939-1945: Organisation, Kompetenzen, Verlage, Bücher: Eine Dokumentation*, *Archiv für Geschichte des Buchwesens* 3 (Frankfurt am Main: Buchhändler-Vereinigung, 2002), 76–85 on p. 78.

<sup>98</sup> Jordan to Meyer-Abich, March 8, 1943, NAMA, Ba 38.

<sup>99</sup> Neergaard to Meyer-Abich, October 12, 1942, NAMA, Ba 58, p. 1.

<sup>100</sup> Neergaard to Meyer-Abich, December 22, 1942, NAMA, Ba 38.

lecture on quantum biology because the “political sections” in his works provoked outrage.<sup>101</sup>

Neergaard, a pro-German in neutral Switzerland, now feared for his career, bluntly reminding Meyer-Abich that “[t]he whole situation would of course be completely different if [General Erwin] R[ommel] stood in Alexandria and Stalingrad had fallen immediately.”<sup>102</sup>

With the deck now firmly stacked against them, one might suspect that Meyer-Abich and Jordan would have given up on their efforts to publish a second issue during the war. And, indeed, they let the matter rest for almost a year. Yet Jordan and Meyer-Abich would not let their beloved journal vanish so easily, making one last attempt at getting it to print in fall 1944—as Allied armies advanced on the Reich from East and West. There was, it turned out, another way to get a book published that could potentially avoid the Propaganda Ministry entirely: through the *Wehrmacht*. The German Army had its own supply of paper independent of the Propaganda Ministry; that supply was reserved exclusively for projects that were *kriegswichtig*, or crucial to the war effort. By receiving contracts directly from the *Wehrmacht*, publishers could both avoid some of the censorship from the Propaganda Ministry and get their works into print much more quickly.<sup>103</sup> Books published in this manner, though, were not available to the general public in Germany or in Europe; they were instead distributed directly to the troops as “army editions” or “field post editions” (*Wehrmachtausgaben* or *Feldpostausgaben*) through an extensive network of “front book stores” in the occupied countries.<sup>104</sup> Tens of millions of books were thus provided to German soldiers.<sup>105</sup>

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<sup>101</sup> Neergaard to Meyer-Abich, November 23, 1942, NAMA, Ba 38, p. 2. The book meant here is Jordan’s *Die Physik und das Geheimnis des organischen Lebens* (Physics and the Secret of Organic Life), mentioned above.

<sup>102</sup> Neergaard to Meyer-Abich, November 23, 1942, NAMA, Ba 38, p. 2.

<sup>103</sup> Barbian, *Literaturpolitik im “Dritten Reich,”* 313–15; Barbian, *Literaturpolitik im NS-Staat*, 186–92; Bühler and Bühler, *Der Frontbuchhandel*.

<sup>104</sup> Bühler and Bühler, *Der Frontbuchhandel*, 88–112; Barbian, *Literaturpolitik im NS-Staat*, 189–92.

<sup>105</sup> Bühler and Bühler, *Der Frontbuchhandel*, 125.

Amazingly enough, in its last incarnation, *Physis* was to be printed as one of these special “field post editions,” intended as reading material for German troops at the front.

As early as January 1944, Meyer-Abich had received word from Marquardt that paper would “probably be made available soonest” for field post editions published contractually through the *Wehrmacht*.<sup>106</sup> Yet it was only in late September 1944 that the *Wehrmacht* finally placed an order for 650 copies of the first issue of *Physis*. As Marquardt noted, since the contract was made out in Jordan’s name merely for a publication titled *Physis*, this field post edition could have “different contents” from the first issue of *Physis*, meaning that the *Wehrmacht* edition would become a stealth second issue of the journal.<sup>107</sup> Jumping at the opportunity, Meyer-Abich activated his correspondence networks once again. The issue would have ten articles, and as it was strictly limited to 160 pages, it would be printed with a smaller typeface so as to pack in more content.<sup>108</sup> This planned *Wehrmacht* issue also differed from the version marketed to the Foreign Office in 1943: among the ten contributors were Meyer-Abich, Petersen, Jordan, the medical doctor Willy Hellpach, the chemist Alwin Mittasch, and the zoologist Kurt Friedrichs.<sup>109</sup> Jordan’s essay would have been a reprint of one of his essays from the first issue, as he was again too busy with war work to compose another piece, but most of the others were to be new.<sup>110</sup> By November 1944, the paper allocation for the *Wehrmacht Physis* issue had finally been granted, but the it received the lowest “urgency level”

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<sup>106</sup> Quoted in Meyer-Abich to Mrugowsky, January 18, 1944 (copy), NAMA, Ba 55.

<sup>107</sup> Marquardt to Meyer-Abich, September 23, 1944, NAMA, Bd 38.

<sup>108</sup> Marquardt to Meyer-Abich, October 27, 1944, November 8, 1944, and November 14, 1944, all in NAMA, Bd 38.

<sup>109</sup> Marquardt to Meyer-Abich, November 14, 1944, NAMA, Bd 38. Mrugowsky was not listed as a contributor for this *Wehrmacht* version of the issue; perhaps Meyer-Abich intuited that associating his journal with such a high-ranking SS member would look unseemly after the war.

<sup>110</sup> Jordan to Meyer-Abich, October 3, 1944, NAMA, Ba 1, p. 1. I thank Kevin Amidon for his help in locating this letter.

designation from the army, meaning that production would take months at best.<sup>111</sup> As German armies were routed in early 1945, this bizarre final iteration of *Physis* perished on the vine at *Hippokrates-Verlag*.

The perplexing case of the *Wehrmacht Physis* issue prompts an obvious question: why did Jordan and Meyer-Abich ever think that the average war-weary German soldier would want to read extended tracts on holism, quantum biology, or philosophy? Most field post editions marketed to soldiers and produced via *Wehrmacht* contracts were either standard Nazi agitprop fare glorying in German victories or escapist fiction meant for broad consumption. These types of works were also printed in much higher volume—with editions quite often numbering in the hundreds of thousands—raising another question: why the extremely low print run?<sup>112</sup> Yet even if the print run were higher, the issue was to be printed exclusively for soldiers and sent to them directly, meaning that those academics to whom *Physis* was marketed would not be able to obtain this new issue!

Perhaps Meyer-Abich and Jordan gave these seemingly self-evident questions little thought, simply wishing to put out a new issue of *Physis* however they could, not caring whom it reached. Or maybe the futile, almost absurd, attempt to continue *Physis* was simply a coping mechanism for them, a search for normalcy from two men whose entire world was collapsing. Yet it also seems plausible that they had an ulterior motive. That the *Wehrmacht* book publishing industry was notoriously corrupt during the Third Reich; with paper stock hard to come by, under-the-table dealing and bribery predictably ensued.<sup>113</sup> Moreover, cryptic remarks in one of Marquardt's November 1944 letters allude to a "shipment" sent by the publisher to neutral Switzerland under an

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<sup>111</sup> Marquardt to Meyer-Abich, November 21, 1944, NAMA, Bd 38.

<sup>112</sup> On the *Wehrmachtausgaben*, see Bühler and Bühler, *Der Frontbuchhandel*, 184–218; Barbian, *Literaturpolitik im NS-Staat*, 190–91.

<sup>113</sup> See for example Hans E. Bühler and Olaf Simons, *Die blendenden Geschäfte des Matthias Lackas: Korruptionsermittlungen in der Verlagswelt des Dritten Reichs* (Köln: Pierre Marteau, 2004).

“export declaration” signed by Meyer-Abich.<sup>114</sup> This “shipment” did not contain copies of the *Physis* issue, for it had not yet been printed. But it is possible that Meyer-Abich planned to perform a similar maneuver with the 650 copies of the *Wehrmacht Physis* issue. With a new printed issue then safely stored in Switzerland during the Third Reich’s *Götterdämmerung*, *Physis* would then be ready for distribution immediately after the war’s end. In any case, the German defeat in 1945 made the entire matter moot.

### Conclusion

Tellingly, Meyer-Abich and Jordan’s alliance, forged from their shared experience as scientific and ideological outcasts in the Nazi state, did not long survive that state’s demise. Jordan, jobless, slowly proceeding through formal denazification, and attempting to find a new academic position in the Western occupation zones, resigned as coeditor of *Physis* in December 1945.<sup>115</sup> Meyer-Abich did manage to rescue the journal, but only barely: a second *Physis* issue, “Volume 2/3,” appeared in 1949, with Meyer-Abich now the sole editor and Jordan one of five “collaborators,” yet the new volume received little attention and the journal died in obscurity.<sup>116</sup> Meyer-Abich would continue to advocate for holism in the early Federal Republic in vain, while Jordan’s scientific interests gradually turned away from biophysics and toward cosmology and general relativity.<sup>117</sup>

The wartime *Physis* saga leads to three conclusions. First, through both *Physis* and the campaign of intrigue behind the scenes, Meyer-Abich and Jordan attempted to bend the Nazi state to their own designs in an effort to smash their opponents and institutionalize Jordan’s bold vision

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<sup>114</sup> Marquardt to Meyer-Abich, November 14, 1944, NAMA, Bd 38.

<sup>115</sup> Jordan to Meyer-Abich, December 21, 1945, NAMA, Ba 1. I thank Kevin Amidon for his help in locating this letter.

<sup>116</sup> Adolf Meyer-Abich, ed., *Physis: Beiträge zur naturwissenschaftlichen Synthese*, 2/3 (Stuttgart: Hippokrates-Verlag Marquardt & Cie., 1949).

<sup>117</sup> Amidon, “Adolf Meyer-Abich, Holism, and the Negotiation of Theoretical Biology,” 358–59.

of science on an industrial scale. Aiming to gain monetary and political support for their heterodox scientific program, they were willing, even eager, to infuse Jordan's blueprint for big science with overt paeans to Nazi political goals.<sup>118</sup> And to benefit Nazi propaganda in the occupied countries, Meyer-Abich and Jordan were glad to portray their journal as an ideologically sound enterprise for the "new Europe." Reinforcing the notion that it would necessarily be "German-led," they were happy to include articles by German scholars who had accepted posts in the occupied countries; they also actively recruited contributions even from those most complicit in war crimes, like Mrugowsky. And yet despite this Herculean effort to cater to Nazi whims, *Physis* was essentially a complete failure. Despite repeated appeals to the Reich Student Leadership, the Foreign Office, and the *Wehrmacht*, a patron was never found. Even the plan to feature publications by Mrugowsky, a man very close to the regime's inner circle, had little impact. Nevertheless, deep into the war Meyer-Abich and Jordan were still quite eager to consciously identify and portray their ideas as compatible—even the best possible fit—with Nazi ideology; they were eager to "work toward the *Führer*" in science. Jordan and Meyer-Abich can thus be classified as "failed collaborators" with the Nazi state.

The second conclusion perhaps contains a deeper warning. In 1941 and 1942, at the peak of Hitler's empire, Jordan almost perfectly envisioned the industrial-scale big scientific enterprise that emerged in the United States during and after World War II (and which then spread across the globe). The resemblance is indeed remarkable; Jordan, amazingly, came to many of the same conclusions that the American science administrator Vannevar Bush would reach in his famous 1945

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<sup>118</sup> Admittedly, Meyer-Abich was less interested in big science in and of itself; he saw Jordan's vision as a politically expedient way to promote his scientific interests. For Jordan the converse was true: he was motivated by his vision of big science, while holism was less important. Again, it was no coincidence that this unlikely alliance dissolved quickly after German defeat in 1945.



report to the president, *Science, The Endless Frontier*. Both emphasized how the cost and scale of science were now so great that financial support from the state was a necessity.<sup>119</sup> Both were concerned about maintaining intellectual freedom for brilliant individuals in this large enterprise.<sup>120</sup> And via similar reasoning, both came to the verdict that—somewhat paradoxically—“basic” science needed to be prioritized over “applied” research.<sup>121</sup>

These two visions of big science arose organically and independently from each other, in vastly different political contexts. One was born in the Nazi milieu, as Germany appeared unstoppable on the European continent, and was an attempt to make science “work toward the *Führer*.” The other was born in Allied victory, framed as a product of American ingenuity and freedom.<sup>122</sup> Yet at their core, both laid out the same vision for big science—and so we must conclude that there is nothing inherently democratic about the concept.<sup>123</sup> After all, Jordan’s vision of centrally led institutes harmonized well with the Nazi ideology, and while he certainly “Nazified” his plan for big science via slogans and vocabulary, the basic top-down organizational system of big science is inherently semi-authoritarian. Moreover, Jordan’s failure to implement his vision in the Nazi state was more contingent than it may seem. Had he been savvier and located the right power brokers in the Nazi polycracy, or had the regime been more amenable to ideas from sympathetic

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<sup>119</sup> Vannevar Bush, “Science, The Endless Frontier” (Washington, D.C.: Office of Scientific Research and Development, 1945), 7.

<sup>120</sup> Jordan’s view is elaborated above; Bush noted that, “[s]cientific progress on a broad front results from the free play of free intellects, in the manner dictated by their curiosity for exploration of the unknown.” See Bush, “Science, The Endless Frontier,” 7.

<sup>121</sup> Jordan asserted that “pure [i.e. basic] research must precede applied research,” while Bush claimed that “basic research is the pacemaker of the technological process.” See Jordan, “Naturwissenschaft im Umbruch,” 453; Bush, “Science, The Endless Frontier,” 14.

<sup>122</sup> “. . . [W]ithout scientific progress we could not have maintained our liberties against tyranny”; see Bush, “Science, The Endless Frontier,” 6.

<sup>123</sup> On democracy being beneficial to science, and authoritarianism damaging, see for example Sigerist, “Science and Democracy”; Merton, “A Note on Science and Democracy”; Goudsmit, *Alsos*, xxxiii–xxxviii.

intellectuals—and had the course of the war taken a different turn—it is scarily conceivable that something resembling Jordan’s vision could have been constructed under Nazi auspices in Europe. The *Physis* story thus provides another chilling reminder that there is nothing inherently irreconcilable between modern large-scale science and an anti-democratic political system.<sup>124</sup>

The third conclusion pertains to Jordan’s strategy for negotiating the Nazi regime. As described in Chapter 2, this blueprint, which he believed all patriotic German scientists could and should follow, centered on a belief that a deal could be struck between scientists and the Nazi state. If scientists continued to toe the Party line and emphasize—using the regime’s language—the military and propaganda value of science, Jordan believed that Hitler’s state would eventually see science’s potential and fund it commensurately. As described in Chapter 2, this was the main reason why Jordan was willing to propagandize for the regime even after he became convinced that it would never initiate the mystical rebirth of Germany he longed for. Yet this perceived “deal” was predicated on turning a blind eye to a core tenet of the Nazi worldview: its rabid anti-Semitism. Though Jordan opposed the purge of German-Jewish academics carried out by the Nazis carried out in 1933, believing it would cripple German science—and potentially damage Germany’s chances at winning a future war—he certainly approved of general anti-Semitic measures.<sup>125</sup> Nevertheless, Jordan’s postwar writings make clear that did not condone the atrocities committed by the Nazi regime, and indeed viewed them as appalling crimes against humanity.<sup>126</sup>

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<sup>124</sup> On this revisionist view, that democracy is not necessary to scientific success, see for example Rabkin and Mirskaya, “Science and Totalitarianism.”

<sup>125</sup> On Jordan’s anti-Semitism, see Chapter 1; for an example of the type of anti-Semitic rhetoric he trafficked in, see his pseudonymous Domeier, “Um Luthers Erbe.”

<sup>126</sup> See in particular Jordan’s pseudonymous Rack, *Das Problem der Elite*. In this work, Jordan acknowledges the Holocaust as a crime, though like many in his milieu, he also relativizes the regime’s crimes by equating them to the use of the atomic bomb against Japan and the expulsions of ethnic Germans across Europe after 1945.

But what Jordan never came to understand was how this strategy left him inherently complicit in the regime's worst crimes.<sup>127</sup> As the war dragged on, in their repeated attempts to “work toward the *Führer*,” Jordan and Meyer-Abich grew closer and closer to the regime's worst characters—like Joachim Mrugowsky, who was eventually convicted of war crimes for his involvement with countless atrocities. (Jordan even wished to visit Mrugowsky's institute!) This incident was not outlier for Jordan; on the contrary, the attitude he displayed in the Mrugowsky case was characteristic. Indeed, one brief, final wartime case study makes Jordan's staggering indifference to the regime's mounting anti-Semitism very clear.

From the start of his scientific career, one of Jordan's favored places in which to publish his work had been *Die Naturwissenschaften* (The Natural Sciences), the premier interdisciplinary scientific publication in the German-language scientific world.<sup>128</sup> Starting in the 1920s and continuing through the war years, Jordan published dozens of articles and book reviews in *Die Naturwissenschaften*. Yet as the war dragged on and publication, as noted above, became an ever more laborious process, Jordan became increasingly frustrated with the delays his articles faced when being published in the journal. Finally, in October 1944, Jordan reached a breaking point, informing the journal's publisher that he would be “categorically terminat[ing]” his “now twenty year-long” association with the *Naturwissenschaften*, for he felt that the war was not solely to blame for the delays and that the journal

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<sup>127</sup> This was not unique to him—Meyer-Abich certainly never came to such an understanding, and neither did Jordan's *völkisch* intellectual milieu. On the latter, see again Vordermayer, *Bildungsbürgertum und völkische Ideologie*.

<sup>128</sup> *Die Naturwissenschaften* was founded in 1913, and appeared weekly; it was intended as a German-language counterpart to *Nature*, the English-language interdisciplinary scientific journal. See for example Hansjochem Autrum, “Arnold Berliner und die „Naturwissenschaften“,” *Die Naturwissenschaften* 75, no. 1 (January 1988): 1–4.

was stringing him along. “I have the feeling,” he wrote, “that this [i.e. my own] work is no longer as valued as it was during [Arnold] Berliner’s time.”<sup>129</sup>

It is this last, casual, off-the-cuff comment that in its very banality is so noteworthy. Arnold Berliner, a German Jew, had founded *Die Naturwissenschaften* in 1913, and edited the publication until being forced out when the journal was “Aryanized” in 1935. Over the years, Berliner had thus personally solicited and edited many of Jordan’s contributions to the journal. Unwilling to emigrate to avoid Nazi terror, Berliner—who Jordan believed to have so valued his contributions to the journal—had committed suicide in his Berlin apartment two and a half years earlier, on March 22, 1942, in the face of imminent deportation by the Gestapo to a concentration camp.<sup>130</sup> Jordan, blithely recalling Berliner fondly in this October 1944 letter, either did not know or was indifferent to the fact that Berliner, one of the German-Jewish scientists Jordan claimed to value, had killed himself because of Nazi genocidal policies. This ignorance—willful or not—is simply astounding, and it exemplifies the fatal, inevitable result of the strategy taken by Jordan under the Nazis. By casting in his lot with the Party, even as the regime’s persecution of the Jews metastasized into mass murder, Jordan looked past the firings, the persecution, and the eventual genocide of the Jewish scientists he claimed to cherish. In the end, for him, a victorious, strong Germany was worth allying with Nazism—even when its true murderous nature was revealed. Jordan would never acknowledge this element of personal guilt, one shared by all who “worked toward the *Führer*”—even those who, like him, did so indirectly.

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<sup>129</sup> Jordan to Paul Rosbaud, October 2, 1944, NPJ, Nr. 765. Jordan’s earlier August letter was a postcard, dated August 23, 1944, NPJ, Nr. 765. As mentioned in the introduction, it remains unknown how these letters sent by Jordan to Rosbaud found their way to Jordan’s own Nachlass in the *Staatsbibliothek*. These are originals, not carbon copies.

<sup>130</sup> On Berliner, see for example Sven Thatje, “Dr Arnold Berliner (1862–1942), Physicist and Founding Editor of *Naturwissenschaften*,” *Die Naturwissenschaften* 100, no. 12 (December 5, 2013): 1105–7.

But how would Jordan's émigré colleagues—who managed to avoid Berliner's fate—view him after the war? Would he be reaccepted into the international community after proclaiming his allegiance to the regime in print? How would he explain his actions under Nazism after the regime's horrific crimes became infamous public knowledge? We turn in Chapter 4 to Jordan's postwar efforts at rehabilitation, which remarkably proved to be highly successful.

## Chapter 4: Denazification, Rehabilitation, and Rejuvenation, 1945-1957

*“Dear Mr. Bohr, I should like to give you a short coherent account of what I did during these black 12 years. Certainly some misunderstandings of my tendencies by old friends abroad have been inevitable...”*

–Pascual Jordan to Niels Bohr, May 1945<sup>1</sup>

The war ended for Pascual Jordan on April 8, 1945, when American troops occupied Göttingen. Jordan had been evacuated to the university town from Berlin in late February 1945, along with the rest of his naval research institute—which was headed by mathematician Helmut Hasse and officially titled the *Amtsgruppe Forschung Erfindung Patente III* (FEP III). He thus barely avoided the feared Red Army and the chaos of the *Götterdämmerung* of the Third Reich in the capital.<sup>2</sup> Though many other scientific institutes based in Berlin, like Heisenberg’s Kaiser Wilhelm Institute for Physics, were evacuated to the countryside in 1943 and 1944 to avoid damage from Allied bombers, it had been unclear even into January 1945 if Jordan’s institute would follow suit. As it became apparent that Hitler and other Nazi leaders would make a futile and bloody last stand in Berlin, Jordan quite understandably feared for his life prior to the evacuation.<sup>3</sup> An apparently unsent letter to Heisenberg dated January 28, 1945, listing a series of unpublished manuscripts Jordan “advise[d] to your [i.e. Heisenberg’s] care, in the case that I myself cannot pick [them] up,” reads much like a last will and testament: “I would be very grateful to you, if you could ensure that the works [already] in press are, sometime, somewhere, actually published.”<sup>4</sup> Even works “too

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<sup>1</sup> Jordan to Niels Bohr, May 1945, BSC, Folder 158, Item 26.

<sup>2</sup> Jordan was still in Berlin as late as February 20, 1945; see Jordan to Kuratorium der Universität Berlin, February 20, 1945, HUA, Personalakten Pascual Jordan, Bd. 1, Bl. 145. For reference to the evacuation of the institute see John Todd et al., “Applied Mathematical Research in Germany, with Particular Reference to Naval Applications,” BIOS Final Report No. 79 (London: British Intelligence Objectives Sub-Committee, 1945), 46.

<sup>3</sup> On the German home front in the final stages of the war, see Ian. Kershaw, *The End: Hitler’s Germany, 1944-45* (London: Allen Lane, 2011).

<sup>4</sup> “Heisenberg’s bunker” was almost certainly a reference to the bunker in the Kaiser Wilhelm Institute for Physics, located on Boltzmannstraße in the district of Dahlem. Jordan to Heisenberg, January 28, 1945, NPJ, Nr. 1141, Bl. 2v. This letter, signed by Jordan, is still located in Jordan’s *Nachlass*, meaning that it almost

premature to be publishable,” he wrote to Heisenberg, like a manuscript on abstract algebra, “could potentially be of interest” to mathematicians in Allied countries, like Emil Artin or John von Neumann.<sup>5</sup> (Jordan was vague in the letter, presumably in fear of being accused of “defeatism,” a “crime” punishable by death late in the war.)

Slightly less worse than being charged with defeatism would have been conscription into the *Volkssturm*, a militia tasked with defending the Reich that was supposed to comprise all able-bodied men between the ages of 16 and 60. To avoid this potential fate, while still in Berlin, Jordan received a “research contract” from his colleague Walther Gerlach in case his “for the case that my navy job were suspended in the confusion of the final events [of the war].”<sup>6</sup> These precautionary measures nevertheless proved unnecessary, as he told Gerlach after the war, due to his “fortunate” last minute evacuation to Göttingen. There, as he wrote, “in spite of a bit of adventure, which at the time was somewhat alarming, my own personal ‘front transit’ [*Frontdurchgang*] proceeded very luckily.”<sup>7</sup> It is unclear what exactly these “adventures” were, but Göttingen, filled with wounded soldiers and refugees, was declared an open city in early April by German General Otto Hitzfeld. The United States Army occupied it without a fight, thus sparing Jordan from any potential participation in a fanatical last stand.

Was Jordan wanted by the Allies as an atomic physicist? As one of the most famous theoreticians to remain in Germany during Nazi rule, Jordan must have been on the radar of the American *Alsos* Mission, which was charged with assessing the status of the German nuclear

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certainly remained unsent. Given its dramatic content, one wonders if Jordan abandoned it only after hearing word of his own institute’s imminent evacuation. It is located on the verso side of a page from an apparently unpublished mathematical manuscript dating from the early postwar years. (As noted in the Introduction, Jordan had a lifelong habit of reusing paper.)

<sup>5</sup> Jordan to Heisenberg, January 28, 1945, NPJ, Nr. 1141, Bl. 2v.

<sup>6</sup> Jordan to Walther Gerlach, August 8, 1946, NWG, Nr. 94/1.

<sup>7</sup> Jordan to Gerlach, August 8, 1946, NWG, Nr. 94/1.

program. But while Jordan was apparently close to joining the effort at one point, he was never actually a member of the uranium project.<sup>8</sup> Indeed, a postwar report indicates that Jordan was interviewed by the physicist Samuel Goudsmit, the scientific head of the Alsos Mission.<sup>9</sup> Yet the official history of the Manhattan Project and the Alsos Mission does not mention that interrogation.<sup>10</sup> Two sources—including a 1954 article in *Der Spiegel*—even claim that Jordan was wanted by American military intelligence in 1945, and that US forces indeed wrongly arrested a different Jordan in a case of mistaken identity. This Johannes Heinrich Jordan, a tailor from Bremerhaven was allegedly then sent to the United States and briefly interned; only when he arrived in America was it realized that he was not actually the atomic physicist Pascual Jordan.<sup>11</sup> (Some of the details in this story seem sensational, and I have not been able to confirm it—it is likely apocryphal.) In any case, in the immediate aftermath of the war, Jordan remained apparently undisturbed by American military intelligence in Göttingen.

Against long odds, Jordan had managed to survive Germany's collapse personally unscathed. His family, evacuated to Salzburg as early as 1941, was similarly unharmed. In all other respects, though, the war had been a catastrophe. As a Nazi Party member, he was automatically dismissed from his post at the University of Berlin by the Soviet occupying authorities; the prestigious position

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<sup>8</sup> An undated letter, probably from summer 1943, from Jordan to Heisenberg contains a cryptic reference to Jordan potentially reading some “uranium literature” in the case that his transfer to the navy did not go through. See Jordan to Heisenberg, undated (likely August 1943), NWH, Nr. 1968.3.

<sup>9</sup> The BIOS Report on Hasse's naval research institute states that Jordan was “previously interrogated by Professor Goudsmith [sic].” See Todd et al., “Applied Mathematical Research in Germany, with Particular Reference to Naval Applications,” 57. Records of this interrogation have not been located.

<sup>10</sup> See the unpublished internal Manhattan District History, particularly Book I, Volume 14, “Intelligence & Security,” Foreign Intelligence Supplement No. 1, c.a. 1945-1946, p. 4.30-4.31. The section on the “Göttingen Operation,” from April 17, 1945, only mentions conversations with physicists Hans Kopfermann and Fritz Houtermans. This document is available online at [https://archive.org/details/Manhattan\\_District\\_History](https://archive.org/details/Manhattan_District_History).

<sup>11</sup> “Guten Tag, Dr. Jordan,” *Der Spiegel*, April 21, 1954. The second source that recounts this tale (with some small differences) is a 1953 letter to Jordan from a Dr. Wietfeldt in Bremerhaven, who claimed to have known the tailor in question for “decades.” See Dr. Wietfeldt to Jordan, June 5, 1953, NPJ, Nr. 640.



Jordan had long dreamed of was no more. Moreover, his apartment in Rostock along with all its contents had been requisitioned by Soviet occupation forces.<sup>12</sup> Jordan was left in Göttingen with no job, no income, and with the burden of having to formally be “denazified” by the occupying authorities. Using newly discovered archival sources, prominently including the detailed proceedings of Jordan’s formal denazification tribunal in Hamburg, long thought to be lost, this chapter traces the path Jordan took in the immediate postwar period.

How would he explain his actions to his friends and colleagues who had emigrated, many of whom had relatives who had been murdered by the Nazi regime? What was he to do in a Germany occupied by the victors? Would he return to Berlin and work under the hated Russians? Would he move to the United States? How would he make money in the meantime? As I will show, Jordan drew on a wide range of support in the field of physics both at home and abroad to successfully make the case that his fierce opposition to *deutsche Physik* meant he had secretly been resisting Hitler all along. Moreover, he cleverly used the onset of the Cold War to his advantage, dangling a lucrative offer from the East Germans in front of his Western denazifiers to get a better deal. Amazingly enough, as I will show, most of his colleagues ended up accepting his explanations for his Nazi-era actions; even those who were angry in the war’s aftermath seem to have forgiven him relatively quickly. Surprisingly, the trope of Jordan as an evil ‘Nazi’ who betrayed his colleagues was not an invention of the immediate postwar period. (As I will discuss in Chapter 5, this image of Jordan stems from his reentry into politics in the late 1950s and early 1960s, at the height of the Cold War.)

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<sup>12</sup> Friedrich Möglich to Günther Rienäcker (Rostock University Rector), July 20, 1947, RUA, Personalakten Pascual Jordan, Bl. 11.

## Resuming Old Connections

Up to now, very little was known about Jordan's personal thoughts or feelings during the immediate postwar period. How did he reflect on his actions during the Third Reich? What little material that stems from this time in the Jordan *Nachlass* is found on the verso sides of manuscripts and lecture notes; these were often composed on the reverse sides of letters Jordan had received. (Jordan had a lifelong habit of resuing paper, as described in the Introduction.) A few additional clues can be found in the archives of Jordan's correspondents, both those inside the scientific world and those outside of it. But to a large extent, the period still remains shrouded in mystery. Yet from what has survived, it seems clear that in spite of the many paeans to the "new Germany" that Ernst Domeier wrote in 1933, Jordan now—amazingly—viewed himself as a victim of Nazism. The long battles against Hugo Dingler and *deutsche Physik* had taken their toll. As he wrote to Adolf Meyer-Abich on January 2, 1946:

I was a [Nazi] party member as of May 1, 1933. I am, however, in the long run thoroughly optimistic that enough competent evaluators will be found who can attest that this membership only served to make my personal fight against National Socialism possible within the scientific sector. Likewise, there will certainly be influential personalities in scientific circles in England to be found who will be able to make sure that my case is deservedly handled as a special case...Right now I will be satisfied if I find possibilities for scientific publication; everything else will follow in time. According to the personal pledges that have already been made to be by influential [personalities] on the English side, this seems to be assured. All the same, I would like to operate prudently and avoid controversy with bureaucratic subentities [*bürokratischen Unterinstanzen*] for now, until direct contact with the English positions becomes closer.<sup>13</sup>

To a friend in the Baltic Brotherhood, Jordan was far blunter: "...thank God we are finally loose of the Third Reich..."<sup>14</sup>

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<sup>13</sup> Jordan to Meyer-Abich, January 2, 1946, NAMA, Ba 1.

<sup>14</sup> Jordan to Harald von Rautenfeld, July 4, 1948, BB, 010/1.

But he surely knew that his Jewish friends and colleagues who had emigrated due to Nazi persecution might not easily see eye-to-eye with him. Though they were unaware of the Domeier persona, he had needed to quell concerns about his article in the Rostock university student magazine as early as 1933 (see Chapter 2); further paeans to Nazism and militarism, like *Physikalisches Denken in der neuen Zeit*, had not gone unnoticed abroad. Collegial relations between Jordan and the emigres had largely been maintained until 1939—in the American case until 1941—via his explanations that these were the concessions one had to make to teach “real” physics in the Third Reich.<sup>15</sup> As Jordan liked to put it then, his writings glorifying the military potential of physics were the Nazi equivalent to what Soviet scientists said to appease Stalin.<sup>16</sup> But with the liberation of the concentration camps, and the extent of the Holocaust now widely known to all, these writings of Jordan’s were damning in a way they had never been before the war. In the eyes of former German-Jewish colleagues like his doctoral adviser Max Born, even if Jordan had failed, he had attempted to put their beloved physics at the service of the most infamous criminal regime in world history. Certain passages were particularly eerie; at one point in his 1935 monograph, Jordan hinted at the terrifying potential of nuclear weapons: “a not-too-distant future may have at its disposal... *explosive materials* in comparison to which all present explosives are harmless toys.”<sup>17</sup> If Jordan had succeeded in his goal of convincing the Nazis that German science was worth supporting, his colleagues wondered, would Hitler’s forces have developed the atomic bomb?

Thoughts on how to position himself and explain his actions after the German defeat had probably been floating in Jordan’s mind since at least 1943.<sup>18</sup> That year, he struck some of the

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<sup>15</sup> On Jordan and the émigrés before the war, see Chapter 2.

<sup>16</sup> Jordan to Heisenberg, June 6, 1934, NWH, Nr. 1515/2.

<sup>17</sup> Jordan, *Physikalisches Denken in der neuen Zeit*, 49.

<sup>18</sup> As Jordan viewed it in summer 1943, it was “improbable” to imagine that the war would be “long”; a “sudden catastrophe” was “more probable.” If anything, this was likely an understatement of Jordan’s actual

egregiously pro-Nazi passages from the introduction of the second edition of his book *Die Physik und das Geheimnis des organischen Lebens*, which had originally been written in the winter of 1940-1941, when German victory seemed assured.<sup>19</sup> Of course, such thoughts could not be made public during the war, as any accusation of “defeatism” could be met with the death penalty. Yet it must have been on his mind, particularly as the course of the war turned decisively against Germany in 1944, and as German forces collapsed entirely in early 1945.

In any case, as soon as American troops entered Göttingen, Jordan turned his attentions to his colleagues abroad. He composed long letters to Niels Bohr, who was still in exile in England, Max Born in Edinburgh, and Wolfgang Pauli and John von Neumann in Princeton.<sup>20</sup> All four were of Jewish descent and had fled Germany and Europe as refugees from Nazi persecution. (It is possible Jordan sent letters to other colleagues, but these four were Jordan’s closest collaborators who had emigrated.) Ironically, the letters Jordan wrote and sent—suspiciously—right after the end of the war may have brought more attention to his wartime activities and publications than they would otherwise have received. After all, it had been six years (four or five for those in the United States, which had been neutral until 1941) since these colleagues had even heard from Jordan, and they obviously did not receive any of his wartime publications. Busy with their own lives and the

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views, for in the late Third Reich, any negative views about the war effort could easily lead to accusations of “defeatism,” punishable by death. See Jordan to Heisenberg, undated (likely August 1943), NWH, Nr. 1968/3.

<sup>19</sup> Pascual Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 2. Auflage, Die Wissenschaft: Sammlung naturwissenschaftlicher und mathematischer Monographien 95 (Braunschweig: Vieweg Verlag, 1943). Not all pro-Nazi passages were removed; an infamous section praising Hitler and proclaiming that the “parliamentary-democratic ideal no longer lives” remained even in 1943. See Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 2. Auflage, 108.

<sup>20</sup> The Bohr letter survives; see below. The Born letter appears to be lost, despite extensive searches in both Born collections in Berlin and Cambridge, but it is referenced in an August 7, 1945 letter from Born to Bohr; see Born to Bohr, August 7, 1945, BSCS, Folder 37. Pauli mentions a 1945 letter from Jordan to himself and von Neumann, now apparently lost, in a 1952 letter to the Hamburg dean of mathematics and natural sciences; see Pauli to Dekan Alfred Willer, May 8, 1952, PLC, 0501,5.

exigencies of the war, they had not given Jordan much thought; the letters from him so soon after the war's end were thus a huge shock to the emigres. As Pauli said later: "He...sent a long apologia at the end of 1945 to myself and...John von Neumann in Princeton, long before anybody in England or in the United States had time to deal with Jordan at all."<sup>21</sup> Max Born put it similarly in a letter to Jordan in 1957: "Right after the end of hostilities I received a letter from you in which you explained why you had advocated for Hitler and the Nazis in books and other writings. This was completely unnecessary, as I had heard nothing of this in Scotland, on the other side of the front."<sup>22</sup>

Unfortunately for the historian, of the three, only the letter sent to Bohr survives. Written apparently in May 1945—that is, months before the war in the Pacific was over—it seems that the letter did not arrive in Bohr's hands until July or August.<sup>23</sup> Four pages long, written in broken English, probably to reduce time in the mail (all letters in German were subject to Allied censorship), Jordan's letter to Bohr presents an extensive apologia of his wartime actions. It is a truly unique historical document, particularly in light of the new Jordan documents analyzed in Chapter 3, and therefore worthy of a detailed analysis.

Opening as it did with the this chapter's epigraph, Jordan telling Bohr that he wished to "give [him] a short coherent account of what I did during these black 12 years," the letter contains a mixture of truths, partial truths, lies of omission—along with the occasional outright falsehood—that was typical of such statements made in Germany in the immediate postwar period. Expanding

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<sup>21</sup> Pauli to Willer, May 8, 1952, PLC, 0501,5.

<sup>22</sup> Born to Jordan (copy), October 30, 1957, NMB, Nr. 1003. Jordan does not seem to have saved the original letter.

<sup>23</sup> Max Born wrote to Bohr on August 7, 1945—the day after the atomic bomb was dropped on Hiroshima—telling Bohr that he had received a letter from Jordan that day (i.e. August 7) in the mail: "The other remarkable event was a letter from Pascual Jordan, forwarded to me by a British scientist who has visited Göttingen. This letter is rather amazing in its impudence, and still more so is the enclosed copy of a letter from Jordan to you, which you may have received meanwhile although Jordan says that it has not yet been sent off." See Max Born to Niels Bohr, August 7, 1945, BSCS, Folder 37, Item 5.

on the tack he had used with his colleagues abroad prior to the outbreak of war, Jordan depicted himself to Bohr as an undercover agent, operating from deep within the Nazi Party, who fought for the noble cause of truth in physics. His mission was one so secret that he could not discuss it with Bohr or other emigres out of fear of being betrayed or attracting attention from virulent Party elements: “I should have been glad to be able to give occasionally some hints of explanation; but that would have been to [sic] dangerous, to me and to my family. I could not even dare explaining something to those friends in Germany who did not understand without comment.”<sup>24</sup> Essentially, this paragraph was a rehash of what he had told colleagues before the war, that he had said what he needed to say in Nazi Germany to be able to get his ideas in physics to print; secretly, though, he was playing a double game with the Nazis.

But there were now additional details to this story of academic resistance from inside the Party that had not been present in prewar iterations. In this 1945 version, Jordan claimed that he had “naturally” thought of “instantaneous emigration” on Hitler’s assumption of power in 1933 but that “several arguments spoke against this resolution”:

- 1) I rather could not depart [sic] with my old mother (she died 1942).
- 2) My known Sprachfehler [i.e. Jordan’s stutter] (12 years ago much worse than today) made me many difficulties in profession and in daily life.  
These difficulties were to multiply abroad.
- 3) I doubted me [sic] as an eventual voluntary emigrant to be justified to charge the organization created for helping those who were inevitably forced to emigrate.
- 4) I believed to a false theory about the probable evolution of the nazist party after 1933. I thought [sic] the radicalism shown at the beginning would evade [sic] with time and a tolerable situation would return by steps after some years; I hoped to be able to accelerate this evolution to a certain little extent. When I had to convince myself that on the

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<sup>24</sup> Jordan to Bohr, May 1945, May 1945, BSC, Folder 158, Item 26.

contrary the tendencies grew more and more radical, there remained no possibility to emigrate.<sup>25</sup>

All four “arguments,” considered individually, seem to have at least partial truth. Jordan was close with his mother, who died in 1942; given the struggles he faced in overcoming his disability in his home country, it is not a stretch to think that the stutter would have given him problems abroad, speaking in a foreign language; organizations helping refugees leaving Germany were indeed overloaded with requests for help; and Jordan was one of those *völkisch* intellectuals who believed that the Nazi rabble had toppled the republic but would soon give way to the true conservative elites, who would restore order.

Yet when considered as a whole, the idea that Jordan considered “instantaneous emigration” in 1933 is a flat-out lie. Given the forceful, commanding proclamations Ernst Domeier made that year glorifying the “National Socialist revolution,” it is inconceivable to think that Jordan actually considered emigrating, even if he wished his Jewish colleagues (for him, the stereotypical “good Jews”) could remain at their posts. Recall that in July 1933, Ernst Domeier described the Nazi takeover as a world-historical “incision in the course of German history” whose “scope and significance” could be compared with “only a few other events of earlier times.” If anything, in 1933, Jordan was encouraging his elitist *völkisch* far-right compatriots to throw in their lot with Nazism, even if they distrusted the rabble-rousing ways of the Nazis: “*Opposition* cannot be the task of conservative forces today, but rather only a creative placing of themselves into the National Socialist revolution. The fight against the varied remnant of liberal aspiration must be carried on, as they attempt to sneak into the new [i.e. Nazi] state under altered guise [*veränderter Maskierung*].”<sup>26</sup>

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<sup>25</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26. I preserve all original typographical errors.

<sup>26</sup> Domeier, “Das Gesetz der Geschichte,” July 22, 1933, 517.

In the second section of the 1945 letter to Bohr, Jordan claimed that as “a pupil of famous emigrated teachers and a notorious defender of Einsteins [sic] theories,” he had been “one of the most prominent aims of suspicion and hatred from the side of the Nazis. Next to Heisenbergs [sic]...I was the most visible not emigrated exponent of theoretical physics – a discipline which held a record in attracting the animosities of Nazis. Things became still worse by my living at Rostock, an inferior but very radical centre of Nazism.”<sup>27</sup> Given this situation, as Jordan saw it, “only two ways were open.” The first would have been to follow Max von Laue’s example, to speak out against the Nazis “also in matters which did not concern physics,” namely, politics. Yet according to Jordan, though this “attitude...[was] much more admirable than mine, [it] would have meant for me, being much less prominent a figure than [von Laue], certainly ruin of my existence, and most probably would have landed me in a concentration camp.”

The second option, the one Jordan claimed he chose, was to slip into the Nazi Party undetected, and sabotage its scientific policies from within:

The only other way open to me was to give in in matters which seemed to me of minor importance, to look out for connections with people in the nazi party which did not belong to the most dangerous clique of Stark and Lenard [the two chief apostles of *deutsche Physik*], and to endeavor to concentrate my efforts in fighting those tendencies. I had to become a member of the party and to make those less radical people believe I were [sic] their man; I did not hesitate to do so because I did not feel any obligation towards these people. Only my wife and my mother knew my true feelings about AH [Adolf Hitler]. (Two or three friends knew them approximately; one of these has been hanged in consequence of the 20. july.)<sup>28</sup>

As in the first section, much of what Jordan said was based in truth. Rostock was indeed a hotbed of National Socialist and anti-democratic sentiment, as described in Chapter 2.<sup>29</sup> And there is a good

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<sup>27</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26, p. 2.

<sup>28</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26, p. 2. Again, I preserve all original typography and spelling.

<sup>29</sup> In the 1920s, the far-right monarchist German National Peoples Party (*Deutschnationale Volkspartei*, DNVP) received upwards of 20% of the vote in Rostock’s province of Mecklenburg, and the Nazi Party received 44.8% of the vote in 1932, before Hitler took power. See for example Nikolaus Werz and Jochen Schmidt,



case to be made that—as Jordan suggested—after Heisenberg, he was the second-most-prominent target of attack by the forces of *deutsche Physik*. To be sure, Jordan was never attacked in the pages of the SS newspaper, as Heisenberg was, but Jordan’s battles with Hugo Dingler and his circle were legendary and no less fierce. (See Chapters 2 and 3 for more on the Dingler affair.) Moreover, it is plausible that Jordan would have ended up in a concentration camp if he had spoken out against the Nazis as Max von Laue had done, without the protection of von Laue’s international reputation and his Nobel Prize.

But again, this was only one side of the story. Though he generally disliked Rostock, finding it to be a provincial scientific backwater, perhaps the only aspect of the city that Jordan did like was its conservative atmosphere. Rostock’s radical milieu offered avenues for contact with like-minded individuals, particularly among the student body. As he reported to *völkisch* writer Erwin Guido Kolbenheyer in July 1931: “Here at the university I have gradually...gained some contact with student national-political [*nationalpolitische*, i.e. anti-Weimar Republic] work, which is developing very pleasantly (particularly in relation to paramilitary sports [*Wehrsport*], etc.).”<sup>30</sup> And while Jordan was attacked by radical Party elements—the adherents of *deutsche Physik*—as seen in Chapters 2 and 3, his arguments against them were in no way democratic. On the contrary, Jordan argued that the Nazis should support “professional” physics because modern theories could prove useful on the battlefield. Finally, while Jordan would almost certainly have been persecuted for opposing Nazism in the manner of Max von Laue, there was simply no chance Jordan would even have considered

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*Wahlen in Mecklenburg und Vorpommern*, Rostocker Informationen zu Politik und Verwaltung 6 (Rostock, 1996), 10–12.

<sup>30</sup> Jordan to Erwin Guido Kolbenheyer, July 6, 1931, NEK. Indeed, as noted in Chapter 1, Jordan had been eager to make contact with these students from the beginning of his time in Rostock; as he wrote to Kolbenheyer in March 1930, only six months after being appointed there, he was “already attempting to make some connections with national-politically interested circles in the student body.” See Jordan to Kolbenheyer, March 14, 1930, NEK.

speaking out in such a manner. While he probably opposed certain policies favored by some Nazi elements, Jordan was willing to look past those in the face of the revisionist political program offered by National Socialism. He would never have acted as von Laue did, simply because he agreed with much of the Nazi political program. Even though he was disillusioned by certain aspects of Nazism, he remained sympathetic to the regime's broader aims, like Wilhelm Stapel.<sup>31</sup>

Was the compromise worth it, though? Using the rhetorical device of apophasis, in the third section of his letter, Jordan told Bohr that he did not wish to “discuss the question whether my incessant endeavouring to undermine the positions of these...antiscientists has been successful and useful or not,” but then immediately proceeded to make the case that dragging himself into the mud of Nazism had been worthwhile after all. Jordan had, he wrote, received letters from unknown students and physicists thanking him for his actions, who had assured him that “his secret following among the student body was much larger than I myself even realized.”<sup>32</sup> It was a “fact” that theoretical physicists in Germany had “not been persecuted in a similar manner as for instance theologians [sic] and clergymen who in great number went through (or ended in) the concentration camps...Perhaps I really contributed a little to prevent such an evolution; I prefer to leave this question open. Let me only say that the mentioned antiscientists were awfully sorry when they learnt that I was a member of the party.” Why had Jordan taken this public stand? It was done out of a sense of responsibility to the field—his actions were selfless, even heroic:

Apart from this I dare say that I did not go my way in order to save myself, but in order to help physics. (But I cannot deny that today I am quite satisfied with the fact that I did survive personally). I have not avoided risky experiments. For instance I thought it to be a thrilling sport to give a book pleading for relativity and quanta the title “Die Physik des XX. Jahrhunderts”, as an answer to A. Rosenbergs [sic] ill-famed “Mythus des XX.”

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<sup>31</sup> On Jordan's relationship with Stapel, see Chapter 1; on Stapel—and Jordan's—disillusionment with some aspects of Nazism yet their continued willingness to propagandize for the regime, see Chapter 2.

<sup>32</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26, p. 2-3.

Jahrhunderts”. The number of persons imprisoned or murdered by the SS is so great that there seems to be no necessity to say it was really a little hazardous to attack in such a manner the standard book of nazistic Weltanschauung.<sup>33</sup>

Again, though Jordan professed not to judge whether or not his actions against *deutsche Physik* had been successful or not, the implicit message of the section was unambiguous: Jordan’s own actions during Nazi rule had been heroic and selfless, and had only been done to save physics from “scientific gangsters.”

This section of the letter, perhaps above all others, betrays the way in which a statement’s meaning could, and did, change before and after 1945. (As will be seen in Chapter 5, these meanings again gained new connotations in the 1950s and 1960s, at the height of the Cold War.) As it turns out, this was not the first time that Jordan cited this quote about his supposed “secret following among the student body,” which he claimed came from an anonymous supporter of his in physics.<sup>34</sup> Fascinatingly, this quotation was in fact nearly identical to the final sentence of Jordan’s denunciation of Fritz Kubach and Hugo Dingler, which he had sent in November 1941 to Party functionary Heinrich Kunstmann as a part of the campaign of intrigue surrounding the scientific journal *Physik*.<sup>35</sup>

Then, at the peak of Nazi power, Jordan used the quote to demonstrate to Kunstmann and other Nazi functionaries that—fortunately for the *Reich*—the younger generation of German physicists had been able to see past the lies spread by the forces of *deutsche Physik*, whom Jordan

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<sup>33</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26, p. 3. Emphasis in original.

<sup>34</sup> Unlike the rest of the letter to Bohr, this sentence was written in German (“*meine heimliche Anhängerschaft unter der Studentenschaft viel grösser sei, als ich wohl selber ahnte*”), presumably to demonstrate its veracity as well as the impact it had made on Jordan.

<sup>35</sup> In the letter to Kunstmann, the quotation reads: “...die Schar meiner heimlichen Anhänger unter den jungen Physikstudenten viel größer sei, als ich wohl selber ahnen könnte.” See Jordan to Heinrich Kunstmann, November 26, 1941, NAMA, Ba 38, p. 4. For a detailed discussion of this denunciation, see Chapter 3.

termed “harmful to the *Volke*.”<sup>36</sup> Indeed, they secretly sympathized with Jordan and his allies, who were the true German patriots and supporters of the regime. In the summer of 1945, this quote carried a much different meaning: now, it was evidence that Jordan’s efforts at resisting Nazi influence in science—working from within the regime—had not been in vain. Through his books and articles, which necessarily needed to carry a patina of Nazi ideology, Jordan had been able to smuggle “real” physics into the regime; in 1945, this quote signified that younger physicists had looked past the obvious nods to propaganda and thankfully imbibed knowledge of modern physics. Which interpretation was ‘true’? Both, depending on who you asked—but Jordan’s simplification of the entire subject in his letter to Bohr elided over the distinction that one could, like Jordan, both oppose *deutsche Physik* yet nevertheless still support the Nazi regime and the German war effort.

As to whether Jordan’s work had contributed to the fact that, as he claimed, theoretical physicists were not persecuted as “theologists [sic] and clergymen” were, this is impossible to tell. However, it must be noted that many of those religious figures who were persecuted by the Nazis—most famously Dietrich Bonhoeffer—actively opposed the war effort and attempted to undermine the regime; on the contrary, Jordan’s attempts to take down *deutsche Physik* promoted modern physics as the best possible way for Germany to gain an advantage over its opponents in war.<sup>37</sup> And it is impossible to know if Jordan actually intended *Die Physik des 20. Jahrhunderts* as a response to Alfred Rosenberg’s infamous work, or if this story was simply invented after the war.

The fourth and final section of the letter, Jordan’s “concluding remark” of “more general interest,” attempted to describe the mood on the German home front during the war. Yet its

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<sup>36</sup> Jordan to Heinrich Kunstmann, November 26, 1941, NAMA, Ba 38, p. 4. (See also Chapter 3.)

<sup>37</sup> See for example Jordan, *Physikalisches Denken in der neuen Zeit*.

rationalizations are perhaps the most implausible and scarcely credible claims made in the entire letter:

Things changed considerably after 1939. Abroad people probably are inclined to regard militarism and nazism as identical perversities. But in reality Wehrmacht and NSDAP were sharply opposite – as indicated later by the events of the 20. july. During the first phases of the war many Germans took it for certain (and I believe they were right) that in the case of a positive or tolerable result of the war the successful Wehrmacht would liquidate the NSDAP.<sup>38</sup>

Asserting that “many Germans” believed that the Wehrmacht would “liquidate” the Nazi Party (loaded words in the vocabulary of the Third Reich) in the case that the war had been won was, even in 1945, completely fanciful. As historians have detailed, in 1940 and 1941, with France smashed and ousted from the war in a stunning military success and the United Kingdom left standing alone against Germany, Hitler’s cult of personality reached an all time high. German armies seemed invincible, and Hitler took personal credit for the victory, appearing in propaganda and in the popular mind to be a genius strategist.<sup>39</sup> Even some of those who would later participate in the July 20<sup>th</sup> plot—almost all of whom were conservative German nationalists—were enthralled by these initial military successes. To assert that “many Germans” believed that the NSDAP would be toppled if Germany had won the war was naïve at best, even in 1945.

Jordan ended the letter with a classic non-apology apology, one which must have sounded shameless to his colleagues who had had to emigrate in fear of Nazi persecution or even death:

Naturally it may sound a little cheap to give these explanations now, after all is over, and I do not want to clear myself of all possible objections whether all I did was necessary and good taste or not. I did, what I did, but I hope that you, who know me for long time [sic], will understand that my intentions at least were good, and that my attitude will not cause on your side any personal misgiving.

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<sup>38</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26, p. 3.

<sup>39</sup> See for example Mark Mazower, *Hitler’s Empire: How the Nazis Ruled Europe* (New York: Penguin Books, 2008), particularly 54–56, 102–3.

I heard with much concern that you and your family had also to endure a lot during the first part of the war. I hope that you will soon be able to return to Kjøbenhavn [Copenhagen] again...<sup>40</sup>

It is hard to know entirely what his colleagues actually thought of this letter, but it does not seem to have been positive. Max Born was certainly incensed: “This letter is rather amazing in its impudence,” he wrote to Bohr. “[Jordan] tries to make us believe that he [joined the Party] only to deceive the Nazis and to work against them from their own ranks. I think it thoroughly disgusting.”<sup>41</sup> To fellow émigré Francis Simon, though, Born was less harsh: “I quite believe [Jordan] that he has tried to double-cross the Nazis; but he has certainly been a Nazi and behaved like a Nazi; I am sure his wife is, or was, an ardent Nazi.”<sup>42</sup> (Born took the fact that Jordan’s family was in Salzburg, safely away in the “National Redoubt,” as a sign that his wife must have been a believer.) Though Born told both Simon and Bohr that he would not respond to Jordan, he eventually did, sending Jordan a letter that contained a list of his “relatives and friends” who had been murdered by the Nazis during the Holocaust.<sup>43</sup> Niels Bohr, writing to Born, was more diplomatic about the situation: “The difficulties in the world are certainly very great at present and even the relationship to former friends is a most intricate matter. I trust, however that we shall soon see a more favourable development of the whole situation...”<sup>44</sup> Yet even if he did not put these feelings into words, Bohr must have also felt betrayed by Jordan.

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<sup>40</sup> Jordan to Bohr, May 1945, BSC, Folder 158, Item 26, p. 4.

<sup>41</sup> Max Born to Bohr, August 7, 1945, BSCS, Folder 37, Item 5, p. 2-3.

<sup>42</sup> Francis Simon to Born, August 7, 1945, BSCS, Folder 323, Item 2.

<sup>43</sup> This letter does not survive, but it was mentioned by Born later, when, as will be described in Chapter 5, he and Jordan had a falling-out in 1957. “I sent you as an answer [to the May 1945 letter] a list of my relatives and friends who had perished due to the Nazis, and you answered that you had known nothing of this and that you were deeply appalled [to find out].” See Born to Jordan, October 30, 1957, NMB, Nr. 1003, p. 1.

<sup>44</sup> Bohr to Born, December 9, 1945, BSC, Folder 35, Item 39.

## The Offer from the East

Fascinatingly, the first substantial offer for employment Jordan received came from the very forces he had fled from earlier in 1945: the academic authorities of the newly-established Soviet occupation zone. The future East Germans tried exceptionally hard to recruit Jordan to come work at a new institute they were building, one that was envisioned as fulfilling the plan Jordan had proposed in the journal *Physis* during the war. Even though Jordan had been a member of the Nazi Party and had made nods toward its ideology, the East Germans were willing to employ him due to his scientific brilliance. (As will be described in Chapter 5, the East German tune changed by the late 1950s. Then, when Jordan reentered politics as a staunch Cold Warrior in Konrad Adenauer's Christian Democratic Union, he became the target of extremely vicious attacks from the East Germans, who portrayed him an unrepentant fascist.)

Into the fall of 1945, Jordan still titled himself a professor at the University of Berlin when it seemed prudent; when he wrote Linus Pauling that September, he noted that he was affiliated with the University of Berlin, and “temporarily” in Göttingen.<sup>45</sup> It remains unclear if Jordan was ever actually formally fired from the University of Berlin. Somewhat abnormally, there is no official notification of his position being terminated in his personnel file from the university.<sup>46</sup> Moreover, Jordan's name does not show up in the—admittedly fragmentary—lists of professors dismissed in the war's immediate aftermath due to their membership in the Nazi Party.<sup>47</sup> It is possible that in the wake of the utter chaos at the end of the war, the educational authorities in the Soviet occupation

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<sup>45</sup> Jordan to Linus Pauling, September 26, 1945, LPP, Box 190, Folder 7.

<sup>46</sup> Personalakten Pascual Jordan, PA J 069, HUA.

<sup>47</sup> See for example HUA, Rektorat (nach 1945), 17/1, Bl. 168-170, 183-185. See also the “list of members of the NSDAP, its associated organizations, and applicants” in Rektorat (nach 1945) 76, Bl. 180-181, HUA. Jordan is not listed in either of these lists. It must be admitted, though, that the records regarding the reopening of the university are fragmentary.

zone were simply unaware that Jordan had been officially named to the university's faculty in October 1944. In a sign of the general confusion during the last years of the conflict, Jordan's name does not seem to have ever been printed in the course catalog.<sup>48</sup> With the destruction of many university records, buildings, and institutes during the Battle of Berlin, it certainly seems plausible to think that they simply did not realize that he had been employed there. An undated list of the "most notable professors of the University of Berlin who have not been approved [as denazified] or who have not yet gotten in touch" lists Heisenberg, Peter Adolf Thiessen, Max Planck, and Max von Laue, but Jordan's name is surprisingly not listed, reinforcing this theory.<sup>49</sup>

However, it seems also probable that another plan was afoot. There is, in fact, one undated document, probably from 1946, that lists Jordan as having been "dismissed"; it lists all the professorial chairs in the mathematics and natural sciences faculty, their occupants before the "collapse," and their occupants now after the war. Except for Jordan, all who were listed as being dismissed were specifically noted to have been terminated due to their status as former members of the Nazi Party; Jordan was listed as "dismissed" but without a specific cause. Yet the document noted that his professorial chair in theoretical physics had already been filled, by one Robert Rompe.<sup>50</sup> Replacing Jordan with Rompe (the other professorial chair in theoretical physics, formerly held by Heisenberg, would go to theoretical physicist Friedrich Möglich) had evidently been planned as early as October 1945.<sup>51</sup>

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<sup>48</sup> See for example *Friedrich-Wilhelms-Universität zu Berlin: Personal- und Vorlesungsverzeichnis, Wintersemester 1944/45* (Berlin: Preußische Verlags- und Druckerei GmbH, 1944), 37–39, 61, 96–97. He is not listed in the course catalogs for the 1943–44 winter semester or the 1944 summer semester either.

<sup>49</sup> "Verzeichnis der namhaftesten Professoren der Universität Berlin, die nicht zugelassen worden sind, bezw. die sich bisher nicht gemeldet haben," undated (likely 1946), HUA, Rektorat (nach 1945), 17/1, Bl. 183–185.

<sup>50</sup> "Mathematisch-Naturwissenschaftliche Fakultät," undated (likely 1946), HUA, Rektorat (nach 1945), 17/1, Bl. 196–197.

<sup>51</sup> Christian Gerthsen to Zentralverwaltung für Wissenschaft in der sowjetischen Besatzungszone, October 27, 1945, HUA, Personalakten Friedrich Möglich (PA nach 1945, M445), Bd. 3, Bl. 5.



Who was Robert Rompe? Born in 1905 in St. Petersburg to a German businessman, he trained as a physicist and joined the Communist Party of Germany in 1932.<sup>52</sup> Because of his history as a Communist, Rompe could not get an academic job when Hitler came to power, so he spent the Nazi years working in industry. Nevertheless, during World War II, Rompe remained connected with the biophysical circle headed by the Russian geneticist Nikolai Timoféeff-Ressovsky at the Kaiser Wilhelm Institute for Brain Research (*Kaiser-Wilhelm-Institut für Hirnforschung*) in the northern Berlin neighborhood of Buch. (Jordan was also affiliated with this group.) Because he spoke fluent Russian and had been a Communist before the Nazi takeover, Rompe quickly emerged after the war as one of the key figures in the Soviet occupation zone. As early as June 1945, before the Western Allies even arrived in the sectors of the city that would eventually form West Berlin, Rompe had made clear his intentions to work with the Russians.<sup>53</sup> This declaration of loyalty quickly paid off, for in 1946 Rompe was named head of the Division for Higher Education and Science in the *Deutsche Verwaltung für Volksbildung* (“German Administration for National Education,” DVV) in the Soviet occupation zone.<sup>54</sup> This gave him broad authority over the reconstruction of universities and other institutes of higher learning—including scientific academies—in the Soviet occupation zone.

It was probably through Timoféeff-Ressovsky that Rompe and Jordan met at some point in the late 1930s, and they apparently became very good friends; as far as can be discerned, Rompe was

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<sup>52</sup> For more on Rompe, see Dieter Hoffmann, “Die Graue Eminenz der DDR-Physik: Eine kritische Würdigung Robert Rompes (1905-1993) anlässlich seines 100. Geburtstages,” *Physik Journal* 4, no. 10 (2005): 56–58. See also Dolores Augustine’s recent book on science and technology in East Germany, Augustine, *Red Prometheus*, 86, 122–44.

<sup>53</sup> His personnel files in the Humboldt University Archives contain a *Lebenslauf* dated June 20, 1945, clearly intended by Rompe for a Russian audience. See Rompe, “Lebenslauf,” June 20, 1945, HUA, Personalakten Robert Rompe (PA nach 1945, R664), Bd. 2, Bl. 3-6.

<sup>54</sup> This was the forerunner of the East German Ministry of National Education (*Ministerium für Volksbildung*), and had essentially the same role: to determine educational policy in the Soviet occupation zone. Its main objectives were the introduction of socialist education measures and the cleansing of all Nazi educational practices.

the only physicist with whom Jordan ever used the informal pronoun *Du*. Such intimacy among professional colleagues, particularly among university professors, remained rare at this time in the mid-20<sup>th</sup> century and is thus particularly notable.<sup>55</sup> Seeing as the two were so close, it seems probable that Rompe and Jordan had some kind of contingency plan prepared toward the end of World War II: Rompe would contact the Russians, and then presumably attempt to find a position for Jordan under the auspices of the Soviet occupiers. Rompe's quick ascension in the hierarchy of the DVV was perhaps unexpected, but it only helped Jordan and Rompe's chances of "building a big thing" [*ein grosses Ding zu drehen*] together in Berlin," as Jordan described their efforts in 1947.<sup>56</sup> Perhaps for this reason, Jordan does not seem to have been angered at all when Rompe was named to the theoretical physics chair he formerly held at the newly-renamed Humboldt University of Berlin.

Or perhaps this was also because Rompe had written to Jordan at some point in late summer of 1946, asking Jordan to send him a plan for a potential biophysical institute. This proposed institute, which Jordan labeled an "Institute for Biophysics and Medical Physics," resembled in large part the research institute for "quantum biology" and biophysics that Jordan had envisioned during the Third Reich.<sup>57</sup> Then, as described in Chapter 3, the project had been dressed up in Nazi ideology; the facility was to be steered by a *Führungsinstitut* (leading institute; the analogy was explicit), and it was to be run based on the Nazi *Führer* principle. Now in the war's aftermath, the Nazi ideology was stripped out, and some more extravagant elements of the proposal were removed

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<sup>55</sup> Unfortunately, no letters from Rompe survive in Jordan's *Nachlass*, and there is evidently no extant Rompe *Nachlass*. The only correspondence between the two of them that remains is in the archive of the Berlin-Brandenburg Academy of Sciences. See Jordan to Rompe, December 19, 1946, and Jordan to Rompe (copy), April 9, 1947, in ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

<sup>56</sup> Jordan to Rompe, copy, April 9, 1947, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

<sup>57</sup> As noted in Chapter 3, the plan for this institute was published in the abortive journal *Physis* (which Jordan coedited) as part of an attempt to gain patronage from the Nazi Party. For the article itself, see Jordan, "Zukunftsaufgaben quantenbiologischer Forschung."

(like an electron microscopy division) yet the basic premise remained the same: four divisions, which would respectively research genetics, bacteria, proteins/enzymes/viruses, and cancer. While not made explicit, it was implied that Jordan would direct this institute: “In principle, in the case that we take up a project of this kind, I would be keen to devote myself (via relief from administrative work) exclusively to the basic overall planning (and constant guidance) of the scientific work, along with similar influence on the selection of scientific workers. All other [work on] organization should...be assigned to an administrative director.” Such a solution, Jordan emphasized, seemed to him to be the “optimal possibility for forceful advancement” in the field, and would also be “a solution that corresponds in an ideal manner to my own personal wishes for [scientific] work.”<sup>58</sup> Clearly Jordan was invested in this plan.

This new institute would essentially be a successor to and expansion of the former Kaiser Wilhelm Institute for Brain Research run by Timofeeff-Ressovsky, and was to be housed in the same buildings in Berlin-Buch. Rompe forwarded Jordan’s plan to the German Academy of Sciences [*Deutsche Akademie der Wissenschaften*, DAW], the newly reorganized—and renamed—successor organization of the Prussian Academy of Sciences established under the auspices of the Soviet occupation authorities. The DAW quickly took up the question, noting that the plan was “extraordinarily comprehensive and costly, but objectively most welcome,” and asked Jordan for a detailed plan that included potential hires for the institute.<sup>59</sup> Jordan obliged, sending the DAW in December 1946 a more elaborate description of the institute as he envisioned it, outlining who should be considered for each position, with special emphasis on scientists who could potentially be

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<sup>58</sup> Jordan to Rompe, September 20, 1946, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

<sup>59</sup> Protocols of the Mathematisch-Naturwissenschaftliche Klasse of the DAW, November 7, 1946, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

lured from the Western occupation zones. The “objections” held by scientists in the West toward potentially moving to the Soviet zone would “in the course of the next one or two years gradually diminish with gradual normalization of conditions.” Even if East-West relations stayed tense (as of course they did), if an “ideal institute of its type” were founded in Berlin, wrote Jordan, this opportunity would “outweigh” any “relevant qualms” for most scientists.<sup>60</sup>

Throughout 1946 and probably later, Rompe “repeatedly and urgently advised” Jordan to return to Berlin, presumably so they could begin realizing this plan.<sup>61</sup> But a speed bump quickly arose: due to his Nazi past, it was politically impossible for Jordan lead the institute.<sup>62</sup> Yet the authorities in the Soviet zone remained unperturbed; in plans for the institute Jordan was still described as the “scientifically most significant” member of the institute.<sup>63</sup> Even after Jordan ultimately took a post in Hamburg in April 1947, he assured both Rompe and the DAW of his continued interest in the Berlin position, claiming that his new post would make it easier to “win over collaborators who are currently in the West.”<sup>64</sup> Negotiations dragged on. As late as October 1948, Rompe and academy director Josef Naas were submitting testimonials to the Soviet military government attesting that Jordan had defended physics against *deutsche Physik*, falsely claiming that Jordan had even “deserted” his military post when his laboratory was “mobilized for deployment on the eastern front,” running away to Göttingen, where he “found shelter with friends.” They attributed Jordan’s membership in the Nazi Party to the toxic atmosphere at the University of

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<sup>60</sup> Jordan to Robert Rössler [sic, Rössle], December 19, 1946, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

<sup>61</sup> Jordan to Adolf Butenandt, June 15, 1946, NAB, Nr. 2861.

<sup>62</sup> Protocols of the Mathematisch-Naturwissenschaftliche Klasse of the DAW, ABBAW, February 20, 1947 meeting, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

<sup>63</sup> Naas to Dr. Grigorowski, Soviet Military Administration, February 3, 1947, ABBAW, Akademieleitung 1945-1968, Nr. 42, Bd. 1.

<sup>64</sup> Jordan to Rössle, April 14, 1947, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5. See also Jordan to Rompe, April 9, 1947, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

Rostock, where he had taught; of course, they wrote, he had been only a nominal member of the NSDAP, and he had always maintained loyalty to “anti-fascist and Jewish friends.”<sup>65</sup>

While previous research could not conclusively determine whether the Russian occupiers were willing to allow the employment of Jordan, a scientist who was at best politically unreliable in the eyes of the new regime, new documents indicate that the Soviet Military Government actually actually had no qualms about this arrangement. Some of this was pragmatic. As early as December 2, 1947, academy director Josef Naas was pleading Jordan’s case to Nikolai Woronow in the Soviet military government’s educational department. As he wrote, Jordan was “one of the most important representatives of the field of physics in Germany,” in the “circle of physicists in the Heisenberg tier.” Attracting someone of this renown to the Eastern zone, or *Ostzone*, as it was already being termed, would also be of “paramount political importance, as the belief is frequently held in Germany that physicists of this quality will not accept offers in the Eastern [i.e. Soviet] zone or Berlin, as they must reckon with a forced commitment to [work in] Russia.”<sup>66</sup> Here Naas was not-so-subtly alluding to the widespread—and not unfounded—fear that scientists who came to the Soviet occupation zone would then be forced to move to Russia and work on Soviet military projects, particularly their rocket and atomic weapons programs.<sup>67</sup> Naas knew that Jordan’s Nazi past could

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<sup>65</sup> Rompe, “Betrifft: Berufung Prof. Dr. Pascual *Jordan*,” October 4, 1948, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5. See also a memo by Naas, “Betrifft: Berufung des Herrn Professor Pascual *Jordan*,” October 4, 1948, ABBAW, Akademieleitung 1945-1968, Nr. 46, Bd. 5.

<sup>66</sup> Josef Naas to Nikolai Woronow, December 2, 1947, ABBAW, Akademieleitung (1945-1968), Personalakten A 658 (Jordan, Pascual). I use the German transliteration of Woronow’s name for simplicity.

<sup>67</sup> For much more on this fear, and the complicated process of recruiting/coercing/cajoling German “specialists” into working in the Soviet Union, see Norman M. Naimark, *The Russians in Germany: A History of the Soviet Zone of Occupation, 1945-1949* (Cambridge, Mass.: Belknap Press of Harvard University Press, 1995), 205–28.

present some problems, so he was writing early about the “prenegotiations” with Jordan in order to avoid “unexpected surprises” when it came time to confirm his appointment.<sup>68</sup>

Indeed, on October 21, 1948, Rompe and Naas met with Woronow, who gave the Soviet military government’s “approval” for Jordan’s hiring.<sup>69</sup> All that remained was for the education department to make the necessary financial arrangements. The justification for Jordan’s high salary of 15,000 Eastern marks (along with a housing subsidy of 2016 Eastern marks per year) was that he was a “scientist of international reputation...his cooperation would be an extraordinary win for the academy. These facts justify the proposed salary arrangements.” Perhaps the most crucial line followed:

A filled out *Fragebogen* from Prof. Jordan is not yet present. As the important personal circumstances are already known to the *Deutsche Verwaltung für Volksbildung*, and the demand for a *Fragebogen* from Hamburg could perhaps complicate the matter, the *Fragebogen* should be ignored for the time being.<sup>70</sup>

The *Fragebogen*, or questionnaire, was the famous document the occupiers required all former Party members to complete.<sup>71</sup> The content of the questionnaire differed in each occupation zone (the *Fragebogen* in the American zone was the longest, with over one hundred questions to be filled out), but it was required in all four zones. So when Naas noted that the *Fragebogen* would be “ignored,” what he meant in practice was that Jordan’s Nazi past would be ignored, and Jordan would not have to go through formal denazification in the Soviet zone. From this passage, it can be safely assumed

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<sup>68</sup> Josef Naas to Nikolai Woronow, December 2, 1947, ABBAW, Akademieleitung (1945-1968), Personalakten A 658 (Jordan, Pascual).

<sup>69</sup> Josef Naas, Aktenvermerk, “Betrifft: Prof. Pascual Jordan,” October 23, 1948, ABBAW, Akademieleitung (1945-1968), Personalakten A 658 (Jordan, Pascual).

<sup>70</sup> Josef Naas to the Deutsche Verwaltung für Volksbildung, November 12, 1948, ABBAW, Akademieleitung (1945-1968), Personalakten A 658 (Jordan, Pascual).

<sup>71</sup> The questionnaire became so famous that one of the first bestsellers in West Germany was simply titled *Der Fragebogen*. In the novel, the author described his experiences during the Third Reich by answering the questions posed by the occupiers (in this case the Americans) on their questionnaire. See Ernst von Salomon, *Der Fragebogen* (Hamburg: Rowohlt Verlag, 1951).

that if Jordan had actually followed this call to Berlin, the East Germans would have helped to cover up or mitigate his Nazi past, as they did for many scientists they recruited—most famously the chemist Peter Adolf Thiessen.

The East German academy evidently placed enough weight on recruiting Jordan that they sent a certain Dr. Hannemann to meet with him in Hamburg. Hannemann's report, likely from summer 1948, makes clear just how eager the authorities in the Soviet zone were to placate Jordan:

I informed Prof. Jordan that he will be expected as soon as possible in Berlin and that Karlshorst [i.e. the Soviets—Karlshorst was the district of Berlin where the Soviet occupational authorities were headquartered] was also very interested in his arrival. With respect to his journey here we would give him all possible support. Instead of applying for a passport directly for Berlin, which could potentially encounter difficulties, I advised him to apply for a passport for Mahlow [a town bordering Berlin] for the purposes of visiting relatives or something similar. We would make the border crossing easier in every way, send a car to Herrenburg [sic, Herrnburg] near Lübeck [a town right on the inner German border] or even if need be pick him up directly from Hamburg in a car. Prof. Jordan appeared thoroughly interested in Berlin, but had fears that complications could arise through the then still impending currency change in the Western sectors. He would therefore like to wait until the situation is further clarified. Moreover, he is about to go on a long trip to western Germany. After his return he will come back to the matter.<sup>72</sup>

Put more plainly, the authorities in the Soviet zone were willing, if need be, to smuggle Jordan over the border to get him to Berlin.

One can also detect a tone of reluctance in this report, for if Jordan was indeed so interested in coming to Berlin, why would he keep putting off the matter? By 1948 and 1949, as it became apparent that the division of Germany would assume some measure of permanence, and as it became clear that the Western Allies were invested in what would become the Federal Republic of Germany, it seems that Jordan's natural antipathy to communism had overridden his more mercenary instincts toward accepting the offer from the East. When in 1950 the *Deutsche Akademie*

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<sup>72</sup> Dr. Hannemann, Memo, "Ergebnis der Besprechungen in Hamburg," undated (likely 1948?), ABBAW, Akademieleitung (1945-1968), Personalakten A 658 (Jordan, Pascual).

*der Wissenschaften* held a celebration of the Berlin academy's 250<sup>th</sup> anniversary (its predecessor, the Prussian Academy of Sciences was founded in 1700), Jordan declined the invitation to join. He used the occasion to officially decline the academy position, to which, he claimed, he had never officially received word he had been appointed to by the authorities in the Soviet occupation zone. Claiming that it would have been "opportunistic" to move to East Berlin during the Berlin blockade, Jordan noted that he had spoke with Rompe, and they had both concluded that Jordan would "choose the time of my relocation so that the least possible technical burden would arise from the external conditions [i.e. East-West relations]." This agreement had "satisf[ied] both sides," particularly since Jordan planned to "regard the appointment to Berlin as the last appointment to be accepted in my academic career," i.e. that he would permanently move to Berlin.

This plan had now fallen through, Jordan claimed, for to his "surprise and disconcertment" he had realized that "in press reports and radio broadcasts from the *Ostzone* an extremely unfriendly attitude has been taken toward me" for reasons "unknown." As he was worried that a visit in Berlin would "perhaps be cause for a repetition of such unfriendliness," he could not attend.<sup>73</sup> Again, this seems like a poor excuse, in which Jordan did not want to close the door completely, but essentially ruled out any move to East Berlin for the foreseeable future. In a case of great historical irony, Jordan—who had futilely tried to get the Nazi Party to care about science for 12 years—now found himself in a situation where his best friend in the field of physics was a devoted communist who occupied a position of power in the Soviet occupation zone and actively wished to recruit him to the east. But while Jordan may indeed have seriously thought about joining his friend Rompe in East

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<sup>73</sup> All quotations here from Jordan to Johannes Stroux, President of the Deutsche Akademie der Wissenschaften, May 20, 1950, ABBAW, Akademieleitung (1945-1968), Personalakten A 658 (Jordan, Pascual). Jordan's personnel file ends here.



Berlin in the war's immediate aftermath, when it came down to picking sides, anti-communist sentiments won out; Jordan stuck with the west.<sup>74</sup> Jordan's planned biophysical institute—first envisioned in a Nazi guise during the war—was indeed constructed, as the “Institute for Medicine and Biology,” and the East Germans recruited biophysicist Walter Friedrich as its director.<sup>75</sup>

Ultimately, the sole product of Jordan's nearly five year dalliance with moving east was a short essay he wrote on Planck's quantum hypothesis, which, bizarrely, appeared together with an article by the Marxist philosopher Klaus Zweiling on “Dialectical Materialism and Theoretical Physics” in a slim volume printed by the DAW's publishing house, *Akademie-Verlag*.<sup>76</sup>

### Playing Both Sides

The proceedings of Jordan's formal denazification in the British occupation zone have long thought to have been lost, and the exact circumstances of his legal trial were thus a total mystery.<sup>77</sup> But the files were not destroyed, and have indeed resurfaced; in the section that follows, I present a detailed account of Jordan's long, complicated journey to legal rehabilitation. As historians have

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<sup>74</sup> It is unclear if Jordan and Rompe remained friends after the late 1940s. As noted earlier, there is no extant correspondence with Rompe in the Jordan *Nachlass*, and Rompe's estate papers were apparently not preserved. One would assume that after Jordan came out as a staunch Cold Warrior in the late 1950s (see chapter 5), Rompe may have broken off contact, but it remains a fascinating what-if question.

<sup>75</sup> A successor institute still exists today in Berlin-Buch, the Max Delbrück Center for Molecular Medicine, which is part of the Helmholtz Association of German Research Centers (*Helmholtz-Gesellschaft Deutscher Forschungszentren*). For more on the history of this institute after the late 1940s, see Heinz Bielka, *Geschichte der Medizinisch-Biologischen Institute Berlin-Buch*, 2. Auflage (Berlin: Springer-Verlag, 2002).

<sup>76</sup> Pascual Jordan, “Das Plancksche Wirkungsquantum,” in *Beiträge zum neuzeitlichen Weltbild der Physik* (Berlin: Akademie-Verlag, 1950), 5–18; Klaus Zweiling, “Dialektischer Materialismus und theoretische Physik,” in *Beiträge zum neuzeitlichen Weltbild der Physik* (Berlin: Akademie-Verlag, 1950). As of 1955 Zweiling was professor of dialectical materialism at Humboldt University in Berlin. In one of those strange turns of history, Zweiling ended up among the many East German ideologues who attacked Jordan—his former co-contributor—when Jordan infamously reentered West German politics in the late 1950s as a Cold Warrior. Back in 1948, Zweiling had been listed as one of the “leading comrades” with whom Jordan would be put in “close contact” to encourage Jordan's “positive development” ideologically. See Josef Naas, memo “Betrifft: Berufung des Herrn Professor Pascual Jordan,” dated October 4, 1948, ABBAW, Akademieleitung (1945-1968), Nr. 46, Bd. 5.

<sup>77</sup> See for example Hoffmann, “Der gute Nazi,” 157.

detailed, the Western Allies pursued denazification vigorously in the immediate postwar period, but by 1947 and 1948, with the onset of the Cold War and massive resistance from Germans all across the political spectrum, the mood changed dramatically.<sup>78</sup> Aided by the standing offer from East Berlin, Jordan was ultimately not only legally denazified, but also largely succeeded in clearing his name in the eyes of his colleagues in the field.

Given his staunch opposition to communism, Jordan might seem to have been an ideal candidate for the conservative atmosphere in the early Federal Republic, which was still rebuilding from the war. In the West, many former Nazis were quickly reinstated in professorial positions, unless they were fanatics. (And even many of the most fanatical Nazis—excepting, of course, those who were executed by the Allies in the immediate postwar—eventually got their jobs back by the early 1950s.<sup>79</sup>) But the ever-present financial issues in postwar Germany and his relative isolation in the field—again, likely in part due to his stutter—along with Jordan’s past as a Party member made his employment no easy task. In this respect, Jordan was “unlucky” in comparison with his colleagues who had held positions in the West before 1945. With the dissolution of two historic German universities, Breslau and Königsberg (along with *Technische Hochschulen* in Danzig and Breslau), along with the steady stream of professors fleeing from the Soviet occupation zone, there were hundreds of unemployed *Dozenten* searching for work.<sup>80</sup> Had Jordan been employed at a

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<sup>78</sup> The classic study remains Lutz Niethammer, *Die Mitläuferfabrik: Die Entnazifizierung am Beispiel Bayerns* (Berlin: Dietz, 1982).

<sup>79</sup> On the various amnesties of former Nazis, see Norbert Frei, *Vergangenheitspolitik: die Anfänge der Bundesrepublik und die NS-Vergangenheit* (C. H. Beck, 1996).

<sup>80</sup> A list of university professors without appointments living in the British zone, dating from July 20, 1946, extends to eighteen pages, and lists hundreds of unemployed professors from all academic fields (106 in the natural sciences alone)—and this was only in the British occupation zone. See HUA, Rektorat (nach 1945), 17/2, Bl. 246-254.

university in the Western zones prior to 1945, there is a good chance he would simply have kept his position.

As he noted in his letter to Meyer-Abich, Jordan—ever the elitist—hoped at first that because of his scientific renown, he would be “deservedly handled as a special case” by the occupiers when it came to denazification.<sup>81</sup> Yet these early hopes of help from the Anglo-American upper crust proved unfounded. It first seemed that Jordan’s best option in the West was in Göttingen, and that he might find quick employment there in 1946 with either the university or—more likely—the Göttingen Academy of Sciences. (The academy was likely seen by German colleagues as more plausible because it would not involve classroom instruction—the occupying authorities were wary of former Nazis instructing the youth.) Yet plans for this “unusually comfortable and honorable” position in Göttingen fell through due to lack of funds, as Jordan informed biophysicist Adolf Butenandt in April 1946.<sup>82</sup> Nevertheless it was in Göttingen, with theoretical physicist Richard Becker as a witness, that Jordan filled out his first *Fragebogen* for the military government.<sup>83</sup> Similar feelers extended to the newly-founded Academy of Sciences in Mainz fizzled out as well.<sup>84</sup>

As his unemployment dragged on and his situation became more dire, Jordan bombarded colleagues in his personal network with obsequious letters asking what to do: “It is not the purpose of these lines to ask you for a special effort [on my part],” Jordan wrote to Butenandt in April 1946. “But perhaps it so happens that the situation is such that you would have some advice for me as

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<sup>81</sup> Jordan to Meyer-Abich, January 2, 1946, NAMA, Ba 1.

<sup>82</sup> Jordan to Adolf Butenandt, April 2, 1946, NAB, Nr. 2861.

<sup>83</sup> See page 12 of Jordan’s *Fragebogen*, dated November 11, 1946, StaH, 221-11, 68600 KAT. On Jordan’s potential employment in Göttingen see Rammer, “Die Nazifizierung und Entnazifizierung,” 118–19; Hoffmann, “Der gute Nazi,” 156.

<sup>84</sup> Jordan to Helmuth Scheel, October 26, 1949, AWLM, Personalakten Pascual Jordan, Bd. 1, Bl. 3-4.

soon as you only knew that I would be receptive (and grateful) for it.”<sup>85</sup> (Butenandt shut down this feeler quickly: though he and his colleagues in Tübingen had “obviously spoken often of [Jordan],” they did not need anyone to teach theoretical physics.<sup>86</sup>) For someone who had struggled from the start to find a place in the field and in German academia, the realization that his colleagues did not see him as particularly special or worthy of looking after must have been a humbling and frustrating experience for Jordan.

It seemed in early 1947 that Jordan would end up in Freiburg, where Jordan had attempted to work his connections for special treatment with the local French occupying authorities. In Freiburg, experimental physicist Wolfgang Gentner (1906–1980) had established good relations with the French occupation authorities. Gentner, a fluent French speaker, had spent part of the war in Paris working with famous French physicist Frédéric Joliot-Curie. He was known as an opponent of the Nazis, and quickly emerged as a leader in reconstruction in Freiburg.<sup>87</sup> Gentner wished to bring Jordan to Freiburg, and at first hoped to personally discuss Jordan’s case with Joliot-Curie in Paris, thereby entirely avoiding a public denazification procedure. Clearly, Gentner was worried about potential public blowback.<sup>88</sup> When this proved impossible, wishing to “avoid a more or less public trial” of Jordan, Gentner’s solution was to use more local connections: “I know the chair of the [state denazification] committee well personally and could discuss the matter with him beforehand. If he is of the opinion that we cannot count on the approval of the committee, I would not even submit the case to trial, to avoid a rejection that could easily hurt you.”<sup>89</sup>

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<sup>85</sup> Jordan to Butenandt, April 2, 1946, NAB, Nr. 2861.

<sup>86</sup> Butenandt to Jordan, May 25, 1946, NAB, Nr. 2861.

<sup>87</sup> Dieter Hoffmann and Ulrich Schmidt-Rohr, “Wolfgang Gentner: Ein Physiker als Naturalist,” in *Wolfgang Gentner: Festschrift zum 100. Geburtstag*, ed. Dieter Hoffmann and Ulrich Schmidt-Rohr (Berlin: Springer-Verlag, 2006), 23–25.

<sup>88</sup> Wolfgang Gentner to Jordan, August 20, 1946, NWG, Nr. 4.1.

<sup>89</sup> Wolfgang Gentner to Jordan, November 11, 1946, NWG, Nr. 4.1.

Such a statement from a known opponent to Nazism is quite revealing. Gentner saw the denazification proceedings solely as a hurdle that needed to be cleared, and actually sought to protect Jordan from possible reputational damage. He personally pushed for Jordan's case to be quickly approved, and at no point expressed any concerns about Jordan's political activities during the Third Reich. Some are surprised that Gentner, who dissented from Nazism during the Third Reich, was so willing to help an ex-Nazi like Jordan.<sup>90</sup> But all available evidence suggests that Gentner saw Jordan as someone who had fundamentally been on the same side as him during the battles with *deutsche Physik* in the 1930s and 1940s. It suggests that Gentner did not think of Jordan as a "Nazi" or as someone who needed to be punished for his actions under Hitler. In the immediate aftermath of the war, the meaning of the word "Nazi" in the German physics community carried a far different connotation: one who supported *deutsche Physik*. In the end, the Freiburg authorities were apparently willing to give Jordan a post, but Gentner worried that the pay was too low, and by the time the offer was ready Jordan had accepted a position in Hamburg.<sup>91</sup> Gentner viewed this turn of events as unfortunate, writing to a colleague that he was "very sorry" that they did not manage to recruit Jordan, for "I was already very excited to cultivate an active circle of physicists together with him..."<sup>92</sup>

### Settling in Hamburg

It was natural that Jordan would reach out to his connections at the University of Hamburg, as, aside from Göttingen, it was the only university located in the three Western occupation zones where Jordan had spent time before the war. (As noted in the Introduction, Jordan served as an

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<sup>90</sup> Hoffmann and Schmidt-Rohr, "Wolfgang Gentner: Ein Physiker als Naturalist," 26.

<sup>91</sup> Gentner to Michael Schön, March 3, 1947, NWG, Nr. 4.2.

<sup>92</sup> Gentner to Michael Schön, April 18, 1947, NWG, Nr. 4.2.

*Assistant* to theoretical physicist Wilhelm Lenz in Hamburg from summer 1928 until assuming his professorship in Rostock in fall 1929.) Jordan had enjoyed his time in Hamburg in the late 1920s, and left Hamburg for Rostock only reluctantly, after an attempt to secure a permanent position there failed. A chance at a prestigious post in a large city thus surely must have appealed to Jordan. Moreover, Jordan's old boss from the 1920s, theoretical physicist Wilhelm Lenz, remained a professor in Hamburg after being quickly reinstated by British occupation authorities; there was an obvious connection for Jordan to use.<sup>93</sup>

And it was indeed Lenz who proposed bringing Jordan to Hamburg, after Jordan gave a lecture there in mid-1946. “[P]rivate reconnaissance has revealed that the possibility exists to draw this outstanding scholar to Hamburg for a few years as a guest professor,” wrote Lenz to the University rector, remarking that the faculty agreed that Hamburg “should not let this unusual situation [i.e. Jordan's unemployment] pass by unused.” In other words, Jordan must have spoken to Lenz when he visited (the “private reconnaissance,” presumably), mentioning that he was looking for a position and eager to return to Hamburg.<sup>94</sup> As one of the “most eminent theoretical physicists of the present,” Lenz argued that Jordan would benefit the intellectual atmosphere in Hamburg immensely, noting that Jordan was “indisputably...the most important advocate for theoretical biophysics of today.”<sup>95</sup> Lenz also emphasized Jordan's ability to speak to a broader audience, one

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<sup>93</sup> Lenz was deemed “by nature completely unpolitical” by the British. “His entrance into the Party was a giving way to repeated pressure,” the judged. Quoted in Monika Renneberg, “Die Physik und die physikalischen Institute an der Hamburger Universität im ‘Dritten Reich,’” in *Hochschulalltag im ‘Dritten Reich’: Die Hamburger Universität 1933-1945*, ed. Eckart Krause, Ludwig Huber, and Holger Fischer (Berlin: Dietrich Reimer Verlag, 1991), 1112. For more on Lenz, whose career deserves closer examination, see Karin Reich, “Der erste Professor für Theoretische Physik an der Universität Hamburg: Wilhelm Lenz,” in *Mathematics Meets Physics: A Contribution to their Interaction in the 19th and the First Half of the 20th Century* (Frankfurt: Verlag Harri Deutsch, 2011), 89–144.

<sup>94</sup> Lenz to Emil Wolff (Rector, University of Hamburg), August 6, 1946, StaH, 361-6, IV 2076, Folder 3.

<sup>95</sup> Lenz to Emil Wolff (Rector, University of Hamburg), August 6, 1946, StaH, 361-6, IV 2076, Folder 3.

which would pack lecture halls, a talent very much prized by university administrators at the time: “...Herr Jordan has the gift of a lively lecture that can hold a large auditorium under a spell...even though he cannot quite suppress a certain speech defect.” (Note again, though, that the stutter was clearly a mark against Jordan that needed explanation.)

The one obvious sticking point was Jordan’s membership in the NSDAP and his actions during the Third Reich. (Without this “minor” snag, of course, Jordan would have already had a position in the Western zones.) What Lenz had to say on this is highly instructive, for it presaged what was to come in Jordan’s denazification proceeding:

According to my information, it is to be expected that the military government will not object to his “*Fragebogen*.”

[...]

He admittedly joined the Party and the SA relatively early, without assuming any offices over time; on the other hand, the Lenard group [i.e. *deutsche Physik*] always gave him difficulties with his book publications because of his natural advocacy for Einstein’s great achievements.<sup>96</sup>

With support from the rector and the Hamburg senator for education, Heinrich Landahl, all that was required was the approval of the military government.<sup>97</sup> Jordan was to fill out the famous *Fragebogen* in duplicate, as per the norm: one copy in English, and one in German.<sup>98</sup> Contrary to some sources, Jordan was not officially “denazified” when hired in 1947—his proceeding would drag on until 1949.<sup>99</sup> Instead, he received preliminary approval on March 22, 1947, as the British

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<sup>96</sup> Lenz to Emil Wolff [Rector of University of Hamburg], August 6, 1946, StaH, 361-6, IV 2076, Folder 3.

<sup>97</sup> Hans von Heppe (Adviser [*Referent*], Hamburg School Administration) to Wilhelm Lenz, September 6, 1946, StaH, 361-6, IV 2076, Folder 3.

<sup>98</sup> Both copies, dated November 11, 1946, survive; the English copy is in Jordan’s personnel file in the Hamburg State Archives, StaH, 361-6, IV 2076, Folder 2, while the German copy is in Jordan’s denazification file, StaH, 221-11, 68600 KAT. The witness of Jordan’s *Fragebogen* was his fellow theoretical physicist Richard Becker, professor in Göttingen.

<sup>99</sup> See for example Beyler, “From Positivism to Organicism,” 37.

occupying authorities noted that there were “no grounds for suspicion” and that Jordan would “remain in his appointment unless instructions are received to the contrary.”<sup>100</sup>

Here a brief explanation of the process of formal, legal denazification is necessary. (Even the word “denazification” seems on its face to be a paradoxical concept. What does it mean, after all, to “denazify” someone or something?) Perhaps the only subject the Western Allies and the Soviet Union could agree on after the war was that the Nazi Party needed to be permanently banned, its ideals prevented from ever returning. But with membership in the NSDAP numbering almost 8 million by 1945, it was obvious to all that such a large group of Germans could not simply be permanently excluded from society. A method needed to be devised to sort out the truly irredeemable Nazis—who needed to be harshly punished—from the “petty Nazis,” who could potentially be rehabilitated. All Nazi Party members and many non-members were required to fill out the *Fragebogen*, or questionnaire, mentioned above; though the questionnaire differed in each occupation zone. Based on the answers given, along with other testimony received, a person could be classified into one of five categories:

- I. Major Offenders (*Hauptschuldige*), potentially punished by death or long prison terms.
- II. Offenders (*Belastete*): Activists, Militarists, and Profiteers, also punishable by prison.
- III. Lesser Offenders (*Minderbelastete*), who were to be given probation.
- IV. Fellow-Travelers (*Mitläufer*), who could face fines or potential restrictions on travel.
- V. Exonerated (*Unbelastet*), who faced no punishment.<sup>101</sup>

These denazification hearings were completely separate from the famous trials of war criminals at Nuremberg or other postwar tribunals for war crimes. At first, they were run by the occupiers themselves, but overwhelmed by the volume of people to be considered, the military authorities quickly began to employ exonerated or minimally implicated German judges on the panels that

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<sup>100</sup> Jones?, “Report on Satisfactory Preliminary Investigations,” dated March 22, 1947, StaH, 361-6, IV 2076, Folder 3.

<sup>101</sup> Allied Control Council Directive No. 38, October 12, 1946.



considered these cases. These hastily arranged court-like tribunals became known as *Spruchkammer* (literally “verdict chamber”). They heard the majority of cases, including Jordan’s. In the *Spruchkammer* hearings, in contrast to normal court proceedings, a person was assumed guilty until proven innocent, which induced people to submit affidavits attesting to their innocence or their resistance to the regime. These documents became known as *Persilscheine* (literally “whitewash bills”) after a common brand of German laundry detergent, and they were ubiquitous in the Western zones.

Jordan probably received easy approval because he had connections with two of the three members of the *Spruchkammer*, or in the terminology of the British occupiers, the “Advisory Board” assigned to evaluate his case. The panel was composed of members of the Hamburg university’s faculty, and the first member was the rector Emil Wolff, the very same person who “urgently endorsed” Lenz’s proposal for bringing Jordan on as a guest professor. Another member was mathematician Hans Zassenhaus, who had been one of Jordan’s friends and scientific collaborators in Berlin at the end of the war.<sup>102</sup> Needless to say, this three-man panel was surely not going to report to the British occupiers that Jordan was unemployable as a former Nazi.<sup>103</sup> The Advisory Board’s recommendation on the “Fragebogen Action Sheet” provided to the British makes clear that Jordan knew his audience. *Deutsche Physik* was to blame for Nazism in science, not those physicists who, like Jordan, had defended modern physics. They also claimed that Jordan had “refused” to work on the V-2 rocket:

Professor P. JORDAN has entered the Party and the SA in 1933 and has become Rottenführer in the SA. There seems to be no doubt that he has made considerable concessions to the Nazi spirit in some of his publications. To reach a just appreciation of

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<sup>102</sup> On Jordan and Zassenhaus, see Jordan to Heisenberg, January 28, 1945, NPJ, Nr. 1141, Bl. 2v.

<sup>103</sup> The third member of the Advisory Board was the botanist Gustav Bredemann. See “Report of Advisory Board,” Fragebogen Action Sheet, dated January 30, 1947, StaH, 221-11, 68600 KAT.

Professor Jordan's general attitude it is necessary to examine his underlying motives. It appears from a number of reliable statements that his compromise with National Socialism was mainly a consequence of his endeavors to protect and defend German Theoretical Physics against the dangerous ideological and antisemitic [sic] attacks of the so called "German Physicists"... There are besides mentioned several facts in those enclosed statements that show that he has not really sympathized with National Socialism. It is important that he has refused to work at the V 2 [sic]. In general his attitude during the war was very reserved. Apparently he was considered by reliable opponents of the System as trustworthy. He certainly was not trusted by the National Socialists and his scientific rank has not been acknowledged by a call to an important chair before 1944.

After careful consideration the Advisory Board has come to the conclusion that in spite of evident objections resulting from the compromising attitude of Professor Jordan his approval can be supported if the scientific motives of his conduct are understood and appreciated.<sup>104</sup>

Because the argument that Jordan "refused" to work on the V-2 (or the atomic project) became so crucial in his denazification, it is important to note here that it was a blatant lie. While Jordan never joined the nuclear project, this was not for lack of interest. At one point in 1943, it seemed that he would end up working with the "uranium club," and he seemed very interested in doing so.<sup>105</sup> That he never worked on the project likely had more to do with the fact that he and Werner Heisenberg, who led the project, had an uneasy relationship. And regarding the rocket project, Jordan was stationed at the rocket research base in Peenemünde (led by Wernher von Braun) from January to August 1943. It seems that he was assigned not to the infamous V-2, but to a different rocket project that was also being developed, an anti-aircraft missile codenamed "Waterfall." Yet this was not because of any moral stand—he was simply assigned to that project arbitrarily.

Based on this report from the Advisory Board, very sympathetic to Jordan's case, Jordan might well then have been completely exonerated in 1947. It seems the reason this did not happen was due to an article published that November by a young physics student named Ursula Martius (who

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<sup>104</sup> "Report of Advisory Board," Fragebogen Action Sheet, dated January 30, 1947, StaH, 221-11, 68600 KAT.

<sup>105</sup> Jordan to Heisenberg, undated (likely August 1943), NWH, Nr. 1968/3.

later emigrated to Canada and became widely known under her married name, Ursula Franklin), that lamented the lack of proper denazification in physics. Former Nazis remained in the field, Martius wrote, but they were now wearing fancy blue suits instead of the Party uniform and badge. Among those Martius named was Jordan, noting that blatantly pro-Nazi passages—i.e. “not every nation is gifted a man [i.e. Hitler] with the force of a volcano”—were quietly struck out of new editions of his books.<sup>106</sup> As Martius concluded, “Those who can creatively pursue the subtlest questions of modern science cannot excuse themselves [by saying] ‘I did not know.’”<sup>107</sup> Someone must have forwarded the denazification authorities a copy of this article; or perhaps the British authorities stumbled upon it themselves. In any case, Martius’s article appeared in print six months after the March 1947 decision to preliminarily approve Jordan, as the ultimate decision on his classification was still pending, and it was probably the reason why on June 15, 1948, Jordan was finally placed in Category IV as a fellow-traveler.<sup>108</sup>

### **The Appeal and the *Persilscheine***

Almost immediately, Jordan decided to appeal his “categorization” as a fellow-traveler.<sup>109</sup> Though he was not to be assessed any fines, his property would not be confiscated, and he would not have any employment restrictions, Jordan was evidently worried about not being able to travel outside Germany.<sup>110</sup> As was typical in these “categorization” appeals in the *Spruchkammer*, Jordan

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<sup>106</sup> For this passage in original, see Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941, 108.

<sup>107</sup> Ursula Maria Martius, “Videant consules...,” *Deutsche Rundschau* 70, no. 11 (November 1947): 99–102. Excerpts from Martius’s article are located in Jordan’s denazification file, StaH, 221-11, 68600 KAT.

<sup>108</sup> “Action taken,” Fragebogen Action Sheet, dated June 15, 1948, StaH, 221-11, 68600 KAT. See also Jordan’s “Preliminary Notification about Categorization,” dated June 17, 1948, StaH, 221-11, 68600 KAT.

<sup>109</sup> Jordan appealed on July 20, 1948, four days after receiving the notification about his preliminary categorization. See Zustellungsurkunde, July 16, 1948, and Jordan to Vorsitzenden des F.A. Nr. 6A..., “Benachrichtigung über Berufung,” July 20, 1948, StaH, 221-11, 68600 KAT.

<sup>110</sup> For Jordan’s potential punishment (or lack thereof), see “Preliminary Notification about Categorization,” dated June 17, 1948, StaH, 221-11, 68600 KAT. About traveling abroad, see Jordan to Max Born, July 23, 1948, NMB, Nr. 353. Travel restrictions were listed as a potential punishment for *Mitläufer* in the initial

chose to employ a lawyer to represent him. (The initial 1946 *Fragebogen* was submitted solely by Jordan, without legal representation.) Far more atypical was the story of Jordan's lawyer, Herbert Walter Samuel. Amazingly, he himself was half-Jewish and had been persecuted by the Nazis; toward the end of the war, Samuel was forcibly conscripted into a labor battalion ("Sonderkommando J") assigned to particularly dangerous work clearing rubble or unexploded ordinance.<sup>111</sup> That a victim of National Socialism would choose to represent an ex-Nazi at his denazification hearings is certainly peculiar. According to Jordan, Samuel himself assured him that in the "current circumstances," i.e. the general handling of denazification trials in the Western zones, it was "grotesque" that Jordan had been classified in Category IV as a *Mitläufer* instead of being simply exonerated.<sup>112</sup> Given this information, perhaps Jordan convinced Samuel that his case was special, or that he was innocent; or perhaps Samuel simply needed work in those immediate postwar years.

In any case, Jordan chose his lawyer wisely, for the eight-page "grounds for appeal" Samuel sent on August 24, 1948 to the Central Office for Appeals Committees (*Zentralstelle für Berufungsausschüsse*) was a masterpiece of its craft. Samuel knew how to speak the strange language of denazification, making an apparently convincing case that Jordan had joined the Nazi Party "as an emergency measure of a certain cunning"; it was a means "to take the political lead of the fight to be waged scientifically... [I]t gave him a platform from which he could carry out his scientific battle

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description of the five categories, see Allied Control Council Directive No. 38, Article XI, issued October 12, 1946.

<sup>111</sup> Samuel, classified as a "Mischling" under the Nuremberg Laws, was forcibly conscripted into a "Sonderkommando J," which cleared rubble and carried out rescue operations in extremely dangerous conditions in wartime Hamburg. Remarkably, Samuel remained in Germany after the war, was one of the cofounders of the Free Democratic Party (FDP) in Hamburg in 1945, and later served in the city-state's parliament. His father, though, did not survive the war, committing suicide in March 1943 after years of persecution. See Susanne Rosendahl, "Walter Ludwig Samuel \*1875," *Stolpersteine in Hamburg*, July 2015, [http://www.stolpersteine-hamburg.de/?MAIN\\_ID=7&BIO\\_ID=4977](http://www.stolpersteine-hamburg.de/?MAIN_ID=7&BIO_ID=4977).

<sup>112</sup> Jordan to Max Born, July 23, 1948, NMB, Nr. 353.

relentlessly.”<sup>113</sup> “[V]iewed objectively,” wrote Samuel, Jordan’s membership in the NSDAP “was very valuable for German science in the anti-fascist sense, because of the good use he made of it [to help science]... [B]ecause of his membership in the NSDAP, he could help foil the attainment of Nazi goals.”<sup>114</sup> Jordan, wrote Samuel, could not have accomplished any of this if he had not “grasped the ruse of formally acquiring party membership with all its associated necessary obligations.”<sup>115</sup> Of course, like Jordan’s 1945 letter to Bohr, this document was replete with lies of omission and misconstrued facts. But Samuel knew how to speak the language of denazification, telling the committee what it wanted to hear: that Jordan had fought Nazism in science.

Attached to Samuel’s appeal plea for Jordan were at first twelve—and ultimately fourteen—affidavits in support of the appeal. (Much of Samuel’s appeal itself was a narrative constructed with the provided testimonials.) Eight of Jordan’s *Persilscheine* came from colleagues in physics. The other six testimonials were from a varied group: two came from friends in the Baltic Brotherhood, two came from students who had attended Jordan’s lectures, one came from the uncle of a student who had attended the University of Rostock, and the final came from educational reformer Gustav Wyneken.<sup>116</sup> Jordan personally solicited the majority of the affidavits, providing some colleagues

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<sup>113</sup> Herbert Walter Samuel to the Zentralstelle für Berufungsausschüsse, “Berufungsbegründung in Sachen des Professors Dr. Pascual Jordan,” August 24, 1948, p. 4–5, StaH, 221-11, 68600 KAT.

<sup>114</sup> Samuel here was quoting the affidavit from Wilhelm Westphal. See Herbert Walter Samuel to the Zentralstelle für Berufungsausschüsse, “Berufungsbegründung in Sachen des Professors Dr. Pascual Jordan,” August 24, 1948, p. 5, StaH, 221-11, 68600 KAT, as well as Westphal, “Betr. Prof. Dr. Pascual Jordan,” undated (likely summer 1948), StaH, 221-11, 68600 KAT.

<sup>115</sup> Herbert Walter Samuel to the Zentralstelle für Berufungsausschüsse, “Berufungsbegründung in Sachen des Professors Dr. Pascual Jordan,” August 24, 1948, p. 6, StaH, 221-11, 68600 KAT.

<sup>116</sup> Attachments 3 through 17 of Jordan’s denazification appeal, StaH, 221-11, 68600 KAT.

with his “political CV,”<sup>117</sup> and even edited drafts of some of the *Persilscheine* to fit the narrative he was constructing.<sup>118</sup>

The *Persilscheine* from Jordan’s colleagues in physics are deeply reflective of the phenomenon described at length by Klaus Hentschel in his work on the mentality of German physicists in the immediate postwar period.<sup>119</sup> As Hentschel describes, during the war’s aftermath, any public or private opposition to *deutsche Physik* and any support of relativity theory and quantum mechanics during the Third Reich was depicted as heroic resistance to Nazism.<sup>120</sup> (Hence the emphasis on science in Samuel’s narrative.) This was despite the fact that, as has been shown by historians and as was discussed in Chapters 2 and 3, those who supported *deutsche Physik* were largely defeated by 1941 or 1942; *deutsche Physik* had nothing to offer the Nazis but ideology, while modern physicists could provide technological advancements that were helpful on the battlefield. Moreover, as should be plainly obvious, support of modern physics and modern science did not necessarily equate to opposing all or even some aspects of Nazism or German nationalism. Under the paradigm introduced by Ian Kershaw, most physicists probably fell into the category of “dissenters,” who opposed the introduction of ideology into science; some who spoke out against *deutsche Physik* perhaps qualified as members of the “opposition” (crucially, this does not mean that they disagreed with other aims of the regime and may have in fact supported many); but very few physicists or

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<sup>117</sup> For the “political CV,” see Jordan to Max Born, July 23, 1948, NMB, Nr. 353. This same document was submitted as the first piece of evidence in support of the denazification appeal. See Jordan, “Politischer Lebenslauf,” undated (likely summer 1948), StaH, 221-11, 68600 KAT.

<sup>118</sup> Jordan personally revised the affidavit he requested from Harald von Rautenfeld, one of his Baltic German friends, striking a passage that read “...it was intolerable [*unerträglich*] for him as a German to leave his Fatherland and he thought he could not answer for a further crumbling of scientific ability.” See Jordan to Harald von Rautenfeld, August 17, 1948, BB, 009.

<sup>119</sup> Klaus Hentschel, *The Mental Aftermath: The Mentality of German Physicists, 1945-1949*, trans. Ann M. Hentschel (New York: Oxford University Press, 2007), especially 91–99.

<sup>120</sup> This happened particularly in the Western zones but to an extent in the Soviet occupation zone as well—take note of how Rompe’s letter in support of Jordan noted his opposition to *deutsche Physik*.

scientists were members of any “resistance” as defined by Kershaw, namely, underground groups that took active, concrete measures to attack the regime.<sup>121</sup> (One notable example of resistance in science was that of chemist Robert Havemann.<sup>122</sup>)

Nevertheless, portraying support for modern physics as an act of brave resistance to the regime quickly became commonplace.<sup>123</sup> It proved convenient for two reasons: first, it allowed the blame for anti-Semitic measures in physics to fall solely upon the small group who supported *deutsche Physik*, who had been outcasts in the field even during the Third Reich. In this way mainstream German physicists could ostracize the remaining members of *deutsche Physik*—a small group who had been widely despised from the start—while all other physicists could resume their careers undisturbed, without the taint of Nazism. Second, it made it simple for physicists to easily provide *Persilscheine* for one another—all one had to do was attest that a colleague had opposed *deutsche Physik*, and the deed was done. Under this fallacious schema, Jordan’s actions could be portrayed as heroic resistance: he had been a fierce opponent of *deutsche Physik*, the “Lenard-Stark clique,” and Hugo Dingler; because Jordan had opposed these fanatics, it was clear that he was not a Nazi. In fact, Jordan’s strong opposition to the group he had once derided as “scientific gangsters” meant that he was really a member of the scientific and intellectual resistance to Nazism. (Needless to say, as Hentschel notes, this black and white identification of *deutsche Physik* with Nazism and “modern physics” with resistance ignored all the subtleties of physics under Hitler.)

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<sup>121</sup> For this classic formation, see Kershaw, *Popular Opinion and Political Dissent in the Third Reich*, 2–4. See also Kershaw, *The Nazi Dictatorship*.

<sup>122</sup> On Havemann, see Dieter Hoffmann, “Robert Havemann: Antifascist, Communist, Dissident,” in *Science under Socialism: East Germany in Comparative Perspective*, ed. Kristie Macrakis and Dieter Hoffmann (Cambridge, Mass.: Harvard University Press, 1999), 269–85.

<sup>123</sup> It is unclear how German physicists managed to settle on this binary so quickly. Perhaps it was because *deutsche Physik* was well known in the Anglophone world prior to the war, where its prewar successes had been exaggerated; the Nazi hatred of Einstein was also common knowledge. News of the wartime defeats suffered by *deutsche Physik* did not arrive until historians began to examine the episode.

So it is not surprising to see that Werner Heisenberg described Jordan as being part of a group of physicists who joined the party to protect science with the knowledge that they needed to “naturally accept occasional concessions to party doctrine.” According to Heisenberg, physicists could, in part, thank Jordan for the fact that the attacks from *deutsche Physik* were defeated under Nazism.<sup>124</sup> (One of the members of the denazification committee even highlighted the former passage, demonstrating its effectiveness in the postwar atmosphere.) Biophysicist Michael Schön echoed this portrayal, describing Jordan’s “fight against [the party’s] anti-scientific attitude.”<sup>125</sup> Theoretical physicist Fritz Houtermans claimed Jordan joined the Nazis so as to “gain contact with such circles in the party who stood far from the radically anti-scientific tendencies” of *deutsche Physik*, in order to fight the movement, which would have been “hopeless” from outside.<sup>126</sup> Another colleague, Walter Weizel, described Jordan as largely apathetic to questions of politics, making his “fanatical fight” against *deutsche Physik* “all the more violent.”<sup>127</sup> (Jordan accurately noted on the *Persilschein* that Weizel had joined the left-leaning Social Democratic Party and was serving as a representative in the Bonn city council.)

Many of these *Persilscheine* from Jordan’s colleagues in physics described personal conversations with Jordan during the Third Reich that were defeatist in nature, or claimed that Jordan was a member of certain circles in science that opposed Nazism.<sup>128</sup> As theoretical physicist Hans Jensen wrote, “In the circles of decided Nazi opponents among the Hamburg and Berlin

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<sup>124</sup> Werner Heisenberg, “Zur Frage der politischen Beurteilung von Herrn Professor Dr. Pascual Jordan...,” October 21, 1946, StaH, 221-11, 68600 KAT. Emphasis in original.

<sup>125</sup> Michael Schön, “Erklärung,” August 3, 1948, StaH, 221-11, 68600 KAT.

<sup>126</sup> Fritz Houtermans, “Ich versichere hiermit an Eides statt das Folgende...” undated (likely 1946), StaH, 221-11, 68600 KAT.

<sup>127</sup> Walter Weizel, “Betr. Prof. Pascual Jordan,” August 12, 1948, StaH, 221-11, 68600 KAT.

<sup>128</sup> See for example Hans Jensen and Michael Schön’s testimonials, J. Hans D. Jensen, “Erklärung,” October 6, 1946 and Michael Schön, “Erklärung,” August 3, 1948, both in StaH, 221-11, 68600 KAT.



physicists, to which I belonged and which, under the situation then almost had a conspiratorial character, Jordan always enjoyed complete trust despite his formal ties to the party; he often participated when we discussed the [political] situation.”<sup>129</sup> It is impossible to judge the accuracy of these statements. One thing, however, seems clear: Jordan almost certainly never shared his political opinions with his colleagues. The “Domeier” pseudonym must have remained a mystery to them.

The affidavits from Jordan’s colleagues in physics were supplemented by a set of testimonials from various people in other areas of Jordan’s life, intended to show that even outside physics, Jordan never had any sympathy for Nazism. One of these was theologian Hagen Staack, who studied religion at Rostock in the 1930s. Staack noted that “in our circles...of illegally assembling anti-Nazi students, [Jordan] was considered one of our strongest supporters,” because he “cleverly and wisely” maintained the tradition of the “upright German scholar with high scientific merit.”<sup>130</sup> One farmer, named Hardenack von Viereck, wrote on behalf of his nephew, who had been killed during the war; his nephew had apparently informed him that Jordan “stood as far as imaginable from the ‘philosophy’ [*Gedankengut*] of Nazism.”<sup>131</sup> Harald von Rautenfeld, one of Jordan’s Baltic German friends from the Baltic Brotherhood, termed Jordan’s place within the Party as an “obvious fighting position” which he assumed as a “convinced Christian” in an attempt “to preserve freedom of research to a degree.”<sup>132</sup>

Jordan’s bona fides now clearly established, Samuel brought down the hammer at the end of his appeals document. Demonstrative as it is of the emerging Cold War context in which Jordan’s appeal was held, this passage is worthy of quotation at length:

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<sup>129</sup> J. Hans D. Jensen, “Erklärung,” October 6, 1946, StaH, 221-11, 68600 KAT.

<sup>130</sup> Hagen Staack, “Betr. Professor Dr. Pascual *Jordan*,” August 2, 1948, StaH, 221-11, 68600 KAT.

<sup>131</sup> Hardenack von Viereck, “Eidesstattliche Erklärung,” July 25, 1948, StaH, 221-11, 68600 KAT.

<sup>132</sup> Harald von Rautenfeld, “Erklärung,” August 20, 1948, StaH, 221-11, 68600 KAT.

Finally, it should be noted that Herr Professor Pascual Jordan has received a very honorable appointment from the *Deutsche Akademie* in Berlin, which is in the Soviet sector...

An American governmental office has offered Herr Professor Pascual Jordan an initial six month contract in Washington with prospect of a subsequent long-term contract along with granting American citizenship for him and his family.

If the United Nations brush aside [*hinweggeben*] the formal membership of Herr Professor Pascual Jordan in the NSDAP in this way, should we Germans, who benefited from the successes of his self-sacrificial struggle, judge him more severely?<sup>133</sup>

In other words, if the Americans and the Russians both wanted Jordan, how could he not be welcome in West Germany?

It took the appeals committee took half a year consider to Jordan's case. During the intervening time, in February 1949, Samuel appended two final documents to Jordan's file, which both deserve a close look. The first, a *Persilschein* from the medical student Albert Suhr (1920-1996), was perhaps the most important *Persilschein* Jordan received. Sent to the appeals committee almost six months after the initial appeal was filed, on February 2, 1949, Suhr's declaration, which was "provided...on his own initiative [i.e. it was not solicited by Jordan]," as Samuel wrote, "deserve[d] special attention, because Mr. Suhr was a political prisoner for two years and was even awaiting the execution of his death sentence [at war's end]."<sup>134</sup> Samuel's comments were a reference to the guidelines for the denazification tribunals, in which statements from victims of Nazi terror were considered to carry special weight.

Indeed, Suhr had been a member of a local student resistance group in Hamburg inspired by the famous Munich *White Rose* group, was arrested by the Gestapo in September 1943, and spent the

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<sup>133</sup> Samuel to the Zentralstelle für Berufungsausschüsse, "Berufungsbegründung in Sachen des Professors Dr. Pascual Jordan," August 24, 1948, p. 8, StaH, 221-11, 68600 KAT. I include here the correction of a typographical error that Samuel noted two days later, see Samuel to the Zentralstelle für Berufungsausschüsse, August 26, 1948, StaH, 221-11, 68600 KAT.

<sup>134</sup> Samuel to the Zentralstelle für Berufungsausschüsse, February 2, 1949, StaH, 221-11, 68600 KAT.

rest of the war as a political prisoner.<sup>135</sup> As he noted in his letter, Suhr had not known Jordan during the Nazi period, and indeed had met him only in 1946 when attending his lectures in Hamburg as a student. Yet Jordan's conduct in the postwar lecture hall was enough, for Suhr, to demonstrate his anti-Nazi bona fides:

In person Herr Prof. Jordan represents the opposite picture of a militarist or a Nazi. In his descriptions, his comparisons with reality, one wins from him the absolute picture of a truly humanistic scholar, who at that is one of the few people that are going a new way in Germany, and who transmit a new foundation to the academic youth in a time after the war when they are far less endangered by the remnants of National Socialism than from nihilism. In contrast to nationalism, his lectures lead the way for a purpose that is human and humane...they provide a contribution to the best and most valuable German tradition, the humanistic, the intrinsically German tradition of our universities...

In Herr Prof. Jordan, I never managed to discover any of the traits that stand close to the intrinsic sentiments of Nazism or militarism, and that mainly are connected with an attitude toward humanity that one originally—not unfoundedly—labeled “reactionary.”<sup>136</sup>

Whether or not Suhr's comments were truly provided to Jordan unsolicited—one wonders why Suhr would write such an extensive *Persilschein* without prompting—they would have been extremely valuable to Jordan in making his case, as noted above. Moreover, they demonstrate that Jordan was aware that even his conduct in the lecture hall would be used to judge his “democratic” convictions in the new political climate.

The second document—the fifteenth piece of evidence submitted in support of his appeal—was perhaps less helpful to Jordan than Suhr's, but even more revealing about the general situation at the time. It was an excerpt from a January 1949 letter to Jordan from his old teacher Max Born, who heaped praise on Jordan's cosmological works, noted that they were unappreciated in the

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<sup>135</sup> Suhr was a member of the student group that has come to be known as the *Hamburg White Rose*, which was inspired by the famous *White Rose* group led by Sophie Scholl in Munich. Suhr's group illegally distributed some of the same anti-war material printed by the Munich group. He was sentenced to appear in front of the infamous *Volksgerichtshof*—an instrument of Nazi terror—on April 19, 1945, but had already been freed by American troops on April 12 from a prison in the northern German town of Stendal.

<sup>136</sup> Testimonial from Albert Suhr, dated January 27, 1949, StaH, 221-11, 68600 KAT.

United Kingdom and offered to find a translator for one of Jordan's essays so that it could be published in English in *Nature*.<sup>137</sup> Born, whose generosity was legendary, even "gladly" offered to supervise the translation and to deal with *Nature*. As Samuel described it, the excerpt "shows in its personal warmth the clear and undimmed esteem Herr Professor Jordan enjoys with this respected scientist of the Edinburgh University." Of course, as Samuel made sure to add, Born had been fired by the Nazis due to his Jewish ancestry, was forced to emigrate in 1933, and had "lost more than twenty of his personal relatives and closest friends who were not able to emigrate through the murderous terror of the past regime."<sup>138</sup> Nevertheless, Samuel implied, he still held Jordan in high scientific regard.

Jordan's choice to include this letter excerpt as evidence in his denazification case was unsavory at best, and duplicitous at worst. While alone it was innocuous enough, what Samuel and Jordan failed to include in their submission to the tribunal was that Jordan had specifically solicited a *Persilschein* from Born in 1948, which Born had almost certainly refused to provide him with. "My official denazification proceeding has led to a 90%, but not 100% satisfying result," wrote Jordan to Born. "...[W]ould you find it possible to contribute some kind of positive evaluative statement...if you found some kind of statement to be reasonable, its value to me would be so great that I did not want to refrain from asking you entirely [*nicht von vornherein unterlassen wollte*]." As with Harald von Rautenfeld, Jordan attached his "political *Lebenslauf*" to the letter to Born, with the suggestion that Born could "confirm one of the points" therein.<sup>139</sup>

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<sup>137</sup> This indeed came to pass. The article was P. Jordan, "Formation of the Stars and Development of the Universe," trans. Herbert S. Green, *Nature* 164, no. 4172 (October 15, 1949): 637–40.

<sup>138</sup> Samuel to Zentralstelle für Berufungsausschüsse, February 2, 1949, StaH, 221-11, 68600 KAT.

<sup>139</sup> Jordan to Born, July 23, 1948, NMB, Nr. 353.

Born's response to Jordan does not survive, but it was certainly skeptical, for it prompted a long response from Jordan about his wartime actions. In his typical manner, Jordan alluded to complex political and moral debates via cryptic analogies from physics: "I can only extrapolate my probable fate in the case of a Hitlerian victory from the empirical facts—regarding how I fared during his rule...in this situation I found myself in an instability that greatly depressed the statistical expected value of my period of existence." With the jargon, Jordan was essentially telling Born that his own life had been at risk under Hitler. Jordan believed that his actions were morally justified, as well: "I believe I would have no difficulties (aside from general human kinds), to plead a case for my actions [during the Third Reich] in front of the moral analog of the Laplacian Spirit." (The Laplacian Spirit is an imaginary observer who can theoretically measure physical quantities perfectly and instantly, so Jordan was here claiming that he could defend his actions against any moral arbiter.) He finished the letter brusquely: "Enough of this topic. I prefer to talk physics."<sup>140</sup>

Though there is no proverbial smoking gun, it is nevertheless obvious that Born declined Jordan's second request, and did not send Jordan the requested *Persilschein*.<sup>141</sup> Similarly, it is also clear that Jordan did not inform Born that he would nevertheless include an excerpt from one of his letters to show the tribunal that Born still held, as Samuel termed it, "clear and undimmed esteem" for Jordan despite the murder of his relatives by the Nazis.<sup>142</sup> Had Born ever known of this—and he almost certainly never did—he likely would not have looked kindly on Jordan's actions; he certainly would have viewed it as another betrayal. For even though Samuel never stated that Born believed

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<sup>140</sup> Jordan to Born, August 15, 1948, NMB, Nr. 353. The last sentence was written by Jordan in English in the original, probably for emphasis.

<sup>141</sup> The fact that Jordan forwarded the excerpt from the 1949 letter from Born about the *Nature* article to the denazification tribunal in lieu of a *Persilschein* makes it clear that Born refused to write one. If Born had written a *Persilschein* as requested, Jordan surely would have included it in his submission instead, as it would have been far more valuable.

<sup>142</sup> Samuel to Zentralstelle für Berufungsausschüsse, February 2, 1949, StaH, 221-11, 68600 KAT.

Jordan to be innocent, the lawyer worded his description of the letter such that that conclusion was to be drawn. Why else would Born, “of his own accord,” offer to see Jordan’s article through to publication in *Nature*? Surely Born would not be so generous to an unrepentant Nazi, meaning that Jordan was certainly innocent—and the tribunal should agree. Here we see the duplicity of postwar denazification in full effect.

Samuel’s efforts were not in vain, and his advice to Jordan to appeal proved spot on. After months of delays, the appeals committee met on March 30, 1949, and quickly granted the appeal, officially placing Jordan in Category V of the denazification schema, thereby acquitting him. The reasoning given by the committee epitomizes how denazification ended up working in practice:

Reasoning: Prof. Jordan was already confirmed by decision of the expert committee [*Fachausschuss*] and the advising committee [*Beratende Ausschuss*] in February 1947 and classified in Category IV. He would therefore by now probably have been classified on [Jordan’s] request in Category V by the expert committee. The appeals committee therefore has no objections to carrying out this [revised] classification on its part.<sup>143</sup>

Essentially, the appeals committee granted Jordan’s appeal because Jordan had already been hired as a professor—and therefore been approved by the military government—and because he “by now probably” would have been classified in Category V on request. “[B]y now” here reflects the change in attitude toward denazification from 1947 to 1949; with the onset of the Cold War, the more stringent denazification procedures of the early postwar years gave way to a far more lenient policy aimed at winning the Germans over to the Western side in the emerging East-West conflict.<sup>144</sup> Three

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<sup>143</sup> Berufungsausschuss 3 für die Ausschaltung von Nationalsozialisten, protocol, March 30, 1949, StaH, 221-11, 68600 KAT. Interestingly, the chair of this committee, jurist Wilhelm Kiesselbach, played an important role in reconstructing the German legal system under British occupation. See Wilhelm Lührs, “Kiesselbach, Wilhelm,” in *Neue Deutsche Biographie*, vol. 11, 1977, 599–600.

<sup>144</sup> This has been widely noted by historians. Given the massive public backlash and resistance to denazification efforts, as the Cold War set in, the Western occupying powers quickly abandoned their strict policies, because they wished to build West Germany as a bulwark against communism in Europe. Again, see Frei, *Vergangenheitspolitik*.

days later, on April 2, 1949, the expert committee at the University of Hamburg confirmed this decision, stating that it also had “no reservations” about Jordan’s appeal.<sup>145</sup> Legally, Jordan was finally denazified.

### **Article 131 and Jordan’s Quest for a Permanent Position**

Jordan’s initial appointment in Hamburg was a three-year guest professorship, intended as a “temporary solution until the general consolidation of the situation [i.e. in Germany],” and it was to end on May 1, 1950.<sup>146</sup> His position was paid for out of an unfilled professorship in applied physics, which the faculty wished to fill. They also wished, however, to retain Jordan. But despite desperate pleas to Hamburg educational authorities, the city-state refused to budge, claiming that there was no money to pay for a new professorship when the city was still grappling with reconstruction.<sup>147</sup> Some 200 university students submitted a petition in support of Jordan, praising his ability to communicate science to lay audiences and noting that the university would be losing an instructor who had “made a name outside the university, not to mention abroad.”<sup>148</sup> Perhaps this pushed the authorities to extend Jordan’s position through September 1950 (it certainly did not hurt), though it seems the university had already planned this.<sup>149</sup> But as Heinrich Landahl, the city’s senator for education, informed Jordan, this extension was it: Jordan would be jobless again come fall.<sup>150</sup>

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<sup>145</sup> Fachausschuss XI a 1 to Berufungsausschuss, April 2, 1949, StaH, 221-11, 68600 KAT.

<sup>146</sup> Lenz to Emil Wolff (Rector of University of Hamburg), August 6, 1946, StaH, 361-6, IV 2076, Folder 3.

<sup>147</sup> Heinrich Landahl to Allgemeinen Studenten-Ausschuß der Universität Hamburg (essentially the university’s student government), March 28, 1950, StaH, 361-6, IV 2076, Folder 3.

<sup>148</sup> Zuleger, 1. Sprecher of the Allgemeiner Studenten-Ausschuß der Universität Hamburg to Hamburg Senate, March 23, 1950; Schneider, 2. Sprecher of the Allgemeiner Studenten-Ausschuß der Universität Hamburg to Landahl, March 24, 1950. (with petition enclosed). Both in StaH, 361-6, IV 2076, Folder 3.

<sup>149</sup> See for example a Vermerk from Hans von Heppe dated February 24, 1950, and Paul Harteck to Hochschulabteilung, March 15, 1950, both in StaH, 361-6, IV 2076, Folder 3.

<sup>150</sup> Landahl to Jordan, March 28, 1950, StaH, 361-6, IV 2076, Folder 3. For more on Landahl, see Rainer Nicolaysen, “Das „Ja“ eines späteren Sozialdemokraten: Über Heinrich Landahl (1895–1971) und seine Zustimmung zum „Ermächtigungsgesetz“ am 23. März 1933,” *Zeitschrift des Vereins für Hamburgische Geschichte* 98 (2012): 151–92.

The saga dragged on. After tortured intrigue in the Hamburg Senate—and serious attention from the press—Jordan’s professorship was extended through 1952 at the last minute. The university rector, physicist Paul Harteck, pleaded to several other Hamburg senators while the obstinate Landahl was sick: “Should...the large echo that Mr. Jordan finds in public life lead to someone from a third party advocating for Mr. Jordan in order to move the High Senate to find a special arrangement for him, the university would greet this gratefully.”<sup>151</sup> That third party turned out to be Karl Schiller, Senator for Economics and Transport, who knew Jordan personally from various “humanistic and epistemological discussions...He is a tremendously prolific stimulator [*ein ungeheuer fruchtbarer Anreger*]. Hamburg cannot do without him.”<sup>152</sup> Schiller’s influence apparently did the trick, for Landahl agreed to extend Jordan’s guest professorship for another two years.<sup>153</sup> Jordan’s popular renown had paid off for him at this crucial moment.

Yet again, though, in 1952, Jordan seemed to be on the precipice of unemployment. (“...I must have rubbed [Landahl] the wrong way [*irgendwie auf die Hühneraugen getreten haben muß...*],” he wrote to Heisenberg, describing Landahl’s “iron resistance” to attempts to make Jordan’s position permanent.<sup>154</sup>) But just when he was considering an offer from the United States Navy, another solution appeared: Article 131 of the West German Basic Law. This paragraph in the West German constitution specified that a federal law would regulate how the new state would deal with civil servants rendered unemployed as a result of the Second World War. (West Germany claimed to be

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<sup>151</sup> Harteck to Senator Walter Dudek, Finance Senator, May 2, 1950, StaH, 361-6, IV 2076, Folder 3.

<sup>152</sup> Karl Schiller to Dudek, June 1, 1950, StaH, 361-6, IV 2076, Folder 3.

<sup>153</sup> In a strange coincidence, Jordan’s position was now paid from the professorship held by Adolf Meyer-Abich, his erstwhile wartime ally in the *Physis* saga, who was off in El Salvador founding a research facility under the auspices of the German government. According to the logic of the Hamburg bureaucrats, Meyer-Abich was there on federal business, so Bonn could pay his salary. See the Vermerk from von Heppe, dated September 18, 1950, StaH, 361-6, IV 2076, Folder 3.

<sup>154</sup> Jordan to Heisenberg, March 26, 1951, NWH, Nr. 1697/1.



the legal successor of the German *Reich* in its borders of 1937, meaning that many civil servants in the former eastern provinces of the *Reich* were rendered jobless after 1945.) This law was meant mainly to provide relief for refugees from the former eastern territories of Germany, including East Prussia, Pomerania, and Silesia—where Germans were expelled *en masse* after 1945—but those civil servants who, like Jordan, fled from the Soviet occupation zone also fell under its jurisdiction. Crucially, the wording of the article, which stated that it applied to all civil servants who were employed by the state on May 8, 1945 (the day of Germany’s surrender) and who had “left the service for reasons other than civil service regulations and collective bargaining agreements” left the door open for those who had been dismissed as Nazis or for Nazi-era actions to receive compensation from the state.<sup>155</sup>

It was under this law that the “iron resistance” of Landahl was broken. Jordan’s position would be made permanent as a special professorship for Jordan, as one of the civil servants who fell under Article 131 (so-called “131ers”).<sup>156</sup> Under the law that provided for the 131ers, the West German federal government would pay for his position. What this meant was that the Hamburg government was only willing to employ Jordan, who they themselves described as one of the “most

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<sup>155</sup> It was due to Article 131 and the laws passed that many committed Nazis were able to reenter public service. Only relatively recently has this episode in early West German history received attention from historians. Not all of the so-called “131ers” were incriminated in Nazi crimes—some were bureaucrats from former German territories—and it is still uncertain what percentage of them actually were heavily incriminated. Exact statistics are hard to find. For more on the 131ers, see Frei, *Vergangenheitspolitik*, 69–99. See also Joachim Perels, “Die Übernahme der Beamtenschaft des Hitler-Regimes: Benachteiligung der Entlassenen und Privilegierung der Amtsinhaber der Diktatur,” *Kritische Justiz* 37, no. 2 (2004): 186–93.

<sup>156</sup> See Rudolf Fleischmann to Hamburg Schulbehörde, March 24, 1952, Jordan’s *Unterbringungsschein* attesting to his status under Article 131, dated April 2, 1953, and finally the official proposal to name Jordan a permanent professor signed by Landahl, dated March 20, 1953, which notes carefully that “Prof. Jordan belongs to the circle of persons who fall under Article 131 [of the *Grundgesetz*], all in StaH, 361-6, IV 2076, Folder 3.

eminent theoretical physicists,” if the city-state itself did not have to pay his salary.<sup>157</sup> In context, though, Jordan’s hiring under Article 131 is highly revealing. Though he fell under the law as a refugee and not because he had dismissed as a Nazi (recall that Jordan was never formally dismissed for his Party membership and that the British military government made no objection to his hiring in Hamburg in 1947), the creation of his permanent position under the auspices of Article 131 makes it clear that Jordan personally benefited from the political atmosphere in early West Germany, which emphasized forgetting the Nazi past and “reintegrating” those who had been dismissed due to associations with the regime.<sup>158</sup> Without this focus on “reintegration” and the collective forgetting of the Nazi period, it is conceivable that Jordan would not have found his permanent job in Hamburg.

### **Conclusion: Jordan’s Rehabilitation in the Eyes of His Colleagues**

Though Max Born was not willing to write Jordan a *Persilschein* for his denazification appeal, and never knew that Jordan submitted one of his letters to the tribunal without asking, he was willing to help Jordan reenter the field of physics. He ultimately did help Jordan get the article mentioned in the letter excerpt published in *Nature* in 1949.<sup>159</sup> The correspondence between the two became more frequent and friendlier as the years went on. Ultimately the two reunited again in person in 1953, when Born visited Hamburg; he and his wife spent an evening with the Jordans, which they recalled fondly in the years afterward.<sup>160</sup> Otto Hahn, too, was willing to reaccept Jordan

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<sup>157</sup> This apparently did happen. On February 10, 1954, the university officially petitioned for a subsidy from the Interior Ministry to pay for Jordan’s salary, as specified under the 1953 version of the law. See Dr. Baring to Hamburg Senate *Personalamt*, February 10, 1954, StaH, IV 2076, Folder 3, 361-6.

<sup>158</sup> It is also clear that Jordan very much knew that he fell under Article 131, and wrote to the university administrators to make sure they knew as well. (As it turns out, they had already listed him in the proper category.) See Jordan to von Heppe, August 24, 1951, as well as von Heppe to Jordan, August 29, 1951, both in StaH, IV 2076, Folder 3, 361-6.

<sup>159</sup> Jordan, “Formation of the Stars and Development of the Universe.”

<sup>160</sup> On Born’s visit with Jordan, see Jordan to James Franck, February 6, 1953, JFP, Box 4, Folder 6.

into the scientific community. When Ursula Martius wrote to Hahn in 1947, sending along a copy of her *Deutsche Rundschau* article which denounced Jordan, Hahn admitted that Jordan did “stupid” things during the Third Reich, but also wrote that he did not believe that Jordan, after being denazified, would “suddenly reemerge as [an] active or potential Nazi.” While he would not actively help Jordan, wrote Hahn, he also would not “active[ly] report” him to the occupation authorities.<sup>161</sup> This epitomized the cautious and halting rapprochement in the late 1940s and early 1950s between Jordan and those who had opposed Nazism or had to flee Germany out of fear of persecution. In this period, he nonetheless resumed friendly contact with John von Neumann, Eugene Wigner, Wolfgang Pauli, and others who had been forced to flee Europe because of Nazism.

In short, by the middle of the 1950s, most of the international physics community would probably have agreed with the largely forgiving portrayal of Jordan’s conduct during the Nazi period voiced by Dutch physicist Hendrik Casimir in his 1983 autobiography. Though Casimir agreed with what he believed to have been Jordan’s aims in the Third Reich, i.e. defending quantum mechanics and relativity theory, “which in those days required considerable courage,” Casimir had qualms about Jordan’s methods, i.e. joining the Party and fighting from within. Admitting that he and many colleagues were shocked by the “martial prose” in Jordan’s infamous 1933 article in the Rostock student magazine (see Chapter 2), Casimir nevertheless concluded with a positive verdict on Jordan’s conduct under Hitler: “All the same, I suppose he did more for physics and physicists than many who played it safe and just kept aloof.”<sup>162</sup> Though Jordan muddied himself in the struggle for

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<sup>161</sup> Amazingly, Hahn drew a comparison between denazification and the “informing and overseeing during the Third Reich,” stating that Germans had had “enough yelling” back then. See Otto Hahn to Ursula Martius, November 12, 1947, NOH, Nr. 2726. Martius was not pleased with this response; see Martius to Hahn, November 27, 1947, NOH, Nr. 2726. Disgusted with the political situation in Germany, she ultimately emigrated to Canada in 1949.

<sup>162</sup> Hendrik B. G. Casimir, *Haphazard Reality: Half a Century of Science* (New York: Harper & Row, 1983), 54.

modern physics, as Casimir saw it, he still fought the good fight, and was deserving of forgiveness.<sup>163</sup> In 1953, most physicists would have agreed with Casimir's portrayal. The reinvention had succeeded, and had Jordan remained outside the limelight, Casimir's view might still hold today. But this did not happen; as we will see in the next chapter, Jordan would return to the public stage, reentering politics in the late 1950s. It was only then that he gained a new reputation, the one he largely retains today: that of an unrepentant, remorseless Nazi.

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<sup>163</sup> Interestingly, in this same passage, Casimir noted that he personally knew Jordan "only slightly," and that though he was "definitely one of the leading figures in early quantum mechanics," his name would "not occur" in the rest of the book. This is yet another indication that Jordan's isolation in the field led to his contributions to quantum mechanics being largely underplayed. See *Ibid.*

## Chapter 5: The Belated “Birth” of a Nazi: Jordan, the Cold War, and Remembrance, 1957-1970

*“My wife undertook the effort to unearth your books, namely, the uncleaned first editions, and discovered a host of your maxims to power [Kraftsprüche]. Your political judgment proved then to be completely wrong. What right do you have now to act as an expert on delicate political questions and to portray us others as politically underage? ... You believe that violence and power are the only valid arguments in human lives. For you, even science, even our physics, is primarily a means to power.”*

–Max Born to Pascual Jordan, October 30, 1957<sup>1</sup>

*“The Jordan affair is terrible, of course, but very easy to explain; he [i.e. Jordan] still is now what he always was, an old Nazi.”*

–Walther Gerlach to Erich Kamke, July 3, 1957<sup>2</sup>

By the mid-1950s, Pascual Jordan had largely been reintegrated into the West German and international physics community, succeeding in rehabilitating himself both legally as well as in the eyes of the majority of his colleagues in Germany and abroad. Apparently heeding Wolfgang Pauli’s advice to stay out of politics, he reentered the international scientific community.<sup>3</sup> In science, from about 1949 onward, Jordan’s interests gradually shifted from biophysics to general relativity.<sup>4</sup> This was shrewd on Jordan’s part, as the 1950s proved to be the start of what would later be termed the “renaissance” of general relativity. During this period, technological advances in telescopic technology allowed theoretical results in relativity theory to be experimentally tested for the first time, which meant that a theory once considered to be a mathematical oddity with little application in reality now suddenly found itself at the forefront of the discipline. Thus, for the first time in his

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<sup>1</sup> Born to Jordan, October 30, 1957, NMB, Nr. 1003.

<sup>2</sup> Walther Gerlach to Erich Kamke, July 3, 1957, NWG.

<sup>3</sup> Pauli wrote sardonically in a 1947 letter to Jordan that he “hope[d]” that Jordan’s “extra-scientific ambitions” would “in the future remain strictly limited to the pension fund,” a not-so-subtle reference to Jordan’s Nazi-era political activities. See Pauli to Jordan, November 22, 1947, reprinted in Karl von Meyenn, ed., *Wolfgang Pauli: Wissenschaftlicher Briefwechsel mit Bohr, Einstein, Heisenberg, u.a.*, vol. III: 1940-1949, Sources in the History of Mathematics and Physical Sciences 11 (Berlin: Springer-Verlag, 1979), 479–80.

<sup>4</sup> An interesting what if: had Jordan accepted the offer from East Berlin, and assumed the leadership of a massive biophysical institute, Jordan likely would have remained engrossed in biophysics and never shifted his scientific focus to general relativity. Yet it was in the field of general relativity that he ended up training his brightest students, and his scientific legacy was maintained mostly by this school.

career, Jordan found himself surrounded by a talented group of students, some of whom, like Jürgen Ehlers, would later become leaders in the field. The famous “Jordan seminar” on relativity theory in Hamburg was in full bloom.<sup>5</sup>

In 1955, Jordan was invited by Pauli to speak at a historic conference on relativity in Bern. Organized in honor of the 50<sup>th</sup> anniversary of Einstein’s first papers on the theory, this meeting proved to be the first in a series that continues to this day; it laid the groundwork for what would eventually become the International Society on General Relativity and Gravitation.<sup>6</sup> In short, Jordan was back on his feet, suddenly active in one of the most cutting-edge fields of his discipline. Surrounded by a group of loyal students, the outlook was bright. Had things continued in this way, Jordan might very well be remembered quite differently, perhaps as a scientist who changed his tune after the war and found new relevance in a field he—poetically—had once defended from fanatical Nazis under Hitler. (Of course, this narrative, had it ever existed, would not have been accurate!)

Yet a fateful decision made by Jordan to reenter politics at the height of the Cold War ultimately ensured that his efforts at rehabilitation vanished overnight. By serving as Konrad Adenauer’s attack dog and vociferously denouncing his colleagues who opposed West German nuclear armament—who became known as the “Göttingen 18”—Jordan was transformed into an

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<sup>5</sup> As noted above, the most famous members of the Jordan group were Jürgen Ehlers (who went to become the first director of the Max Planck Institute for Gravitational Physics), Engelbert Schücking, Wolfgang Kundt, Manfred Trümper, and Rainer Sachs. (The four former physicists completed their doctorates under Jordan, while Sachs spent time in Hamburg as a postdoctoral scholar. Interestingly, Sachs was a German-Jewish refugee who fled Germany with his family in the 1930s.)

<sup>6</sup> On the 1955 jubilee conference, see Roberto Lalli, *Building the General Relativity and Gravitation Community During the Cold War* (Berlin: Springer, 2017), 37–47, which mentions Jordan in particular on 42–43. For Jordan’s contribution to the conference, see Pascual Jordan, “Über die Hypothese einer Veränderlichkeit der sogenannten Gravitationskonstante,” in *Fünfzig Jahre Relativitätstheorie; Cinquantenaire de la Théorie de la Relativité; Jubilee of Relativity Theory*, Helvetica Physica Acta, Supplementum IV (Basel: Birkhäuser Verlag, 1956), 157–67.

outcast in the international physics community.<sup>7</sup> The ensuing conflict, tinged by the tense, fraught climate of the early Federal Republic, with memory and reinterpretations of the Nazi era ever-present but rarely spoken aloud, entrenched the reputation Jordan carries to this day: that he was an unrepentant, remorseless Nazi.<sup>8</sup>

### The Göttingen Manifesto

The trigger for Jordan's reentry into politics was the publication of what became known as the Göttingen Manifesto on April 12, 1957. That morning, readers of the three largest West German national newspapers—the *Frankfurter Allgemeine Zeitung*, *Süddeutsche Zeitung*, and *Die Welt*—were confronted by a declaration signed by eighteen world-renowned atomic physicists, calling for West Germany to forego arming its newly reconstituted army with tactical nuclear weapons.<sup>9</sup> Authored primarily by Carl Friedrich von Weizsäcker, the statement was signed by Max Born, Walther Gerlach, Otto Hahn, Werner Heisenberg, and Max von Laue, among other physicists; collectively the group became known as the “Göttingen 18,” which was an allusion to the famous “Göttingen

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<sup>7</sup> This reveals much about the nature of the international physics community, in that their standards for rehabilitation were largely scientific, not political. As noted in Chapter 4, most members of the international physics community were willing to welcome Jordan back into the fold because he had fought against *deutsche Physik* and supported modern physics during the Third Reich.

<sup>8</sup> In this chapter, when discussing how Jordan “became” an unrepentant Nazi in collective memory, the term “Nazi” indicates what I now argue it meant for the West German public at the time—someone who had willingly collaborated with the Party during the Third Reich and who continued to espouse hawkish conservative views in postwar West Germany. I argue also that in the international scientific community, the conception of “willing collaboration” with Nazism changed during this period. The old excuse of joining the Party to save German science and fight *deutsche Physik* no longer held water. I hope to further develop and expand upon this distinction in the future.

<sup>9</sup> See for example “18 deutsche Forscher warnen vor Atomwaffen,” *Die Welt*, April 13, 1957; “Beschwörender Appell der deutschen Atomforscher,” *Frankfurter Allgemeine Zeitung*, April 13, 1957. The weekly magazine *Der Spiegel* devoted several articles to the Manifesto in its next issue; see “Die Achtzehn,” *Der Spiegel*, April 24, 1957; “Die Superbombe,” *Der Spiegel*, April 24, 1957; Max Born, “Ich trete ein für Aufklärung,” *Der Spiegel*, April 24, 1957. The Manifesto even made the front page of *The New York Times*; see M. S. Handler, “18 German Physicists Bar Work on Nuclear Weapons,” *The New York Times*, April 13, 1957.

7” of the 19<sup>th</sup> century.<sup>10</sup> In a famous act of protest, the Göttingen 7—including the two brothers Grimm—resigned from their posts at the University of Göttingen in 1837 rather than accepting the repeal of a liberal constitution by the new King of Hannover.<sup>11</sup> By styling themselves the “Göttingen 18,” the physicists clearly placed themselves in this tradition of liberal dissent by prominent public intellectuals, and thus claimed moral authority over the government’s decision.

The central thesis of the short, 450-word Manifesto was the physicists’ judgment that “[t]actical nuclear weapons have the same destructive effect as normal atomic bombs”; after all, it had been a tactical nuclear weapon that destroyed Hiroshima. It was true, they wrote, that “strategic” nuclear weapons had a much greater destructive effect, but attempts to draw a distinction between the two types of bombs, as West German Chancellor Konrad Adenauer had done, was deeply fallacious.<sup>12</sup> With good reason, they concluded that both the direct effects of atomic detonations and the lasting effects of radiation meant that only a few hydrogen bombs would likely “exterminate” [*ausrotten*] the entire population of the Federal Republic. As scientists who worked in atomic physics, they claimed to feel a sense of “responsibility for the potential effects of these actions [i.e. their research].” Though they “profess[ed] ourselves to freedom as it is advocated for today in the Western world against communism,” and admitted that “the fear of the hydrogen bomb

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<sup>10</sup> The full list of signees is as follows: Fritz Bopp, Max Born, Rudolf Fleischmann, Walther Gerlach, Otto Hahn, Otto Haxel, Werner Heisenberg, Hans Kopfermann, Max von Laue, Heinz Maier-Leibniz, Josef Mattauch, Fritz Paneth, Wolfgang Paul (not Wolfgang Pauli, as is occasionally cited), Wolfgang Riezler, Fritz Strassmann, Wilhelm Walcher, Carl Friedrich von Weizsäcker, and Karl Wirtz.

<sup>11</sup> On the Göttingen 7, see for example Hans Kück, *Die Göttinger Sieben: ihre Protestation und ihre Entlassung im Jahre 1837* (Berlin: Verlag Emil Ebering, 1934); Rudolf von Thadden, *Die Göttinger Sieben, ihre Universität und der Verfassungskonflikt von 1837* (Hannover: Buchdruckwerkstätten Hannover, 1987).

<sup>12</sup> The Göttingen Manifesto, originally issued on April 12, 1957, is reprinted in Robert Lorenz, *Protest der Physiker: Die “Göttinger Erklärung” von 1957*, Studien des Göttinger Instituts für Demokratieforschung zur Geschichte politischer und gesellschaftlicher Kontroversen 3 (Bielefeld: transcript Verlag, 2011), 31–32. An English translation can be found in Mark Cioc, *Pax Atomica: The Nuclear Defense Debate in West Germany during the Adenauer Era* (New York: Columbia University Press, 1988), 78–79. All translations here, though, are my own.



contributes to the maintenance of peace in the whole world,” the physicists believed that in the long term such a balance of terror was “untenable.” The key passage came at the end:

We do not feel competent making concrete political suggestions to the superpowers. We believe that for a small country like the Federal Republic, it is itself best protected, and it best assists [the cause of] world peace, when it explicitly and freely renounces the possession of nuclear weapons of any type. In any case, none of the undersigned are prepared to participate in the creation, testing or deployment of any type of nuclear weapon. At the same time, we feel it is extremely important that we support with all available means the peaceful development of atomic energy, and we will continue to work on this task as [we did] before.<sup>13</sup>

All things considered, it was actually a quite moderate statement: as they saw it, West Germany should continue integrating with Western Europe, refrain from developing its own nuclear force, and—reading between the lines—both east and west should attempt to rein in the nuclear arms race.

Nevertheless, the Göttingen Manifesto sparked enormous public outcry on its publication, and its stature has only grown over time. Today it is often remembered as one of the foundational moments of the anti-nuclear movement in Germany, despite the fact that the Göttingen 18 were actually in favor of nuclear power.<sup>14</sup> As historians have emphasized in recent years, the backstory behind the Manifesto was quite complex, and the motives of the Göttingen 18 were not as pure as they seemed. Most of the “Göttingen 18,” including von Weizsäcker, were consummate insiders who had been meeting with the West German Atomic Ministry for months beforehand.<sup>15</sup> They likely would have been happy to continue meeting with the Atomic Ministry in private if not for a remark by West German Chancellor Konrad Adenauer to the press on April 5, in which Adenauer casually stated that atomic weapons were just a “further development of artillery.” Naturally, he continued,

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<sup>13</sup> Reprinted in Lorenz, *Protest der Physiker*, 32. (Again, translation mine.)

<sup>14</sup> See for example Norbert Seitz, “Die Göttinger Erklärung 1957,” Deutschlandfunk, May 19, 2018, [http://www.deutschlandfunk.de/appelle-des-20-jahrhunderts-1-die-goettinger-erklaerung-1957.724.de.html?dram:article\\_id=418321](http://www.deutschlandfunk.de/appelle-des-20-jahrhunderts-1-die-goettinger-erklaerung-1957.724.de.html?dram:article_id=418321).

<sup>15</sup> See Cioc, *Pax Atomica*, 42–44, 75–80; Lorenz, *Protest der Physiker*, 46–49. Max Born was the exception here; he had no contact with the government.

the newly developed West German *Bundeswehr* would have to build some of its own in the future.<sup>16</sup> Seeing this comment in print, the physicists finally decided that they had to act outside governmental channels, and went ahead with the publication of the Manifesto in the press. Given the circumstances, it is unsurprising that despite the claim of the Göttingen 18 that they were acting as “non-politicians” who, nevertheless, “could not say nothing to all political questions,” their Manifesto was largely interpreted as a direct rebuke to Adenauer and his party, the Christian Democratic Union (CDU).<sup>17</sup> Adenauer himself certainly took the Manifesto as an affront.<sup>18</sup> In 1957, an election year, such a rebuke took another meaning—it was perceived as an implicit endorsement of Adenauer’s opponent in the campaign for West German chancellor, Erich Ollenhauer, and his Social Democratic Party (SPD).<sup>19</sup> As will be seen, the SPD made the nuclear question the main issue of their election campaign, and the Göttingen Manifesto thus increasingly became associated with Ollenhauer’s campaign and the opposition to Adenauer.

Ironically, despite the outcry provoked by the Manifesto, what went unsaid in the text is far more revealing than what was actually addressed. It was no coincidence that the majority of the signatories of the Göttingen Manifesto—at least 12, by my count—had worked on the German

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<sup>16</sup> Cioc, *Pax Atomica*, 42–44.

<sup>17</sup> As the *New York Times* noted the next day, the “eighteen scientists placed a powerful weapon in the hands of Dr. Adenauer’s chief opponents, the Social Democrats...”; see M. S. Handler, “A-Bomb Boycott Stirs Bonn Furor,” *The New York Times*, April 14, 1957. As is the case to the present day, the CDU in the 1950s maintained a joint caucus with its Bavarian sister party, the Christian Social Union (CSU) in the West German parliament. For simplicity’s sake, here I will simply use the CDU to denote both the CDU and CSU unless otherwise noted. At the time, the CDU and CSU were governing in coalition with the pro-business Free Democratic Party (FDP) and the small national-conservative German Party (*Deutsche Partei*).

<sup>18</sup> Cioc, *Pax Atomica*, 77–78.

<sup>19</sup> On the Göttingen Manifesto being understood as an implicit endorsement of the SPD, see Cioc, *Pax Atomica*, 44–45, 76–80. On the history of the SPD during Adenauer’s time as chancellor, see in particular Franz Walter, *Die SPD: Biographie einer Partei von Ferdinand Lassalle bis Andrea Nables*, Überarbeitete und erweiterte Taschenausgabe (Reinbek bei Hamburg: Rowohlt Taschenbuch Verlag, 2018), 145–66; Bernd Faulenbach, *Geschichte der SPD: Von den Anfängen bis zur Gegenwart* (München: Verlag C.H. Beck, 2012), 61–82.

nuclear project or other military research programs during World War II.<sup>20</sup> Indeed, though it was never mentioned explicitly in the Manifesto, the specter of the wartime German nuclear project was everpresent between the lines.<sup>21</sup> Understanding this context requires a brief excursus into what Mark Walker has termed the “Myth of the German Atomic Bomb.”<sup>22</sup>

As detailed in Chapter 4, the postwar German physics community quickly developed a binary scale for “denazification” inside the field itself: a “true” Nazi was one who sympathized with *deutsche Physik*; any who opposed *deutsche Physik* were not “real” Nazis. Moreover, those scientists who worked on the uranium project during the war, many of whom were interned in the United Kingdom after World War II, quickly developed an interpretation of their wartime activities designed to portray themselves in the best possible light. In this narrative, depending on the telling, German scientists were either “fortunately” spared the decision to build a bomb by wartime contingencies, or actively chose not to build an atomic bomb for Hitler.<sup>23</sup> As Walker has noted, this

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<sup>20</sup> Heisenberg, von Weizsäcker, Otto Hahn, Karl Wirtz, and Walther Gerlach were major players in the German uranium project. All whitewashed or glossed over their wartime activities in various ways after the war. See Lorenz, *Protest der Physiker*, 64–79. See also Walker, *Nazi Science*, 247–57.

<sup>21</sup> There were several other questions that went unanswered in the Manifesto. Aside from a vague allusion to “professing” themselves to the “Western world against communism,” NATO was not mentioned at all in the Manifesto. What did the Göttingen 18 think about NATO “nuclear sharing” policies, under which elements of the *Bundeswehr* could control foreign—i.e. American—atomic weapons under the alliance’s auspices? Did they think that American nuclear weapons should be removed from West German soil? Again, nothing explicit was stated about these important questions in the Manifesto. Finally, the question of possible German reunification hung over the Manifesto in a very similar way to the memory of the wartime German nuclear program. What if the two Germanys, not even yet ten years old, could reunify as a neutral, non-aligned, sovereign state? During the late 1950s, a time when the Iron Curtain did not yet appear so permanent (and the Berlin Wall had not yet been constructed), many still saw this as a viable option. As we will see, the SPD made it a central part of their election platform in 1957. Again, nothing was said about this crucial question in the Göttingen Manifesto. For Jordan’s story, though, the legacy of the German nuclear project is most important. It is thus the primary point of analysis here.

<sup>22</sup> On the “Myth of the German Atomic Bomb,” see Walker, *Nazi Science*, 183–262. On the German nuclear program itself, the standard work remains Walker, *German National Socialism and the Quest for Nuclear Power*.

<sup>23</sup> The release of the so-called Farm Hall transcripts in the early 1990s allows one to witness the birth of this narrative, later termed by Max von Laue as the *Lesart*, or “reading” of the story. On the *Lesart*, see Jeremy Bernstein, ed., *Hitler’s Uranium Club: The Secret Recordings at Farm Hall*, 2nd ed. (New York: Copernicus, 2001), 349–55.

story carried a moral subtext: it implied moral superiority to the American physicists who worked on the Manhattan Project.<sup>24</sup> It provoked outcry on the Allied side in the war's immediate aftermath, but as the Cold War began in the late 1940s and early 1950s, discussion of the German nuclear project largely fell dormant.

Yet the question of what exactly it was that German nuclear scientists had done or attempted under Hitler resurfaced in 1956, when Austrian journalist Robert Jungk published his history of the atomic age, *Brighter than a Thousand Suns*.<sup>25</sup> This book, the first popular history of the nuclear era, was based on interviews with Heisenberg and von Weizsäcker, among others, who found in Jungk a willing exponent of their story. While it was not explicit, the book implied that German scientists had known how to build a bomb and consciously chosen not to provide one to the Nazis.<sup>26</sup> At a time when these physicists were attempting to convince the West German public to buy into a nuclear research program, Jungk's book was well-timed to counter the specter of "Hitler's bomb."<sup>27</sup> The "Myth of the German Atomic Bomb" resurfaced, and was for the first time exposed to a broader audience.<sup>28</sup>

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<sup>24</sup> Walker, *Nazi Science*, 247–57.

<sup>25</sup> Robert Jungk, *Heller als tausend Sonnen: Das Schicksal der Atomforscher* (Bern: Alfred Scherz Verlag, 1956).

<sup>26</sup> See in particular *Ibid.*, 96–116, 120–21. This deception was typical of von Weizsäcker and Heisenberg, who almost always stopped short of stating the falsehood directly, yet left it as the obvious conclusion to the reader/interviewer/interlocutor. In other tellings of the story, German scientists would sometimes state that they were "fortunate" they never had to make the decision their American colleagues had made to build a bomb, thereby implicitly making themselves seem morally superior to the Americans who worked on the Manhattan Project. Notably, later in his life, after Walker informed him of the evidence he uncovered about the German nuclear project, Jungk felt that he had been deeply misled by Heisenberg and von Weizsäcker. See Robert Jungk, *Trotzdem: Mein Leben für die Zukunft* (Munich: Carl Hanser Verlag, 1993), 297–300.

<sup>27</sup> See Walker, *Nazi Science*, 247.

<sup>28</sup> It was Jungk's book that inspired Thomas Powers's apologetic and conspiratorial *Heisenberg's War*, which envisioned Heisenberg as a heroic resister, and it was Powers's book that inspired Michael Frayn's play *Copenhagen*. See Powers, *Heisenberg's War*; Frayn, *Copenhagen*. Powers continues to propagate the "Myth" to this day; see for example Thomas Powers, "The Private Heisenberg and the Absent Bomb," *The New York Review of Books* 63, no. 20 (December 22, 2016), <http://www.nybooks.com/articles/2016/12/22/private-heisenberg-absent-bomb/>.

Now apparently rehabilitated by Jungk as members of the resistance to Hitler, the words of the Göttingen 18 thus carried additional moral context that would not have escaped educated Germans: members of the group like Heisenberg, von Weizsäcker, and Hahn had, according to the accepted story by Jungk, heroically decided not to build an atomic bomb for Hitler. The 18 were thus speaking from a position of serious moral authority. In this way, with their apologetic and misleading story about “keeping the bomb from Hitler” now public, the Manifesto served as a way to cement this false narrative, helping both to clear their own names as well as the reputation of their discipline. (The only émigrés among the signatories were Max Born and Fritz Paneth. Born remained an outsider among the 18, while Paneth died a year after the manifesto’s publication.) It is for this reason that historian Robert Lorenz attributes careerist motives to the Göttingen 18, noting that they were “not unfailingly moral Olympians, [and] not exclusively civilly courageous heroes.”<sup>29</sup> Historian Holger Nehring goes further, asserting that the Manifesto was an “act of self-denazification” for the majority of the 18, a way to clear their names from involvement with the German nuclear project during World War II.<sup>30</sup> Indeed, while the 18 were genuinely and earnestly opposed to West German nuclear armament—and hoped for worldwide disarmament—Nehring is correct to point out that for many of the 18, the Manifesto also served the purpose of diassociating themselves, and atomic physics, from the stench of Nazism.

Left unsaid in the Manifesto itself, this connection to the Nazi era was made explicit by one of the signatories who had worked on the atomic project during the war, Wilhelm Walcher, in an

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<sup>29</sup> Lorenz, *Protest der Physiker*, 346.

<sup>30</sup> Holger Nehring, “Die nachgeholte Stunde Null: Intellektuelle Debatten um die Atombewaffnung der Bundeswehr, 1958–1960,” in *Streit um den Staat. Intellektuelle Debatten in der Bundesrepublik 1960–1980*, ed. Dominik Geppert and Jens Hacke (Göttingen: Vandenhoeck & Ruprecht, 2008), 229–50. Max Born is the major exception to Nehring’s thesis, for he had emigrated in 1933 and only returned to Germany in 1954. Moreover, he had been a convinced pacifist since World War I.

interview with the SPD newspaper *Vorwärts* in May 1957. Without prompting by the interviewer, Walcher stated that the signatories of the manifesto were “determined now to help [build nuclear weapons] just as little as we did during the past dark years of the Nazi dictatorship.” In case the connection was not clear enough, Walcher then explicitly stated that German scientists chose not to build an atomic bomb during the Second World War: “There was no shortage of uranium, atomic fission...had long been achieved, and we could have built the bomb! *But all of us internally rejected the Nazi system. We withheld our knowledge.*”<sup>31</sup> In a revised edition of *Brighter than a Thousand Suns* from 1958, Jungk also emphasized this supposed legacy of German moral thinking, noting that “these German physicists [i.e. the 18], thus remained faithful to their attitude of resistance already practiced under great danger during the “Third Reich.”<sup>32</sup> The Manifesto was thus intended as a moral statement, one issued from considerable experience. Lorenz rightly notes that the Manifesto was part of Heisenberg and von Weizsäcker’s “public relations program,” one which catapulted Weizsäcker to considerable fame as a “philosopher of peace and responsibility.”<sup>33</sup> Yes, many of the signatories of the Manifesto—Max Born and Otto Hahn in particular—were deeply concerned about worldwide disarmament and abhorred the idea of West Germany building nuclear weapons,

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<sup>31</sup> Erwin Koch, “Wie kam es zu dem ‘Göttinger Manifest?’ Und die Wahrheit über die Unterhaltung der Wissenschaftler mit dem Bundesverteidigungsminister. Ein ‘Vorwärts’-Gespräch mit Professor Wilhelm Walcher, Marburg,” *Vorwärts: Sozialdemokratische Wochenzeitung*, May 17, 1957. (Emphasis in original.)

<sup>32</sup> Along with Heisenberg and von Weizsäcker, Manifesto signatories including Otto Haxel, Fritz Bopp, Rudolf Fleischmann, Walther Gerlach, Josef Mattauch, Fritz Strassmann, and Max von Laue, among others, were named explicitly as “leading” resisters during the Third Reich in a passage praising the Göttingen Manifesto in the afterword to the 1958 revised edition of Jungk’s text; see Robert Jungk, *Heller als tausend Sonnen: Das Schicksal der Atomforscher*, (Revised edition) (Bern: Alfred Scherz Verlag, 1958), 345. (Jungk also lists Max Born, but he had emigrated long before the war’s start, as noted above.) This revised German edition appeared around the same time as the 1958 English edition, though the title page did not mention revisions and retained the original dating of 1956. Jungk also added a footnote containing an excerpt from a letter he had received from Heisenberg discussing his infamous meeting with Bohr in 1941; see *Ibid.*, 377–78. These additions, though, failed to quell the fervor surrounding the book’s depiction of the German project. For the English edition, see Robert Jungk, *Brighter Than a Thousand Suns: A Personal History of the Atomic Scientists* (New York: Houghton Mifflin Harcourt, 1958).

<sup>33</sup> See Lorenz, *Protest der Physiker*, 215–19; 263–88, second quote on 263.

but for others, like von Weizsäcker, there were additional motives. In this way, the Manifesto had as much to do with the “Myth of the German Atomic Bomb”—and thus the collective and moral memory of German science under the Nazis—as it did with the nuclear question in late 1950s West Germany.<sup>34</sup>

### **“We Must Rescue Peace!”**

One colleague who was almost certainly never asked if he wished to add his signature to the Göttingen Manifesto was Pascual Jordan. As outlined in Chapter 4, by the early 1950s, Jordan had been reaccepted into the West German and international physics communities as a member in good standing. Yet his conservative political leanings were well known, and the authors of the manifesto surely knew that Jordan would not be willing to endorse any statement that made even the slightest indication of a concession by West Germany to the hated Soviets. They likely thought that Jordan would remain publicly silent, as he had since the end of the war. (None of Jordan’s scientific colleagues were aware of his 1950 book *The Problem of the Elite*, which was privately published and written under the pseudonym “Erwin Rack.”<sup>35</sup>) Yet it soon became clear that Jordan would not remain silent, as he quickly announced his opposition to the Manifesto both publicly and privately. This section describes the ensuing outcry, one which would ensure that Jordan would go down in infamy.

Jordan’s opposition to the Manifesto was that of a quintessential Cold Warrior: his fear was that the Soviets would not hesitate to pounce if the West showed any sign of weakness. His position

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<sup>34</sup> As Walker puts it succinctly, “The scientists’ 1957 description of their motives and intentions [i.e. the Göttingen Manifesto] also parallels the motives and intentions that Jungk had ascribed to the wartime conspirators. The Göttingen Eighteen appeared merely to be continuing consequently the same ethical conduct they had begun during the Third Reich...” See Walker, *Nazi Science*, 252. See also Lorenz, *Protest der Physiker*, 215–19; Nehring, “Die nachgeholte Stunde Null,” 234–36.

<sup>35</sup> Rack, *Das Problem der Elite*.

was best expressed in a May 1957 letter to Werner Heisenberg, one of the signatories of the Manifesto. The famous theoretical physicist—and erstwhile collaborator of Jordan’s—had written to Jordan that he hoped that the Manifesto would force the Western side to be more “conciliatory” at the disarmament talks then ongoing in London.<sup>36</sup> Jordan responded at length, telling Heisenberg that he believed such a view was a “mistake of [mathematical] sign”—one had to “bring not the Western, but rather the Eastern negotiating partners to conciliation.”<sup>37</sup> For Jordan, the crucial question was whether or not both sides would actually disarm, or if only one side—the West—would disarm, while the Soviets feigned playing along, lying in wait to launch an attack on the now-unprepared West. How could one trust that the Soviets actually would disarm, asked Jordan; how could one be sure that they would be honest when negotiating?

In Jordan’s eyes, one could only assure this by showing strength—even bellicosity—by continuing to integrate into NATO, and by keeping Konrad Adenauer in office. Why would West Germany give up any potential bargaining power—including a theoretical sovereign nuclear force—without getting anything back from the Russian side? Western integration would come to an end—at least on the military level—if Ollenhauer and the SPD were elected; Jordan thus believed that an SPD victory would likely be catastrophic to the Western cause. In his view, shaped by his lifelong pessimism, the Manifesto had completely altered the election:

Perhaps you [i.e. the 18] explicitly wanted this [political effect]; or perhaps you think it is of negligible impact relative to the greater problems of the discussion. But I fear that Ollenhauer involuntarily keeps secret his conception of foreign policy – because it doesn’t exist [*Nichtvorhandensein*]. I fear further that hazy, erratic politics, like that which Chancellor Ollenhauer would bring us, could in a few years lead us home into the Soviet *Reich* [*Heim ins Sowjetreich*], and that then the Soviets will develop our land into a base for attack against

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<sup>36</sup> Heisenberg to Jordan, May 9, 1957, NWH, Nr. 1745. I hope to examine Jordan’s relationship with Heisenberg in a future study. Jordan held Heisenberg in high respect, yet he also felt frustrated with his position in Heisenberg’s shadow, both scientifically and as a public intellectual.

<sup>37</sup> Jordan to Heisenberg, May 11, 1957, NWH, Nr. 1745. This again is an example of how Jordan employed analogies from physics and mathematics when writing privately about politics.



England. Then we will really have atomic war on our heads, moreover, without having done anything for the protection of our population.<sup>38</sup>

These were all “admittedly hypothetical assessments [*Urteile*],” Jordan admitted, but he saw the danger as so threatening that he could not remain neutral: “I see it now as my unavoidable duty to deploy my own weak forces in service of the small chance still left to bring the federal government, which you [i.e. the 18] have torpedoed so effectively, safely into harbor [*in den Hafen gelangen*].”<sup>39</sup> Nevertheless, Jordan understood quite clearly that this difference of opinion could prove costly to his personal relationships: “The Manifesto has devastated me in two ways: first, because I believe it to be objectively harmful instead of helpful, and then because I find myself, painfully, in considerable difference of opinion with respect to people that I so treasure and admire, like Born, yourself, and our friend [von] Weizsäcker.”<sup>40</sup>

Jordan’s position seems outlandish from a 21<sup>st</sup> century perspective, but it should be put into context. The late 1950s were perhaps the tensest period in the entire Cold War—and West Germany was situated on the front line. West Germany—and the rest of the Western world—still formally refused to diplomatically recognize the existence of East Germany, which Cold Warriors like Jordan referred to as the “Soviet occupation zone.” The bloody Soviet invasion of Hungary in fall 1956, which crushed a Hungarian government that promised to hold free elections and withdraw from the Warsaw Pact, loomed in the minds of Westerners. With memories of the 1948 communist coup in Czechoslovakia and the brutal Soviet repression of the June 1953 revolt against communist rule in

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<sup>38</sup> Jordan to Heisenberg, May 11, 1957, NWH, Nr. 1745. Jordan’s use of the phrase “*Heim ins Sowjetreich*” was a sarcastic reference to the Nazi slogan *Heim ins Reich* (home into the *Reich*), used to describe the 1939-1940 population transfers of ethnic Germans from the Baltic States, the Soviet Union, and South Tyrol into conquered Polish territory. Curiously, Jordan sarcastically referenced Nazi slogans on a fairly regular basis in postwar letters.

<sup>39</sup> Jordan to Heisenberg, May 11, 1957, NWH, Nr. 1745.

<sup>40</sup> Jordan to Heisenberg, May 11, 1957, NWH, Nr. 1745.

East Germany still fresh, it was a time of constant East-West tension. Moreover, constant uncertainty continued to surround the status of West Berlin. The Soviets regularly threatened to block Western access to the enclave; the status of the former German capital often seemed likely to spark a Third World War. While history proved Jordan wrong, one can understand how a conservative West German would be exceedingly wary of Soviet intentions and worried about defending against an attack from the East. Jordan's opposition to the manifesto stemmed from this mindset—that of a quintessential Cold Warrior, very much like Edward Teller's in the United States.

What is harder to understand is the bitterly personal method in which Jordan chose to publicly attack the Manifesto and the 18. This counteroffensive, attempting to halt what Jordan perceived as the potentially catastrophic consequences of the Manifesto, began on April 25, less than two weeks after the Manifesto originally appeared—well before Jordan wrote the letter to Heisenberg quoted above. That day, a lengthy article by Jordan titled “The Scientist's Responsibility” appeared in the Rhineland newspaper *Der Mittag*, lamenting the Manifesto as an “extremely one-sided assessment of the problem brought in sensational form to the general public,” and outlining Jordan's general assessment that the Manifesto played right into the plans of the Soviets. The “danger of an imminent hot atomic war” grew closer, Jordan wrote, the “greater the military fighting potential of the Soviet Union is in comparison to the Western group of powers.”<sup>41</sup> So the Göttingen Manifesto, idealistically beautiful as it might be, played into Moscow's hands. Jordan's main line of attack on the Manifesto rested on a personal accusation about the character of the 18. Even though, as he wrote, the signatories of the Manifesto were world-renowned physicists, they nevertheless were no experts in politics, and they should not have attempted to claim such authority on delicate

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<sup>41</sup> Pascual Jordan, “Die Verantwortung des Wissenschaftlers,” *Der Mittag: Zeitung für Rhein und Ruhr*, April 25, 1957.

affairs of state. As he wrote in a passage that would become infamous, “A surgeon, a pianist, or a prominent soccer player has exactly the same authority in the assessment of this [i.e. the nuclear] question [as a physicist], namely *none at all*.”<sup>42</sup> (Jordan’s lack of self-awareness here was astounding; after all, his argument against the 18 partially rested on his credentials as a university professor and a physicist.)

Jordan followed this first salvo up with a lengthy article in the May issue of the illustrated Hamburg magazine *Das Fenster* (The Window), titled “Atomic Fear—A Dangerous Adviser.” Appearing with pictures in a magazine similar to the American *Life*, this article was aimed at broad swaths of the German population. It attacked the Manifesto as an “statement from extremely *unpolitical* men...certainly less fit to judge about basic political questions than the average democratic citizen,” one which could “bring great danger to the population of the Federal Republic.”<sup>43</sup> It was accompanied by a fearsome map of divided Germany depicting a large group of Soviet tanks—representing what the caption claimed to be the 272 military divisions of the Soviet army stationed in the Eastern Bloc—pointing their guns at at the small Federal Republic, which only had 20 divisions of its own.<sup>44</sup> The obvious implication: nuclear weapons were necessary for West Germany’s defense.

Jordan’s public campaign against the Göttingen 18—the result of what he saw as his “unavoidable duty” to help preserve the Adenauer government—reached its infamous culmination with a small pamphlet Jordan published in summer 1957, titled “We Must Rescue Peace!” (*Wir müssen den Frieden retten!*)<sup>45</sup> This short brochure, distributed widely via direct mail to citizens across

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<sup>42</sup> Ibid. Emphasis in original.

<sup>43</sup> Pascual Jordan, “Atomangst – gefährlicher Ratgeber,” *Das Fenster: Bilder und Berichte von Mensch und Zeit*, May 1957, 7, 5.

<sup>44</sup> Ibid., 7.

<sup>45</sup> Pascual Jordan, *Wir müssen den Frieden retten!* (Köln: Verlag Staat und Gesellschaft, 1957).

West Germany, proved so inflammatory that it turned Jordan into a virtual exile in the German and international physics communities. The pamphlet made the same arguments Jordan had introduced in his first two articles, but upped the rhetoric and the *ad hominem* attacks against the 18 considerably; at best, according to Jordan, they were political naïfs and thus unwitting agents of Moscow's nefarious plans. At worst, Jordan hinted that they might be actively collaborating with the Soviets.

In the pamphlet, Jordan attempted to style himself as the rational Cassandra to the hysterical 18: "We must rescue peace. Peace is in danger...But to rescue peace, we must have not only good, ethically commendable *intentions*, but we must also do the *sober, right thing*." As Jordan wrote, he saw it "as his duty" to "warn the German people from the advice" of the Göttingen Manifesto, whose 18 signatories he claimed to know "personally well." Yet after "sober scrutiny and thought" Jordan truly believed that "*the cause of peace is not furthered by this manifesto...on the contrary, it has been damaged*," and thus felt a need to speak out. Aware of the personal consequences, terming this opposition to his colleagues and friends the "most painful experience of my life," Jordan wrote that he would "not be able to answer to my conscience," if he kept quiet and "hid my serious concerns and my great worries from the German people."<sup>46</sup>

Jordan's attempt to portray himself as the noble, self-sacrificing Cassandra of the West German nuclear debate was belied by the rest of the brochure. From the beginning, he took shots at the 18. The very first section of the pamphlet was titled "Panic or Reason?" and it essentially compared the 18 to the Nazis. In its audacity and sheer insolence, it is worth quoting at length:

The German people have the alarming tendency, every so often—in rare exceptional cases—to cast off their sober-mindedness, their reasonable objectivity, and to get mixed up in an intoxication of enthusiasm to which reason can provide no resistance.

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<sup>46</sup> Ibid., 4. All emphasis in original

So it was in 1933, Jordan said.

Now, in 1957, broad circles of our people are again in a mood where all reason, all dispassion is suspicious and undesirable. Again around us sky-high promises are being made: ‘The Federal Republic is best protected if it remains unarmed!’ This is indeed contrary to reason; but reason has nothing to say if we simply ‘believe’...<sup>47</sup>

What was promised by the 18 and the SPD was so “rapturous, so stirring, that the ‘Führer’ and his ‘ideas’ paled in comparison.” The Germans “should have learned through Hitler that reason and dispassion are the unavoidable preconditions to *responsible actions*. If we want to again have faith in rapturous promises, instead of examining the condition in all thoroughness, we will soon—the dangers of the atomic age really are dreadful enough—fall into a still greater disaster than that which we embarked on in 1933.”<sup>48</sup>

Jordan maintained this polemical style throughout the brochure, attempting to hammer home the same point that he had outlined to Heisenberg: the ultimate goal was disarmament by both sides, yet voluntary disarmament by the West alone would only encourage Soviet aggression and heighten the danger of war. (Of course, as noted above, the Manifesto never said anything about disarmament; it only called for West Germany to avoid developing its own sovereign nuclear force.) New in the pamphlet was a section responding to German-French medical doctor Albert Schweitzer’s April 23, 1957 radio broadcast, titled “Appeal to Humanity,” in which Schweitzer warned that rising levels of radiation from atomic testing were causing failed pregnancies and birth defects and therefore threatened the future of humanity.<sup>49</sup> (During the 1950s, with atmospheric nuclear testing constantly in the news, knowledge of radiation sickness and the long-term effects of

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<sup>47</sup> Ibid., 2.

<sup>48</sup> Ibid., 2–3.

<sup>49</sup> Schweitzer’s 1957 speech is reprinted in Albert Schweitzer, “Appell an die Menschheit,” in *Gesammelte Werke*, vol. 5, 5 vols. (München: Beck, 1974), 564–77.

radiation became more prevalent, making Schweitzer's appeal well-timed.<sup>50</sup>) According to Jordan, "the real danger is the danger of a hot atomic war," not "mere test explosions," adding that radiation "within certain limits is beneficial to a large extent" and was naturally present in many of the famous sanatoriums in the world. Raising a fuss about radiation in the way that Schweitzer did simply played into the hands of the Soviets: "*The atomic panic spreading in the Federal Republic is one of the trump cards of Soviet policy.*"<sup>51</sup>

Finally, Jordan turned to the motivations behind the Manifesto: why had the 18 published it? How could they, scientists busy in the ivory tower, claim authority over political questions? "Many thoughtful people," Jordan wrote, had shared their "suspicion" with him that "hidden political forces—inner German [i.e. East German], or foreign" were behind the Manifesto. Jordan asserted that, in his "opinion," such rumors were false.<sup>52</sup> Yet the explanation that followed probably served to anger his colleagues far more than any allegation of communist subversion would have, for Jordan accused his colleagues of being too foolish to truly understand geopolitics. This "severe blow against the Federal Republic," as he termed the Manifesto, was not ghostwritten by communists, Jordan wrote; rather, this "great gift to the Soviets came to them unexpectedly." The 18, political naïfs as they were, simply had no idea what they were doing when they published their statement. It emerged from "sheer ignorance of the international political situation." "I will say it openly," said Jordan. "Even we atomic physicists are nothing other than helpless in the face of the international situation's awful dangers. One can and must say even more: atomic physicists are on average

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<sup>50</sup> In 1954, the *Lucky Dragon #5*, a Japanese fishing boat, strayed into the path of fallout from American nuclear tests at Bikini atoll in the Pacific Ocean, and the crew was afflicted with radiation sickness. One sailor died; the incident brought the dangers of radiation to the broader public.

<sup>51</sup> All quotes from Jordan, *Wir müssen den Frieden retten!*, 10–11.

<sup>52</sup> As Lorenz notes, asserting that opponents on the left were secretly acting as agents of the Soviet Union was a favored tactic of Adenauer and the CDU in the late 1940s, 1950s, and even into the early 1960s. See Lorenz, *Protest der Physiker*, 124–25.

doubtlessly less competent and qualified to judge serious political issues of the day.” Democratic citizens read newspapers, wrote Jordan, whereas time was “too costly” for “internationally famous scientists” to similarly inform themselves about politics.<sup>53</sup>

The polemic closed with what we would now term a “non-apology apology.” An obvious counterargument to Jordan’s pamphlet, or, indeed, any of his publications against the Manifesto, was that, by his own reasoning, Jordan’s attacks could easily be turned on their face and aimed at his own statements. Jordan himself argued that as they had no authority to speak on political questions, atomic physicists should stay out of politics—and yet his articles against the Manifesto were inherently political! (Of course, the 18 stated that their limited manifesto, dealing purely with nuclear weapons, emerged out of a sense of responsibility from their positions as experts.) When Jordan spoke out against the Göttingen Manifesto as a university professor and a physicist, was he not then also using his authority as a scholar to justify such attacks against his colleagues? He was thus claiming the very same authority that he accused his colleagues of abusing maliciously. Following Jordan’s own logic, he had the same amount of competence to judge political statements as his colleagues: namely, none at all. Yet to equate his warning with the Manifesto was a misunderstanding, Jordan wrote, for in pamphlets like “We Must Save Peace!,” he was speaking only in his “capacity as a federal citizen, explicitly not as an atomic physicist—led from the conviction that in political judgment, not scholarship, but exclusively common sense should speak.”<sup>54</sup>

It is unclear how much contact Jordan had with West German chancellor Konrad Adenauer’s political party, the Christian Democratic Union (CDU), while he was writing his pamphlet. It seems that he was a member of the CDU prior to 1957, and thus may perhaps have

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<sup>53</sup> All quotes in this paragraph from Jordan, *Wir müssen den Frieden retten!*, 14–15.

<sup>54</sup> *Ibid.*, 20.

known some lower level figures in the party. But available records in the CDU (and CSU) archives show no evidence in support of the theory voiced by some in the summer of 1957: that Jordan wrote the pamphlet on explicit orders from CDU leadership.<sup>55</sup> Moreover, to his colleagues, Jordan privately characterized his decision to speak out against the 18 and defend the Adenauer government as a noble sacrifice made out of a sense of “unavoidable duty,” one prompted by Jordan’s existential fear that an SPD electoral victory would inevitably lead to a Soviet takeover of West Germany. In short, it seems almost certain that Jordan’s decision to compose the incendiary text was entirely his own, for though he polemicized his argument—as he admitted in private to several colleagues—he truly believed his main thesis.

It is also unclear when the pamphlet was actually written and printed. It was probably written in the spring, perhaps alongside Jordan’s articles in *Das Fenster* and *Der Mittag*, for it shares their lines of argument and turns of phrase. It was published by an obscure publisher in Cologne, *Verlag Stadt und Gesellschaft GmbH*, in summer 1957, likely June or July. Regardless of whether Jordan willingly offered it to the CDU or if the party simply stumbled on it by chance, they quickly seized on the pamphlet. As early as August 1957, it was apparently being sent as direct mail by the CDU to voters—particularly doctors—in several German states.<sup>56</sup> CDU elements were clearly involved on

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<sup>55</sup> There is no evidence of such collusion in Jordan’s *Nachlass*, but Jordan’s *Nachlass* contains almost nothing relating to Jordan’s postwar political career, not even a copy of the infamous pamphlet itself. It is conceivable that after writing the pamphlet, Jordan sent a copy to higher-ups in the CDU, offering his services to combat the 18. There is no record of this in the CDU archives, but records from this early era of CDU history are admittedly—and surprisingly—fragmentary.

<sup>56</sup> See Josef Röhl to Walther Gerlach, undated (summer 1957), NWG, Nr. 094/1 and Friedrich Sandies, “Offener Brief an Professor Pascual Jordan,” *Nationale Rundschau?*, August 24, 1957. See also von Weizsäcker to the “Göttingen 18,” September 4, 1957, NWH Nr. 1958/2, which mentions this as well.



some level.<sup>57</sup> While the conspiracy theory of Jordan-as-CDU-agent is almost certainly incorrect, his political reemergence clearly placed him on the CDU's side.

And as the nuclear issue became the SPD's main line of attack against Adenauer in the increasingly vitriolic summer election campaign—the election would take place on September 15, 1957—many inside and outside the CDU began to see Jordan as a potential candidate for the *Bundestag*.<sup>58</sup> By mid-summer, rumors began spreading that Jordan would be on the ballot for the CDU in his home state of Hamburg.<sup>59</sup> Sources are unclear on why this did not come to pass: a press report from July 9 claims that “friends in the party” asked Jordan to allow the CDU to draft him as a candidate, but that he nevertheless turned them down. However, friends of the Göttingen 18 seem to have believed that it was the local Hamburg CDU party who turned down Jordan, after he approached them.<sup>60</sup>

The CDU did not give up, though, even after it became clear that Jordan would not make the ballot in Hamburg. On the contrary, in a sign of how concerned the party leadership was about the atomic issue, Konrad Adenauer personally stepped in to ensure Jordan made the ticket. The West German chancellor wrote to the head of the local CDU in the state of Lower Saxony (which borders Hamburg), to make sure Jordan made the ticket there:

As you know, we have attempted to bring Herr Professor Pasqual [sic] Jordan onto the party list in Hamburg. Unfortunately this was unsuccessful. Herr P. Jordan would be a very valuable aid for us during the party discussions about atomic questions. We believe also that

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<sup>57</sup> Given its vague name and the fact that it seems to have vanished without a trace, it is conceivable that the pamphlet's publisher, *Verlag Stadt und Gesellschaft*, was somehow affiliated with the CDU. Many suspected CDU involvement; see for example Josef Röhl to Walther Gerlach, undated (summer 1957), NWG Nr. 094/1.

<sup>58</sup> On the SPD's election campaign, see Lorenz, *Protest der Physiker*, 90.

<sup>59</sup> The city of Hamburg is, like Bremen (and since reunification in 1990, Berlin), both a city and a constituent federal state of Germany.

<sup>60</sup> For the press report, see “Pascual Jordan kandidiert nicht,” *Hamburger Abendblatt*, July 9, 1957, <https://www.abendblatt.de/archiv/1957/article202972555/Pascual-Jordan-kandidiert-nicht.html>. See also Werner Kliefoth to Hedwig Born (copy), August 10, 1957, in NWG Nr. 080/083.

the affiliation of such a famous atomic physicist would in itself be advantageous for us. It is now requested that the gentlemen in Lower Saxony place Professor Pasqual [sic] Jordan on their party list.<sup>61</sup>

Adenauer's letter, casually noting the benefits of having "such a famous atomic physicist" within the ranks of the CDU, betrays the real reason for the party's interest in Jordan. The CDU was deeply concerned about the impact of the Göttingen 18 on the campaign, fearing that the prestige of the physicists would drive voters into the hands of the SPD. To neutralize the threat posed by the Göttingen 18, they wanted an atomic expert on their own side—yet they did not much care who their atomic physicist was.

In other words, aside from his opposition to the Göttingen 18, there was nothing particular about Jordan that attracted the CDU. He was recruited purely based on his fame, his status as a scientist, and his conservative Cold Warrior bona fides. Perhaps nothing demonstrates this more clearly than the fact that Adenauer—apparently so concerned with recruiting an atomic physicist to his side—somehow did not know how to spell the first name of his prized recruit!<sup>62</sup> The West German chancellor's intervention was ultimately successful: Jordan was placed in the sixth position on the party list in Lower Saxony (*Niedersachsen*), a position where, given the CDU's local popularity, he was virtually assured to be elected.<sup>63</sup> On election day, September 15, 1957, this was confirmed: Jordan was elected to the third West German Bundestag.

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<sup>61</sup> Konrad Adenauer to August Wegmann, August 1, 1957, ACDP, I-366-039/2.

<sup>62</sup> Adenauer's letter was probably dictated, so the spelling error may have been a result of poor transcription. Yet even if this was the case, the fact that the error was not spotted and corrected reveals much about the CDU's attitude toward Jordan.

<sup>63</sup> The West German voting system (and reunified Germany's voting system today) is peculiar to many non-Germans. Each citizen actually gets two votes for the *Bundestag*, one vote for their local candidate, who is directly elected, and one vote for what is known as a party list. This is literally a list made by each state political party, on which that state party's candidates are ranked in order of preference. Roughly speaking, those named on the party list are elected into the Bundestag proportionally according to the percentage of votes the party received in that particular federal state, with those ranked at the top of the list receiving parliamentary mandates before those ranked lower. As Jordan was no politician—and likely also because his

As with the Göttingen Manifesto itself—and typical for 1950s West Germany—more was at play behind the scenes. For as it turns out, Jordan was not actually the first atomic physicist the CDU attempted to recruit as a candidate for the *Bundestag*. Before they approached Jordan, Adenauer’s Party had asked Carl Friedrich von Weizsäcker—the main force behind the Göttingen Manifesto—to be drafted as a candidate.<sup>64</sup> For the CDU, von Weizsäcker would obviously have been a superior candidate to Jordan, as he was himself a member of the Göttingen 18—had he run, it would have seemed to voters that the Göttingen 18 now approved of Adenauer. Von Weizsäcker and the CDU evidently went back and forth over possible terms, but he turned them down, probably out of fear that a political move would destroy his credibility as a non-partisan scientific expert.<sup>65</sup> Interestingly, Jordan was apparently aware of the negotiations between the CDU and von Weizsäcker, and when they came to naught, claimed that he had chosen to “spring into the gap” out of a “sense of duty.”<sup>66</sup> Von Weizsäcker’s choice proved to be prescient, for as Lorenz notes, the Göttingen Manifesto was the start of his successful personal rebranding as a “philosopher of peace.” Meanwhile, as we will see, Jordan would go down in history as the pro-Adenauer, pro-nuclear, unrepentent Nazi.<sup>67</sup>

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opinions were extremely controversial—it made little sense to nominate him as a candidate for a particular district (the direct election), so the party list was the logical option.

<sup>64</sup> There is little direct evidence for this, but see for example Eugen Gerstenmaier to Carl Friedrich von Weizsäcker, July 4, 1957 NCFvW, Nr. 4. Gerstenmaier, one of the leaders in the CDU, mentions to von Weizsäcker that he “believe[d] that the confusion of the last days would not have arisen if you [i.e. von Weizsäcker] had been able to look after things as member of parliament in the last weeks.” This was a thinly veiled request for von Weizsäcker to run.

<sup>65</sup> Lorenz, *Protest der Physiker*, 64.

<sup>66</sup> Jordan to Ernst Bruche, September 18, 1957, reproduced in Arne Schirrmacher, *Dreier Männer Arbeit in der frühen Bundesrepublik*, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 296 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2005), 25.

<sup>67</sup> Lorenz, *Protest der Physiker*, 64, 275–88.

## The Eighteen Fight Back

Though Jordan knew Robert Jungk—he had actually been one of the physicists interviewed by Jungk while he was researching *Brighter than a Thousand Suns*—he seems to have been unaware that much of the power of the Göttingen Manifesto came from its implicit, albeit unstated, link to Jungk’s story of supposed “resistance” by German nuclear scientists to Nazi atomic ambitions.<sup>68</sup> As noted above, Jungk’s book, a bestseller, brought this pseudo-conspiracy theory to a mass audience in 1956. In this context, it is notable that while *Wir müssen den Frieden retten!* does briefly allude to the Nazi period, the pamphlet does not mention the German nuclear project during World War II.<sup>69</sup> (In his April article in *Der Mittag*, Jordan does mention Jungk’s book, but only with regard to the American nuclear project and the “types of decisions of conscience” American physicists had to make.<sup>70</sup>) Thus, though Jordan was heavily involved with the creation of the “resistance” narrative in the immediate postwar period—he indeed used it himself during his denazification proceedings, as seen in Chapter 4—when Jordan denounced the Göttingen 18 in 1957, he nevertheless seems to have been oblivious as to how the memory of the German atomic project had tinged the reception of the Manifesto. He truly seems to have been blind to the minefield of memory and commemoration into which he had tread.

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<sup>68</sup> In Jungk’s foreword, he lists Jordan as an interviewee, and notes that Jordan provided him a manuscript about Werner Heisenberg. (It is unclear what this manuscript was.) Interestingly, Jungk’s narrative also includes the potentially apocryphal anecdote—discussed in Chapter 4—about the tailor named Jordan who, allegedly, was mistakenly arrested by American forces in Bremen in the war’s immediate aftermath and brought to the United States because American intelligence believed him to be the physicist Pascual Jordan. Jungk may have learned about this story during his interview with Jordan. See Jungk, *Heller als tausend Sonnen*, 1956, 251–52; Jungk, *Brighter Than a Thousand Suns*, 1958, 254–55.

<sup>69</sup> As noted above, the references to the Nazi period largely appear when Jordan hyperbolically claims that the atmosphere in West Germany in 1957 was similar to the atmosphere of hysteria in Germany when Hitler took power in 1933. See Jordan, *Wir müssen den Frieden retten!*, 2–3.

<sup>70</sup> See Jordan, “Die Verantwortung des Wissenschaftlers.”

Indeed, all evidence suggests that Jordan chose to mount a ferocious offensive against the Göttingen 18 out of genuinely existential fear; as noted above, he fatalistically viewed an SPD victory in the 1957 election as the prelude to West Germany falling to the Soviet Union.<sup>71</sup> Amazingly enough, Jordan seems to have truly thought that his colleagues—even if they disagreed on his manner of attack—would see that his assault on their public stand was not opportunistic or disingenuous but came out of an inescapably legitimate fear. As Jordan put it Heisenberg in May 1957, he had an “unavoidable duty” to attack the misguided manifesto; the hyperbolic personal attacks on the 18 were simply a product of Jordan having to act alone, with the comparatively “weak force” of a single individual. The 18, he wrote to his former collaborator, had the luxury of taking the high ground, as they spoke in a group from a position of strength.<sup>72</sup> Somehow, Jordan believed—or perhaps hoped—that his colleagues would understand that in his stylized position as the lone voice of reason, he was “forced” to go low in his attacks out of necessity and duty. Jordan hoped they would realize that he himself perhaps did not personally believe everything he had written about the 18.

This proved to be a great delusion. The Göttingen 18 saw the pamphlet not as an honorable defense of Adenauer and the West—as Jordan naively believed they would—but viewed it as a ferocious and disingenuous personal attack on their integrity. Moreover, it proved to be the catalyst for a drastic reinterpretation of Jordan’s image. When they read his newspaper articles and his infamous pamphlet, “We Must Rescue Peace!,” and then cross-referenced these denunciations with

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<sup>71</sup> While this belief may seem hyperbolic in retrospect, Konrad Adenauer himself also shared this fatalism about a potential SPD victory. It was a key part of the CDU’s 1957 campaign message. See Konrad Repgen, “Finis Germaniae: Untergang Deutschlands durch einen SPD-Wahlsieg 1957?,” in *Konrad Adenauer und seine Zeit: Politik und Persönlichkeit des ersten Bundeskanzlers*, ed. Dieter Blumenwitz et al., vol. 2: Beiträge der Wissenschaft, 2 vols. (Stuttgart: Deutsche Verlags-Anstalt, 1976), 294–315.

<sup>72</sup> Jordan to Heisenberg, May 11, 1957, NWH, Nr. 1745.

Jordan's publications under Hitler, these colleagues now saw Jordan's actions—both past and present—as those of a disingenuous, unrepentant, remorseless Nazi. No longer was Jordan a courageous fighter against *deutsche Physik* deserving of rehabilitation; now he was a hardcore Nazi to the bone, one who had somehow escaped detection and who now needed to be exposed.

Outrage among the Göttingen 18 began to spread when Jordan spoke out against the Manifesto in April. If at first they were merely annoyed at Jordan's apparent impertinence and lack of tact, by late summer, with the polemical pamphlet *Wir müssen den Frieden retten!* being mailed across Germany and Jordan's political ambitions now apparent, this transformed into anger. An article Jordan published in the August issue of the trade journal for West German physics, *Physikalische Blätter*, further infuriated his colleagues, for between the lines, it implied that in their political judgments, the Göttingen 18 were equivalent to classical physicists who refused to accept clear evidence of quantum theory's physical truth.<sup>73</sup> That essay was followed by two rebuttals. The first was by experimental physicist Hans Schimank (who had not signed the Manifesto), which called for “unconditional agreement” to the Manifesto, arguing that a possible nuclear war would be far worse for Germany than Nazism and the “terrors of the concentration camp” ever were; the second was by Rudolf Fleischmann—one of the 18—which denounced those who “spread sloppy comments with insufficient justification” and proclaimed that “purely scientific questions cannot be influenced

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<sup>73</sup> In this long-winded, obtuse article, Jordan goes through what he views as the history of the quantum revolution, describing the “new mindset” that developed among the quantum theorists, and arguing that those who attempted to save classical mechanics were “self-contradictory.” He then analogizes the Göttingen 18 to these classical physicists. See P. Jordan, “Über die Notwendigkeit des Umdenkens in den modernen Entwicklungen der Physik,” *Physikalische Blätter* 13, no. 8 (August 1957): particularly 362-363, 366. Interestingly, this was a similar line of attack to that which Jordan used against the *deutsche Physiker* under Hitler, when he often compared his enemies to foolish classical physicists who refused to accept modern theories.

by day-to-day political considerations.”<sup>74</sup> While Jordan went unnamed in these passages, Fleischmann was clearly criticizing Jordan’s preceding article and his entire campaign against the Göttingen Manifesto.

The two articles by Schimank and Fleischmann point toward an unspoken taboo in the West German physics community which Jordan had broken by reentering politics and attacking the Göttingen 18. As outlined in Chapter 4, German physicists (both in the West and the East) had quickly siphoned all blame for Nazism onto the small group of *deutsche Physiker*; whereas those who had continued to believe in modern physics were then portrayed as part of the “scientific resistance” to the regime. Jordan, as described in the preceding chapter, saw himself—and was viewed by others at the time—as part of this “scientific resistance.”<sup>75</sup> A corollary to this *deutsche Physik*/Nazi—academic physics/resistance binary governed the decorum of the postwar West German physics community: upstanding scientists were not to politicize or ideologize their science in any way, and most importantly, they were not to take sides in political fights. To do so would be equivalent to what the *deutsche Physiker* did under Hitler, something all agreed was an abomination. Amazingly to modern eyes, most of the 18 seem to have viewed themselves as experts issuing an urgent—and apolitical—warning from a position “above” politics.<sup>76</sup> Von Weizsäcker envisioned this nonpartisan position as the key to their power in the public eye (some might call this *political* power!); as he put it

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<sup>74</sup> Hans Schimank, “Der Galilei-Konflikt unserer Zeit,” *Physikalische Blätter* 13, no. 8 (August 1957): 367; Rudolf Fleischmann, “Zur Göttinger Atomerklärung,” *Physikalische Blätter* 13, no. 8 (August 1957): 368.

<sup>75</sup> Of course, as Chapters 2 and 3 make clear, the whole concept of a “scientific resistance” was deeply fallacious.

<sup>76</sup> Most today would likely say that the Göttingen 18 made an inherently political statement, yet many of them viewed their Manifesto as an “apolitical” warning. This can be seen as an evolution of the classic position of physicists during the Weimar Republic and the Nazi era, who largely viewed themselves as “apolitical” and therefore above daily politics. On “apoliticality” and the notion of academics being “above politics” in early 20th century German academia, see Ringer, *The Decline of the German Mandarins*, particularly 120–143, 213–219.

in a letter to the 18, “among other things, our stance differs from Jordan’s precisely in that we did not want to help one [political] party win.”<sup>77</sup>

Von Weizsäcker’s statement is key, for it demonstrates that what angered Jordan’s colleagues was less his stance per se, and more his inflammatory *ad hominem* attacks and his choice to so consciously align with one party—the CDU—and Adenauer’s government. (Indeed, other physicists who spoke out against the Göttingen Manifesto for reasons similar to Jordan’s who nevertheless refrained from personal attacks and direct endorsements of the CDU received little ire from the 18.<sup>78</sup>) In their view, in acting as an agent of the West German government, Jordan had ignored all scientific reason—as Fleischmann hinted in his article—and thereby betrayed his field. In the eyes of Jordan’s colleagues, he had broken the postwar taboo against politicization of science; by injecting ideology into his science and spewing deeply fallacious nonsense, he had taken the same tactic chosen by the *deutsche Physiker* under Hitler. And like the *deutsche Physiker*, Jordan had similarly chosen to slander his fellow colleagues among the Göttingen 18 with personal attacks. These, his colleagues believed, were akin to the denunciations issued by *deutsche Physik* under Hitler.

In a sign of how isolated Jordan was in the field of physics by taking such a vitriolic public stance in opposition to the Göttingen 18—how his colleagues now found him on the same level as

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<sup>77</sup> Von Weizsäcker to the Göttingen 18, September 4, 1957, NWH, Nr. 1958.2.

<sup>78</sup> Theoretical physicist Siegfried Flügge, for example, published a letter to the editor in the June 1, 1957 edition of the *Frankfurter Allgemeine Zeitung*, stating that he could not add his signature to the Manifesto, for he disagreed with the urging of the 18 that West Germany would be best protected if it voluntarily renounced present and future possession of nuclear weapons. Though he agreed with the rest of the Manifesto, Flügge believed this particular passage to be a “misuse...of scientific authority” on a “thoroughly controversial political question,” as issuing such a statement with the authority of a scientist implied that the physicists carried an studied opinion on the issue of nuclear armament. Here, though, they had no particular expertise. Flügge’s view was, as is obvious, very close to Jordan’s assertion that the 18 were no more informed on nuclear strategy than average citizens and thus had no right to issue political statements with the weight of scientific expertise. Unlike Jordan, though, Flügge only published this single letter to the editor, did not personally attack the 18, and did not explicitly call for readers to support Adenauer and the CDU; unsurprisingly, the 18 thus took little notice of his letter.



the *deutsche Physiker*—he was attacked by name by one of the 18, Walther Gerlach, in a plenary address at the September 1957 annual meeting of the German Physical Society. Publicly naming and shaming Jordan in front of the entire field, with the explicit endorsement of many of the 18, Gerlach was clearly confident he had the backing of his colleagues outside the 18 when he counterattacked against Jordan.<sup>79</sup> The Manifesto had been issued freely, Gerlach said, and speaking out was a decision made of “conscience based on [expert] knowledge... We were all the more so struck when one of our colleagues—Pascual Jordan (Hamburg)—dragged this Manifesto into the domestic election.”<sup>80</sup> Particularly infuriating to Gerlach was a mocking quotation in Jordan’s pamphlet *Wir müssen den Frieden retten!*, purportedly stemming from the voice of the Göttingen 18—who were in Jordan’s view, disastrously naïve.<sup>81</sup> Referencing this section, Gerlach denounced Jordan for including a “blatant falsehood” in his polemical pamphlet, which was a “conscious distortion” of the Manifesto.<sup>82</sup> The vast majority of the West German physics community seems to have agreed with Gerlach’s assessment. Only five months after he chose to reenter the public sphere in April 1957, Jordan had gone from being an upstanding member of the German scientific community to an outcast, completely isolated in his field—a West German *deutsche Physiker*.

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<sup>79</sup> On the endorsement from his colleagues, see Gerlach to Martin Holste, September 19, 1958, NWG, Nr. 094/1.

<sup>80</sup> See Walther Gerlach, “Drei große Sorgen,” September 1957. Copy located in NWG, Nr. 094/2.

<sup>81</sup> Boxed and italicized for emphasis, the quotation, written by Jordan in the supposed voice of the Göttingen 18, gave a humiliatingly naïve answer to the question of how West Germany should attempt to negotiate with the Soviet Union. The entire section reads as follows: “In this moment, the Göttingen Manifesto recommends that we should say to the Soviets: ‘We are not demanding any concessions at all from you. You do not need to specify anything regarding disarmament or reunification. We want to freely give you what you need so urgently. Because we want to give an example. We want to begin with an advance payment without demanding clear service in return.’” Jordan, *Wir müssen den Frieden retten!*, 8.

<sup>82</sup> Gerlach, “Drei große Sorgen.” As will be seen, the dispute between Gerlach and Jordan only escalated, culminating in a court case in 1958-1959.

## Reinterpreting Jordan's Image—the “Birth” of a Nazi

Incensed, Walther Gerlach, Max Born, and many other colleagues began to look into Jordan's past during the Third Reich—and when they saw what he had written under Hitler, they began to view that past in a far different light than before. Whereas in the war's immediate aftermath, Jordan's injection of Nazi ideology into modern science had been viewed as part of the fight against *deutsche Physik*, an attempt to smuggle relativity theory and quantum physics into the Nazi-era classroom in a way that was palatable to the regime, now, after Jordan's public campaign against the Göttingen 18, these passages were now reinterpreted as evidence that Jordan was a true believer in Hitler's cause. His writings during the Third Reich were now seen as confirmation that Jordan had indeed been a Nazi all along.<sup>83</sup> This depiction would stick, marking 1957 as the crucial turning point for Jordan's image in the field of physics, among educated Germans, and in moral and collective memory. It was only then, at the height of the Cold War, that Jordan became an “unrepentant Nazi” in the public eye.

To again be clear, when I discuss how Jordan “became” a Nazi in the public eye, I am not in any way attempting to rehabilitate him for his actions under Hitler. (Chapters 2 and 3 make it abundantly clear that Jordan clearly agreed with many Nazi policies and saw the Party as a potential ally; this was why he joined in the first place) What I am attempting is to understand why and how Jordan—unlike many of his colleagues who made similar arguments in support of science under Hitler—became one of the few theoretical physicists remembered as an “unrepentant Nazi.” This

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<sup>83</sup> As discussed in Chapter 4, there were indeed a few voices, mainly from the younger generation (like Ursula Martius) who had been consistently saying this since the war's end. Yet they were very much in the minority during the Allied occupation and into the 1950s.

historical question is worthy of examination, for it reveals much about cultures of remembrance in physics, early West Germany, and the Cold War.

Jordan's reemergence prompted a reexamination of his past. By publishing the pamphlet *Wir müssen den Frieden retten!*, personally attacking the Göttingen 18, and then ultimately running for the *Bundestag* with the governing CDU, Jordan had revealed his true self, in the eyes of most colleagues. He was not a fellow member of the scientific "resistance" under Hitler, but rather nothing more than the West German equivalent of the *deutsche Physiker*. This interpretation was only confirmed when incensed colleagues and educated Germans found Jordan's Nazi-era writings. Max Born's wife, Hedwig, dug up older editions of Jordan's works, which the Borns had apparently never seen during the war's aftermath.<sup>84</sup> Only available at this point in antiquarian book stores, she was able to uncover the "uncleansed first editions" of his Hitler-era books like *Die Physik und das Geheimnis des organischen Lebens*, discovering, as she later wrote to Jordan, "quite a few of your statements on power."<sup>85</sup> The nods she found to National Socialist ideology were many. Assembling several choice quotations in a piece she titled "Commentary Superfluous," she forwarded these proverbial skeletons in Jordan's closet to several German newspapers.<sup>86</sup> Contained in the collection were many of the infamous quotations from Jordan's Nazi-era books mentioned in Chapters 2 and 3, including perhaps his most egregious paean to Hitler from 1941, "Not every nation is gifted a man with the power of a volcano."<sup>87</sup> Hedwig Born's article was published in a left-leaning paper, the *Deutsche*

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<sup>84</sup> In his angry letter to Jordan discussed below, Born stated explicitly that they had never seen these Nazi-era writings before 1957; see Born to Jordan, October 30, 1957, NMB, Nr. 1003.

<sup>85</sup> Born to Jordan, copy in NWG, Nr. 094/1. See also Norton Wise's analysis in Wise, "Pascual Jordan: Quantum Mechanics, Psychology, National Socialism," 250–54.

<sup>86</sup> A copy of Hedwig Born's original typewritten collection, "Kommentar überflüssig: Aussprüche von Pascual Jordan" can be found in NWG, Nr. 094/1.

<sup>87</sup> Hedwig Born, "Pascual Jordan, Propagandist im Sold der CDU," *Deutsche Volkszeitung*, August 24, 1957. For the original of this quote, see Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941, 108. (Unlike the portions of the introduction, this section was also included in the 1943 second edition.) The quotes in the

*Volkszeitung*, under a new headline, “Pascual Jordan: Propagandist in the Pay of the CDU,” and it brought Jordan’s Nazi-era writings to a wide postwar audience that seems to previously have been largely unaware of their existence.<sup>88</sup> (Some of them were admittedly reproduced in the immediate postwar period, particularly in Ursula Martius’s article, as discussed in Chapter 4, but at the time they were largely ignored, excused as foolish mistakes, or seen as part of the fight against *deutsche Physik*.<sup>89</sup> Moreover, their republication in 1957 in a newspaper with a large readership brought Jordan’s Nazi-era writings to a far broader audience than Martius’s article, which appeared in a higher-brow literary journal, the *Deutsche Rundschau*.)

In the physics community, this new knowledge—or for some, this revisiting—of Jordan’s Nazi-era writings cemented the emerging view among the West German physics community that Jordan was an unrepentant Nazi. Max Born, feeling personally betrayed by one of his students, made this quite explicit to Jordan after the election. In characteristic fashion, Jordan had attempted to apologize and walk back his statements when personally confronted by Hedwig Born, writing to Born in October 1957 and claiming that he did not realize Born was so invested in the Manifesto. In this letter, Jordan repeated what he had told Heisenberg, lamely explaining that the political situation “forced” him to speak out, and that he used an aggressive tone because his “weak voice of an

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collection came from *Physikalisches Denken in der neuen Zeit* and *Die Physik und das Geheimnis des organischen Lebens*; others reproduced included “War is the primary means for the creation of objective historic facts...” and “This war...has made *one* decision final: the parliamentary-democratic concept no longer lives.” See Jordan, *Physikalisches Denken in der neuen Zeit*, 59; Jordan, *Die Physik und das Geheimnis des organischen Lebens*, 1941, 108. Interestingly, from this collection it seems that many of Jordan’s Nazi-era writings discussed in Chapter 3—including, for example, the 1941 *Deutschlands Erneuerung* article and the 1942 *Physis* issue—were so obscure and difficult to find that the Borns and Walther Gerlach never uncovered them or were unaware of their existence. They were, of course, also unaware of the Domeier articles.

<sup>88</sup> Born, “Pascual Jordan, Propagandist im Sold der CDU.” She was actually displeased with the newspaper’s decision to change her article’s title to this more polemical version, stating that it occurred “without [her] previous knowledge,” and that she wanted Jordan’s Nazi-era remarks to stand by themselves without commentary. See Hedwig Born, “An die ‘Deutsche Volkszeitung,’” *Deutsche Volkszeitung*, September 7, 1957.

<sup>89</sup> Recall in particular Otto Hahn’s 1947 letter to Ursula Martius, discussed in Chapter 4.

individual” could only be heard if he “formulate[d] the factual contents of my warning with strong emphasis [*starker Unterstreichung*].”<sup>90</sup> Born, though, would hear none of Jordan’s weak attempts to walk back his rhetoric, and confronted him in a letter so blunt it is worthy of quotation at length:

I return very reluctantly to old affairs, but I have no choice. Right after the end of the war I received a letter from you, in which you explained to me why you advocated for Hitler and the Nazis in publications and books. This was totally unnecessary, because I had heard absolutely nothing about this in Scotland, on the other side of the lines. As an answer, I sent you a list of my relatives and friends who perished because of the Nazis, and you answered that you knew nothing about that and were deeply distressed.<sup>91</sup> I took that seriously. We spent an evening in your apartment in Hamburg during our first visit to Germany [i.e. after the war] and we would never have gone back to the matter if you had not just forced us to do so. My wife undertook the effort to unearth your books, namely the uncleansed first editions, and discovered a host of your maxims to power [*Kraftsprüche*]. Your political judgment proved then to be completely wrong. What right do you have now to act as an expert on delicate political questions and to portray us others as politically underage? ... You believe that violence and power [*Gewalt und Macht*] are the only valid arguments in human lives. For you, even science, even our physics is primarily a means to power [*Mittel zur Macht*]. Thus you now support Adenauer’s “policy of strength” [*Politik der Stärke*].<sup>92</sup>

Born makes the change in perspective about Jordan clear. He had believed Jordan after the war, just as many physicists had believed Jordan (or, as we will see, just as many said similar things as Jordan under the Nazis). Importantly, Born had never actually sought out Jordan’s Nazi-era writings, had taken Jordan at his word when considering his choices during the Nazi period, and had ultimately forgiven him any transgressions under Hitler. They had resumed friendly contacts, as outlined in Chapter 4. It was only now, with both Jordan’s political reentry *and* the added evidence of his Nazi-era writings, that Born determined that Jordan was a Nazi. But now, he had revealed his true nature: for Born, Jordan was now a Nazi, full stop. As he put it in a letter to Walther Gerlach, “the whole

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<sup>90</sup> Jordan to Born, October 21, 1957, NMB, Nr. 353. Jordan was responding to a letter from Hedwig Born which apparently does not survive.

<sup>91</sup> This incident is mentioned in Chapter 4; neither Jordan’s letter to Born nor Born’s response survive. As noted there, Jordan’s letter to Born was likely very similar to the one Jordan sent to Niels Bohr in 1945.

<sup>92</sup> Born to Jordan, October 30, 1957, NMB, Nr. 1003. Jordan’s *Nachlass* does not contain a copy of this letter. Hedwig Born also responded to Jordan along similar lines.

dirty affair [with Jordan] deeply disturbs me, as it is a sign that the people who used to be Nazis again feel safe enough [in West Germany] to come forward publicly.”<sup>93</sup> Even after they reconciled later in life, Born refused to listen to Jordan’s persistent claims that he fought to defend modern science under Nazism.<sup>94</sup>

Gerlach, too, was now certain that Jordan was a Nazi, a West German *deutsche Physiker* in service of Konrad Adenauer. Like Born, he was incensed at Jordan’s decision to attack the Göttingen 18. His personal copy of Jordan’s *Wir müssen den Frieden retten!* survives in his archive, and it is filled with irate marginalia outraged at what Gerlach viewed as Jordan’s hypocrisy and “gall.”<sup>95</sup> As he saw it, Jordan’s actions were the height of impudence: as a former—and current—Nazi, Jordan had no right to attack the upright Göttingen 18. This connection, for Gerlach, was explicit. “Jordan furthered [the shattering of ethics] during the Third Reich,” scribbled Gerlach next to Jordan’s passage about the “shattering” of scientific ethics after the discovery of the atomic bomb. For emphasis, Gerlach circled the word “shattering” (*zerschmetternd*) in Jordan’s text.<sup>96</sup> And beneath the final line in the pamphlet, in which Jordan claimed that “common sense” should reign in discussions of politics, not “erudition,” Gerlach circled the words “common sense,” remarking laconically that “Herr PJ proved [to be] without this [i.e. common sense] during in the Third

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<sup>93</sup> Born to Gerlach, August 26, 1957, NWG, Nr. 083.

<sup>94</sup> As he wrote to Gerlach later that year, after Hedwig Born received a response from Jordan that is now lost: “My wife just received a long answer from Jordan to her letter. His defense is mainly: He wrote the sleazy [*anrühigen*] pro-Hitler things in order ‘to save German physics,’ and he never believed in the Nazi principles. And much like this. He did not answer me, my letter was probably too rude [*grob*].” Born to Walther Gerlach, November 4, 1957, NWG, Nr. 094/1. Even after Born and Jordan eventually reconciled in the 1960s, he was not willing to accept the “saving German science from *deutsche Physik*” argument as valid; he instead preferred to let sleeping dogs lie. See for example Born to Jordan, February 18, 1964, NMB, Nr. 1003.

<sup>95</sup> Gerlach’s copy of *Wir müssen den Frieden retten!* with annotations is located in NWG, Nr. 094/2. His annotation of “gall” (*Frechheit*) is on p. 17.

<sup>96</sup> Gerlach’s copy of *Wir müssen den Frieden retten!*, 15, NWG, Nr. 094/2

Reich.”<sup>97</sup> As Gerlach summed up angrily, “Jordan’s election propaganda [i.e. his public fusillade against the 18] shows his old Nazi standpoint toward power.”<sup>98</sup> For Gerlach, Jordan was now a Nazi to the bone.

This new realization that Jordan was a Nazi now spread widely in both the field of physics as well as among educated West Germans. Physicist Werner Kliefoth, who was not a member of the Göttingen 18, captured the mood in the field when he warned Walther Gerlach: “[w]e all know what happened when such people were once given *carte blanche*,” explicitly comparing Jordan to *deutsche Physik* and the Nazis.<sup>99</sup> These colleagues now worried that Jordan would damage the field—just as Johannes Stark and Philipp Lenard had done during the Third Reich—if given a chance at power. As Kliefoth noted alarmingly, Jordan’s “influence in certain political circles” was “growing.”<sup>100</sup> Similar fears were shared in educated circles outside the field of physics. Art historian Werner Gross, for example, echoed this new interpretation of Jordan in an August 1957 letter to Gerlach, placing Jordan’s infamous pamphlet (*Wir müssen den Frieden retten!*) on the same level as notorious Nazi propaganda organs: “It is hard for me to find [such] a pharisaical [i.e. hypocritical] portrayal of things in black and white [*pharisäische Schwarzweißmalerei*]—from no less than a physics celebrity [i.e. Jordan]—any better than the political style of the *Stürmer* or *VB* [*Völkischer Beobachter*].”<sup>101</sup> (*Der Stürmer* was an infamously lurid and virulently anti-Semitic Nazi tabloid edited by Julius Streicher during the Weimar Republic and the Third Reich, while the *Völkischer Beobachter* was the official newspaper of the Nazi Party.)

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<sup>97</sup> Gerlach’s copy of *Wir müssen den Frieden retten!*, 20, NWG, Nr. 094/2.

<sup>98</sup> Gerlach notes, “Jordan’s Wahlpropaganda zeigt seinen alten Nazistandpunkt um Macht,” undated (likely 1957-1958), NWG, Nr. 094/1.

<sup>99</sup> Werner Kliefoth to Gerlach, August 17, 1957, NWG, Nr. 022,1.

<sup>100</sup> Werner Kliefoth to Gerlach, August 17, 1957, NWG, Nr. 022,1.

<sup>101</sup> Wilhelm Groth to Gerlach, August 30, 1957, NWG, Nr. 094/1.

And this new image of Jordan as an unrepentant Nazi spread outside the ivory tower as well. As one Munich doctor wrote to Gerlach, “as far as I am informed from the newspapers, [Jordan] is a scientist hired [*gechartert*] by the federal government. As we have had bad experiences with such men in the past, it is unclear why the government is using such practices again today.”<sup>102</sup> The past this doctor was referencing was clearly the Third Reich, and the “men” he so obviously despised were those scientists who allowed themselves to be bought by the Nazi government. In this doctor’s eyes, and in the eyes of many West Germans, Jordan had sold himself to Adenauer’s government, and in the process, had lost all credibility and respect. In doing so, he had revealed himself to be a fervent Nazi hiding in the clothes of the West German CDU. This depiction of Jordan largely holds to the present day.

### Motives for Reinterpretation

This then-new depiction of Jordan as an “unrepentant” Nazi has continued to hold to this day—because it is inherently truthful. As we saw in Chapter 1, Jordan really did have *völkisch* sympathies previous to 1933,<sup>103</sup> and as depicted in Chapters 2 and 3, Jordan really did sympathize with many Nazi aims. Well into the war, he was ready and willing to collaborate with Hitler’s state. So in this sense, West German intellectuals were entirely correct when they now identified Jordan as a Nazi. What is so fascinating about the case of Jordan, though, and what has not been noted before, is that—as described in Chapter 4—he had largely avoided indictment (in the realm of public opinion) for his actions under Hitler between 1945 and 1957, that is, until he reemerged on the West

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<sup>102</sup> Josef Röhrli to Walther Gerlach, undated (summer 1957), NWG, Nr. 094/1.

<sup>103</sup> It is nevertheless important to remember that none of Jordan’s contemporaries knew about his articles under the Domeier pseudonym—their judgment of Jordan was based solely on his Hitler-era writings. Richard Beyler was the first to discover the Domeier articles, after he found evidence of their existence in Jordan’s *Nachlass* in the early 1990s. This additional evidence has, of course, only solidified the consensus that Jordan was a true Nazi.



German political scene. During this twelve-year period, physicists in Germany almost universally saw Jordan as a fellow opponent of *deutsche Physik*, which in their (fallacious) binary meant that he could not be a Nazi; the international scientific community simultaneously largely accepted Jordan's explanations of his actions under Hitler in the immediate postwar period—or were unaware of his Nazi-era writings completely. Thus, in the realm of public opinion and historical memory, Jordan only “became” an unrepentant Nazi in 1957, at the height of the Cold War. Why the reinterpretation? In this section, I now interrogate and attempt to understand this reinterpretation of Jordan in its proper context. This analysis reveals much about early West German history, while also prompting us to consider how cultures of remembrance form in the sciences. Namely, why are some scientists remembered and not others? As will be seen, the case of Jordan reveals much about this question.

Returning to Jordan's story, it is obvious why his political reentry prompted outrage: his attack on the Göttingen 18 was fiercely personal and unrelenting—as detailed above, for most of spring and summer 1957, Jordan was publicly attacking his colleagues in some form or another. But what prompted the reinterpretation of Jordan's past? For Max Born and other émigrés—both those still abroad and those who, like Born, returned to Germany—the answer is obvious: they saw his Cold War-era decision to side with Adenauer's CDU as a sign that his Nazi-era actions were not, as Jordan had told them after the war, solely made to protect science, but had actually been taken out of a deeper conviction in the Nazi cause. They now came to the realization that Jordan had lied to them about his Nazi-era actions and intentions, and thus felt betrayed by a colleague they had known for years.

Born was particularly aggrieved, because Jordan was his former Ph.D. student; as outlined in the Introduction, the two had worked together closely on the foundation of quantum mechanics in

the mid-1920s.<sup>104</sup> Another one of Jordan’s mentors from Göttingen, experimental physicist James Franck, felt similarly disappointed in him. For both Born and Franck, this betrayal was deeply personal—after all, as described in Chapter 1, they had helped finance Jordan’s education in Göttingen during the hyperinflation of the early 1920s. Like all émigrés, the two had family members who had perished in the Holocaust. Feeling that they had given Jordan the benefit of the doubt in 1933 and 1945, they now resolved not to be fooled by him again. In their eyes, Jordan’s true colors as a Nazi had now been revealed. When Born wrote to Franck, who had settled in the United States at the University of Chicago after emigrating, to tell him about Jordan’s attack on the Göttingen 18 and his reemergence in West German politics, Franck responded somberly: “I’m sorry to hear about Jordan. He showed a weak character during the Nazi time too. Certainly, politics ruins the character if there is something to ruin.”<sup>105</sup> In 1934, of course, Franck had been willing to listen to Jordan’s explanations; then, Franck had urged Born not to take Jordan’s infamous article in the *Rostock* university student magazine “seriously,” terming Jordan’s pro-Nazi statements therein a “gaffe.”<sup>106</sup> Jordan’s reemergence on the political scene in the late 1950s changed Franck’s perception of Jordan. Born felt similarly: “Before I always held the rod with [Jordan],” he wrote to fellow émigré Wolfgang Pauli, “because I saw his Naziness [*Nazitum*] as a one-time aberrance. But it must lie deeper in the blood. [*Es muss wohl tiefer im Blute liegen.*]”<sup>107</sup>

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<sup>104</sup> Aside from Born, the only other German Jewish émigré who signed the Göttingen Manifesto (and who, like Born, also returned to West Germany in the 1950s), was chemist Fritz Paneth. Though Paneth was never close with Jordan, and the two probably did not ever meet, Paneth likely also felt betrayed by Jordan, for Jordan had been reaccepted into the international scientific community and was now betraying that forgiveness.

<sup>105</sup> James Franck to Born, October 1, 1957, JFP, Box 1, Folder 7.

<sup>106</sup> Franck to Born, April 18, 1934, JFP, Box 1, Folder 7.

<sup>107</sup> Born to Pauli, February 12, 1957, reprinted in Karl von Meyenn, ed., *Wolfgang Pauli: Wissenschaftlicher Briefwechsel mit Bohr, Einstein, Heisenberg u.a.*, vol. IV, Part IV: 1957-1958, Sources in the History of Mathematics and Physical Sciences 18 (Berlin: Springer, 2005), 213–14. Interestingly, this letter dates from before Jordan’s attack on the Göttingen 18; Born is referring to the start of Jordan’s political reemergence, the 1956

For the German-Jewish émigrés, then, it was largely an open-and-shut case. Jordan had outed himself as a Nazi. But what about the sixteen other signatories to the Manifesto, who had remained in Germany during the Nazi period? Additionally, what about the rest of the West German physics community, most of whom had also stayed through the war years? Here the picture becomes less clear. As outlined above, many of these signatories had—to varying degrees—worked on the German atomic project during World War II. Recall that their public Manifesto drew much of its power from its implicit-yet-unstated connection to the conspiracy theory espoused in 1956 by Robert Jungk in *Heller als tausende Sonnen*, namely, that German physicists consciously chose not to build atomic weapons to Hitler. In reality, though, such a conscious decision was never taken.

Indeed, when one analyzes the field of physics during the Nazi era, as historians have done over the past thirty years, one realizes that under Hitler, most of the members of the Göttingen 18 (obviously aside from Born and Paneth) were roughly located in the same zone of complicity as Jordan.<sup>108</sup> Between 1933 and 1945, many of them had followed Jordan’s strategy for science as outlined in Chapter 2, attempting to justify the value of science on its military applications. Heisenberg, for example, in a long 1943 essay arguing against *deutsche Physik*, stated that opponents of modern physics could not use “philosophical articles” or “polemics” to attack relativity theory or quantum mechanics. The proverbial proof was in the pudding, he wrote, as all experimental results pointed in favor of the validity of modern physics. Like Jordan, though, he purposefully expressed this belief in militaristic terms to appease the Nazis: “*The experiment [must be] to the front!*” [i.e. the

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apocalyptic book *Der gescheiterte Aufstand* (The Failed Rebellion). See Pascual Jordan, *Der gescheiterte Aufstand: Betrachtungen zur Gegenwart* (Frankfurt am Main: Vittorio Klostermann, 1956). Perhaps this was when Born began to reinterpret Jordan’s past.

<sup>108</sup> More research is needed to untangle the varying motives of the Göttingen 18, and I aim to delve deeper in this regard in future work on this topic.

experiment is proven in battle].”<sup>109</sup> Elsewhere in the essay he claimed that relativity theory would have emerged “even without Einstein,” citing Henri Poincare and Hendrik Lorentz as examples of those who had come close.<sup>110</sup> As did Jordan, Heisenberg took an anti-Semitic shot at Hugo Dingler in a footnote, citing, without commentary, his Weimar-era writings that apparently praised Jewish culture.<sup>111</sup> Heisenberg concluded his piece with a warning, very similar to those issued by Jordan, that “the political fight against ‘modern theoretical physics’ also has, in my view, a very unpleasant effect...on the scientific-technical power of Germany.”<sup>112</sup>

Gerlach, too, had skeletons in the closet. As Robert Lorenz notes, Gerlach was involved with weapons research for various military authorities for the entirety of World War II. As early as November 1939, he was working with the German Navy on torpedo development. By 1943 he had been named “plenipotentiary” for atomic physics by Hermann Göring, and was officially in charge of the entire nuclear project. In short, Gerlach maintained continued contact with the uppermost elite in the Nazi regime.<sup>113</sup> Moreover, while he was interned after the war in the United Kingdom along with the other members of the *Uranverein*, other internees believed Gerlach to be perhaps the scientist most willing to put aside whatever qualms he had with the Nazi regime to support the German cause.<sup>114</sup> This was strikingly similar to Jordan’s attitude, as we saw in Chapters 2 and 3. Like

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<sup>109</sup> Heisenberg, “Die Bewertung der ‘modernen theoretischen Physik,’” 210. Emphasis in original. This essay was originally written in 1940 but, due to the huge battle between *deutsche Physik* and academic physicists, it was only published three years later. It appeared in the *Zeitschrift für die gesamte Naturwissenschaft*, the house journal of *deutsche Physik*, and it was a sign that the academic physicists had won the battle. See Beyerchen, *Scientists under Hitler*, 192–93; Walker, *German National Socialism and the Quest for Nuclear Power*, 70–72. Here what is crucial, though, is the rhetoric Heisenberg chose to use.

<sup>110</sup> Heisenberg, “Die Bewertung der ‘modernen theoretischen Physik,’” 205.

<sup>111</sup> *Ibid.*, 203–4.

<sup>112</sup> *Ibid.*, 211.

<sup>113</sup> Lorenz, *Protest der Physiker*, 70–71.

<sup>114</sup> Bernstein, *Hitler’s Uranium Club*, 123–28, 143.

Jordan, Gerlach claimed after the war that used his power to protect younger scientists from being drafted into the war effort, thereby protecting German science.<sup>115</sup>

Moreover, there is much evidence that the two were on friendly terms both during and immediately after the war. In 1941, Jordan listed Gerlach as a potential ally in an abortive attempt at mounting a collective campaign against Hugo Dingler and *deutsche Physik*, similar to the one that Jordan attempted that year with Adolf Meyer-Abich, which was discussed in Chapter 3. In particular, it seems that while Jordan was briefly stationed in Potsdam that summer that he, Gerlach, and Austrian physicist Paul Rosbaud met several times in person in Berlin to discuss this possible intrigue.<sup>116</sup> To discredit Dingler in the eyes of Party leaders, both Gerlach and Jordan were willing to embrace anti-Semitic methods; the two both discovered and disseminated information about Dingler's apparent "pro-Jewish" tendencies in writings of Dingler's from the Weimar era.<sup>117</sup> Finally, as noted in Chapter 4, at the end of the war—likely in early 1945—Gerlach helped provide Jordan with an official governmental research contract so that Jordan would avoid being drafted during the hopeless last stand in Berlin if his laboratory was not evacuated.<sup>118</sup> In short, both attempted to combat *deutsche Physik* and both wished to aid the Nazi war effort.

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<sup>115</sup> Walker, *Nazi Science*, 235–37.

<sup>116</sup> See in particular Jordan to Paul Rosbaud, September 10 and September 30, 1941, both in NPJ, Nr. 765, and Rosbaud to Jordan, September 12, 1941, NPJ, Nr. 583. Jordan was stationed in Potsdam briefly, from late July to early September 1941.

<sup>117</sup> On Gerlach's use of these Weimar-era works by Dingler, see Beyerchen, *Scientists under Hitler*, 180, 183. Jordan was aware of these Dingler works as early as 1938, citing them in Nazi publications apparently to no avail; see Jordan, "Nationalsozialistische Wissenschaft — Aufgabe ohne Kompromiß!" 55. Jordan's attempted intrigue with Rosbaud also revolved around discrediting Dingler with this material; see Jordan to Rosbaud, September 10, 1941, NPJ, Nr. 765.

<sup>118</sup> Jordan noted that this happened during a meeting in person in Berlin; the two likely met several times there after Jordan was transferred to Berlin in fall 1943. Of course, as discussed in Chapter 4, Jordan's laboratory ended up being evacuated after all. See Jordan to Gerlach, August 8, 1946, NWG, Nr. 94/1.

And one could say the same about Carl Friedrich von Weizsäcker. Perhaps even more than Heisenberg and Gerlach, who each had their fair share of detractors, von Weizsäcker was able to radically reinvent himself after the war. As Lorenz notes, the Göttingen Manifesto was the crucial turning point in von Weizsäcker's reinvention as a "philosopher of peace."<sup>119</sup> His long lifespan—he died in 2007 at age 94—allowed him to burnish this reputation for another 50 years. A genial man, he constantly made himself available to journalists, constantly propagating his version of the nuclear story, and he had an army of students and acolytes eager to defend him as well. Obituaries upon his death lauded him as the "last universally educated scholar in German-speaking Europe."<sup>120</sup> Yet the fact remains that von Weizsäcker in 1940 wrote an *Uranverein* report outlining the possibility of developing nuclear explosives, and that he drafted a patent in 1941 that mentions the possibility of a nuclear bomb.<sup>121</sup> He too was in the same milieu as Jordan, willing to work on military projects to aid the German cause during World War II.

Many other members of the Göttingen 18, like Wolfgang Paul, Hans Kopfermann, Wilhelm Walcher, Otto Haxel and Karl Wirtz were also involved to varying degrees with the German nuclear project during the war; Haxel, Kopfermann, and Paul were also members of the Nazi Party.<sup>122</sup> Even Otto Hahn, rightfully held up as one of the few "decent Germans" under Hitler, was the head of a physics institute devoted to military research during the war, which investigated nuclear fission in

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<sup>119</sup> Lorenz, *Protest der Physiker*, 263–88, particularly 277.

<sup>120</sup> Quoted in *Ibid.*, 285.

<sup>121</sup> On Weizsäcker's 1940 report and his 1941 patent application along with his other activities during the war, see Walker, *German National Socialism and the Quest for Nuclear Power*, 23–24; Mark Walker, "Physics, History, and the German Atomic Bomb," *Berichte zur Wissenschaftsgeschichte* 40, no. 3 (September 2017): 271–88, particularly 275–276.

<sup>122</sup> Lorenz, *Protest der Physiker*, 72–73, 78. Again, Nazi Party membership did not necessarily signal ideological allegiance to the regime; the point is to demonstrate that these scientists too were willing to make compromises with the Nazi state.

particular.<sup>123</sup> The only signatories of the Manifesto who were not involved with Nazi military programs were the two German Jews who emigrated to escape Nazism and returned after the war: Max Born and Fritz Paneth.

The intention here is not to relativize or to make a *tu quoque* argument with the goal of “letting Jordan off the hook” for his actions under National Socialism. (Again, see Chapters 2 and 3 for the full details of his efforts to collaborate with the regime.) There is no doubt that Jordan certainly was a Nazi. Rather, the purpose is to demonstrate that the arguments made by the Göttingen 18 against Jordan could in many cases have been easily turned against them. All who remained in Germany during the Nazi era needed to make certain compromises with the regime. Heisenberg, von Weizsäcker, and Gerlach, among others, were willing, like Jordan, to collaborate with the regime in certain degrees—or look past its violence—if their scientific plans were funded.<sup>124</sup> (In many ways, they were more successful at such collaboration than Jordan was.) In doing so, they were forced into alliances with many of the regime’s most unsavory figures, as was Jordan. If they did not always cloak their scientific projects in the same sort of Nazi rhetoric as Jordan, they were certainly willing to take the regime’s money and carry out research for the war effort. It was for this very reason, as we saw in Chapter 4, that Heisenberg, von Weizsäcker, Gerlach, and the rest of the 18—even, to an extent, Otto Hahn—saw Jordan as one of their own in the war’s immediate aftermath. They too had followed Jordan’s prescription for science under Nazism; they had been on the same side against *deutsche Physik*.

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<sup>123</sup> See in particular Ruth Lewin Sime, “The Politics of Forgetting: Otto Hahn and the German Nuclear-Fission Project in World War II,” *Physics in Perspective* 14, no. 1 (March 2012): 59–94; Ruth Lewin Sime, “The Politics of Memory: Otto Hahn and the Third Reich,” *Physics in Perspective* 8, no. 1 (March 2006): 3–51, here 40–41.

<sup>124</sup> Again, more work is needed to untangle the varying motives of the signatories of the Göttingen Manifesto; the point is that these scientists argued along similar lines as Jordan, aiming to get the Nazi regime to financially support science.

It was only now, in the late 1950s, that these colleagues of Jordan's changed their perception of him and began to regard him as an unrepentant "Nazi." Just as *deutsche Physik* became a scapegoat for academic physicists in Germany in the immediate aftermath of World War II, as we saw in Chapter 4, so too did Jordan now become an easy target for von Weizsäcker and company. And while Jordan's attack on the Manifesto probably did cause the Göttingen 18 to reevaluate their opinion of his actions under Hitler, Jordan's political reemergence was also undeniably convenient for their own efforts at reputational reinvention. If confronted about their own conduct under Hitler, Gerlach, Heisenberg, von Weizsäcker, and others now had an example—Jordan, a political outcast, whose tone-deaf, fiery rhetoric was extremely unpopular with the West German public<sup>125</sup>—to show the West German public and the international scientific community what a "true" Nazi looked like in 1957. Compared to Jordan, how could they be Nazis? Some members of the Göttingen 18, like Gerlach, consciously reinterpreted Jordan's past; for others, like von Weizsäcker, this reinterpretation probably occurred on a more subconscious level. Either way, Jordan's presence as a clearly "unrepentant Nazi" still active in West German politics helped to feed the myth of resistance that Gerlach, von Weizsäcker, and other physicists with similarly questionable backgrounds during the Nazi period were spreading at this time.

In sum, Jordan's reemergence was a convenient and important corollary to their "act of self-denazification," as Holger Nehring termed it, for he provided the West German public with an example of one who, unlike them, remained a Nazi to the bone. In this way, Jordan became a

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<sup>125</sup> The Göttingen Manifesto and the resulting anti-nuclear campaign left their mark on West German popular opinion. Beginning in 1957 and continuing well into the 1960s, roughly two-thirds of West Germans who were polled opposed arming the *Bundeswehr* with nuclear weapons. See for example Michael Geyer, "Cold War Angst: The Case of West German Opposition to Rearmament and Nuclear Weapons," in *The Miracle Years: A Cultural History of West Germany, 1949-1968*, ed. Hanna Schissler (Princeton: Princeton University Press, 2001), 392–98.



convenient scapegoat and whipping boy for the sins of the vast majority of German physicists under Hitler. It was no coincidence that the reputations of von Weizsäcker, Heisenberg, and others as heroic resisters to Nazism began to crystallize in this moment as well, at the height of the Cold War; they were aided in their rehabilitation by the convenient example of Jordan the pariah.<sup>126</sup> The pasts of von Weizsäcker, Gerlach, and even Otto Hahn would largely remain unexplored by historians until the 1990s, 2000s, and even after 2010.<sup>127</sup>

Many physicists, including Heisenberg, von Weizsäcker, Gerlach, and others, had argued along the same lines as Jordan under Hitler, if perhaps not with the same fiery rhetoric. In their joint effort at rehabilitation during the immediate postwar period, they were all allies. Their paths only diverged in the late 1950s, at the height of the Cold War; it was this context that forged their varying images in historical memory. It was at this point that Heisenberg, von Weizsäcker, Gerlach, and others chose to reinforce Jungk's narrative in the Göttingen Manifesto and position their actions as part of the same moral spine that they had allegedly developed under Nazism.<sup>128</sup> Astute observers at the time picked up on this subtle bit of political positioning. When asked about the motives behind the Göttingen Manifesto, Austrian physicist Paul Rosbaud—who spied for the Allies from Berlin during World War II—wrote revealingly:

My first impression was, if only [the Göttingen 18] had protested at many other occasions—but then, of course, it was a bit risky to protest [i.e. under Hitler]. Germany is today a 'democracy' and it is quite harmless to 'protest' and at the same time to get another alibi, i.e.

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<sup>126</sup> On Heisenberg and von Weizsäcker's use of the Göttingen Manifesto as a way to rehabilitate their reputations, see again Lorenz, *Protest der Physiker*, 251–88.

<sup>127</sup> As Ruth Lewin Sime, biographer of Lise Meitner, writes about Otto Hahn, "Hahn successfully projected a restorative image of German scientific excellence untainted by Nazism or the war, at the same time rendering himself immune from critical examination." Indeed, this article, the first examination of Hahn's role in the German war effort, was only published in 2012! See Sime, "The Politics of Forgetting," 60.

<sup>128</sup> Again, I hope in the future to further analyze the varying motivations of the Göttingen 18.

that Germany never wanted to have anything to do with war, atom bombs etc—the same alibi as in Jungk’s book.<sup>129</sup>

In later letters, Rosbaud was even more caustic, seeing the Manifesto for what—at least in part—it was, namely a play at rehabilitation by von Weizsäcker, a man who was “shrewd and deliberately enigmatic, brought up in the school of diplomacy.”<sup>130</sup>

These actors thus reinforced the perception that had already started to form, namely that they had maintained their independence from Nazism and even resisted Hitler’s supposed plans to build atomic weapons. (It is telling that Heisenberg’s 1943 article attacking *deutsche Physik* along Jordan-like lines never resurfaced in 1950s West Germany, or that Gerlach’s close relationships with Hermann Göring and Albert Speer received little attention.) Jordan, on the other hand, acted as a mouthpiece for Adenauer’s government, denouncing his colleagues just as the *deutsche Physiker* had done under Hitler; unlike the others, his past under Hitler was brought to light. This Cold War-era decision to reenter politics was ultimately what gave Jordan—and not his colleagues—a reputation as a recalcitrant Nazi.<sup>131</sup> His unpopular political views, his inflammatory tactics, and his obviously tainted past made him an easy scapegoat for the sins of the vast majority of German physicists under Hitler. They continue to govern his image in historical memory to this day.

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<sup>129</sup> Rosbaud continued to note that he excepted Otto Hahn, Max von Laue, and Max Born from this assertion, writing that he “never doubted their integrity.” See Paul Rosbaud to Samuel Goudsmit, May 11, 1957, Box 28, Folder 44, SGP.

<sup>130</sup> Rosbaud to Goudsmit, June 30, 1958, SGP, Box 28, Folder 44. In another letter, Rosbaud was even more overt in his judgement: “You know my misgivings about everything that Freiherr says and writes. He is too much of a politician and he is very ambitious.” (Carl Friedrich von Weizsäcker’s family was part of the old German nobility; they carried the title of *Freiherr*, the equivalent to the English *baron*.) See Rosbaud to Goudsmit, June 14, 1957, SGP, Box 28, Folder 44. On the Göttingen Manifesto as a turning point in von Weizsäcker’s rehabilitation, see again Lorenz, *Protest der Physiker*, 263–88.

<sup>131</sup> Ironically, of course, this was a reputation that was in many ways well-deserved.

## Jordan's Reemergence in the Eyes of the East

Jordan's actions during the 1957 election and his subsequent position in the Bundestag earned him the permanent enmity of another group of Germans: the ruling Socialist Unity Party (*Sozialistische Einheitspartei Deutschlands*, SED) of East Germany. The German Democratic Republic, as it was formally known, had greeted the Göttingen Manifesto with acclaim from its initial publication, styling it as courageous opposition by Western scientists under pressure by what they termed the militaristic, reactionary Adenauer clique. A counter-declaration of solidarity with the 18 from Eastern physicists—including none other than Jordan's old wartime friend Robert Rompe—was issued the day after the original Manifesto was made public; the most famous signatories of the original Manifesto—particularly Heisenberg—were inundated by dozens or even hundreds of letters from East German groups and individuals thanking them for their brave action.<sup>132</sup>

With his firmly pro-NATO and pro-Adenauer politics, his vehement hatred of anything communist, and the fact that he was a former Nazi, Jordan was a perfect target for the East Germans. His *Lebenslauf* fit perfectly the East German assertion that there had been no purge of Nazis and fascists in West Germany after 1945, and Jordan's personnel files in the university archives of Rostock and Berlin—subordinate wings of the local university SED groups—provided

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<sup>132</sup> For a copy of the East German counter-declaration from the Physikalische Gesellschaft in der Deutschen Demokratischen Republik, dated April 13, 1957, see NWH, Nr. 1114/3. Heisenberg himself received hundreds of letters from residents of apartment blocks, workers in state-owned industries, local committees of the SED, and even several from elementary school students in East Berlin. The majority of these letters are extremely formulaic, making it clear that the operation was directed from some central organ—it would be fascinating to track down the bureaucratic apparatus in charge of this action. For these letters, as well as many other fascinating responses to the Manifesto from all across the world, see NWH, Nr. 1114-1115. The East German reaction to the Manifesto was a source of continual worry to many members of the 18, who—with good reason—feared being labeled as communists or East German agents. As Heisenberg noted in a letter to von Weizsäcker, “the strength of our position...in Germany to this point has relied on [the fact] that in spite of the ‘Declaration of the 18,’ we have not been classified as ‘pink [*rosa*].’ We must protect this capital scrupulously...” See Heisenberg to Carl Friedrich von Weizsäcker, December 9, 1957, NWH, Nr. 1958/2.

juicy dirt for young Party members looking to write dissertations in the “field” of Marxism-Leninism. “Worthy comrades,” wrote Dresden doctoral student (and Party member) Georg Domin to the Rostock archivists in 1961,

for the purposes of a dissertation, I am addressing the reactionary interpretations of science of Pascual Jordan, professor of theoretical physics currently living and teaching in Hamburg. As is known, Jordan was active as a professor from 1929 to 1944 at the University of Rostock. During this period, he published many of his writings in which he glorified Nazism and militarism, and attempted demagogically to win other scientists toward a blind submission to the fascist state and its ideology.

Just as the Borns noticed, Domin noted that one could easily find “astonishing analogies” between Jordan’s publications during the Nazi period and his present political role in the CDU, especially with the unpublished and unvarnished material in archives: “...I am turning to you with a favor to ask: surely there is material (old personnel files, manuscripts by J., evaluations of him, minutes, etc.) in the archives of your university that could help me more easily...expose the nefarious role of this man.”<sup>133</sup> The response from the local party secretary, Birkner, is revealing: he had himself already studied Jordan “a while ago,” and could say from personal experience that “several of his [i.e. Jordan’s] fascist tirades exist in university publications.” The local Institute for Marxism-Leninism was also planning to “devote more attention to this question,” wrote Birkner, urging Domin in the future to get in touch with the responsible cadres at the institute—likely to coordinate their messages.<sup>134</sup>

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<sup>133</sup> Georg Domin to the Hochschulparteileitung der SED an der Universität Rostock, September 28, 1961, RUA, Personalakten Pascual Jordan, Folder 1, Bl. 63.

<sup>134</sup> Birkner to Domin, March 24, 1962, RUA, Personalakten Jordan, Folder 1, Bl. 64. Domin did, in the end, write his dissertation on Jordan, see Georg Domin, “Auseinandersetzung mit der weltanschaulichen Position Pascual Jordans unter besonderer Berücksichtigung seiner Auffassungen zu einigen Grundproblemen der Biologie” (Humboldt-Universität zu Berlin, 1962). For another, more interesting, Marxist dissertation on Jordan, see Hubert Laitko, “Zum philosophischen Konzeption des Physikers Pascual Jordan: Versuch einer kritischen Analyse” (Humboldt-Universität zu Berlin, 1964).

This research by the University of Rostock’s Institute of Marxism-Leninism— as at all East German universities, an official academic department—culminated in two dissertations by Ruth Carlsen and Gudrun Mieke. While these works formally dealt with the “fascistization” of the entire University of Rostock from 1932–1935 and 1935–1945, respectively, Mieke in her dissertation devoted considerable space to Jordan’s own role in this process. A sign of the importance she—and presumably others in the local SED leadership—attributed to Jordan’s perceived role was that he was mentioned by name on the first page of the introduction:

[This research] is, considering the neo-fascist development in West Germany, of current interest...[it] will be made clear in particular with the example of the physicist Pascual Jordan, who once taught in Rostock...[that] parts of the intelligentsia retain the opinion that war—even atomic war—is necessary. This [opinion] has not only been spread without hindrance in West Germany, it is strongly supported by leading West German circles.<sup>135</sup>

Indeed, section 3.1.4 of Mieke’s work, “*Wehrwissenschaft* as a Constituent Part of Instruction in Individual Faculties,” was largely based on extensive quotes from Jordan’s works, old and new. This was necessary, she noted, because “the example of this Rostock university professor clearly shows the continuity of ideological opinions of a group in the university intelligentsia, that contrary to all historical development and experience, and contrary to their own knowledge [*Kenntnis*], still plant themselves in the service of the reactionary forces of German imperialism [i.e. West Germany].”<sup>136</sup> Other sections of Mieke’s dissertation are not so ideologically tinged; the repetition of common Marxist slogans in connection with Jordan makes it very possible that she was told—or felt it necessary—to sharpen her language in these passages.

Ironically, these intrepid young Marxist scholars conveniently ignored—or were unaware of—the fact that leading East German academic administrators had attempted to recruit Jordan to

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<sup>135</sup> Gudrun Mieke, “Zur Rolle der Universität Rostock in der Zeit des Faschismus in den Jahren 1935–1945” (Universität Rostock, 1968), A-B.

<sup>136</sup> *Ibid.*, 243.

assume a leading position in a new biophysical institute in the Soviet sector of Berlin in the immediate aftermath of World War II (see Chapter 4).<sup>137</sup> At this time, from 1946 to 1948, Jordan's Nazi past had excluded him from consideration as director—but he was still envisioned as a full professor and a crucial member of the new institution.<sup>138</sup> By 1965, though, Jordan was seen in the eyes of the East German party apparatus as worthy of mention in the *Brown Book*, the *Urtext* of all East German agitprop works. This book listed over 1500 “War and Nazi Criminals in the Federal Republic: [in the] State, Economy, Army, Justice, and Science” Had Jordan remained outside of the public sphere after the war, it seems highly improbable that the East Germans ever would have seen him as worthy of mention here—let alone listed him alongside names like Otmar Freiherr von Verschuer, one of Josef Mengele's collaborators, as one of the “Brown Professors and Nazi Ideologues in West Germany” who was now a “champion for atomic war.”<sup>139</sup>

East German interest in Jordan's role in West German science and politics went even further, into the upper echelons of the state's ruling clique. The infamous intelligence service of the German Democratic Republic, the *Stasi*, recruited a prominent theoretical physicist in general relativity, Hans-Jürgen Treder, as an informant, in part so that Treder could spy on Jordan at international conferences. From 1963 to 1965, Treder wrote occasional reports for the *Stasi*, which often touched on Jordan. In their “proposal to recruit” Treder, the physicist's *Stasi* handler noted Jordan as one of the “most important of his connections.”<sup>140</sup> The *Stasi* encouraged Treder,

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<sup>137</sup> Beyler, “From Positivism to Organicism,” 470–79.

<sup>138</sup> *Ibid.*, 174.

<sup>139</sup> *Braunbuch: Kriegs- und Naziverbrecher in der Bundesrepublik: Staat, Wirtschaft, Armee, Verwaltung, Justiz, Wissenschaft* (Berlin: Staatsverlag der Deutschen Demokratischen Republik, 1965), 318–21. While the book was intended as propaganda and rolled out in an international press conference, modern scholarship has shown that the vast majority of the information included in it was true.

<sup>140</sup> “Vorschlag zur Werbung eines GI,” i.e. Hans-Jürgen Treder, December 2, 1964, report compiled by *Stasi* agent Rolf Enge, BStU, MfS AIM 2470-87, Bd. I, Bl. 49-50.

codenamed “Researcher” (*Forscher*), to cultivate his “enemy connections” to Jordan by accepting an invitation to Jordan’s seminar in Hamburg. As they put it, Jordan played “no insignificant political role” in West Germany and science.<sup>141</sup> It seems that the Stasi also wished to be made aware of other scientists through Jordan: “The visit itself and [Treder’s] appearance will decide the further character of the connection. It can be evaluated if Jordan makes other people who are of importance to us known to the informant.”<sup>142</sup>

This attention from the Eastern Bloc was not without apparent consequence. Despite his fame in the field, and his invitation to the 1955 conference in Bern, mentioned above, Jordan was not named to the International Committee on General Relativity and Gravitation, founded in 1959, the predecessor to the modern-day International Society on General Relativity and Gravitation. While details are murky, it seems almost certain that Jordan’s late 1950s political reentry was what made him untenable for a leadership role in this international organization.<sup>143</sup> No one had taken notice of his past until he spoke out against the Göttingen 18. When German scholars were finally invited to join this international committee in the late 1960s, Cold War tensions mandated nominating two Germans: one from the West, and one from the East. Despite his continued fame, Jordan was evidently still untenable to the East—Otto Heckmann, a colleague of his in Hamburg, was suggested by Soviet scientists as the West German representative instead of him. Fascinatingly, it was Treder, recruited as a Stasi informant largely to spy on Jordan, who was named as the East German representative to the international community.<sup>144</sup> In this time of Cold War tensions Jordan

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<sup>141</sup> “Plan zur Entwicklung von Feindverbindung des GI ‘Forscher,’” Rolf Enge, January 27, 1965, BStU, MfS AIM 2470-87, Bd. I, Bl. 59.

<sup>142</sup> “Plan zur Entwicklung von Feindverbindung des GI ‘Forscher,’” Rolf Enge, January 27, 1965, BStU, MfS AIM 2470-87, Bd. I, Bl. 59.

<sup>143</sup> Lalli, *Building the General Relativity and Gravitation Community During the Cold War*, 53–54.

<sup>144</sup> *Ibid.*, 96.

had indeed managed a rare achievement: with his actions, he had angered elements on both sides of the Iron Curtain.

### Conclusion

For all the fanfare surrounding his election to the *Bundestag*, Jordan was barely active in the West German parliament. He never gave a speech during his four-year term, though he advised the CDU/CSU caucus on nuclear issues—along typical Cold Warrior lines—during a parliamentary debate over nuclear matters in 1958.<sup>145</sup> Jordan achieved attention largely as a target for the SPD—who labeled him a “mole,” as he had once claimed that humanity could live under the earth in the event of a nuclear war—and for causing a minor political scandal after being photographed in front of dozens of old imperial German wartime banners at the conference of a revived version of the far-right *Stahlhelm* veterans organization in fall 1959.<sup>146</sup>

Amazingly, Jordan was gradually able to repair his relations with many of his colleagues who signed the Manifesto. He still cherished them personally, terming them “men who I highly venerate” in a condolence letter to Max von Laue’s widow after von Laue’s death in 1960.<sup>147</sup> Even Max Born eventually forgave Jordan for his reentry into politics, writing to Jordan in 1963 that he had

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<sup>145</sup> See the copy of a March 1958 brief by Jordan, “Gesichtspunkte und Tatsachen zur Atomdiskussion,” written for members of the CDU/CSU caucus, located in Nachlass Hermann Höcherl Nr. 35, ACSP.

<sup>146</sup> A copy of Jordan’s speech, in which he declared that the front of the the Cold War was “everywhere,” can be found in NPJ, Nr. 420, in an undated fall 1959 clipping from the newspaper *Der Stahlhelm*. The speech evidently took place on August 29, 1959. Left-leaning newspapers in Jordan’s native Hamburg reprinted this picture several times in late 1959 and early 1960; see the press clippings from the *Hamburger Echo*, dated December 28, 1959 and January 30/31, 1960, both in StaH, 361-6 IV 2076, Folder 10. For Jordan being attacked as “mole,” see for example Peter Altenburg, “Ein MdB mit Maulwurfsidee: Gedanken zu den Worten eines deutschen Bundestagsabgeordneten,” *Hamburger Echo*, January 11, 1960. A 1958 mention of Jordan in the Bundestag led to shouts of “the mole” from the SPD delegation; see Karl Mommer, speaking on the draft of the “Gesetz eines Gesetzes zur Volksbefragung wegen einer atomaren Ausrüstung der Bundeswehr,” in “Deutscher Bundestag, 31. Sitzung, Bonn, Freitag, den 13. Juni 1958,” in *Deutscher Bundestag — 3. Wahlperiode* (Bonn, 1958), 1729B.

<sup>147</sup> Jordan to Margarethe von Laue, May 5, 1960, NMvL, Nr. 972, Bl. 31–33.



“suffered in these last years from the fact that we grew apart over the question of nuclear armament and became enemies...And I wish that we could come together. We could achieve so much together...”<sup>148</sup> The main exception was Walther Gerlach. The personal fight between Jordan and Gerlach had been extremely bitter; in 1958, Jordan hired an aggressive lawyer to threaten Gerlach, who eventually petitioned local prosecutors to open a libel case against Gerlach for describing Jordan’s depiction of the Göttingen Manifesto as a “blatant falsehood” and a “conscious distortion.” This court case was finally dropped by prosecutors in July 1959, but Gerlach would never forgive Jordan for the saga.<sup>149</sup>

However, even when Jordan mended the fences, these colleagues were not willing to change their minds about how they viewed his actions under Hitler and after the war. After Jordan attempted in 1964 to explain his conduct during the Third Reich to Born by claiming that his life had been in danger under Hitler, his former teacher remained unimpressed: “concerning your attitude during the ‘1000 years’ [i.e. the Third Reich], a collection of your remarks on power in books and publications during the Nazi period exists, which is difficult to reconcile with your claim that you always supported scientific truth against the *deutsche Physik* of Lenard and comrades.” Jordan’s tactics under Adenauer had been no better, Born wrote. Declining Jordan’s offer to speak about his political past, Born told him, in essence, to let sleeping dogs lie.<sup>150</sup> The two maintained friendly contact until Born’s death in 1970, but in Born’s mind, his opinion on Jordan’s past had been crystallized in 1956 and 1957.

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<sup>148</sup> Born to Jordan, November 2, 1963, NMB, Nr. 444.

<sup>149</sup> See the extensive documentation to this imbroglio in NWG, Nr. 094/1. Fascinatingly, in what does not seem to be a coincidence, no trace of this legal case can be found in Jordan’s *Nachlass*.

<sup>150</sup> Born to Jordan, February 18, 1964, NMB, Nr. 1003. A copy of this letter is not extant in Jordan’s *Nachlass*, and neither is the letter that prompted Born’s response.

The saga with Born thus exemplifies the way in which Jordan's remembrance was forged at the height of the Cold War. Whereas before 1957, his past was rarely mentioned, articles afterward never failed to bring it up; it governs the historiography to this day. Again, this is not without reason—Jordan deserves this reputation! Yet it is important to remember that he simultaneously served as a convenient scapegoat for the crimes of German physicists during the Nazi era. The *deutsche Physiker* had received all the blame in the immediate postwar for Nazi crimes in the physics world. Now they were out of the picture entirely, and when Jungk's book and the Göttingen Manifesto offered a path to rehabilitation at the height of the Cold War, a new scapegoat was needed. Jordan's unique combination of a legacy of publications praising the Nazi regime, his continued inflammatory rhetoric against the highly popular Göttingen Manifesto, along with his seeming ability to anger colleagues on all sides made him the perfect whipping boy for von Weizsäcker and others.

Considered in this way, Jordan's case thus provides insight into an issue far broader than the comparatively simple question of whether or not he was complicit in the Third Reich's crimes. (He was, as were all physicists who stayed in Germany during World War II!) His life demonstrates that historical memory and the scientific canon often form long after the fact, and that they can often be crystallized by actions and deeds made long after the events in question.

## Conclusion: Lessons from a Peculiar Life

Though Jordan managed to repair his relations with many of the Göttingen 18 by the mid-1960s, his reputation had forever changed, and he remained isolated in his field. West Germany was slowly changing, too; the ossified, conservative society of the 1950s gradually and haltingly gave way as the generation who came of age after the war—termed the 1968ers—began to question how their parents could have supported the Nazis and fought for Hitler. The new West German Chancellor Kurt Georg Kiesinger—also from the CDU—particularly outraged students and the left wing, for Kiesinger had been a member of the Nazi Party from February 1933 to 1945.<sup>1</sup> One of the hotbeds for student protests was Jordan’s own University of Hamburg, where in November 1967, at the annual ceremony inaugurating the new university rector, two students famously unfurled a banner reading “Under the Gowns—the Musty Odor of 1000 Years” (*Unter den Talaren — Muff von 1000 Jahren*). (This formal ceremony was an important, solemn occasion in traditional German academia; the professors marched in wearing academic regalia, with the rector at the front, wearing the traditional chain of office.) With its reference to Hitler’s infamous proclamation of the “thousand-year Reich,” the protest directly linked West German academia—and its professoriate—to the crimes and failures of Germany’s recent past. It is hard to escape the conclusion that one of those old Nazi professors these students were protesting against was Pascual Jordan, who was likely in the auditorium during the protest.<sup>2</sup>

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<sup>1</sup> Neither Adenauer nor his immediate successor as chancellor, Ludwig Erhard, had been members of the Nazi Party. Erhard was chancellor from 1963 to 1966; Kiesinger succeeded him, serving from 1966 to 1969.

<sup>2</sup> One obituary of Jordan claims that in 1968, he personally confronted students who broke up a faculty meeting at the University of Hamburg at which the next rector was to be elected. It is unclear if this happened, as no other sources support this assertion, but it certainly seems plausible. See Klaus Müller, “Pascual Jordan tot: Weißer Rabe unter den Physikern,” *Die Welt*, August 1, 1980. On the 1968 rector election, see Malte Habscheidt, “Das Ende der Magnifizienz: Die umstrittene Wiederwahl Werner Ehrlichers zum Rektor der Universität Hamburg 1968,” in *Gelebte Universitätsgeschichte: Erträge jüngster Forschung—Eckart*

Jordan's past—as viewed through the lens of his Cold War reemergence—was by this point often making him persona non grata in certain spheres. In 1967, the same year as the Hamburg student protest, a Swiss religious organization was forced to rescind an invitation for Jordan to speak. The group had invited him to speak about the relationship between science and religion, but had been inundated with letters of protest. As was now to be expected, *Der Spiegel* cited Jordan's political actions in the late 1950s—namely, his opposition to the Göttingen Manifesto in 1957 and his speech to the *Stahlhelm* in 1959—as evidence that he was a “militant” nationalist. In the judgment of both *Der Spiegel* and the Swiss theologians who had invited Jordan, an analysis of Jordan's Nazi-era writings confirmed this verdict. (The Swiss theologians had deputized someone to look into the publications.) Fascinatingly, the outcry surrounding this incident forced Jordan to make a statement to *Der Spiegel*—the only public comments he ever made about his past after the war. Tellingly, Jordan no longer even attempted to justify his Nazi-era actions on the basis of protecting science or saving the younger generation of scientists; instead he simply stated that he was “not interested” when “archaeologists [went] digging in the past.” His explanation of the *Stahlhelm* speech was similarly ill-judged—Jordan lamely claimed that had he wanted to “introduce” the group to democracy and thus “prevent” the creation of an overtly neo-Nazi party. This experiment, according to Jordan, had “unfortunately failed.”<sup>3</sup> *Der Spiegel* was admittedly a left-leaning magazine, but before 1957 it had mentioned Jordan uncritically.<sup>4</sup>

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*Krause zum 70. Geburtstag*, Hamburger Beiträge zur Wissenschaftsgeschichte (Hamburg: Dietrich Reimer Verlag, 2013), 61–80.

<sup>3</sup> All quotes here from “Pascual Jordan: Überall Front,” *Der Spiegel*, January 9, 1967. The neo-Nazi party Jordan was referencing here is the *Nationaldemokratische Partei Deutschlands* (National Democratic Party of Germany, NPD), which was founded in 1964.

<sup>4</sup> See for example “Guten Tag, Dr. Jordan.” Local newspapers in Hamburg had also argued vehemently for the university to retain Jordan before he received his permanent position; see for example Ludwig Schubert, “Pascual Jordan ein Luxus?,” *Hamburg Freie Presse*, March 15, 1950.

Increasingly at odds with a changing West German society, Jordan retired from the University of Hamburg in 1970, after a long and failed attempt at getting the university to name a physicist who worked on general relativity as his successor.<sup>5</sup> During the 1970s, he continued to publish newspaper articles, popular scientific works (including reminiscences about the development of quantum physics), cultural-philosophical texts, and some scientific papers.<sup>6</sup> Yet Jordan remained on the peripheries of physics. Moreover, by the late 1970s, his health was in decline and he again had serious financial problems.<sup>7</sup>

Jordan, the last living coauthor of the *Dreimännerarbeit*, and one of the last surviving members of the *Wunderkind* generation of quantum pioneers, died on July 31, 1980. “For the scientist himself, his Nazi past was soon prehistoric, but it nevertheless overshadowed his achievements in theoretical physics,” wrote *Der Spiegel* in its one-paragraph obituary of Jordan.<sup>8</sup> Even the more conservative *Frankfurter Allgemeine Zeitung* dryly noted in its obituary that Jordan’s postwar “marriage of science and politics was not very prosperous,” remarking laconically that Jordan’s 1959 speech to the revived *Stahlhelm* was “not exactly met with applause.”<sup>9</sup> International media paid little attention to

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<sup>5</sup> On the question of Jordan’s successor, see for example Max Born to Jordan, December 5, 1967, NMB, Nr. 1003, Jordan to Born, February 14, 1968, NMB, Nr. 353, Jordan to Heisenberg, May 20, 1968, and Heisenberg to Jordan, May 24, 1968 (copy), both in NWH, Nr. 1745.

<sup>6</sup> See for example Pascual Jordan, *Albert Einstein: Sein Lebenswerk und die Zukunft der Physik* (Frauenfeld und Stuttgart: Verlag Huber, 1969); Pascual Jordan, *Schöpfung und Geheimnis* (Oldenburg: Stalling, 1970); Pascual Jordan, *Wie frei sind wir? Naturgesetz und Zufall*, Texte + Thesen 18 (Osnabrück: Verlag A. Fromm, 1971); Pascual Jordan, *Erkenntnis und Besinnung: Grenz betrachtungen aus naturwissenschaftlicher Sicht* (Oldenburg: Stalling, 1972); Pascual Jordan, *Aufbruch zur Vernunft: Ein Naturforscher zur deutschen Besinnung*, Texte + Thesen 73 (Zürich: Edition Interfrom, 1976).

<sup>7</sup> By the 1970s, Jordan was often unable to attend meetings of the Mainz Academy of Sciences and Literature, where he had served for long periods as both president and vice president, because he could not afford the cost of travel and lodging. See for example Jordan to Dr. Brenner, March 20, 1975; Jordan to Dr. Brenner, April 11, 1975; Jordan to Heinrich Bredt, January 4, 1978; and Jordan to Bredt, January 17, 1978, all in Jordan Personalakten, Bd. I, AWLM.

<sup>8</sup> “Pascual Jordan,” *Der Spiegel*, August 4, 1980.

<sup>9</sup> H. Z., “Pionier der Physik: Zum Tode der Physiker Pascual Jordan,” *Frankfurter Allgemeine Zeitung*, August 2, 1980.

Jordan, befitting his status as the forgotten founder of quantum mechanics—whereas the *New York Times* in February 1976 featured a long obituary of Werner Heisenberg, there was no notice taken of Jordan’s death in July 1980.<sup>10</sup> Even the *Physikalische Blätter*, the trade journal of German physics, carried only a small obituary of Jordan from the German Physical Society. It noted the death of “one of its most important members,” promising that an “detailed appreciation of his life’s work” would “appear later.”<sup>11</sup> But tellingly, that promised article was never published.

The ambivalent reaction to Jordan’s death augured how his life would be remembered afterward. Uncertainty about how Jordan should be commemorated—if at all—only increased in the 1980s and 1990s. In reference works, which often serve as a barometer for historical memory, Jordan’s name straddles the divide between those scientists who receive their own article and those who do not make the cut.<sup>12</sup> One standard 1995 English-language reference work on twentieth century scientists meant for high schools and colleges, for example, carries entries of Max Born, Werner Heisenberg, Paul Dirac, Wolfgang Pauli, and other participants in the quantum revolution.<sup>13</sup> Yet an article on Jordan only appears in the supplementary volume, which was published three years later.<sup>14</sup> Even in Germany, where anniversaries of birthdays, dates of death, and famous discoveries are extravagantly celebrated with proverbial Teutonic punctuality, remembrance of Jordan has been uneven. 100<sup>th</sup> birthdays, the roundest of round numbers, are normally celebrated in solemn fashion. Revealingly, though, the symposium theoretically organized in honor of Jordan’s 100<sup>th</sup> birthday,

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<sup>10</sup> “Heisenberg, Nobel Physicist, and Whipple, Winner in Medicine, Die,” *The New York Times*, February 2, 1976.

<sup>11</sup> “Pascual Jordan Gestorben,” *Physikalische Blätter* 36, no. 9 (September 1980): 288.

<sup>12</sup> Reference works are often the first place students look for information on a specific scholar or discovery, and thus help form the canon of scientists in popular memory.

<sup>13</sup> Emily J. McMurray, ed., *Notable Twentieth Century Scientists*, 4 vols. (Detroit: Gale Research Inc., 1995).

<sup>14</sup> Bryan Bunch, “Ernst Pascual Jordan,” in *Notable Twentieth Century Scientists Supplement*, ed. Kristine M. Krapp (Detroit: Gale Research Inc., 1998), 235–38.

which was in 2002, only took place after Jordan's 101<sup>st</sup> birthday, in October 2003.<sup>15</sup> Even on Wikipedia—today's de facto standard reference work—the articles on Jordan in both English and German are dwarfed by those of his colleagues.

But we should remember Jordan—precisely for the reasons why he has been forgotten. The process in which Jordan was forgotten, depicted in this dissertation, is highly instructive and telling; Jordan's life provides important lessons for historians of Germany and historians of science alike.

For as has been seen, being overlooked was nothing new for Jordan. The process of forgetting him did not start after the war, or even after 1933. As early as the 1920s, Jordan was overlooked due to his stutter. Had he never joined the Nazi Party, there was a good chance that his life and his contributions to science would nonetheless have been overlooked. As noted, many of Jordan's most important contributions to physics were made in collaboration with other scientists. Given how his stutter made it challenging for him to build a scientific reputation, many colleagues in the field probably overlooked Jordan's contributions to these collaborations in favor of those of his more well-known collaborators.<sup>16</sup> This is probably why, in stark contrast to all of his contemporaries from the quantum revolution, there is no canonical equation or discovery in physics named after Jordan.<sup>17</sup> In short, it was no coincidence that Jordan was never nominated for the Nobel Prize

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<sup>15</sup> The conference was held jointly by the Mainz Academy of Sciences and Literature, the Max Planck Institute for Gravitational Physics (led by Jordan's student Jürgen Ehlers), and the Max Planck Institute for the History of Science. For the proceedings of the symposium, see Jürgen Ehlers, Dieter Hoffmann, and Jürgen Renn, eds., *Pascual Jordan (1902-1980): Mainzer Symposium zum 100. Geburtstag*, Max-Planck-Institut für Wissenschaftsgeschichte Preprints 329 (Berlin: Max-Planck-Institut für Wissenschaftsgeschichte, 2007).

<sup>16</sup> One factor may potentially have been a 1926 article by Erwin Schrödinger, in which he abbreviated the "Heisenberg-Born-Jordan quantum mechanics" to "Heisenberg quantum mechanics" in "the interest of brevity." While Schrödinger simply wanted to save space in this article, this perhaps encouraged colleagues to consider quantum mechanics as Heisenberg's sole creation. See Erwin Schrödinger, "Über das Verhältnis der Heisenberg-Born-Jordanschen Quantenmechanik zu der meinen," *Annalen der Physik* 384, no. 8 (1926): 734–56.

<sup>17</sup> This is important, for physics students learn about canonical figures in the field's history via the discoveries that carry their name; it means that Jordan's name has died in the field. In comparison, every student who

before 1933; his name was not well known. This tells us that scientific acknowledgment and prestige are often more contingent than we might believe—and it demonstrates that “invisible disabilities” like stuttering have often prevented certain figures from building reputations and receiving recognition.

Moreover, better knowledge of Jordan’s case could help put a persistent myth to rest: despite overwhelming evidence to the contrary, many still believe that brilliant scientists are inherently also paragons of virtue. (The converse of this myth also remains popular: namely, if scientists have political beliefs that we consider odious, their scientific contributions must be of poor quality.) Though Jordan, as detailed in Chapters 2 and 3, was sorely disappointed that the Nazi regime did not initiate the spiritual rebirth of Germany he craved, and was privately bitter that he was never placed in a leading technocratic position in the Nazi state, he nevertheless remained more than willing to “work toward the *Führer*” in science. His “failed collaboration” is revealing, as he presciently envisioned the “big science” enterprise that was to emerge during and after the war in the United States, presenting it with a Nazified veneer so as to appeal to the regime. “Good” scientific thinking is thus not reliant on a democratic or egalitarian worldview.

Jordan’s life also contains important lessons for understanding postwar Germany and postwar science. As detailed in Chapter 4, after some initial difficulty in the war’s immediate aftermath, Jordan managed to rehabilitate himself in the eyes of his colleagues by the mid-1950s. (Of course, these colleagues were unaware of Jordan’s writings under the “Domeier” pseudonym in the early 1930s.) It was only in the late 1950s that Jordan’s reentry on the West German political scene

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takes quantum mechanics learns about the “Heisenberg uncertainty principle,” the “Pauli exclusion principle,” the “Born-Oppenheimer approximation,” the “Dirac equation,” or the “Schrödinger equation.” Ironically, as detailed in Chapter 2, Jordan’s name has remained alive in mathematics, where the branch of algebra he discovered is still termed “Jordan algebra.”



prompted a reexamination of his past, as described in Chapter 5. Many colleagues, like Max Born, had believed what Jordan told them after the war, and were so incensed by Jordan's opposition to the Göttingen Manifesto that they again looked into his past. Jordan's Nazi-era books and articles shocked them. Coupled with his reemergence as a Cold Warrior, this meant that they would forever view him as a Nazi, full stop. For other members of the Göttingen 18, like Werner Heisenberg, Carl Friedrich von Weizsäcker, and Walther Gerlach, Jordan's crass criticisms of the group, his unpopular pro-nuclear policies—and the ample pro-Nazi passages in his Hitler-era writings—made him a convenient catalyst in their successful attempts at reputational rehabilitation.

While counterfactuals are always speculative, it seems appropriate to introduce one here in order to fully appreciate what Pascual Jordan's life—and his afterlife—may have looked like had he stayed out of politics in the 1950s. Consider the career of famous Austrian biologist Konrad Lorenz, one of the founders of the field of ethology. Born in 1903, Lorenz was only one year younger than Jordan. Like many Austrians, Lorenz eagerly joined the Nazi Party after the *Anschluss* in 1938, claiming in his application that he had been an enthusiastic supporter of the Party in Austria before the annexation. Like Jordan, Lorenz believed that he could convince the Nazis that his research was worthy of financial support; like Jordan, Lorenz incorporated Nazi terminology and ideology into his scientific and popular scientific works. He even joined the Party's "Racial-Political Office [*Rassenpolitische Amt*]" and participated in an "experiment" in 1942 in German-occupied Poland that examined the offspring of so-called *Mischlinge*, children born to "mixed partnerships" between ethnic Germans and ethnic Poles. In short, he thus placed himself at the disposal of Nazi racial policy.<sup>18</sup>

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<sup>18</sup> On Lorenz, see Ute Deichmann, *Biologists under Hitler*, trans. Thomas Dunlap (Cambridge: Harvard University Press, 1996), 179–205. Deichmann notes how Lorenz, like Jordan, was also influenced by Oswald Spengler's thought. On Lorenz's past, see also Benedikt Föger and Klaus Taschwer, *Die andere Seite des Spiegels: Konrad Lorenz und der Nationalsozialismus* (Wien: Czernin, 2001); Klaus Taschwer and Benedikt Föger, *Konrad Lorenz: Biographie* (Wien: Zsolnay, 2003).

After the war, though some were apparently aware of his past political activities, Lorenz was able to resurrect his career in remarkable fashion. He received a position in a Max Planck Institute in Germany in 1951, and by 1963, was named a director of the Max Planck Institute for Behavioral Physiology.<sup>19</sup> To the end of his life, he maintained that he had had no knowledge of the regime's crimes, even claiming that he was unaware that Nazi euphemisms like "selection" or "elimination" meant murder. Lorenz was lionized for protesting against the construction of nuclear reactors in Austria, which made him a hero to the country's environmental movement; he ultimately won the Nobel Prize in Medicine in 1973. At this point, Lorenz publicly denied having joined the Nazi Party.<sup>20</sup> At the same time, admirers across the world were defending his wartime actions in glowing publications.<sup>21</sup> In the 1980s, he repeatedly denied having been a member of the Party, claiming, for example, that he "avoided all politics" in a 1988 interview.<sup>22</sup> Lorenz died in 1989; it was only in the 1990s that Ute Deichmann carried out the first serious study of biologists and biology under Nazism, which uncovered much evidence about Lorenz's attempts to work with the regime. And it was only in the early 2000s that historians made the extent of his affinity with Nazism clear.<sup>23</sup>

The Lorenz comparison thus points toward the conclusion that Jordan's reputation would likely be remembered quite differently had Jordan remained out of politics in the 1950s and 1960s.

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<sup>19</sup> Deichmann, *Biologists under Hitler*, 199.

<sup>20</sup> Taschwer and Föger, *Konrad Lorenz*, 234–35.

<sup>21</sup> See for example Alec Nisbett, *Konrad Lorenz: A Biography*, 1st American ed. (New York: Harcourt Brace Jovanovich, 1977). To be fair, intrepid scholars did criticize works like Nisbett's, but they remained outnumbered by Lorenz's admirers. (There was also little criticism in Austria.) For an example of such criticism, see for example Theo J. Kalikow, "Konrad Lorenz's 'Brown Past': A Reply to Alec Nisbett," *Journal of the History of the Behavioral Sciences* 14, no. 2 (April 1978): 173–79. (Even here, though, journal editors allowed Nisbett to respond at some length; see Alec Nisbett, "The Author Responds," *Journal of the History of the Behavioral Sciences* 14, no. 2 (April 1978): 179–80. For another critique of Lorenz, see Theodora J. Kalikow, "Konrad Lorenz's Ethological Theory: Explanation and Ideology, 1938-1943," *Journal of the History of Biology* 16, no. 1 (1983): 39–73.

<sup>22</sup> Deichmann, *Biologists under Hitler*, 179.

<sup>23</sup> Föger and Taschwer, *Die andere Seite des Spiegels*; Taschwer and Föger, *Konrad Lorenz*.

While we cannot be certain of this conjecture, it is plausible. Indeed, given his prolific work in the realm of popular science, Jordan might instead be remembered as a kind of West German Carl Sagan, a quirky, stereotypically absent-minded professor whose books and appearances on television and radio inspired many future scientists to enter the field.<sup>24</sup> Ironically, Jordan deserved the reputation he eventually received—for he really did believe what he wrote in places like *Deutsches Volkstum* and *Blut und Boden*, and he really did seek to enlist Nazi support for his dreams of German scientific grandeur. (Though as was seen in Chapter 5, many other contemporaries who were able to restore their reputations after the war also worked for the German cause and attempted to win regime support for science.)

Particularly when viewed in contrast with that of Lorenz, Jordan's case demonstrates that he was very much the outlier: many scientists realized that if they stayed out of politics or nodded to left-leaning protest movements in the West, their reputations would be protected and their pasts left untouched. Savvier than Jordan, they were thus able to rehabilitate themselves. The Cold War context thus played a crucial role in shaping the collective memory not just of Jordan or Lorenz, but of an entire generation of scientists. (Not to mention important figures in other areas of society!) In this way, this case suggests that interrogating the construction of collective memory in science can be a highly productive line of research for historians—an insight that can be applied far beyond Pascual Jordan, quantum physics and Germany.

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<sup>24</sup> Even as it stands, Jordan is often cited as a scientist who inspired the younger generation with his popular works and public appearances. See for example the interview of molecular biologist Thomas Trautner by Ralf Hahn in *Genes and Men: 50 Years of Research at the Max Planck Institute for Molecular Genetics* (Berlin: Max Planck Institute for Molecular Genetics, 2014), 63.

## Bibliography

### Unpublished Sources

I have listed collections of personal papers (*Nachlässe*) individually here, organized by archive. For other collections—of organizations, universities, or bureaucracies—I list only the archives along with a general descriptor of the collections or documents consulted (i.e. “Jordan personnel files” or “Files pertaining to...,” etc. Full archival signatures and call numbers can always be found in the footnotes (with appropriate cross-referencing to the list of abbreviations).

#### *Staatsbibliothek zu Berlin (Potsdamer Straße)*

*Nachlass* Pascual Jordan  
*Nachlass* Max Born

#### *Archiv der Max-Planck-Gesellschaft, Berlin*

*Nachlass* Adolf Butenandt  
*Nachlass* Wolfgang Gentner  
*Nachlass* Otto Hahn  
*Nachlass* Max Hartmann  
*Nachlass* Werner Heisenberg  
*Nachlass* Max von Laue  
*Nachlass* Carl Friedrich von Weizsäcker

#### *Archiv der Berlin-Brandenburgischen Akademie der Wissenschaften, Berlin*

*Nachlass* Walter Friedrich  
*Nachlass* Karl Lohmann  
*Nachlass* Friedrich Möglich  
*Nachlass* Achille Papapetrou  
*Nachlass* Hans Stubbe  
Akademieleitung nach 1945

#### *Bundesarchiv, Berlin-Lichterfelde*

R 4901, Reichserziehungsministerium (REM)  
Files of the former Berlin Document Center (Nazi Party membership files, etc.)

#### *Stasi Records Agency (BStU), Berlin*

Various files pertaining to Jordan made by the *Stasi*

*Humboldt University Archive, Berlin*

Jordan personnel files, along with files of other colleagues

*Archiv der Deutschen Physikalischen Gesellschaft, Berlin*

Files pertaining to the awarding of the Planck Medal

*Staatsarchiv Hamburg*

Jordan personnel files  
Jordan denazification file  
Jordan press clippings collection, among others

*Staats- und Universitätsbibliothek Hamburg*

*Nachlass* Adolf Meyer-Abich

*Rostock University Archive*

Jordan personnel files, among others

*Göttingen University Archive*

Jordan personnel files  
Various other files pertaining to the Mathematical-Natural Scientific Faculty (*Mathematisch-Naturwissenschaftliche Fakultät*)

*Staatsbibliothek Göttingen*

*Nachlass* Ludwig Bieberbach  
*Nachlass* Helmut Hasse  
*Nachlass* Friedrich Hund  
*Nachlass* Gottfried Köthe  
*Nachlass* Constance Reid  
*Nachlass* Rudolf Smend  
Sammlung Max Voit

*Stadtarchiv Goslar*

*Nachlass* August Georg Kenstler

*Niedersächsische Landesarchiv, Hannover*

Various files pertaining to the *Bismarckschule*

*Stadtarchiv Hannover*

Various files pertaining to the *Bismarckschule*

*Universitätsarchiv Hannover*

Matriculation records pertaining to Jordan

*Archive of the Akademie der Wissenschaften und der Literatur zu Mainz*

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Records pertaining to the founding of the Mainz Academy

*Deutsches Museum, Munich*

*Nachlass* Wather Gerlach

Atomdokumente

*Archiv für Christlich-Soziale Politik, Hanns-Seidel-Stiftung, Munich*

*Nachlass* Hermann Höcherl

*Nachlass* Franz Josef Strauss

Various other CSU-related files

*Hofbibliothek Aschaffenburg*

*Nachlass* Hugo Dingler

*Archiv für Christlich-Demokratische Politik, Konrad-Adenauer-Stiftung, Sankt Augustin*

*Nachlass* Pascual Jordan (small collection separate from the collection in Berlin)

Jordan press clippings collection

*Nachlass* August Wegmann

Various other CDU-related files

*Deutsches Literaturarchiv, Marbach*

*Nachlass* Ernst Jünger

*Nachlass* Armin Mohler

*Nachlass* Wilhelm von Scholz

*Nachlass* Wilhelm Stapel

Editorial records of the magazine *Merkur*

Various other *Nachlässe* of German literary figures

*Herder-Institut, Marburg*

Records of the *Baltische Brüderschaft* (Baltic Brotherhood)

*Archiv der deutschen Jugendbewegung, Witzenhausen*

Nachlass Gustav Wyneken

*Kolbenheyer-Archiv, Geretsried*

Nachlass Erwin Guido Kolbenheyer

*ETH-Bibliothek, Zürich, Switzerland*

Nachlass Carl Jung (C. G. Jung Arbeitsarchiv)

*Churchill Archives Center, Cambridge, United Kingdom*

Max Born Papers

Lise Meitner Papers

*Noord-Hollands Archief, Haarlem, the Netherlands*

Nachlass Otto Neurath

Nachlass Moritz Schlick

*Niels Bohr Archive, Copenhagen, Denmark*

Niels Bohr Papers

*Hebrew University of Jerusalem, Special Collections*

Albert Einstein Papers

*American Institute of Physics, College Park, Maryland*

Samuel Goudsmit Papers

*Library of Congress, Washington, DC*

John von Neumann Papers

*Rockefeller Archive Center, Sleepy Hollow, New York*

Rockefeller Foundation files pertaining to Jordan

*Hoover Institution Archives, Stanford University*

Karl Popper Papers

Edward Teller Papers

*Princeton University Library, Special Collections*

Robert Dicke Papers  
Eugene Wigner Papers

*University of Chicago Library, Special Collections*

James Franck Papers

*New York University Library, Special Collections*

Richard Courant Papers

*California Institute of Technology, Special Collections*

Max Delbrück Papers

*Oregon State University, Special Collections*

Linus Pauling Papers

*University of Pittsburgh, Special Collections*

Hans Reichenbach Papers

### **Published Sources—Works by Jordan**

Note: A complete bibliography of Jordan's works does not exist, and this list makes no claims toward completeness. I hope in the future to compile a complete bibliography, but it is a daunting task, for Jordan published widely in many obscure periodicals that are long out of print. Here I list pseudonymous works by Jordan under the pseudonym employed (i.e. Ernst Domeier or Erwin Rack).

Born, M., and P. Jordan. "Zur Quantentheorie aperiodischer Vorgänge." *Zeitschrift für Physik* 33 (1925): 479–505. <https://doi.org/10.1007/BF01328329>.

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- . "Das Gesetz der Geschichte." *Deutsches Adelsblatt* 51, no. 30 (July 22, 1933): 517–19.
- . "Das Gesetz der Geschichte." *Blut und Boden: Monatschrift für wurzelstarkes Bauerntum, deutsche Wesensart und nationale Freiheit!* 5, no. 8 (August 1933): 340–44.
- . "Das Märchen von Wolf, der die Scharfe reagiert." *Deutsches Volkstum* 14, no. 2 (1932): 145–47.
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