

Battle in the Mind Fields

**JOHN A. GOLDSMITH
AND BERNARD LAKS**

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Preface

First of all, a word about what this book is, and what it is not. It is a historical account of some central ideas in modern linguistics—an account of the ideas and some of the events surrounding their development, debate, and disposition. The book is *not*, appearances to the contrary, the history of modern linguistics or of any other period. It is far too selective in its choice of topics to be thought of as *the* history of anything. If it is historical, it is because we feel that this is the only way to narrate the story and the best way to hear it as well.

It is a study of rupture and continuity in linguistics. The primary lesson that we draw from the work we have studied here is that in the realm of ideas, continuity is overwhelmingly the way things work, while in the realm of personal interactions, acknowledgments, and jealousies, the degree of rupture that our scholars have described is great. We might even say that it is *astonishing*, but there is nothing to be surprised at, really, if we listen to what historians of ideas and historians of science have been telling us. Our goal in this book is to make clear *how* this pattern of continuity and of rupture has come to be and to shed a bit of light on *why* it is. In the end, we think that this situation has some regrettable sides to it, and we have not shied away from drawing some normative conclusions as well. But by and large we have subscribed to the eternally optimistic philosophy that the truth will set us free and so have tried to keep the moralizing to a minimum. Not to avoid it completely, but to keep it to a minimum.

We will have occasions in this book to remind ourselves, as well as the readers, what intellectual continuity means and what it does not mean. When we find intellectual continuity in the development of a new idea, we do not mean that the new idea was easy to come by, or that it was not

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novel, or that it was not a work of first-class originality. It is easy to misread a history such as ours in which the connections between new perspectives and older developments are emphasized. Continuity means that the new ideas were based on the present; it does not mean that this basis was trivial, or obvious, or less astonishing than anyone may have thought.

What *does* it mean, then? In our view, it is based on the notion (hardly controversial, in our day and age) that at any given moment, there are a range of ideas, opinions, and beliefs that comprise the current state of affairs. These ideas, these common beliefs, will vary with their degree of adhesion: some will be held by many, some by few. Some will have arisen recently, others will have been around for a long time. These ideas will not all be consistent with one another. (If they were, there would be no notion of controversy in a discipline.) These ideas form, in some respects, a large organic garden, or perhaps a zoo, in which change and variety is the principal constant. It is always the case that new creatures are descendants of other living organisms: new creatures do not come on the scene with no living, direct ancestors, or arise as the descendant of a long-extinct breed or race.

To put it slightly differently, when we look at the origin of *new ideas*, they are always the creative modification of several ideas that have been developed recently that no one has yet connected. There are three crucial elements in that: there is a connection that is made of several ideas; those ideas are current ideas of some recency; and this novel connection, once made, is developed and elaborated in a genuinely creative new way. That is the pattern that we find, over and over. And that is the pattern we will show our readers over the course of the growth and development of the mind sciences. Our view of intellectual history is thus both historical and variationist. It is historical in that we believe that there is no way to understand the ideas of a discipline at a particular moment in time without understanding the historical path which led the field from there to where it is today. It is variationist in that it explicitly denies the Kuhnian notion that a scientific discipline will subscribe to a core set of ideas which define a paradigm, a climate of opinion; a living discipline is a quiltwork of disagreements.

The discovery and the acknowledgment of continuity in the study of the mind in these fields is not an exercise in showing that for each idea traditionally attributed to one scholar, there was an earlier scholar who had pretty much said the same thing. That game is rarely of interest if it goes no further than that. The real lesson to be learned from studying the con-

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tinuity of thought in this area is that all of these thinkers are engaging in a greater conversation, and that no single scholar is large enough to hold any single important idea: all of the ideas have developed over the course of generations of controversies in which people with different perspectives and prejudices have served and returned ideas in a great game.

We noted just above that at the level of personal interaction among scholars, the continuity of ideas seems to vanish, and instead we find all sorts of conflicts, of alliances, and of branding. The people whose work we study are, when all is said and done, just people, with all the baggage that they bring with them.¹

It is both helpful and healthy to redouble our efforts to focus on the real intellectual substance in this story, but we have found that we are interested in both sides—both the idea side and the personal and institutional side of the story. Perhaps the most interesting part of the second side of the story is a phenomenon that we find ourselves up against throughout the story: a moment when a leading thinker decides that essentially all the work that has preceded him is no longer worth reading or taking seriously. This stratagem (for what else can we call it?) comes up on quite a few occasions, and there are quite a few more who adopt what the Voegelins once called an *eclipsing stance*. We are fascinated by the double fact that so many feel called to adopt that stance, and that it seems to work so often, for so long. In some instances, this stance is adopted explicitly, with a statement that what has preceded can be safely jettisoned, while in other cases, the message is passed on implicitly, by failing to state the obvious.

The reader is likely to have noticed already that in the pages that follow, there are many dates, places, and events. But do not be fooled by this: that is not what the book is really about. The dates and the events are there to allow us to reflect on questions with real intellectual depth, on hypotheses and the arguments developed for them, on the ways in which questions and positions may remain or return despite differences in their formulation. We care deeply about the ways in which we find conceptual continuity across the work of thinkers who were themselves not aware of the continuity. We care equally about the flip side of this coin: the ways in which change and rupture can emerge from underneath the cover of loyalty and common community.

What this means, in practical terms, is that we undertake a synchronic dialogue with the great writers of the past, and so we discuss their hypotheses and their arguments *not* as if they were archeological ruins but as if

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their hypotheses were *alive*, and as if they were colleagues whose offices were next door. It might take a bit of effort to see how their perspectives bear on our own questions, but that is a challenge that we always face in the real world. The point is that to unearth the continuities and the ruptures and to construct an internal history, what we must do is to engage in a dialogue which allows us to actually feel the agreements and disagreements as if they were ours today.

Our interest in rupture and continuity has led us to take more seriously certain aspects of external history as well. There are three kinds of external forces that play a major role in this story. The first is political, and in this book, the most striking case is the rise of Nazism in Central Europe during the 1930s and 1940s, a world historical fact that led to a major exodus of intellectuals out of Europe at critical moments of our story. From a larger perspective, that movement of scholars from Europe to the United States is part of a bigger picture which began when the United States was younger and not so rich, a time when the natural place for would-be American scholars to go for higher education was Western Europe. The present book is the first of two volumes telling a single story, and we will focus in this book on the events that brought the mind sciences up to World War II. It will be followed by a second volume that treats the three decades that followed the outbreak of the war.

The second kind of external force is quite simply death: a scholar's work stops abruptly at the time of his death, and if death does not stop his or her influence, it changes the character of that influence mightily. While ideas can survive the death of the people who championed them, people have no such longevity; their direct and personal influence vanishes with their death.

The third kind of force is the way in which economic resources are allotted in the creation of jobs, which in turn lead academics to leave some institutions and go to some others. We will see occasions when money that came from the Rockefeller Foundation (to take only one example) made it possible for European academics to leave their homes and avoid almost certain death, and also made it possible for academics to be invited to leave one university and come with all their students to another one. There are—not always, but often—stories that are of interest to us about why an academic institution decides it wants to hire significantly in an area, such as linguistics, psychology, or philosophy, and when that has a significant impact on the story here, we have every reason to look further into what those reasons were.

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As we explore these questions, we are aware that we remain linguists, and we are deeply interested in the ideas themselves; we are not dependent on secondary sources to help us understand what is at stake. It is our strong belief, made more certain throughout the process of writing this book, that a deep account of a discipline cannot be neutral, cannot be so external that it rests on nothing but objective facts. If it is to deal both with ideas and with people, if it is to examine both the ideas that formed the people and the people who brought the ideas to life, then the histories of our disciplines must be internal histories which are capable of understanding the nature of the debates, the arguments, and the stakes. An internal history is not always a history as it was lived by the actors, each with his or her own particular point of view; in fact, it rarely is, and it may be the history that is constructed by partisans who attempt to put down their particular positions in order to reconstruct the underlying dynamics that are at play in the world of a given scientific domain at a particular time. It is less a history of events and more a history of ideas, a history whose primary aim is to bring to light the forces that act upon the growth and development of a discipline. These can include the strengths and the weaknesses of the actors themselves, the arguments and ideas both within the discipline and outside of it, as well as prestige, legitimacy, the strength of the orthodox, and the enthusiasm of the young Turks—in short, everything that is at play in a disciplinary field and that makes it what it is.

We have naturally chosen particular incidents, schools, scholars, and coalitions in our discussions, and the fact that we have left a movement or a scholar out of our discussion does not mean that we think they are less worthy, important, or influential than those we have discussed. We have little discussion of Sigmund Freud in psychology, or of J. R. Firth in linguistics, and nothing to say about Kierkegaard or Bergson in philosophy. We talk more about Bloomfield than we do about Sapir, a fact that in no way reflects a view on their relative importance. We do not discuss Reichenbach's ideas of time and tense, which have had a great impact on current semantics. We barely mention sociology, anthropology, and economics. In all these cases, we were sorely tempted to include discussions. But we have done our best to maintain a tight coherence of the discussion that is to follow, and to do that, we have had to embrace the fact that an omission from our account should never be interpreted as a tacit message that whatever is left out is of less importance.

The particular story that we focus on in this book involves one part of the field of linguistics as we saw it when we embarked on our careers

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in linguistics some 40 years ago. Our own experiences begin roughly where the story leaves off, although we know (or knew) personally many of the principals whose careers extended into the 1970s and beyond. We have great admiration for all of the linguists we describe in this book (for some a bit more than for others, but that is only natural). Some of them are our teachers, and some our friends or professional colleagues, although of course many died before we were born, and those we only know through their writings. A large number of the people we discuss have set to paper their views about where their work comes from, or where the work of others comes from, and in quite a few cases, we aim to show that they are mistaken—sadly mistaken, if you will.

Our intention in this book is to help the reader better understand where our current beliefs in linguistics come from, and how they have been justified. We do not mean by this to criticize or dismiss any particular theory or framework, except insofar as a theory may have been offered to the public with an inaccurate pedigree. But each theory offers an answer to a set of questions which are more often implicit than explicit, and a historical perspective is sometimes the best, if not the only, way to come to understand what those questions are.

Both of us began our studies in linguistics in graduate school around the same time. We were drawn into the field because of the appeal of the questions and methods being explored and developed in generative grammar. If Chomsky had not come onto the scene when he did, it is highly unlikely that we would be here writing about linguistics. We, like so many of our generation, were inspired by the nature of the questions that generative grammar allowed us to explore. So just in case it is not clear, let us say it up front: we consider all of the thinkers and scholars that we write about in this book to be heroes. They are humans, but heroes nonetheless, and there are none of whom it cannot be said that they left the field better for having been there.

One reader of this book, a friend and participant from time to time in this book's story, was not happy by the occasional observation on our part that seemed to be suggesting that we were taking sides in a particular confrontation: at one point, we used the word "strident" to characterize a particular linguist's prose. We've left the word in; we have done our very best to remain sympathetic to all sides in these disagreements, which does not mean that we cannot call a sentence "strident" in tone when it is. As for our position, we are reminded of a statement almost certainly apocryphally attributed to John Lennon: we gave up being fans when we became professionals.

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Needless to say, we have our own views on a number of subjects that we will discuss in this book, and we would not be unhappy if, as the result of reading it, some of our readers become convinced of our views. Still, that is not our primary aim, which is rather to show that among the great questions and ideas that have been central to the mind sciences over the last several centuries, there is more than one way to look at things. No matter how convinced you are of whatever you are convinced of, there is a good case to be made for other points of view. Progress generally comes from finding a new synthesis that brings together older ideas that seemed—but only *seemed*—to be in conflict.

This book is itself also the product of a debate, or a dialectic in the etymological sense of the term. It grew out of the pleasure that we found in discussion, in agreement and in disagreement, in the enjoyment of confronting ideas and arguments. Writing this book has been a project that began a decade ago, and the decision to write this book came only after years of extended discussions between us. It is the result of the agreements and disagreements shared by two linguists from two different continents, who grew up in two intellectual traditions and different material cultures, but who both share a great pleasure in debate, in arguing, and in encouraging controversy as a form of dialogue. We know full well that this is something that we learned from our teachers. Morris Halle, who advised one of us and greatly influenced the other, expressed what we feel: “Convince me,” he would say. “Argue with me!”²

We have been sensitive to the extreme gender bias that leaps out at us as we tell this story. There are women who play important roles in the developments that we discuss, but there are not enough. In the early work on the mathematics of computation, there is ~~Ida~~ Lovelace, and in the story of the exodus of the psychologists from Central Europe to the United States, there is Charlotte Bühler, and there are a few more, such as Margaret Mead. But the academic world has not had a long history of encouraging and supporting women who sought a career at a research university. In our professional lifetime, we have seen the gender balance in linguistics come to parity or near it, but the same cannot be said for some of the other academic disciplines that we explore.

Our friends have warned us that this will not be an easy book to read. There are parts that are a bit dramatic, and there might even be some humor, but there are more parts that are difficult. Despite the tone, we do not offer a simplification of the issues. The reader who does not already have at least a smattering of knowledge of linguistics, philosophy, and

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psychology is going to be introduced to quite a number of unfamiliar characters and ideas. The reader who *does* have some knowledge of these fields is likely to have his assumptions challenged. We think, on the whole, that these issues have not been treated very well in the literature, and it has taken us decades to get to the point where we have been able to see some of these things.

It is often said that there are two ways to read the older literature in one's discipline: one either tries to force the earlier vocabulary into today's categories, translating as best one can into today's terminology, or else one tries to put oneself in the earlier mind-set, and read yesterday's articles from the point of view of a contemporary who was reading it for the first time. Over the course of writing this book, we have come to realize that for our purposes, *both* of these perspectives are necessary, and we do our best to help the reader come to grips with an older literature in both of these ways.

For that reason, we have made a special effort to include more snippets from writers than are typically found in studies of this sort, for the simple reason that the readers deserve to get a bit of a feel for themselves of how an earlier thinker chose to frame his thoughts and make his case.

Notes and Comments

Unless otherwise indicated, all the translations from French and German are our own. Russian names that occur have required a transliteration in English, and in some cases we have simply adopted the common transliterations that have been used, and when there is no common usage to fall back on, we have used a transliteration that makes the most sense, given familiar English orthography. We write Shpet, therefore, rather than Chpet or Špet, and Karchevsky rather than Karcevsij.

We have many people to thank for their help in the course of writing this book. There have been moments when we realized that just about anyone we have ever had a conversation with about linguistics has likely influenced this book in one way or another. Among those whose observations came at particularly important moments, we think of Farrell Ackerman, Daniel Andler, Robert Barsky, Hans Basbøll, Gabriel Bergounioux, Jackson Bierfeldt, Diane Brentari, Noam Chomsky, Katya Chvany, Jacques Durand, Pierre Encrevé, Lila Gleitman, Morris Halle, Chas Hockett, Fred Householder, Geoff Huck, Simon Jacobs, Bill Labov,

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We both want to thank our wives, Jessie Pinkham and Claudie Laks, for their indulgence and support in this project, and we're especially delighted that Claudie's work could serve as the basis for the cover of this book.

Diagrams/Figures

The multicolored schemas we have included should be used with care. Each presents a number of actors in our story, in boxes that are color coded to roughly indicate what discipline the actors were involved in. Their placement in the schema is determined in part objectively: their height in the schema is a direct reflection of the year of their birth (we have shifted a few people up or down in interests of visual clarity). We have greatly simplified things by indicating relationships between various pairs of these people with colored lines, indicating roughly four relationships. One relationship is between colleagues, people who knew each other and influenced each other's work. The second relationship is one of important intellectual influence without personal influence or contact. The third is the most important, in a sense, represented in blue; it is the relationship between a mentor or dissertation advisor and the young scholar being advised. In the cases we look at here, there are a good number of secondary relations of just this sort, where a senior scholar plays a mentoring relationship of someone who was not officially his student (such as Sapir and Whorf), and we have indicated this with a dashed blue line. Finally, in a few cases, we wish to emphasize the hostile relationship between two

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scholars, and we have chosen to indicate these relationships in red. Bear in mind that restricting relationships to just these four kinds has led to some strange designations: for example, the relationship between Edward Sapir and Margaret Mead is represented with the color that indicates “colleagues,” which is not a very good description, but it is better than any of the other choices. In some cases, we describe in the text a group of people who all influenced each other a good deal, but we have not made our figures more cluttered to include all of those pairwise connections. We have included a few mixed categories, notably “philosopher-psychology,” but that did not really help, because it is hardly a meaningful question to ask whether Brentano should be classified as a philosopher or as a philosopher-psychologist. Therefore, the reader should use the colors provided as a roadmap, but they cannot be relied upon in cases where the boundaries are blurred.

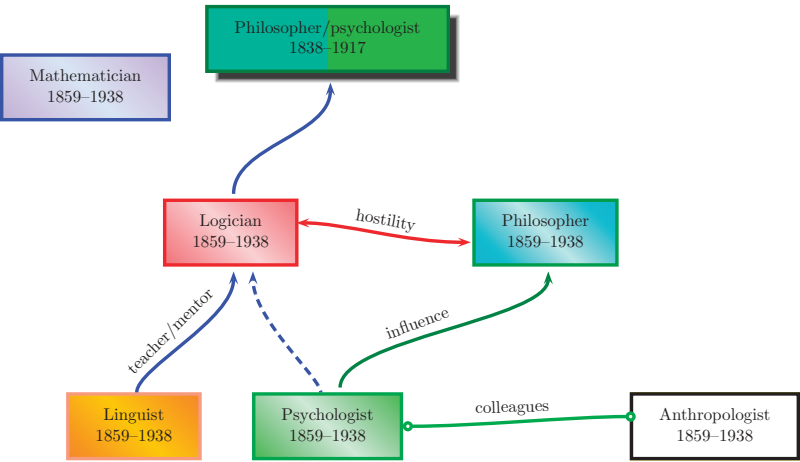


FIGURE 0.1. Sample schema. There are some guidelines needed to understand our figures. The information contained here is intended to serve as a visual reminder of who is who, and what they did. In all cases, a simplification is needed to do this, and the reader must bear in mind that the categorization here is in every instance a simplification of what we describe in the text. The decisions we have made here are simply what seems to us the most helpful and the least inaccurate. The vertical position is determined by date of birth—strictly, in most cases, with a very small amount of adjustment made for clarity. The colors of the individual boxes reflects the disciplines of the actors, but in most cases, some real simplification was needed. Quite a number of people are assigned to two categories, with two colors. The colors of the arrows connecting the boxes correspond to four kinds of relations: mentor (or teacher), colleague, influence, hostility. In many cases, it is hard to determine the relative importance of various teachers, and (as elsewhere) our choices represent an interpretation on our parts.

In order to help the reader organize the characters visually, we have included a number of ovals or rectangles of various sizes, usually with a label, such as “Prague Linguistic Circle.” We caution the reader not to take these indications as claims about membership in the organizations or as some sort of Venn diagram that includes or excludes members. They are there purely to help the reader remember who is who, and should be thought of as pointers to the text, where more information is noted. In particular, the reader should not interpret our depictions as signifying something about the relationship between a school, a circle, or anything else. To repeat: the information presented in the diagrams is in most regards highly subjective, and on different days, we ourselves would make different choices in a few cases as to which color to use or whom to place inside a colored box.

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Battle in the Mind Fields

In the Beginning

Battle in the mind fields: the characters in this story are, for the most part, a feisty and pugnacious cast. They come prepared for battle, they rarely take prisoners, and they enter the fray defending the faith. These are philosophers, psychologists, linguists, cognitive researchers of all stripes, the inheritors of the great classical questions that may live forever: What is thought? How is it that we are conscious of ourselves? How is it that humans are endowed with the gift of language? Is the multiplicity of languages in the world an indication that there are many ways of viewing the world, or are all the languages of mankind cut from a common cloth?

This book describes the evolution of some of these ideas and provides a rough snapshot of some of these people, with the goal of understanding the present, and with the certainty that the only way to understand the present is to understand where it has come from. A glance at what is to come may give the impression that we have wandered a bit through the pages of the past, but we promise that what we have included has reverberated in some fashion right down to the present day.

One of the best reasons to study the history of our disciplines is that everything we think we have learned was once an answer to a living, breathing question, and it was an answer provided at a time when alternative answers were also being taken every bit as seriously. But once an answer is certified as true and placed among our certainties, we forget the question to which it was the answer, and the consequence is that we forget what were the alternatives that once enjoyed some traction. In short, we become trapped by our beliefs—not always a bad thing, as long as

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it leads to no problems. But this phenomenon leads in a natural way to a sclerosis of the mind, a hardening of the mental arteries, and in the end a less adequate understanding of what the disciplines have learned the hard way.

Although much of our perspective in this book derives from personal experience, we have also gained a great deal from the sociologists and philosophers who have studied the evolution of thought in various disciplines. Pierre Bourdieu, for example, made the case for what he called “anamnesis,” with a slight nod towards Plato, though using the term in his own way. He argued that a necessary condition for scientific progress was understanding explicitly the conditions (not to mention the context and the constraints) under which dominant scientific ideas had emerged. He was referring not just to science, but also to the vast range of social endeavors that constitute human society. Whether we call it change, or development, or evolution, the fact is that the moment that we live in is always one of confrontation and contestation, for all the reasons discussed in this book. Once that moment has passed, powerful forces enter into play to pretty up the past, to make it docile and submissive. Understanding and wisdom demand just the opposite, though; they demand that we know where we came from and how we got here.

Why? Because the *sine qua non* of scientific progress is what we might call the *disenchantment* of the scientific world. The student discovers a scientific world, ready-made and already endowed with simplified stories of the past. But the scholar who wants to understand must free herself of that thrall and be on a first-name basis with that world; the scientist must eventually become the master of those stories, and in most cases, that means knowing how we got to where we are. Know where you came from, and you will know where you are going.¹ And so we will have to begin in the past: not as far back as we might—in ancient Greece, say—but with a rapid introduction to the most relevant themes of the nineteenth century, when it seems that we can find the odd character here and there who is already contemporary and many others who are almost there.

People respond and react to what they read, what they hear, and what they are told. That’s only human nature. No one locks himself in a closet and refuses to be influenced by other people. Yet it is not at all rare to encounter brilliant thinkers who try to wipe the historical slate clean—*tabula rasa!*—and start over, afresh. Of course they *themselves* never do start over afresh, *themselves* unaffected by all the ideas and scholarship of the past—that would be impossible—but they send forth the message

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that the work of the past is unimportant. This seems very odd, and so it is. There is some willful forgetting going on, and we would like to know why and to figure out what ought to be done to overcome it.

All thinking is a continuation of conversations that we have overheard or participated in. If we want to understand a book, we might need to have read perhaps not *everything* its author has ever read, but a quite a bit, and often what we find obscure in a difficult writer is obscure simply because we have to roll back some thought process that the writer had engaged in when presented with other questions, other possibilities, and other ideas.² Sometimes we engage in fast reading, just as we sometimes eat fast food, but just as there is for slow food, there is also a great need for slow reading, and we will engage the reader in such an activity in this book. We are tempted to say that a bibliography which goes back no more than five years is either unscientific or dishonest. That is too simple, and of course we could *imagine* papers where a slender bibliography was all that was needed. But as a generalization, it has lot going for it. When it comes to the central questions of the mind, the giants of human thought have preceded us, and we must remember that if we often disagree with them, we never leave them behind. It is critical that we remind ourselves that part of the essence of scientific work consists of confronting a vast library of ideas. When we know a field thoroughly, we find that nine times out of ten, we can summarize and on occasion even evaluate a book by doing nothing more than reading the bibliography carefully.³

The second half of the twentieth century saw the development of an overarching new view of mind which, despite its importance, has no simple name and which will be a major concern of both volumes of this book. This new view is tightly bound to the machine that has changed our lives: the computer. But the connection is not a simple one. Computers, the real thing, first appeared during World War II, largely as part of the war effort, in the United States, in England, and in Germany. Computers were needed at first to solve differential equations rapidly so that artillery could be more accurately aimed, then to break enemy codes and encryption systems, and eventually to help in the development of the atomic bomb. But computers were not the simple source of the new ideas about the mind. If anything, it was the other way around. People were able to invent and create computers because these new ideas about logic and computation were already being developed. Technology, philosophy, logic, mathematics: all these fields were tied together in a complex unity that is no less real today than it was in the beginning of the twentieth century.

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Soft Mentalism, Hard Mentalism

A principal focus of our account is this transitional period and the change in the way the mind was understood. To give a name to this transition (though one that will need a good deal of spelling out over the course of the book), we will look at this shift from a *soft mentalism* to a *hard mentalism*. Soft mentalism focused on consciousness and self-awareness, while hard mentalism focused on representation, intension, and belief. Hard mentalism began as a fantasy: machines that could talk, play chess, and do sums. Pascal and Leibniz had some success with machines that could calculate. These fantasies began to take on form, if not life, and Charles Babbage came as near as anyone in the nineteenth century with his analytical engine. Hard mentalism sees Leibniz as its patron saint, while soft mentalism looks to Descartes.⁴ And as logic is the science of what makes thought possible, there are two concepts of logic that correspond to these mentalisms: *hard logic* and *soft logic*.

The physical sciences over the past four centuries have been extraordinarily successful, as no thinking person could fail to see. Like a sharp investor looking for a place to put his money, many thoughtful people have looked to the physical sciences to try to figure out what they are doing so right and to see whether there are lessons to be learned that could be applied elsewhere. The crass might call this “physics envy”; others will see it as prudence and good common sense. We will see how the fascination with science and with measurement came to center stage in the nineteenth century, and well into the twentieth century, as more *kinds* of objects came to be placed under the scientific microscope: the sound changes in language studied in depth and detail by philologists and linguists, especially by German philologists and linguists, in the nineteenth century, for example. Taxonomic structures of cultural and social systems, of biological species, and of chemical elements all developed quickly during this period. Some of these systems were shaken up again at midcentury by the Darwinian revolution, the revolution that gave a new account, without recourse to divine intervention, of how change over long periods could be scientifically explained.

One of the messages that we expect our readers to take away is the idea that it is simply impossible to understand any of the mind fields—linguistics, philosophy, psychology, logic—over the past 100 years in isolation. Each field influenced, and was in turn influenced by, the others.

This interaction, on the rare occasions it is discussed, is usually presented as a quaint corner of dusty history. We will try to show how wrong this view is, and how much these disciplines have suffered from being unaware of the origins of many of the most important ideas and values that have shaped them. An important part of this intimate relation between the fields derives directly from the fact that these disciplines share deep historical roots, and in many ways these fields were once one. There is much to be learned, for example, from watching how psychology fought for its independence from philosophy after the middle of the nineteenth century and how linguistics continues to view its independence from psychology and to reflect on that independence.

We will frequently see an idea appear in one discipline as if it were new, when it actually migrated from another discipline, like a mole that dug under a fence and popped up on the other side. Disciplines may at times emphasize their limits; under most conditions this is a bad thing, but these limits help clarify for a wide range of workers what the questions are that they should be addressing. Still, there are always individuals who are passionately interested in issues that transcend a single discipline and whose work therefore becomes multidisciplinary. It may be possible to write a history of a single discipline, but it is not possible to research a history of a discipline and restrict oneself to that discipline: the reality, the boots on the ground, has always seen thinkers read and write across the disciplinary boundaries.⁵

We have found it useful to adopt some of Bourdieu's perspectives, as we noted just above.⁶ Bourdieu generalizes the notion of capital from the economic domain to a wide range of social arenas, all the while recognizing that this capital can grow, diminish, accumulate, or even in some cases be wiped out in a crash. It is a banality to say that money is both a reality and a social construction. No one needs any explanation that money has its reality: it can be transformed into a sweater, a dinner, a car. And it is a social construction; without the force of a government behind it, a 10-dollar bill is just a slip of custom-made paper, not good for much at all. And while there is an arbitrariness to the units with which we measure monetary value, all capital has the possibility of accumulating, of being added to by its owner.

In various social arenas, which Bourdieu calls *fields*, individuals enter into different relations with one another; most of the relations discussed in this book involve academic and scientific roles. In different fields, actors may work to accumulate capital, even though the capital is generally

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specific to each field. In the academic realm, the notion of capital corresponds to authority and influence, and under certain conditions it can transfer across fields; although the economic metaphor breaks down in such cases, since a transfer from one field to another need not involve a decrease in accumulated capital in the first. But transfer across fields, as Bourdieu underscores, is far from obvious and far from automatic: it is indeed a complex alchemy, which can involve far more than an explicit or pre-established set of rules; it may depend on a larger context, including ideas circulating on more extensive fields, or a sensitivity to the widest field of all, the *zeitgeist*.⁷

In the rest of this chapter, we will survey the principal themes that return frequently in the story that will capture our attention. We have cast a wide net, from a chronological point of view, so that we can see recurrences—and see them we will.

Liberation Moments

Here is the first noteworthy observation: new ideas that catch on are always perceived by the catchers-on to be liberating them not just from a set of ideas but from a *dogma* of an earlier generation. Each successful new way of looking at mind, language, and reasoning is viewed as a *notional liberation moment*. This way of putting it captures both the heady revolutionary fervor that comes along with a new scientific perspective and the sensation that a new perspective brings out explicitly what was wrong with the old conventional wisdom. Now, with the problem out in the open, we can get rid of it, put it behind us, and move forward with new vigor. We see the dogma of our elders and wonder how they could have failed to see it for what it was, as we see it now.

One of the ideas we will try to spell out is that we never completely drop old ideas: they remain with us, often getting harder and harder to see consciously, which is generally not a good thing. But one of the constants we will hear in the stories that are recounted by participants is this: each person, individually and in concert, felt that a great weight had been lifted from his or her shoulders, and that weight was the weight of a heavy past tradition. The behaviorists felt that way, as did the logical positivists, the early generative grammarians, and then the later generative semantists. Yehoshua Bar-Hillel told of his similar conversion experience upon first encountering Carnap's and Reichenbach's work.

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It follows from this that if you do not understand how a once dominant idea could have captured the imagination of smart, young people, then you simply do not understand it. All new ideas that grab the imagination of new people in a field do so because they are perceived as liberations from some kind of orthodoxy of the past.

Noam Chomsky expressed the heady emotion that we are talking about very well:

The whole history of grammar, for thousands of years, had been a history of rules and constructions, and transformational grammar in the early days, generative grammar, just took that over. So the early generative grammar had a very traditional flair. There is a section on the Passive in German, and another section on the VP in Japanese, and so on: it essentially took over the traditional framework, tried to make it precise, asked new questions and so on. What happened in the Pisa discussions was that the whole framework was turned upside down.

So, from that point of view, there is nothing left of the whole traditional approach to the structure of language, other than taxonomic artifacts, and that's a radical change, and it was a very liberating one. The principles that were suggested were of course wrong, parametric choices were unclear, and so on, but the way of looking at things was totally different from anything that had come before, and it opened the way to an enormous explosion of research in all sorts of areas, typologically very varied. It initiated a period of great excitement in the field. In fact I think it is fair to say that more has been learned about language in the last 20 years than in the preceding 2000 years.⁸

The last sentence is certainly a showstopper: either you believe it or you are stunned by its scientific immodesty. But immodesty (if that is what it is) aside, it illustrates the giddy feeling of liberation that so often comes along with being part of a movement that takes itself to be revolutionary. Martin Joos, an ornery member of the post-Bloomfieldian generation, must have had this in mind when he wrote that “linguistics has been preeminently a young man's pursuit ever since the 1920's.”⁹

Sociology also reminds us that it is not always best to focus too much on the individual: as Bourdieu put it, it is not so much the heir that inherits the inheritance, in the world of ideas, as it is the inheritance that inherits the heir!¹⁰ We should not be too shocked to discover that systems of positions and dispositions are reborn in each individual in each new generation of scholars.

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Here’s another way to think of it. There is a *force* that we can feel when we read the work of giants who have preceded us, an energy that comes with it, an ability to *make us think today*. At the same time, the most profound contributions have always been the result of a thorough knowledge of orthodoxy and its dogma mixed with a passion for heterodoxy. There is no deep mystery why this should be so. It is the simple result of the fact that no one thinks alone or starts over from scratch.

Here is something else to keep in mind, something that we will state more than once, because it bears repetition: if the constant reminders of the sources of our ideas makes the dead weight of the past seem inescapable, don’t worry. Escaping the dead weight of the past is usually very simple: all that is necessary is to become aware, to become knowledgeable. The liberation is virtually instantaneous. There are grounds for hope and optimism.

Our Kind of Science

Any observer of the linguistic scene would notice that every generation has wanted its field to be *scientific*, and what’s more, each generation thinks that it will be the very *first* generation to have succeeded in the quest to become a science. Within the mind sciences (linguistics, psychology, philosophy, logic), each generation rebukes the previous one for having wrongly thought that it had its hands on a legitimate scientific method and framework, and then it immediately goes on to offer what it takes to be a *truly* scientific vision.

It is much more interesting for the reader to see this directly. Here is a modest sample of moments when linguists observe that *finally* linguistics has become a science. We will begin here with a typographical convention that we employ in the rest of the book: within a quotation, added emphasis appears in boldface, and original emphasis appears in italics. Feel free to skim.¹¹

Since the commencement of the present century, and especially within the last fifteen years, the philosophy of language has been pursued with great ardor, and the learned on the continent of Europe, **by following the grand Baconian principle of induction, have placed this science on a solid basis**, and are in the way of most important discoveries. These discoveries are modifying the grammars and lexicons of every language. . . . The new method of

grammar has a thorough and proper unity, because it commences with the proposition, as the central point. The value of every word and of every form is made to depend on its relation to the proposition. This develops the organic relations of language, and gives to the new method a scientific form. . . . The new method . . . of course is the same for all languages. Different languages may all be analyzed in the same way. (Josiah Willard Gibbs 1838)

Another science, cultivated with great zeal and success in modern times, compares the languages of different countries and nations, and by an examination of their materials and structure, endeavours to determine their descent from one another: **this science has been termed *Comparative Philology, or Ethnography*; and by the French, *Linguistique***, a word which we might imitate in order to have a single name for the science, but the Greek derivative *Glossology* appears to be more convenient in its form. (William Whewell 1858)

In old classical usage, [philology] meant the love of literature; afterwards the scholastic mastery and exposition of language; more recently a sort of general amateur study of language, as a matter of mere pleasant curiosity; and last of all, **the scientific exploration and comprehension of its interior mechanism, in relation both to its original elements, and also to their varied transformations**, through a wide range of comparative analysis. (Benjamin W. Dwight 1859)

The science of language is a science of very modern date. We cannot trace its lineage much beyond the beginning of our century, and it is scarcely received as yet on a footing of equality by the elder branches of learning. We hear it spoken of as comparative philology, scientific etymology, phonology, and glossology. In France it has received the convenient, but somewhat barbarous, name of *Linguistique*. . . . We do not want to know languages, we want to know language; what language is, how it can form a vehicle or an organ of thought; we want to know its origin, its nature, its laws; and it is only in order to arrive at that knowledge that we collect, arrange, and classify all the facts of language that are within our reach. (Max Müller 1862)

In a course of lectures which I had the honour to deliver in this Institution two years ago, I endeavored to show that the language which we speak, and the languages that are and that have been spoken in every part of our globe since the first dawn of human life and human thought, **supply materials capable of scientific treatment**. . . . We can treat them, in fact, in exactly the same spirit in which the geologist treats his stones and petrications, nay in which the botanist

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treats the flowers of the field, and the astronomer the stars of heaven. **There is a Science of Language**, as there is a science of the earth, of its flowers and its stars; and though, as a young science, it is very far as yet from that perfection which . . . has been reached in astronomy, botany, and even in geology, it is, perhaps, for that very reason all the more fascinating. (Max Müller 1864)

Those who are engaged in the investigation of language have but recently begun to claim for their study the rank and title of a science. Its development as such has been wholly the work of the present century, although its germs go back to a much more ancient date. It has had a history, in fact, not unlike that of the other sciences of observation and induction—for example, geology, chemistry, astronomy, physics—which the intellectual activity of modern times has built up upon the scanty observations and crude inductions of other days. . . . But to draw out in detail the history of growth of linguistic science down to the present time, with particular notice of its successive stages, and with due mention of the scholars who have helped it on, does not lie within the plan of these lectures. . . . Its execution would require more time than we can spare. (William Dwight Whitney 1867b)

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In 1871, August Schleicher described linguistics in a way that seems so modern that we cannot present less than the first two paragraphs:

Grammar forms one part of **the science of language**: **this science** is itself a part of the natural history of Man. Its **method is in substance that of natural science generally**; it consists in accurate investigation of our object and in conclusions founded upon that investigation. One of the chief problems of **the science of language** is the inquiry into, and description of the classes of languages or speech-stems, that is, of the languages which are derived from one and the same original tongue, and the arrangement of these classes according to a natural system. In proportion to the remainder but few speech-stems have hitherto been accurately investigated, so that the solution of this chief problem of the science must be looked for only in the future.

By grammar we mean the scientific comprehension and explanation of the sound, the form, the function of words and their parts, and the construction of sentences. Grammar therefore treats of the knowledge of sounds, or phonology; of forms, or morphology; of functions, or the science of meaning and relation, and syntax. The subject of grammar may be language in general, or one particular language or group of languages; grammar may be universal or special: it will in most cases be concerned in explaining the language as a

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product of growth, and will thus have to investigate and lay down the development of the language according to its laws. This is its exclusive province, and therefore its subject is the laying-down of the “life of language,” generally called historical grammar, or history of language, but more correctly “science of the life of a language” (of sound, form, function, and sentence), and this again may be likewise as well general as more or less special. (August Schleicher 1871)

Great progress has been made in phonological science during the past score or two of years, and it is hardly too much to say that the mode of production of the ordinary articulate sounds composing human language is now understood in all its main features. (William Dwight Whitney 1865)

Here is the objection, which we take to be more or less well grounded: you transform the study of languages into the study of Language, of Language as considered as a human faculty, as one of the distinctive signs of its species, as an anthropological, or even zoological, character. . . . The most elementary phenomena of language will not be suspected, or clearly noticed, classified, and understood, if we do not insist on the study of languages from beginning to end. Language and languages [*langue* and *langage*] are one thing: one is the generalization of the other. If you want to study Language without undertaking the effort to study the quite evident diversity of what is found in languages, your effort will be in vain; on the other hand, if you want to study languages but lose track of the fact that in their very nature these languages are governed by certain principles of Language, your work will be *even more bereft of serious significance, and of all real scientific basis*. (Ferdinand de Saussure 1891)

A new science, called Phonetics or Phonology, has sprung up, and is now universally admitted to have created the modern science of language. In addition to this physiological and physical basis, the superstructure of the science of language has likewise been stated to be no longer a historical or a philosophical, but to have become a physical, science. It is true that, as with other natural sciences, so also in this case, the morphological, genetic, and biological aspects can be specially studied; also analogies can be drawn between geology and glossology as to their mode of inductive reasoning.

[Merz adds, in a footnote:] In the modern science of language we have one among the many cases where a historical or philosophical science is becoming an exact science by attaching itself to physics and physiology. . . . “It is

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phonology,” says Prof. Sayce (*Introduction to the Science of Language*, 2 vols. 1880, chap. iv) “which has created the modern science of language, and phonology may therefore be forgiven if it has claimed more than rightfully belongs to it or forgotten that it is but one side and one branch of the master science itself. . . . It is when we pass from the outward vesture of speech to the meaning which it clothes, that the science of language becomes a historical one. The inner meaning of speech is the reflection of the human mind, and the development of the human mind must be studied historically.” (John Theodore Merz 1903)

The essential point . . . is . . . that de Saussure has here first mapped out the world in which historical Indo-European grammar (the great achievement of the past century) is merely a single province; **he has given us the theoretical basis for a science of human speech.** (Leonard Bloomfield 1924)

In order to ascertain whether and to what extent linguistics is entitled to the name of a science, we must remember that in Modern English the term “science” may be understood in two different ways, viz: (1) in a broad sense . . . i.e., scholarly knowledge; (2) in a more modern and more technical sense, so as to be applied exclusively to branches of learning concerned with permanent and invariable relations, such as mathematics, chemistry, physics. These and similar sciences, it is claimed, are able to make predictions for the future. If interpreted in this way, the term would not be applicable even to the evolutionary branches of natural science, such as geology and biology. . . . **The science of linguistics is . . . concerned with uniformities and permanent or steadily recurring conditions in human speech generally.** We may count here, e.g., topics like the relation between language and dialects, the causes of phonetic change, the nature of phonetic laws, the mutual relation between appellatives and proper names, the various systems of counting, etc. . . . As branches of linguistics concerned with permanent conditions, we may claim, above all, general phonetics and general grammar. Phonetics nowadays has assumed such proportions as almost to constitute a science by itself. . . . In general or “philosophical” grammar, on the contrary, stress is laid principally on the relation between grammatical forms and mental categories. (Hermann Collitz 1924)

The layman—natural scientist, philologist, or man in the street—does not know that there is a science of language. **Such a science, however, exists;** its aims are so well defined, its methods so well developed, and its past results so

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copious, that students of language feel as much need for a professional society as do adherents of any other science. (Leonard Bloomfield 1925)

At the present time phonology is characterized by its structuralism and its systematic universalism. . . . This direction of thought can be seen in physics, in chemistry, in biology, in psychology, in economic sciences, etc. Phonology is thus not isolated. It is part of a broader scientific movement. (Nikolai Trubetzkoy 1933)

It is only within the last century or so that language has been studied in a scientific way, by careful and comprehensive observation. (Leonard Bloomfield 1933)

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Dynamic philology [which is what Zipf called his approach] has the ultimate goal of **bringing the study of language more into line with the exact sciences**. To this end it views speech-production as a natural psychological and biological phenomenon to be investigated in the objective spirit of the exact sciences from which its methods have been taken. (George Zipf 1936)

The starting-point in **such a science** is to define (1) the universe of discourse and (2) the criteria which are used in making the classifications. (Charles Hockett 1942)

The native languages of our country had been studied by some very gifted men, but none had succeeded [before Boas] in **putting this study upon a scientific basis**. (Leonard Bloomfield 1943)

The Kimhian [David Kimhi, b. 1235?] theory placed the study of the Hebrew phonetics on a scientific basis. (William Chomsky 1945)

There can be no doubt that Bloomfield's greatest contribution to the study of language was to **make a science of it**. Others before him had worked scientifically in linguistics; but no one had so uncompromisingly rejected all prescientific methods, or had been so consistently careful, in writing about language, to use terms that would imply no tacit reliance on factors beyond the range of observation. (Bernard Bloch 1949)

Before the appearance of Bloomfield's *Language*, linguistics was usually treated as an essentially humanistic discipline, often fruitful but not completely

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amenable to scientific method to procedure by postulates, hypotheses, and verification. . . . Descriptive linguistics had, with few exceptions, remained on the level of our traditional West European normative grammar on the Graeco-Latin model; there had been scattered recognition of the need for improved methods of linguistic description (de Saussure, Boas, Sapir), but pre-Bloomfieldian efforts along this line had been relatively desultory and unsystematized. **Bloomfield was the first to demonstrate the possibility and to exemplify the means of a unified scientific approach to all aspects of linguistic analysis:** phonemic, morphological, syntactical; synchronic and diachronic. (Robert A. Hall Jr. 1949)

Modern scientific study has forced us to abandon many of the older commonly held views of language and has provided us with new principles and new assumptions which underlie new methods of analysis and verification. But the cultural lag in assimilating the results of **this modern scientific study of language has been so great that the views and practices of a prescientific era still dominate the schools.** (C. C. Fries 1952)

Crossland: Linguistics is still rather a young discipline. It's only in the last 25 years or so that really serious attempts have been made to put the study of languages on something like a scientific basis. And the people who've been making them have been mainly occupied so far—and I'd say quite well occupied—in working at suitable procedures for recording and analyzing individual languages. . . .

Halliday: I agree. . . . I think that in a sense what enables linguistics now to combine usefully with other disciplines is that it has been freed from entanglement with other subjects, such as psychology, and **its establishment as an independent scientific study.** (BBC Cambridge Language Research Unit 1952)

If one wanted to characterize in a word the direction in which linguistics seems to prolong [the views developed by Meillet], one could say that they mark the beginning of a linguistics conceived of as a *science*, by its coherence, its autonomy, and its goals. To say that linguistics moves in a direction of making itself scientific is not only to insist on a need for rigor which is common to all disciplines—it concerns first of all a change of attitude towards its object, which is defined by an effort to *formalize it*. (Emile Benveniste 1954)

All those who knew Bloomfield best seem to agree that his chief professional concern was to develop *linguistics as a science*. . . . There has been consider-

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able difference of opinion from time to time as to the demands of “scientific” linguistics, but concerning the label of the ultimate goal itself there has been unanimity. (C. C. Fries 1962)

The essence of Chomsky’s revolution in linguistics was **his gift to the field of a truly scientific perspective**. (Frederick Newmeyer 1986)

[Minimalist grammar] is well on its way to becoming a **full-blown natural science**, offering a serious promise of an advanced field of scientific inquiry whose idealizations, abstractions and deductions will eventually match in depth and subtlety those of the most advanced domains of modern science. *Generative grammar is turning into a natural science already, because of what it is now, not because of what it might one day turn into*. (Piatelli-Palmarini 1998)

In spite of its antiquity as an object of human enquiry, **linguistics as a science in the modern sense is very young**. It was only the last century [i.e., the twentieth century] that the study of language moved beyond observation and superficial description to attempts to explain why human language is the way it is. The primary impetus for **this dramatic and revolutionary shift was the work of Chomsky** (Chomsky 1957, 1965). (Peter Culicover and Andrzej Nowak 2003)

We are among those who are persuaded, on solid grounds we think, that in the past 50 years linguistics has progressively established itself as a **genuinely scientific discipline**. (Boeckx and Piatelli-Palmarini 2007)

When we read a few of these remarks from the nineteenth century, it is tempting to brush them off, but when one sees the same message published non-stop over 150 years, it forces us to pause and think about why scientists of the mind conclude, again and again, that they are the first to approach their problem scientifically.

Were they right or were they wrong? If later generations look back at the work of previous generations and doubt that what they found was the product of legitimate scientific practice, what is going on? Has the very meaning of the term *science* changed over time, or are the demands of scientific practice evolving in relation to how much has already been discovered? The answer to these latter two questions is undoubtedly yes, but we can also take away another entirely legitimate conclusion from this brief tour: the thoughtful actors in this story have always made special

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efforts to reflect on what science is, and how their discipline should develop in order to be taken seriously as a science by the neighboring scientific fields.

This, then, is a major theme that we will follow throughout this book: the best thinkers are constantly asking themselves, What does it mean to be a science and also to be interested in my questions? How should we be doing our work if we wish to be scientific?

The World of Ideas and the World of Social Relations

As linguists who came of age in the late 1960s, we ourselves saw and *felt* the two effects we mentioned above that were so common among the generative grammarians that we were proud to be a part of. We prided ourselves on our liberation from the shackles of behaviorism and other forms of empiricism, and we felt that generative grammar finally brought linguistics to the same playing field as other sciences. *Finally*, we thought, linguistics had developed formal theories that were worthy both of the complexity that emerges from a careful study of the data, and of the efforts of scholars who understood the power of formal mathematical models. We forgot that we were ourselves the children of a revolution which itself had been equally forgetful: the structuralist revolution which did its best to forget its past and reinvented the human and social sciences during the half century stretching from 1910 to 1960 by setting up the abstract notion of structure as the king in the kingdom of concepts that could explain everything.

We haven't forgotten the feeling, but we have come to realize that we are not the only ones to feel this way. We were preceded by a number of generations of researchers who felt just the way we did—and we have been followed by younger scholars who feel that linguistics is finally about to make it as a scientific field, for the very first time. We do appreciate the irony.¹² When we go back and read the early publications of such benighted predecessors as John B. Watson, the father of behaviorism, or the followers of Ernst Mach, the godfather of the Vienna logical positivists, or the structuralist linguists whose work forms the basis of our field today, we don't find stupid statements—we find people trying to cast off the chains of an official orthodoxy that they are certain is superannuated and standing in the way of scientific progress. And yet in the versions of intellectual history written by later generations of victors of the battles in the mind fields, the earlier approaches are described time and time again

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as so simple-minded that we can hardly take seriously anyone who went down that particular road. But we do know that those people, our intellectual ancestors, were no more stupid than we are today. Something must be wrong with the history books.

Maybe it's *not* simply the history books that are at fault. Maybe it's the simplistic conception of history that needs to be changed. There is nothing wrong with seeing history as a linear sequence of events, marked with dates and places—but that's only part of the picture. We cannot see the whole story unless we see the shifting tectonic plates of our history, composed of and populated by ideas and ideologies, including many global visions of the world that continued to have an impact on how scientists constructed and viewed the objects of their investigations.

Let's take an example. For the vast majority of contemporary linguists, regardless of the school to which they adhere, structuralist linguistics as it was practiced between 1925 and 1965 is as foreign as the blast of light that still reaches us from the Big Bang, a blast that is now reduced to a background buzz in the sky. Even contemporary views that recognize a debt to structuralism seem to view it as a dried-up well that was once the inspiration of a golden age.

In the history of science and that of ideas, the *thickness* of time is not uniform. On ~~one~~ one hand, 50 years separate us from the publication of *The Sound Pattern of English*, the manifesto of generative phonology published by Noam Chomsky and Morris Halle in 1968, and still it seems to be alive, living among its contemporaries in generative phonology. On the other hand, if 40 years separated Leonard Bloomfield's set of postulates for linguistic analysis for linguistic theory from Chomsky and Halle's opus, linguists in the 1970s could conceive of classical structuralism only as an obscure theory from an obscure time, a time that was almost literally prehistoric. It is as if space-time had been warped to such a degree that neither light nor information could reach us from that time. And this is all the more surprising given that any linguist over the age of 40, to say nothing of the founding fathers of our current schools, were trained in the methods and concepts of structuralism, whether we knew it or not. There isn't a student in linguistics from the over-40 generation who didn't burn the midnight oil trying to solve problems built from data torn from the pages of the *International Journal of American Linguistics*, to say nothing of problems photocopied out of the standard textbooks of the 1950s.¹³ We know whereof we speak: we were there ourselves, we burned that midnight oil.

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What is the cure for this selective amnesia that leaves us blind to our own origins? This is the work that we alluded to above under the rubric of Bourdieu's *anamnesis*, the first goal of any study of the history or the epistemology of a discipline. If it sounds suspiciously like psychotherapy, then so be it! We need to bring into the light of day the hidden linkages among ideas, sometimes denied because they show connections to ideas that seem embarrassing somehow. We need to bring out the underground ruptures that were never publicly acknowledged.

We are not willing to think about intellectuals as a spontaneous product of a virgin birth, or as creative powerhouses free of any and all external influences. We cannot understand theoretical frameworks without understanding the linkages and influences that helped to meld and form them. To speak today of intellectual *genealogies* is a bit loaded, as the word suggests Foucault's thoughts and his take on the history of thought, much of which finds no resonance in this account. But genealogy is important, both for understanding a patrimony passed down in ways both conscious and un-, and for trying to unravel the conflicts and tensions which sometimes are passed down more as that-about-which-nothing-should-be-said than as any sort of explicit inheritance. One of the themes that promises to teach us a lot about ourselves is the deathly silence that has for so long hovered over the question of how the work of Bloomfield, Sapir, and their students has been a fundamental component of all subsequent American linguistics, including the most dominant perspective, generative grammar.

We have learned that the value of studying academic genealogies was greater than we expected, and we will share with you quite a number of intellectual genealogies over the course of this book. To some degree, we were inspired by the work of Collins (1998), in which the study of individual and personal influence seems to shed considerable light on the way in which influence and authority is defined and aligned in academic fields.¹⁴

While Kuhn's *The Structure of Scientific Revolutions* (1962) plays a role directly in some of the literature that we will discuss, it is more generally viewed as part of a longer intellectual tradition that includes contributions by Pierre Duhem, Karl Popper, Imre Lakatos, Paul Feyerabend, Larry Laudan, and other people who have developed ways of understanding the history of science (or of sciences) and the way in which the nature of science as we know it includes alliances and conflicts. We are indebted to all of these authors for their insights, and we will refer to them at various points. Our primary goal is not to construct an overarching theory of

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science nor to align more with one of these scholars than another, but we are very much indebted to them in ways that will be clear throughout this book.

The history of the mind sciences is one of both rupture and continuities, and our principal task is to figure out how this can be so. A simple generalization can carry us quite a way. When we focus on the *ideas* in this story, what we see is a braid of ideas that interconnect and develop over time, and our story is one of continuity. When we focus on the *positions* taken by the individuals in the story, we find bold statements that separate rival camps, and we find ruptures of various sorts. Both of these perspectives are real, but neither of them, taken individually, is the whole story: this is found only in seeing both, together, at the same time.

We have, therefore, given ourselves total liberty to abstract away the human and social context when that is useful for our study of ideas, and *also* to ask how the intellectual positions of an individual or of a group are affected by the fact that such human agents are living in a world composed of human beings. The first is sometimes called *internal history*, the second *external history*; both are important for us.¹⁵ At times we do the first, and follow the trajectory of an idea as it arises in one domain and evolves, perhaps touching down in two or three other domains. At other times, we examine the way in which real people interacted with other real people: even if they shared an interest and a passion for the study of the mind, they were all along flesh and blood human beings as well.

How do styles and forms of social interaction lead to direct and immediate effects on the growth and spread of ideas? Some ways are simply obvious. No one would deny the role that personal charisma can play in the spread of ideas. Some of the people we will discuss in this book were, or are, tremendously charismatic—for example, Franz Brentano, Edward Sapir, and Noam Chomsky. Others—such as Leonard Bloomfield—were anything but.

The complex relationship that exists between a dissertation advisor and his or her doctoral student is another social bond that will be part of the story we consider. We have provided quite a few genealogies that indicate the relationship between a thesis advisor and a student. And an equally important relationship, one that will play a major role in our discussion, will be that of *authority*, a complex notion that involves both people (who is the authority? in whose judgment is she the authority?) and fields (she is the authority when which questions are at stake?). As human beings, we all live in a complex patchwork of such *fields*: a Catholic

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may agree that in religious matters the pope is the final authority, but if the Catholic is a biologist, or for that matter a pharmacist called on to sell products her church does not approve of or may even condemn, she must come to a decision on how the forces and relationships in one field carry over into another. None of these ways of thinking should be taken as tools to oversimplify complex issues; none of them deny the fact that the scientific world enjoys greater autonomy in some respects than others, due precisely to the commitment to increase knowledge that lies at its heart.

We must not leave aside the very personal passion that a scientist has for *knowing*, which can be just as strong as any social ties with other human beings, or even stronger. We are very aware of this; we think it is well characterized by Augustine and his interpreter Pascal, who speak of *libido sciendi*, a human pleasure—"passion" might be a better word—that comes from snatching glimpses of truth. The seeker after truth is often willing to sacrifice a great deal if that sacrifice is the price of knowledge.¹⁶ Such a seeker after truth also prizes the awareness that he or she is not alone in trying to pose questions to Mother Nature and in finding ways to quantify and calculate and specify explicit models of nature. A scientist discovers who he is—or rather, *that* he is a scientist—by recognizing that he finds pleasure and even joy in working, both alone and in teams, to better understand the natural world. We emphasize this point in order to underscore our view that we do not make science profane by considering its sociological aspect; that social side is one part, but only one part, of the larger picture.

Isaiah Berlin, the most profound raconteur one would ever hope to meet, wrote about his life in philosophy, and he put his finger on an interesting phenomenon that is not at all uncommon, and by its very nature involves the group within which one works—and in part, but only in part, its size. He wrote about what happens when one chooses an artificially small and personal group of associates to serve as one's intellectual cohort. Oxford University was his home for many decades.

One of the shortcomings of these meetings is something that seems to me to apply to Oxford philosophy in general, at least in those days. We were excessively self-centered. The only persons whom we wished to convince were our own admired colleagues. There was no pressure upon us to publish. Consequently, when we succeeded in gaining from one of our philosophical peers acceptance or even understanding of some point which we regarded as original and important, whether rightly or, as was more often the case at any rate

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with me, in a state of happy delusion, this satisfied us completely, too completely. We felt no need to publish our ideas, for the only audience which was worth satisfying was the handful of our contemporaries who lived near us, and whom we met with agreeable regularity.

Berlin went on to say that the philosophers in that Oxford crowd did not feel that they had anything to learn from anyone outside the group. “This was vain and foolish and, I have no doubt, irritating to others.” Of that, there is no doubt. This description is echoed by linguists in the early years of generative grammar, linguists who were not from MIT and whose remarks were not taken seriously by young generativists. Berlin ended with another telling observation: “But I suspect that those who have never been under the spell of this kind of illusion, even for a short while, have not known true intellectual happiness.”¹⁷

Now, there is no way to tell whether Berlin’s conjecture, offered in passing, is really *true*, but his point was this: For those seeking true intellectual happiness—what we referred to above as *libido sciendi*—the adventure must be done in a community, not as a solitary individual, and the optimal size of that community may be measured in scores or hundreds, but certainly not larger than that. And not only is the work done *within* that community, but it may well be that membership in this community goes hand in hand with an icy indifference to what is going on, intellectually speaking, outside of that community.

The significance of Isaiah Berlin’s remark is that it reminds us of the importance of thinking about research in social terms—indeed, in sociological terms. Scientists quite rightly focus their attention on the subject of their science—whether that subject is language, rock formation, or mitochondria. But in *doing* science, each scientist is part of a social group—in fact, of many social groups, including the people from whom she learns directly (her teachers), indirectly (the authors of her textbooks and all the people who have established the field), and potentially (her cohort in grad school, her competitors, and so forth). We humans do very little that does not involve us *as members of social groups*—and that is our real advantage as a species.

Scientists spend *most* of their time thinking about science: that is their work. From time to time, they think about the nature of knowledge and the relationship between their theories and the world they study. We will have many occasions over the course of this book to hear the voice of scientists reflecting on the relationship between scientific theory and the

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reality that science aims to study. But rarely do scientists turn their attention to the more abstract question of the social structure of their activity.

Sociology is a field that could, in principle, be used to study the social structure of the scientists and their milieu.¹⁸ Indeed, over the last several decades, sociologists such as David Bloor, Bruno Latour, and Steve Woolgar have done just that, developing a perspective that has been called the *strong program* in the sociology of science. We do not see our work as fitting within that perspective, but we do believe that it is of the greatest importance to include in our account of how science works an explicit understanding that scientists work in a complex world, one that is part of a larger human culture, situated in time and in space. We can learn from sociology how to ask questions that allow us to better understand how scientists accomplish what they do. We view the contributions of sociology to the questions we consider here to be entirely complementary to a study of the explicit logic of scientific research.

It is both helpful and important for us, as we organize our exploration of science and scientists, to draw a distinction between the pure world of ideas and of theory, and the social world in which scientists and disciplines exist and interact. Of course this is to some degree an artificial distinction: every paper is written by somebody who is a human being, every lecture is given by a person with strengths and foibles, and the audience in each case has a pretty good idea of who is writing and speaking—and this “pretty good idea” certainly has an effect on how the paper or lecture is received and understood. But the distinction is nonetheless important, and it allows us to view the developments in each of our sciences (and the activities undertaken by all of the scientists) in a way that provides new insights.

Our focus in this book is the nature of continuity and of rupture in the mind fields, and we are in a position now to observe that it is in the social world where rupture tends to be present and, indeed, to be a dominant characteristic, for there can be a clash between scientists over questions of authority even when there is little difference between their ideas. Of course there are important scientific debates over real scientific issues, and it can easily happen that these debates align with different scientific groups vying for scientific ascendancy—and in a sense that is what we might hope to find. But that is not all we do find, a good deal of the time.

Here, then, is what we propose to show: as we look carefully at the development of linguistics, we find far more continuity in the world of ideas than the extant literature would have us believe. Ideas move from one discipline to another—from logic to linguistics, for example—and

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from one embattled subdomain to another—generative semantics to interpretive semantics, for example. Good ideas tend to flourish.

Things are much more complicated on the social level, where people are born, grow up, enter a discipline, and look for colleagues—compatriots—and a job. The world that they see before them is different from the world that their teachers saw in front of them a generation earlier. Those who persevere and remain active in their own discipline see it evolve, slowly or quickly depending on their own internal clock, and they do their best to help their students and those tendencies in their disciplines that they view as promising. And then they retire and leave, and all the while the process continues.

The social world of the scientist is built up out of relationships of communication, cooperation, and competition. No surprise there. Scientists communicate? Of course they do; they read and they publish papers, and they go to conferences. What more could we ask for? They cooperate: they share their results, and they go to extraordinary lengths to get their results out in front of their colleagues as fast as they possibly can. And they compete for such things as resources, and they compete for priority, and all of this competition makes the frontiers of knowledge move forward as quickly as possible.

As we say, that much is generally accepted, but there is more.

There is a far more important sense in which colleagues in a discipline support one other: they support each other's views as to what the important questions are that must be answered, and how those questions should be defined; they support each other's views as to how their discipline relates to neighboring disciplines.

They compete because life's resources are finite and limited; a scientist wants his work to be taught in courses being given by his colleagues at other institutions, and there is just a finite amount that can be showcased in a course. There is only so much space in a syllabus, and adding one new piece of work typically means throwing out something else: that's what it means for time to be finite. One could draw an analogy here to real-life commerce. We hear talk about "selling" a theory, but there is one enormous difference in the academic world (as Bourdieu¹⁹ pointed out): by and large, the people to whom one wants to *sell* one's work are the very same ones who are out selling their own work. Much of science is a large souk, a bustling marketplace, where there are no customers for any merchant other than all the other merchants present that day. This simple fact has an enormous impact on the social structure of science.

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Let's be clear: there is nothing wrong with this, and if a person knows how to do science well, then one of the consequences of that is simply that others will be interested in his work. There is no way to criticize a scientist for having made his work interesting: the closest one can get to that is the jealous response we sometimes hear that Professor So-and-So's presentations are *flashy* (which typically goes along with the follow-up that the material is not *deep*): *flashy* is a form of *interesting* that is not filling and does not last long, and one wonders afterward just what it was that seemed so appealing during that flashy presentation.

The issue of what questions are *interesting* and *important* is second only to the question of what is *true* (and sometimes may seem even more important). In some disciplines, external funding agencies can wield enormous influence in this regard, and they may be quite aware of the role they play in influencing what questions are viewed as interesting and important. If a federal agency decides to support documentation of endangered languages, then the importance of that field will, quite simply, rise. Much more often, however, it is the senior workers in a field, those in their mid-forties or older, who make the case, in public, as to what the important questions are that should be addressed, and these scientists work to create a *reputation* that will encourage others to take their suggestions seriously.

Over the next few pages, we will discuss three ideas from sociology that are useful for understanding the evolution of the mind sciences: *generations*, *authority*, and a fierce fighting word, *ideology*.

Generations

Generations play a large role in the story told in this book. Across cultures and across time, there are many different ways in which generations have been viewed. One view sees little but simple pairs of parent and child, as in the book of Genesis: "And Arphaxad begat Salah; and Salah begat Eber. And Joktan begat Almodad, and Sheleph, and Hazarmaveth. . . ." Such a view is useful when we are interested in keeping track of who is a descendant of whom. But there are other views, much richer in texture.

In Greek mythology, the most important organizing force in the pantheon of the gods and heroes is the generation: mother and father come together and engender a child—or, more often, a whole set of children. Children of the same parents (and even to a large extent, children of the same father) tend to form groups of solidarity. The Titans were 12 children

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of Gaia and Uranus. Just as important, there is more often than not a presumption of serious conflict between a father and his offspring.

We all know that Sigmund Freud alluded to the Greek legend of Oedipus, who killed his father, King Laius, and Freud took this as a way of talking about the challenges a young boy experiences as he grows up. But the powerful dynamics of generations play a much larger role than that particular one. Listen: Gaia was the very first solid thing that emerged after the aboriginal Chaos (whose name says it all), in Greek mythology. Gaia is the terra firma of our universe. After she came to be, she somehow managed to generate Uranus out of herself, without engaging in the usual procreative practices. Uranus was the sky, he was younger than Gaia, and he became her partner and her mate. The *very first* sexual union was thus that of Gaia and Uranus.

They were a fertile couple, but Uranus was a terrible father, and he refused to let any of his children emerge from Gaia—the first dozen of the offspring were the Titans, and the rest were equally awe-inspiring. The Titans *knew* their father would not let them become people in the world: they were in a much more dysfunctional family than Oedipus's (and that is already saying a lot). To bring this myth back to twenty-first-century academic life, these Titans were the role models for the graduate students whose academic father never wants to let them finish their degree and go out into the world.

Back to Greek mythology. Uranus forced his children to stay in the underworld, which caused Gaia great pain, as well as great grief. Gaia conferred with her children about what could be done, but it was only the youngest of the Titans, whose name was Cronos, who was willing to take on his father (everyone in this story, unlike Oedipus's, is immortal, even if they are vulnerable to attack). Cronos took a sickle and castrated his father Uranus. *This* symbolism requires no exegesis.

Life in dysfunctional families generally stays bad. Cronos himself was warned that he would someday have a son who would overpower him, and so *Cronos* in turn smothered his children. In his case, he did it not by keeping them inside their mother (as his father Uranus had done), but by swallowing them whole, which is a process in mythology that does not lead to imminent destruction—it is much like being swallowed by a whale in the Pinocchio story, or the story of Jonah in the Bible. Cronos's children were the role models for all of the graduate students whose urge to strike out on their own is met by their fierce teachers' will to keep them lashed tightly to the teachers' established truth.

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Now, Rhea, who was both Cronos's sister and the mother of his children, saved her last child from being swallowed by Cronos. The last child was named Zeus, and she saved him by passing Cronos a surrogate child (always referred to as a "stone" in the myths) and secretly saving the real Zeus. When Zeus grew up, he managed to get his siblings out of his father (sources differ as to the method employed, though the use of an emetic remains the best hypothesis), and they all banded together to wage war on their hapless father Cronos and his siblings, the Titans. That 10-year war was the first great war in Greek mythology, and it pitted one generation against another and one set of siblings against another. Zeus's side (the younger generation) won the war, and their home, Mount Olympus, came to be known as the palace of the gods.

The power of these myths is that they bring together in one story the kinds of psychological and social forces that play major roles in how people act, individually and in groups. We certainly *could* understand intergenerational conflicts without bringing up Greek myths, but they do help us to focus on what makes us tick as the humans that we are, and they help us to understand, if only in a prescientific way, the kinds of forces that give rise to particular challenges that we will see in the chapters to follow, such as the rupture between the Neogrammarians and their teachers during an important moment in the development of modern linguistics.

But by no means is it *necessary* to embrace the metaphors of mythology to think seriously about generations. Sociologists since Karl Mannheim²⁰ have explored the consequences of knowing this very simple fact about humans: we are born, we mature, we age, and we leave the scene to be replaced by others. Given the kind of creatures that we are, we leave behind a record of what we have seen and what we have learned, but the next generation after ours never experiences the same things that we did. Each generation faces challenges (social, economics, political, and other sorts) that were never seen in quite the same way before, and each generation has just enough time and interest to learn what it can from what was left to it by the previous generation.²¹ Science progresses fast *because* it gets rewritten by each generation: rethought, restructured, and rewritten. Some things get lost along the way, but hopefully not too much and hopefully nothing that we will regret having lost.

Or perhaps that is an oversimplification. Mannheim believed that it was just as important for society to forget as it was to remember, especially if the forgetting was a precondition for progress, or anything like it. He

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likened the lack of experience in the young to a lightening of the ballast in a ship: a lighter ship may be more agile, but then again, it may capsize in a storm. But on the whole, the inevitability of forgetting is, if not a good thing, a necessary thing, and a society (Mannheim wrote) composed of people who never died would have to come up with a new way to forget.

Any two generations following one another always fight different opponents, both within and without. While the older people may still be combating something in themselves or in the external world in such fashion that all their feelings and efforts and even their concepts and categories of thought are determined by that adversary, for the younger people this adversary may be simply non-existent: their primary orientation is an entirely different one. That historical development does not proceed in a straight line—a feature frequently observed particularly in the cultural sphere—is largely attributed to this shifting of the “polar” components of life, that is, to the fact that internal or external adversaries constantly disappear and are replaced by others.²²

Let’s illustrate this point with an example: Wilhelm Wundt’s effect on the rise of psychology in the second half of the nineteenth century (see chapter 4). One of his students was Edward Titchener, who thought of himself as bringing Wundt’s ideas to the United States—by way of Cornell University, in the event. Titchener, in turn, had a student named Edwin Boring, who became a successful and influential professor of psychology at Harvard University and whose writing on the history of psychology left a profound impact on how American students of psychology perceived the origins of their ideas. More recently, Kurt Danziger questioned Boring’s efforts to go behind Titchener’s own words to see what Wundt himself was arguing for. “Boring was himself,” Danziger wrote, “deeply committed to the positivist philosophy of science whose influence on the early development of psychology is at issue here. But his is the commitment of the second generation: What had been for his teachers conclusions carefully arrived at and boldly asserted, have now become matters to be taken for granted, implicit certainties not open to debate or even worthy of mention.” Danziger underscored the pernicious effect that this leads to: psychologists fail to see that many of their decisions about how to treat phenomena are the consequence of prior philosophical commitments, not realizing that there are indeed a range of philosophical positions that can legitimately be taken, all of which have an impact on the work in psychology. “This is a comforting attitude,” Danziger wrote, “for

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those who have no wish to question fundamental assumptions, and that usually includes the conservative majority.”²³ The more a philosophical view merges with the mainstream, the harder it can be to identify, even by those whose thinking is influenced by the idea all day long.

The effects on disciplinary knowledge that arise from the eternal shifting of generations are of two sorts. We have emphasized one kind, the more *epistemological* sort, which arises from the fact that the understanding of any one thing by a given generation will be different from the understanding of it by the preceding generation because the totality of what the newer generation has to learn has changed. The most striking instance of this occurs when a generation that struggled to learn something new and revolutionary passes the baton on to the generation that follows it, a generation which learned the revolutionary material in the classroom from textbooks.

The second kind of generational shift arises out of the fact that each generation begins young and then gets older and grows up, taking on greater personal and disciplinary responsibilities with each passing decade, expecting the generation of its teachers eventually to cede to it the positions of authority that once had been held by the older generation. This transfer of authority and influence is inevitable, but how smoothly and how graciously it occurs depends on many factors.

Let us look at an example of a shift in perspective that grows directly out of different generational perspectives. We will look at two remarks, made at different times by the same linguist, the first when he was a young man, and the second when he was an older and very distinguished figure (we’ll let you know who he was after you’ve read what he wrote).

As a young man, he described what had happened when he sent a manifesto to an organization he belonged to. He thought the manifesto audacious, and he referred to the specific items as “theses”:

There were no substantial objections to the theses defended by [his group], and especially the resolutions about the tasks of [the larger organization] was accepted unanimously. If, however, [the manifesto] had been submitted to a secret ballot, it would have certainly provoked a few votes against it. Such was, at least, the impression gained from talks in the corridors. But, as a matter of fact, do the votes against mean much when they are devoid of any attempt towards argumentation? Such silent voices belong to those who realize that the recognition of the principles of . . . [linguistics] generates the necessity for fundamental changes in the field of synchrony, in linguistic history and geography,

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and in the description of literary languages, whereas such a thorough reorganization does not suit the adversaries' temperament.

This is a highly political view of the social structure that this young man was describing. He was just setting out on a career, in a period in which writing political manifestos was as natural as breathing the air. In the writer's fantasy, a vote was being taken, a secret vote, and there was a certain frisson that came from the thought that perhaps the theses would have been objected to if the pusillanimous scholars had let their true beliefs be known. And in that world of fantasy, those naysayers, those linguists who would have voted against, are not worthy of the privilege of having a vote: even if they had said no, they would have been the meaningless votes of the democracy in which everyone gets the same vote—just one—regardless of whether they really understand what they are voting on or not. This writer is a young man who is sure that he knows better.

Forty years later, this man, not so young any longer, has become the elder statesman of the field—it is Roman Jakobson, a major figure in twentieth-century linguistics. It is no longer of any value to think that the field of linguistics is riven by disagreement: what good is it to be a senior statesman if one isn't listened to? Now Jakobson preferred to see accord and unity, even when the rhetoric in the street seemed to say otherwise.

"Linguistic theory of our time seems to offer a stunning variety and disparity of clashing doctrines," Jakobson wrote in 1971.²⁴ But that is misleading, he suggested. Do we think we see "intensive contentions and tumultuous controversies"? That is mere appearance: do not be deceived. "A careful, unprejudiced examination of all these sectarian creeds and vehement polemics reveals an essentially monolithic whole behind the striking divergences in terms, slogans, and technical contrivances." That is quite interesting, if only because it invites us to face the question: when is it appropriate to tell two sides of an academic dispute to stop their disagreement, because the rest of the world sees them as arguing about how many angels can dance on the head of a pin? Over the course of this book, there are many occasions where the heated words and intemperate rejoinders seem, from our position today, quite out of proportion to what was at stake.

In 1971, Jakobson urged the younger linguists to see that "most of these allegedly irreconcilable contradictions appear to be confined to the surface of our science, whereas in its deep foundations the linguistics of the last decades exhibits an amazing uniformity." He wanted linguists to understand that when *he* was a young man, the field was rent asunder by

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real disagreements. Today, though, what linguists have in common “is particularly impressive in comparison with the substantially heterogeneous tenets that characterized some earlier epochs of this discipline, in particular, the nineteenth and the early years of the twentieth century.” Jakobson urged linguists not to be led astray by terminology. “Most of the recent discord is based partly on dissimilarities in terminology and style of presentation and partly upon a different distribution of linguistic problems chosen and pointed out by single scholars or teams of inquirers as the most urgent and important.” Be more open minded, Jakobson suggested, and recognize that what interests *you* need not set the limits to the questions the entire field is engaged in answering.

We do recognize that it is not possible to remove the role played by personality in matters of generational conflict. Consider the noted philosopher Ernst Cassirer (who is deeply connected to our skein of psychology and linguistics as well), who was born in the nineteenth century and chased to the United States by Hitler, like so many of his peers.²⁵ His view of generations was different, and he felt no attraction to the notion that “there is a deep and insurmountable gap between the generations; that every new generation must feel in its own way, think its own thoughts and speak its own language. I regard this as a misleading and dangerous dogma—and as a dogma that throughout my life I found constantly contradicted by my own personal experience.”²⁶ His intellectual equilibrium was not matched by many others in this story.²⁷

Then there is the question of age. Many people have pointed out, with varying degrees of graciousness, that the older one is, the harder it gets to change one’s views about basic scientific questions, but even that observation (which is no doubt correct) stands in need of explanation. Is it to be explained by hormones and brain deterioration, or by rational risk-aversion, or by the possibility that the older scientists understand better than the younger ones do the range of good reasons why the current orthodoxy came to be dominant? Whichever account turns out to be correct (and all of those sound quite plausible) makes a difference for the conclusions that we draw from it.

Let us draw the tentative conclusion that some of the explanations for conflict and change may relate directly to a difference of generation. Still, that remark by itself leaves open a wide set of interpretations: the older generation may be irrationally clinging to a bygone tradition, the younger generation may be seeking something that is simply different from what

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came before, the older generation may be suffering from inadequate technical skills, the younger generation may be seeking job perks, or simply jobs. Technologies and dominant ideas may change, and a younger generation may be more willing or more capable of adapting and adopting them.

The generational character of a discipline is distinct from the effects growing out of the strong mentor/student relationship that invariably arises in the training of a young scholar; this latter lies properly in the domain of individual psychology, while the generational character of a discipline lies at the social level. This is a distinction that is useful, though we cannot pretend that it is always easy to draw neatly. Actors in our story make this point, in fact: we have already met Titchener, a psychologist important in the early years of American psychology, who had lost his father early in life; he remarked, “Until one is thoroughly settled for oneself, it must be good to have someone responsible in the prior generation upon whom one can lean.” He wrote of William James, a bit older than himself and established as a psychologist, “James especially owed it to American psychology I think, to take some interest, and to deal out praise and blame.”²⁸

That is a very interesting and revealing remark, even if it is one with which we do not agree, and it is one that steps well outside the bounds of what can be justified on traditional scientific grounds. It is, at the end of the day, one of those things that one may say to oneself when one feels that the world is not quite fair and not quite the way one’s parents had said it was going to be when we were grown up. We will see other cases where one generation disappoints another—sometimes the older one disappoints and sometimes the younger one.

Authority

A second aspect of science that arises because of its social character is the presence of *authorities*. There is no getting away from accepting the word of authorities, and what an authority declares is better protected from being falsified than is something that is declared by someone *not* viewed as an authority. What the great Charles Darwin wrote, with his characteristic modesty and his charm, is just what we all hope we can say:

No doubt errors will have crept in, though I hope I have always been cautious in trusting to good authorities alone.²⁹

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Alexis de Tocqueville offered a number of astute observations regarding precisely this point: to accept an authority means to trust, and there is no option that avoids this:

A man who should undertake to inquire into everything for himself could devote to each thing but little time and attention. His task would keep his mind in perpetual unrest, which would prevent him from penetrating to the depth of any truth or of making his mind adhere firmly to any conviction. His intellect would be at once independent and powerless. He must therefore make his choice from among the various objects of human belief and adopt many opinions without discussion in order to search the better into that smaller number which he sets apart for investigation. It is true that whoever receives an opinion on the word of another does so far enslave his mind, but it is a salutary servitude, which allows him to make a good use of freedom.³⁰

Darwin and Tocqueville look at one side of the authority market, the demand side: we *need* authorities. As long as there is research to be done, there will be a demand for authority. The other side of the coin is the supply side (although the marketplace metaphor begins to feel a bit contrived): what the scientist wants above all else is to be the provider of authority to others, which is to say, to *be* the authority. The very word *authority* contains within it two important things: it is, first of all, relational. One can only be an authority for others, in the sense that one is never an “authority” to oneself (it is not even clear whether it makes sense to ask whether one is an authority in one’s own eyes). If someone is an authority in an area, it is *to someone else* that he is an authority. Being an authority is by its very nature a relational, a social, phenomenon. And being an authority in science has much in common with the more general use of the term *authority*, as when we say that “he took his complaint to the appropriate authorities.” The authorities have a certain power invested in them, and we expect them to exercise that power in a legitimate fashion, not overly influenced by self-interest.³¹

It seems to us that the natural history of science can only be understood if we look carefully and sensibly at both aspects of science. Each individual scientist works as hard as possible to move the accumulated wisdom of a discipline forward, and in doing so to establish himself as an authority, in some fashion, among those with whom he works, and among those with whom he communicates.

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The notion that a scientist strives to be an authority is hardly surprising; when as professors we train beginning graduate students, we tell them that their work towards their doctorate will focus on their becoming the world's expert on some particular (and almost always) small domain. We expect them to *control* the literature in that area, and we hope that when they are done, no one else will be able to publish something on that topic without having to cite our student's (eventual) doctoral dissertation, or a journal article derived from it.

To a certain limited degree, the goal of achieving authority *may* under some circumstance act as a force binding larger groups and mitigating forces towards smaller groups, in the sense that the total amount of authority an individual reaps is heavily weighted by the size of the group in which that authority is recognized. Oversimplifying a bit, this is just to say that if one is invited to give a keynote address at a meeting of an association and derives from this invitation some measure of authority in his future interactions, the amount of authority (if we can speak of such a thing) is directly linked to how large the association is.

Group Identity

It does not take very much for a human act to become a social act: when the act involves language, all that is necessary is for the person to imagine that he is addressing someone else, or that he is speaking along with someone else—as a linguist would say, all that is necessary is for there to be a first-person plural, or a second person engaged in the conversation, real *or imagined*. That is a very low bar. Once those conditions are satisfied, the person begins to develop an understanding of thinking as a social act.

When an individual acts, he typically acts as a member of a group in which he views himself as participating, and as that participation grows, he adopts and develops an account of what that group is. And so we will speak of a person's *self-in-group identity*—or *group identity*, for short—and of the person's *group identity account*. Charles de Gaulle viewed himself as a Frenchman, and he had a historic account of what it meant to be a Frenchman, associated with many noteworthy moments, not the least of which was the French Revolution in 1789. A graduate student submitting a thesis proposal views herself as a graduate student in a particular discipline. As such groups arise, it is in the nature of human beings to develop

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accounts for themselves and for others as to just who they are. These accounts will often include a simplified story of a group's origins, its original aims, and its current aims. Often this story can play an additional role: helping to maintain group solidarity, or even sending an encouraging message to those who are outsiders. In this way, the story can begin to take on a function of *justification* of the project that formed the group.

As an example, let's look at part of the preface of an important work that we will discuss in chapter 7, when we turn to early twentieth-century philosophy. After stating what he intended to do in his book, the author (whose identity the reader will learn in due course) turned to the question of how his work related to the work of others, and he made this observation: "The basic orientation and the line of thought of this book are not properly an achievement of the author alone but belong to a certain scientific atmosphere which is neither created nor maintained by any single individual." Today we might paraphrase this by saying that knowledge is a social good that we share, rather than the possession of an individual, but when we say that, who is the *we* we have in mind when we say that *we* share it? We will come back to that. "The thoughts which I have written down here are supported by a group of active or receptive collaborators." We will look at the genealogical ancestry of this philosopher later, but for now we may observe that he was not referring to the larger movement his work was indebted to, and in particular he viewed himself as part of a much smaller group. He explained that members of the group had "in common especially a certain basic scientific orientation." In fact, this smaller group was as much as anything defined by what it had found, tested, and deemed to be no good at all in other philosophers' work. As for the group's own work, the fact that it rejected a traditional philosophy "is only a negative characteristic," he wrote. "The positive features are more important: it is not easy to describe them, but I shall try to give a loose characterization."

At this point, he began to describe specific characteristics of this group. "The new type of philosophy has arisen in close contact with the work of the special sciences, especially mathematics and physics. Consequently [members of the group] have taken the strict and responsible orientation of the scientific investigator as their guideline for philosophical work, while the attitude of the traditional philosopher is more like that of the poet." His group's members did science, and they did not associate with people who thought like poets. "This new attitude not only changes the style of thinking but also the type of problem that is posed."³²

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That is a very important point for those of us who are interested in the development of scientific groups; at the end of the day, nothing is more important than the characterization of what the *questions* are that we are interested in, and working on. We will see that in the area of the mind sciences, groups define strong principles that establish what these questions are for them. Those principles remain in a murky area that is neither quite a statement of fact, nor quite a statement of value; these are the principles that define what an interesting question is for people in the group. The group of our mystery speaker was the Vienna Circle; the author was Rudolf Carnap, writing in 1926, just as his fame and that of the Vienna Circle were about to expand. We will return to his views in chapter 7.

To sum up, then: for each social group that we belong to, we develop an account of that self-identity. This constitutes a story that we tell ourselves about who we are: about who we are as members of a certain group. In these stories it is convenient and useful to include what E. G. Boring called *Great Events* as well as *Great Men*. Boring was a psychologist, and he was talking to other psychologists, though he knew that they viewed him as a historian as well, and that he was therefore permitted to speak more freely than others might be. Nonetheless, he softened his point by using ironically Capitalized Nouns. He was discussing the fact that a discipline comes round to sharing stories of when its movements began and how they started, and anyone who makes an effort to understand the intellectual landscape will know that the Great Events are peaks in a chain of mountains: high and visible, but not isolated and not always the highest altogether. Boring said these Great Events helped “meet man’s need to make history comfortable to understanding by personalizing it.” He went on to observe that these stories often incorporated specific Great Events that were taken as moments when a movement started. His examples all came from the early decades of psychology, but we will see examples of this throughout the course of this book. Fechner thought his basic view of psychophysics first visited him in his bed on October 22, 1850. “People find pleasure in birthdays. To date the birth of a thought is to dignify it, and biographers pick up these anecdotes and embed them in history.”³³

Boring was all too aware of the inaccuracies that these comfortable stories might contain, despite the function they play. Should we try to get rid of the stories altogether? That was not possible. “The practical solution for all these predicaments seems to be to allow them, to use them, but to recognize them and every now and then to take measures to offset them.”³⁴ This seems like a sensible piece of advice.

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Twenty years earlier, Boring had been a bit less tolerant of the ways of the behaviorist movement: “A formal movement is thus a protest and the psychological reason for protest is, of course, insecurity. No established science feels insecure or protests, for, being secure, it turns to work without attention to itself.” He was reflecting on the state of psychology in William James’s day, which he thought was “insecure, self-conscious, protestant, and full of the business of founding itself”;³⁵ it was *aggressive* and it exaggerated the importance of what it brought to the table.

Ideology

The term *ideology* ineluctably enters into the picture at this point, in light of the fact that one of its definitions is the *account that the members of a group construct to define who they are as a group*— what we referred to above as a group’s account of its identity.³⁶ Still, that is not how the term has always been used, in serious literature and not just the media. We can recall the far more tendentious accusations of *ideology* found in discussions of the radical Left during the 1960s, including Lewis Feuer’s intemperate *Ideology and the Ideologists*;³⁷ Feuer developed a Freudian view of 1960s rebels that has become part of the shared memory of that time. For his part, Feuer proposed three core items in *any* ideology of rebels: “an invariant mythological structure, an alternating set of philosophical tenets, and a historically determined chosen group.”³⁸ The myth is some variant on the Moses story, a man leading his people to freedom. “What is distinctive in ideology,” Feuer wrote, “is the drama it sets forth as the ‘meaning’ of the historical process, together with its assignment of the roles of leadership elite, chosen-class, and historical culmination.”³⁹ In *The Conflict of Generations*, he wrote, “Student movements are the product of selfless, altruistic idealism combined with the resentment and aggression of one generation against another.”⁴⁰

The word *ideology* has, to be sure, an ingloriously checkered past, and it continues to be used today in everyday life in a casual and ill-defined sort of way, typically in a polemical context where a writer who is critical of somebody else’s position calls it “ideological.” “Free schools are a dangerous ideological experiment,” thundered one British politician, concerned that the schools were teaching Islamic beliefs.⁴¹ Another writer on the political scene describes as “ideologists” people who have a need to see more purpose in life than they find in staid bourgeois existence. A

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third commentator draws a parallel between militants who devoted their lives to the Communist Party and those who devote their lives to Islamic fundamentalism, declaring that such people have in common a need for an ideology (unlike the commentator). Yet another will characterize the “dominant ideology” of Western society as that of progress or reason.⁴² In case ~~and~~ after case, what is described as an ideology is a belief that is held to with great strength, but a belief which the writer is sure no one would take seriously if it were brought out into the open and debated rationally by people of good will. That very fact calls for an additional explanation of why *those* people over there do cling to that belief.

There is no getting away from the fact that in the broader world in which we live, the usage of the word *ideology* is both charged and tendentious. This fact is regrettable, because the *notion* of ideology, as developed by sociologists, *could* have been of use to us; it *could* have served to refer to the *group identity account*. We will have to be very careful as we consider the power and strength of adhering to groups, whether they are political or intellectual in their grounding.

The term *ideology* was coined by Destutt de Tracy at the end of the eighteenth century, and he used the term to describe the study of the sensory origins of ideas.⁴³ That usage did not last long. Napoleon, seeing in the Ideologists—a particular group of influential thinkers—critics of his political aims, began to use the word *idéologue* pejoratively to refer to a political actor whose abstractions are of dubious worth. Marx, and marxists after him, have often used the term as part of a way of arguing that most of the fundamental and tacit principles of a society emerge out of the economic relations found there, and these principles—the society’s *ideology*—may be self-serving, oversimplified, and nearly invisible to those held in its sway.

There are essentially three ways in which we find tacit criticisms packaged under the rubric of ideology.

Ideology, in the first place, may be detected where there is an unhappy and unfortunate mixture of value and description. What passes itself off as description on the surface turns out to be heavily value-laden. Raymond Aron suggested, “Political ideologies always mix (with varying degrees of aptness) propositions of fact and judgments of values. They express a perspective on the world and an intention regarding the future. They do not fall neatly into the category of true and false statements.” We will see an example of this in finer detail in volume 2, when we explore the influential work of Thomas Kuhn on scientific revolutions. One

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of his colleagues accused him of writing ideology disguised as history of science. Paul Feyerabend wrote to him,

What you are writing is not just history. *It is ideology covered up as history.* Now please, do not misunderstand me. . . . [I do not] pretend that in history a nice distinction can be drawn between what is regarded as a factual report, and what is regarded as an interpretation according to some point of view. But points of view *can* be made explicit. . . . Nobody will think that the history of crime justifies crime, or shows that crime possesses an inherent “reason” or an inherent morality of its own. In the case of the sciences or of other disciplines [for] which we have respect the situation is much more difficult and the distinction cannot be drawn with equal ease. But in these cases it is of paramount importance *to make the reader realize that it still exists*. You have not done so. Quite on the contrary, you use a kind of double-talk where every assertion may be read in two ways, as the report of a historical fact, and as a methodological rule. You thereby take your readers in.⁴⁴

A second criticism that is often brought under the general umbrella of *ideology* involves the accusation that one’s opponent adheres inflexibly and intransigently to a belief that is much firmer when compared to other beliefs that one might maintain: a real *clinging* to a belief. People may be more resistant to *acknowledging* this belief, and they may find it harder to give up that belief in the face of what others see as reasons to abandon it. In short, they may be overly or irrationally committed to an idea—though not, needless to say, from their *own* point of view—and they may be unwilling or unable to formulate it explicitly. Lurking behind this view, more often than not, is the hope that the study of ideology can play the role of psychoanalysis, by curing and freeing the person who had been held under ideology’s sway. Finally, charges of ideology are sometimes leveled when the accusation is really that one’s own self-interest is at stake. A more complex version of this is that it is not so much one’s own self-interest as it is the interests of those who already dominate (those who are “hegemonic,” in Gramsci’s usage). This sense of the word is often associated with a Marxist orientation. But it can be interpreted in various ways, and some of them are more appropriate for a discussion of science and of scientists (and their behavior as scientists). Researchers in a given field may all agree with one voice that tremendous advances have been made in the last ten years, say—and even if the person who repeats that sentiment out loud may not have any papers published that represent

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some part of that great leap forward, it is nonetheless true that he has a stake in the ongoing health and wealth of the discipline. That stake can be as simple as the belief that his work is part of a legitimate scientific enterprise (and not a waste of his time) or as complex as an effort to increase the money and jobs devoted to his style of research.

The first point (dressing up *shoulds* as *ares*) speaks directly to the *content* of the ideological belief; the second to the too-close-for-comfort relationship between the human believer and his belief; and the third, to the relationship among the objective economic conditions of the believer, his society, and the social role played by the belief.

Within all three uses of the term *ideology*—three uses which at times just barely contain the indignation of the accuser—there is one thing in common: they are ways in which an individual’s thought process is deflected from the true path it would have taken if that person existed in a world where there were no friends, colleagues, competitors, self-delusion, idle curiosity, deadlines, mortgage payments, conferences, books, publishers, fatigue, tenure decisions, or time constraints. And because as scholars we often do our best to evaluate ideas abstracting away from those factors, we may naturally be led to the thought that when those factors do play a role in what we (or our colleagues) do, there is something deeply wrong. Raymond Boudon takes such a point of view; he uses the term *ideology* in his effort to better understand how it is that otherwise rational people can hold to a position that *seems* to rest on science, and yet does not, and which is nonetheless clung to with a force out of all proportion to what is rational.⁴⁵

Jehovah’s Problem and Noah’s Solution

Nothing is more usual and more natural for those, who pretend to discover anything new to the world in philosophy and the sciences, than to insinuate the praises of their own systems, by decrying all those, which have been advanced before them. —David Hume, *Treatise on Human Nature*, introduction

There is an odd and curious phenomenon that occurs and recurs in the history that we will tell. We call it “Jehovah’s problem.” You may not have realized that Jehovah had *any* sort of problem. Let’s begin with a story that you know.

The reader will recall the state that Jehovah found Himself in, early in Genesis, just before the Flood.⁴⁶ He looked at the sorry mess that the

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human race had made for itself and for the rest of the world, and decided that He had had enough. He was going to eliminate it all, and start all over again, but do it right, the next time. After a bit of reflection, He realized that Noah was not at all half bad, and it would not be fair to eliminate him or his family. He would spare them, and the world would start all over again, but this time with just Noah and his closest kin. Noah built the ark; Jehovah sent the rain. Forty days later it was all over, and the only ones left were those who had made it onto Noah's Ark.

Noah was indeed a lucky man. He, and all of his descendants, did not have to contend with any competition from any of Noah's former friends, enemies, or teachers. They were all gone, all washed up and washed away. All of Noah's contemporaries, after the Flood, were highly beholden to him. The book of history was thenceforth rather short, too, because it consisted of everything that Noah wanted it to, and nothing else at all.

We will find many a mover and thinker in the mind sciences over the course of this book who felt himself to be both in Jehovah's shoes and in Noah's. This is someone who looks out on what he sees, who looks back on what he has been taught, and does not like it, not one bit. This is someone ready to chuck it all and start over: someone who would like to be able to call down 40 days of rain and a huge flood to wash away the competition, someone who is sure he could ride it out in an ark of his own design. Alas, no one can do that. Still, we find characters who do the best they can, characters who send forth the message that everything that is being done today is a worthless waste of time. They have a *new* story to tell, a new way to study the mind, and we can do it right this time.

We call this Jehovah's problem—and obviously, it is not a “problem” in the usual sense; it's more of a mind-set and a marketing strategy, and a particular interpretation of how one's own work relates to the preceding scholarship. But it is very common in the mind sciences, and coming to understand it, in all of its nuances, is one of the challenges that we will face. Most often, this mind-set goes hand in hand with the view that everything that has preceded has failed to be scientific, and now we can go forth and be scientific—a pattern we have already discussed briefly. We will see this in psychology, first when John Watson introduced behaviorism in 1913, and again when behaviorism was overthrown (note the metaphor!) by cognitivism in the 1950s. We see it in linguistics when Bloomfield declares (with his students' proud acclaim) that linguistics has finally become a science, in the 1920s, and again in the 1960s, when Chomsky declares (with his students' proud acclaim) that linguistics is finally a science.

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In philosophy, we see this over and over again, in any number of different guises. The most famous philosopher who invited down upon himself a flood to wash away all assumptions and all former teachings was René Descartes, in the seventeenth century: he declared that he would doubt all things, wash away all certainty, and try to build up his beliefs and his knowledge from scratch. While some philosophers have been content to build upon the work of their predecessors, many have called for a complete washing away of what preceded them, on the grounds that it was all spoiled and rotten and worthless. The most ambitious of these was the logical positivists of the Vienna Circle, who urged a program that would relegate almost all of the work of their philosophical predecessors to the dustbin of history, where hopefully no one would ever read it again.⁴⁷

Towards the end of the nineteenth century, the philosopher Josiah Royce (perhaps the last American philosopher whose thought could be said to be squarely and firmly tied into the European currents of philosophical thought) made a similar observation. He began by saying that scholars and thinkers all recognize their ties to earlier thinkers: “The time is long past when really intelligent thinkers sought to do anything outside of intimate relations to the history of thought,” he wrote in 1892. But he thought about that again, realized that was not quite true, and continued, “It still happens, indeed that even in our day some lonesome student will occasionally publish a philosophical book that he regards as entirely revolutionary, as digging far beneath all that thought has ever yet accomplished, and as beginning quite afresh the labors of human reflection.” He obviously had an example or two in mind, but he did not choose to share them with us. “Such men, when they appear nowadays, as once in a while they do appear, are anachronisms; and you will always find them either ignorant of the history of the very subject that they propose to revolutionize or incapable of reading this history intelligently.” Yes, he clearly had some examples in mind. “What they give you is always an old doctrine, more or less distinguished in a poorly novel terminology, and much worse thought out than it has already been thought out, time after time.” And having acknowledged that such people do exist, he went so far as to point a finger about modern liberalism: “It is one of the defects of the current liberalism in matters of opinion that it does encourage, only *too* often, this sort of thinking; and the sole corrective of the error is a certain amount of philosophical study of an historical sort before one begins to print one’s speculation.”⁴⁸

It will be one of our main tasks in this book to document this pattern and to try to come to grips with what is wrong with it; what is, occasionally,

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right about it; and why this pattern is so common. It is not just a personal problem; we are not interested in a psychological analysis of anybody and certainly not of the people who have helped move these fields forward. The point is rather that we see a pattern, and not only that, we fail to see it reported in the literature as a generalization. When it is remarked upon, it is always as someone's personal failing—usually that of the would-be Jehovah (or Noah). But clearly there is more to it than that. The proof that there is more to it is simple: in the real world, there is no Flood. There is nothing that washes away the books and the publications of the earlier scholars. And yet John B. Watson was able to convince people not to read literature from before behaviorism, and B. F. Skinner's students were delighted to never have to read anything before Skinner. Chomsky's students did not have to read what had been published before 1957, and so it goes. Why did the world of scholars permit itself to become dumb? That is the question! Anyone can tell you not to read something. But what is it that makes you willing to follow that advice?

Credit Problem and Heroes

There is a problem encountered by the kind of approach we develop in this book that we should point out here: it does not provide any help in solving the problem of credit attribution. If anything, studying the scholars' work up close makes it all the harder to solve the problem of credit attribution. The more we learn about the evolution of the mind fields, the harder it may be to figure out who the *real* heroes are, and we find ourselves forced to question the reasonableness of asking that question.

In his brilliant book on Galileo, Kepler, and Newton, I. Bernard Cohen found himself trapped by the conflict of the two regimes of the world of ideas and the world of human beings. He surveyed the evolution of the ideas of motion, impetus, and inertia, and the development of these notions in the centuries before Galileo. One thing is perfectly clear: the world did not jump directly from Aristotle's view of motion to Galileo's, even if Galileo and more modern scholars would like to give that impression. Cohen wrote,

Galileo's originality was therefore different from what he boastfully declared. No longer need we believe anything so absurd as that there had been no progress in understanding motion between the time of Aristotle and Galileo. And

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we may ignore the many accounts that make it appear that Galileo invented the modern science of motion in complete ignorance of any medieval or ancient predecessor.⁴⁹

If you actually *read* the physics literature in the centuries preceding Galileo's work—that of Nicole Oresme, for example—you cannot fail to appreciate the continuous conceptual development during these centuries, and Cohen knew all of that material well: that was his discipline, after all. Cohen clearly sensed that there is a conflict at some level between demonstrating continuity in the development of ideas and the pointing out the brilliance and creativity of the work of such men as Galileo. And so he wrote,

By making precise exactly how Galileo advanced beyond his predecessors, we may delineate more accurately his own heroic proportions.⁵⁰

Heroic: that word says it all. When we focus on individuals and their life stories, we build heroes, and occasionally villains, and certainly buffoons. We explore the jealousy, we wonder at the rages, but the more we learn about the actual life of the ideas, the more we grow to distinguish the personal strengths and flaws from the advance of ideas.

Cohen was one of the greatest historians of science of the twentieth century, and we do take his perspective seriously, even if we do not agree with it. He insists on the importance of great leaps of individual minds:

We do not fully understand why or under what conditions, a few hardy individuals are from time to time led to think in wholly new directions, but the fact is that they do.

Though he adds,

New ideas are rarely creations unrelated to the general background of ideas.⁵¹

We would add: not only the general background of ideas but also the general sociohistorical background.

Here is another way in which the conflict between the regime of ideas and the regime of people has been treated. Claude Allegre, a well-known French scientist, described the origin of the notion of tectonic plates, first suggested by Antonio Snider-Pellegrini in 1868 and developed in the

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following years by others, including Elisée Reclus and Frank Taylor. But it was Alfred Wegener, writing in the second decade of the twentieth century, who is generally given credit for the idea. As Allegre notes,

He defended his theory firmly but without excessive aggressivity until his dying day. And so it is that he should be considered the father of the theory of shifting continents. As Georges Duby put it, in matters of reference and precedence, we must establish a simple rule, one which distinguishes clearly between an opinion which is simply one among many, expressed fleetingly, and a work that is built, argued for, and developed around a central idea. [In Duby's words:] "Reference to one is anecdotal, to the other is central and necessary."⁵²

Allegre is trying to solve a problem that simply does not exist, which is to say, he is trying to resolve the conflict between the continuity that inheres in the world of ideas and the rupture that we insist must exist in the world of actors so that we can fairly and justly apportion credit for originality. Perhaps that is too crude a formulation. Of course there is *a* problem, a problem of credit assignment, because that is how our modern world today works: we expect there to be an answer to the question of who deserves the credit for the idea of continental drift, the idea that continents are floating on tectonic plates. But this credit problem is not one which aligns sharply with any significant, or even meaningful, question in the history of ideas. In the world of ideas, continuity is the dominant characteristic.

In the next chapter we will look at the rise of European linguistics in the nineteenth century, and in many of those accounts, the author feels the need to decide just who was responsible for the emergence of this new science. Two of the earliest candidates are William Jones and Friedrich Schlegel, but as one scholar notes, "despite the various claims that have been made in favor of Sir William Jones or Friedrich Schlegel in the history of linguistics, it is still generally held, and I believe with some justification, that Bopp's *Conjugationssystem* of 1816 constitutes the 'breakthrough' of the New Philology."⁵³

Trying to determine who should get the credit for an intellectual advance is asking the wrong question. Sometimes it is an unavoidable question to ask in the heat of the moment, as when we make decisions about whom we should hire or who should receive an honorary doctoral degree, or a Nobel prize. But no such concerns drive us as we write this book. To adopt a metaphor dear to the heart of Americans, science is a team sport, and while we know that individuals will win prizes for outstanding

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performances that are statistically measured and individuals will be selected as Most Valuable Player at the end of each season, it is still the teams who play and win the games.

There is another reason to downplay the credit-attribution problem. Deciding who should get credit can drown out consideration of other questions that are also important. One such question concerns the natural passage of ideas from one of the mind sciences to another—from philosophy to psychology, from psychology to philosophy, and so on. The actors, the thinkers who are themselves engaged in this, are by no means the people who best understand how this passage happens. In a recent study of the origins of Karl Popper’s influential position on the nature of modern science, Michel ter Hark argues convincingly that the important position Karl Popper published in the early 1930s involved ideas that Popper had not had in 1928, when he wrote his doctoral dissertation, and that the ideas were solidly rooted in his study of Otto Selz, a psychologist who had written his second (*Habilitation*) dissertation with Külpe just before World War I, and who by the early 1920s was professor of philosophy and psychology in Mannheim.

Ter Hark is well aware that his reader is likely to say, “who?” when he first encounters the name of Otto Selz. “Selz was, I think, the greatest scientist to emerge from the brief but extraordinarily creative phase of German psychology at the beginning of the twentieth century in Würzburg” and a member of a group that included Oswald Külpe and Karl Bühler. Now, it is true that neither Külpe nor Bühler is well known today, but anyone who has read a bit about the history of psychology will have encountered them, something that cannot be said of Otto Selz. It is clear that Ter Hark senses an injustice that began over 80 years ago. “Not to be credited for his scientific achievements seems to have been Otto Selz’s destiny (and fear),” Ter Hark writes. And he proceeds to show in detail how Selz’s ideas about creative thought were adapted and adopted by Popper. That Popper’s work was an important example of the flow of ideas from psychology to philosophy is fine and admirable. But Ter Hark goes a step further and compares the intellectual influences that he has found with the stories that Karl Popper developed in his intellectual autobiography decades later. “Reading Otto Selz . . . brought about a significant change of perspective in this early psychology, one which would ultimately lead to his evolutionary stance in epistemology and philosophy of science. Because Popper never explains this formative role of Otto Selz in his published work, I even began to think of him as seriously distorting the

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historical record.” Ter Hark ultimately set his goal to be to “reconstruct the immensely fruitful interaction that took place between psychology of thinking and epistemology”—between psychology and philosophy—and “simultaneously to give Otto Selz the credit that he especially deserves.”⁵⁴

Ter Hark may or may not have accomplished the task of getting Selz the credit that he deserved. But he comes very close to raising a question to which his work gives a partial answer, one that is more important for our task: how should we read accounts constructed by our mind scientists? How should we interpret their choice of what to talk about and what not to talk about? Their choice of whom to talk about and whom not to talk about? We might even say, their choice of what to remember and what to forget? Sometimes the answer to those questions is as simple as noting that the mind scientists are hoping to engage in the credit-assignment problem, or to engage in honorable or dishonorable efforts to influence future scholars engaging in credit assignment. When they do that, the stories they leave behind for us are not worth very much. But there may not be a better way, a *right* way, to carry out the credit-assignment problem. We are not convinced that there is.

Let’s be clear on this, then: the distinction between the ideas and the intellectual positions taken by people that we will study is an artificial one, in the sense that one cannot exist without the other. There is no history of ideas to study if there are no scientists around to develop the ideas, and there are no scientists to make bold claims if there are no ideas. Nonetheless, the difference is both useful and important if we are to get a better understanding of much of what happens in the history of ideas, and in particular, if we are to understand how the history of the mind sciences could be simultaneously a story of rupture and of continuity.

If we could, we would simply dismiss the credit-assignment problem from all intellectual history: nothing so distorts the discussion of the development of our ideas than the passionate attachment to the assignment of personal credit. But we can’t; there is some inevitable and unavoidable reason to take on the credit-assignment problem, as we will see. But the cost of going down that road is very high indeed.⁵⁵

Mind and Materialism

One of the largest themes that will follow us throughout the book is the development of our understanding of mind, matter, and mechanism—and

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machines. Over the four or five centuries in which the Western scientific view has evolved, there has always been a sense of complementarity between mind and matter. For some, like Descartes, that complementarity is the reflection of a sharp division between the two, while for others, the separation has been less clear and more gradual. For almost everyone, the worlds of mind and matter differ at the very least by the ways that we describe and think of them, and the principles that we see guiding those two worlds. Over this time, our understanding of *both* mind and matter has changed considerably—indeed, radically.

A profound shift in Western thought occurred during the late sixteenth and seventeenth centuries in which a new picture of materiality emerged, one in which the most important aspects of what is real in the world we live in was directly tied to material shape, to location and movement, and to a new, measurable quantity called *mass*. This shift was deeply connected to the scientific advances that were made in the study of the movement of objects both in free flight and under the influence of gravity. Galileo, René Descartes, Isaac Newton, and others developed an understanding of the world according to which straight-line motion was a natural state for objects to remain in, and there was something about objects (not their size or shape, but something else) that determined both their resistance to change in speed and the degree to which gravity acted upon them. This is what Newton called *mass*. Since mass was revealed, in part, by the way it interacted with gravity, the mass of an object could be measured by setting it on a scale, to see by how much force it was pulled to the Earth.⁵⁶

This was the first great scientific advance of the Western world, and it gave us a new sense of how the inorganic world fit together both beneath our feet and above our heads, both on the ground and in the heavens. But this scientific advance did *not* come with a mission to deny the reality of other aspects of the world, including most notably the spiritual side. Neither God nor the human mind was eliminated from the world views of Galileo, Descartes, or Newton. If the planets moved in paths that obeyed systems of quadratic equations in ways that people had never suspected, that was hardly a reason to doubt that a great mind lay behind the creation of this marvelous solar system that we live in. Yes, there was a revolution in how we viewed the physical universe; no, the revolution did *not* call for the deportation of God and spirit from the universe of the scientist. It was no accident that most of the greatest physicists were also great mathematicians: they were dazzled by the discovery that the language of nature, of God's creation, was mathematics.⁵⁷

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Our modern material view of the world was born in this period of 150 years—a view in which location, movement, and mass were central and essential properties, but several outstanding puzzles remained. The puzzles left little doubt that there was a great deal more about the universe than the distribution of matter in it. One mystery was why so many things retained fixed shapes. We call them solids, but why do some objects maintain a fixed shape as they move or rotate? Sticks, rocks, and bones (but not water or air) have a shape, a form, which means that the stuff inside them was bound together with a set of internal forces that remained to be explained. Whatever is responsible for holding things together is not matter itself. If there are atoms, what keeps the ones that are in solids in place? What keeps them from moving too far apart, or coming too close together? When two objects collide, why do they *collide*? Why do two solid physical objects refuse to mix and mingle, though two streams of water do? And how is it possible that things with the same size and shape can differ with regard to how much of this stuff called mass they are composed of? That is, why does a block of iron have more mass than a block of wood? Are there more tiny things jammed together inside a small piece of iron than there are in a small piece of wood? These were very basic questions about the fundamentals of the materialism that was emerging, and they had no obvious answers.

Behind these reflections was a hope cherished by our trio of scientists (Galileo, Descartes, and Newton) and those who came after them: they hoped that all interaction between things made of matter could be boiled down to two kinds of interactions. One was the local interaction between things that are colliding with one another, and the other was the non-local interaction that we call gravity, which mysteriously acts between massive objects over long distances.

This modern worldview began with an effort to carve out some aspects of the world we can understand, but succeeding generations wanted to explore the idea that *this material world is all there is*. Suppose we allow that there is matter that is revealed quantitatively by how much mass it has, that mass can somehow congeal into objects with shapes and sizes, that these objects can move in space, and that they interact with each other only when they collide with one another (and then there is gravity too). But suppose we say that that is all there is; there is nothing more. What then?

As we just noted, the mechanical view of the world that Galileo, Descartes, and Newton proposed did *not* require that there be nothing else; Descartes could not have been clearer on the subject, explaining that

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there is both mind and matter in the universe. He understood the limits of explanation coming from the study of mechanics: mechanics has nothing to tell us about the way people think or the way we use language. But others would follow who went to extremes, and of these the most famous was Descartes's fellow Frenchman ~~De~~/la Mettrie who famously declared that man was a machine. ~~De~~/la Mettrie was born a half century after Descartes died; from de la Mettrie's point of view, he was *adopting* Descartes's idea and pushing it to its logical extreme. If Descartes had been there to disagree, he would have told ~~De~~/la Mettrie that he himself had been *drawing a distinction* between mind and matter, that he could not have been clearer about this point, and that he was not trying to get rid of everything on the non-material side of that distinction. ~~De~~/la Mettrie would have shaken his head, saying that he was just taking Descartes's ideas seriously. If he could have, Descartes would have told ~~De~~/la Mettrie that what was important was not the mechanical side of the material world, but the overarching power of the rationalist point of view, capable both of informing us about how things work in the material world and of assuring us beyond any possible doubt that we ourselves exist as minds, and furthermore that God exists as well. Descartes was both a mechanist and a spiritualist. But it was ~~de~~/la Mettrie's position that gained greater and greater traction.⁵⁸

~~De~~/la Mettrie's position, the materialist position, was that once we understand how material objects interact (and we were very far from understanding that, but at least we had begun), we would find that all interactions other than gravity are local, and those interactions are strictly governed by the shape of objects, by their rigidity, their mass, and their motion.

And so materialism was born. It was a philosophy that was more smug than it had a right to be, because it declared that all that existed was material in space, yet there is a great deal that we do not know about material and that we do not know about space. But it was a very attractive philosophical position that will follow us throughout our story.

The biggest blow to materialism was the onward march of the scientific analysis of the material world, which never for a moment remained fixed and secure. Here are some of the things that science came up with that were serious challenges to early materialism: just as the amount of mass is conserved over time (matter can neither be created nor destroyed), so too energy is conserved. Like matter, energy can be neither created nor destroyed, but it can hop from one object to another during one of those local collisions. Heat is also an important part of the universe and cannot

be reduced to matter; the laws that govern how objects can heat up and cool down differ from the laws of motion, and the laws of heat are what made possible the greatest inventions of the nineteenth century, starting with the steam engine. Gravity was not the only exception to the rule that all things interact only locally. There were also magnetism and electricity too, which came to be seen as part of a single invisible electromagnetic field that pervades the universe, allowing objects to interact at a distance as far as our eyes can tell.

The materialists continued to argue that man is a machine (or better yet, man is nothing but a machine). In this, they knew that they were waving their hands at any number of difficult questions that they were not prepared to answer, such as how it is that people can use language in a meaningful way. We will see three major themes in the battle (for that is what it is) between the materialists and all those who were not materialists.

In the first place, the non-materialists continued to devise better arguments that there were aspects of mind that were not explicable by known mechanist principles. Second, science itself gave up on the principles of mechanism (as we have just mentioned) to a degree unimaginable by someone like ~~de la~~ Mettrie. The worldview of late twentieth-century physics is astonishingly different from Newton's understanding of the universe. And third, the very idea of machine and of mechanism was taken and adopted by the anti-materialists, as we will see in chapter 8, when mathematicians and logicians began to talk about "Turing machines," "things" that had all the trappings of machines and yet which could be defined outside the world of material objects.

The materialists continued to do their best to chip away at the challenges posed by the non-materialists. They did this by choosing various behaviors that revealed the presence of mind and spirit in the human, and then accounting for the behaviors in a way that was purely mechanical. Clever inventors would devote years to creating machines that could play chess; that would show that gears and wheels suffice to display intelligence, would it not? There was much discussion of *self-moving machines*, though this phrase did not carefully distinguish (as we would want it to do, today) between a machine that keeps on working without providing it with an external source of energy and a machine that controls its motion and movement in what appear to be intelligent ways.⁵⁹ Some inventors have come down to us as hoaxers: Johann Bessler is remembered as the man in the mid-1700s who claimed to have a working perpetual motion machine, and if we cannot prove that he was a fraud, we are certain that he was one

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nonetheless. But machines that controlled themselves? There was nothing fraudulent about that idea, and it became very important as soon as the steam engine was invented, at the end of the eighteenth century.

But while materialists (and agnostic engineers) continued to develop machines that could control themselves in significant ways, machines were always playing catch-up with humans. It was humans whose behavior defined what counted as intelligence, and it was for machines to show that they could do a few small things that could be seen as intelligent.

As we will learn in chapter 8, there was a time when that balance began to tip: it was the moment when Alan Turing invited the machine to move from the world of material into the world of ideas and mathematics, the non-material world. And now, in 2018, we are once again placed in a turbulent moment when the materialists and the non-materialists are at daggers drawn.

Conclusions

In the next three chapters, we will briefly cover the important currents of the nineteenth century that inform the development of linguistics, psychology, and some aspects of philosophy and logic. After that, we will consider more carefully five connected stories. The first chronicles the development of American psychology up through behaviorism, and the development of Gestalt psychology in Germany, followed by the transplantation of the Berlin Gestaltists to the United States. The second story is the rise of the linguistics of Edward Sapir and Leonard Bloomfield in the United States. In chapter 7, we look at a third development, involving two important philosophical movements in the early part of the twentieth century: the work of Edmund Husserl, and the development of the Vienna Circle of logical positivism. Chapter 8 explores some of the important developments of logic, and our understanding of mathematical logic, while chapter 9 explores the fifth and final story, the origins and the ideas of the European structuralists, focusing on Nikolai Trubetzkoy and Roman Jakobson.

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References

- Adamski, Darius. 1992. "La personnologie du Prince Nicolas Troubetzkoy et ses développements dans l'oeuvre de Roman Jakobson." *Langages* 107: 62–68.
- Ajdukiewicz, Kazimierz. 1935. "Die syntaktische Konnexität." *Studia Philosophica* 1: 1–27.
- . 1967a. "On syntactical coherence [only part 1 translated]." Translation of Ajdukiewicz 1935. *Review of Metaphysics* 20: 635–47.
- . 1967b. "Syntactic connection." Translation of Ajdukiewicz 1935. In *Polish Logic 1920–1939*, edited by S. McCall, 207–31. Oxford: Clarendon.
- Albano Leoni, Federico. 2013. "Bühler et le Cercle linguistique de Prague." *Verbum* 31: 89–114.
- . 2015. "Les parties et le tout: Jakobson, Husserl et la phonologie." *Histoire Épistémologie Langage* 37: 27–42.
- Albertazzi, L., M. Libardi, and R. Poli. 1996. *The School of Franz Brentano*. Berlin: Springer.
- Allegre, Claude. 1985. *Ecume de la terre*. Paris: Fayard.
- Alter, Stephen G. 2005. *William Dwight Whitney and the Science of Language*. Baltimore: Johns Hopkins University Press.
- Amsterdamska, Olga. 1987. *Schools of Thought: The Development of Linguistics from Bopp to Saussure*. Dordrecht: Reidel.
- Anderson, Henning. 1989. "Markedness theory—the first 150 years." In Olga Miska Tomić, *Markedness in Synchrony and Diachrony*, 11–46. Berlin: De Gruyter.
- Angell, James Rowland. 1907. "The province of Functional Psychology." *Psychological Review* 14: 61–91.
- . 1936. "James Rowland Angell." In *A History of Psychology in Autobiography*, vol. 3, edited by Carl Allanmore Murchison, 1–38. Worcester, MA: Clark University Press.
- Annan, Noël. 1984. *Leslie Stephen: The Godless Victorian*. London: Weidenfeld and Nicolson.

—1
—0
—+1

- Anschütz, G. 1911. "Über die Methoden der Psychologie." *Archiv für die gesamte Psychologie* 20: 414–98.
- Arens, Katherine. 1989. *Structures of Knowing: Psychologies of the Nineteenth Century*. Dordrecht: Kluwer.
- Ash, Mitchell G. 1989. "Max Wertheimer's university career in Germany." *Psychology Research* 51: 52–57.
- . 1995. *Gestalt Psychology in German Culture, 1890–1967: Holism and the Quest for Objectivity*. Cambridge: Cambridge University Press.
- Aster, E. von. 1908. "Die psychologische Beobachtung und experimentelle Untersuchung von Denkvorgängen." *Zeitschrift für Psychologie* 49: 56–107.
- Atten, Mark van. 2006a. *Brouwer Meets Husserl: On the Phenomenology of Choice Sequences*. Berlin: Springer.
- . 2006b. "Mathematics." In *A Companion to Heidegger*, edited by Hubert L. Dreyfus and Mark A. Wrathall, 585–99. Malden, MA: Blackwell.
- . 2015. *Essays on Gödel's Reception of Leibniz, Husserl and Brouwer*. Berlin: Springer.
- Aurora, Simone. 2015. "A forgotten source in the history of linguistics: Husserl's *Logical Investigations*." *Bulletin d'analyse phénoménologique* 11, no. 5. <http://philpapers.org/rec/AURAFS>.
- Auroux, Sylvain. 1994. *La révolution technologique de la grammatisation*. Liège, Belgium: Mardaga.
- Auroux, Sylvain, Gilles Bernard, and Jacques Boule. 2000. "Le développement du comparatisme indo-européen." In *Histoire des idées linguistiques*, vol. 3, edited by Sylvain Auroux, 155–71. Liège, Belgium: Mardaga.
- Ayer, A. J. 1977. *Part of My Life*. London: Collins.
- Bacon, Francis. 1620. *Novum Organum*. 1889 edition, edited by Thomas Fowler. Oxford: Clarendon.
- Baecklund-Ehler, Astrid. 1977. "Roman Jakobson's cooperation with Scandinavian linguists." In *Roman Jakobson: Echoes of His Scholarship*, edited by Daniel Armstrong and C. H. Van Schooneveld, 21–27. Lisse, Netherlands: Peter de Ridder.
- Bailey, Richard W. 1992. "Hans Kurath." *Language* 68: 797–808.
- Balkan, David. 1966. "Behaviorism and American urbanization." *History of the Behavioral Sciences* 2: 5–28.
- Banner, Lois W. 2010. *Intertwined Lives: Margaret Mead, Ruth Benedict, and Their Circle*. New York: Vintage.
- Barendregt, Hendrik Pieter. 1981. *The Lambda Calculus: Its Syntax and Semantics*. Amsterdam: North-Holland.
- Bar-Hillel, Yehoshua. 1964. *Language and Information*. Reading, MA: Addison-Wesley.
- Barrett, William, and Henry D. Aiken, eds. 1962. *Philosophy in the Twentieth Century: An Anthology*. New York: Random House.

—1—
 0—
 +1—

- Barsky, Robert. 1997. *Noam Chomsky: A Life of Dissent*. Cambridge, MA: MIT Press.
- Bassin, Mark, Sergey Glebov, and Marlene Laruelle. 2015. *Between Europe and Asia: The Origins, Theories, and Legacies of Russian Eurasianism*. Pittsburgh: University of Pittsburgh Press.
- Baudouin de Courtenay, Jan. 1870. "Some general remarks on linguistics and language." Reprinted in Baudouin de Courtenay 1972, 49–80.
- . 1889. "On the tasks of linguistics." Reprinted in Baudouin de Courtenay 1972, 125–43.
- . 1895. *Versuch einer Theorie phonetischer Alternationen*. Strasbourg: Trübner. Translated as "An attempt at a theory of phonetic alternations." Reprinted in Baudouin de Courtenay 1972, 144–212.
- . 1972. *A Baudouin de Courtenay Anthology*. Edited by Edward Stankiewicz. Bloomington: Indiana University Press.
- Bell, David. 1990. *Husserl*. Cambridge: Cambridge University Press.
- Ben-David, Joseph, and Randall Collins. 1966. "Social factors in the origins of a new science: The case of psychology." *American Sociological Review* 31: 451–65.
- Benedict, Ruth. 1943. "Franz Boas: An obituary." *The Nation* 156: 15–16.
- Beneš, Tuška. 2004. "Comparative linguistics as ethnology: In search of Indo-Germans in Central Asia, 1770–1830." *Comparative Studies of South Asia, Africa and the Middle East* 24: 117–32.
- . 2008. *In Babel's Shadow: Language, Philology, and the Nation in Nineteenth-Century Germany*. Detroit: Wayne State University Press.
- Benoist, Jocelyn. 1997. *Phénoménologie, sémantique, ontologie: Husserl et la tradition logique autrichienne*. Paris: Presses Universitaires de France.
- . 2002. "Husserl et la fascination du 'formel.'" In *Les philosophes et la science*, edited by Pierre Wagner, 679–711. Paris: Gallimard.
- Benveniste, Emile. 1954. "Tendances récente en linguistique générale." Reprinted in *Problèmes de linguistique générale*, 1976, 3–17. Paris: Gallimard.
- . 1964. "Ferdinand de Saussure à l'Ecole des hautes études." *Sciences historiques et philologiques (École pratique des hautes études)*, Annual report for 1964/1965: 20–34.
- Bergounioux, Gabriel. 1997. "La Société de linguistique de Paris (1876–1914)." *Bulletin de la Société de linguistique de Paris* 92: 1–26.
- . 2002. "La sélection des langues: darwinisme et linguistique." *Langages* 146: 7–19.
- Berlin, Isaiah. 1980. *Personal Impressions*. New York: Viking.
- Bernard, Claude. 1865. *Introduction à l'étude de la médecine expérimentale*. Paris: Baillière et fils.
- Binet, Alfred. 1903. *Etude expérimentale de l'intelligence*. Paris: Schleicher frères.

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—1
—0
—+1

- Bjork, Daniel W. 1983. *The Compromised Scientist: William James in the Development of American Psychology*. New York: Columbia University Press.
- Blackmore, John. 1972. *Ernst Mach: His Life, Work, and Influence*. Berkeley: University of California Press.
- . 1998. "Franz Brentano and the University of Vienna Philosophical Society 1888–1938." In *The Brentano Puzzle*, edited by Roberto Poli, 73–92. Aldershot: Ashgate.
- Bloch, Bernard. 1949. "Leonard Bloomfield." *Language* 25: 87–98.
- Bloomfield, Leonard. 1914. *An Introduction to the Study of Language*. New York: Henry Holt.
- . 1922. "Review of *Language*, by Edward Sapir." *Classical Weekly* 15: 142–43.
- . 1924. "Review of Saussure 1922." *Modern Language Journal* 8: 317–19.
- . 1925. "Why a linguistic society?" *Language* 1: 1–5.
- . 1926. "A set of postulates for the science of language." *Language* 2: 153–64.
- . 1929. "Review of 'Liebich, B. (1928): Konkordanz Panini-Candra.'" *Language* 5: 267–76.
- . 1930. "Linguistics as a science." *Studies in Philology* 27: 553–57.
- . 1933. *Language*. New York: Henry Holt.
- . 1934. "Review of 'Havers, W. (1931): Handbuch der Erklärenden Syntax.'" *Language* 10: 292.
- . 1936. "Language or ideas?" *Language* 12: 89–95.
- . 1939. "Menomini morphophonemics." *Travaux du Cercle Linguistique de Prague* 8: 103–6.
- . 1943. Untitled note. *Language* 19: 198.
- Bloomfield, Leonard, and Charles F. Hockett. 1970. *A Leonard Bloomfield Anthology*. Bloomington: Indiana University Press.
- Bloomfield, Maurice. 1884. "On the probability of the existence of phonetic law." *American Journal of Philology* 5, no. 2: 178–85.
- . 1888. "The origin of the recessive accent in Greek." *American Journal of Philology* 9: 1–41.
- . 1908. *The Religion of the Veda; the Ancient Religion of India (from Rig-Veda to Upanishads)*. New York: Putnam.
- Blumberg, Albert E., and Herbert Feigl. 1931. "Logical positivism." *Journal of Philosophy* 28: 281–96.
- Blumenthal, Arthur. 1970. *Language and Psychology*. Hoboken, NJ: Wiley.
- . 1975. "A reappraisal of Wilhelm Wundt." *American Psychologist* 30: 1081–88.
- . 1979. "The founding father we never knew." *Contemporary Psychology* 24: 547–50.
- Blust, Mark. 1996. "The Neogrammarian hypothesis and pandemic irregularity." In *The Comparative Method Reviewed: Regularity and Irregularity in Lan-*

-1—
0—
+1—

- guage, edited by Mark Durie and Malcolm Ross, 136–56. Oxford: Oxford University Press.
- Boas, Franz. 1888. *The Central Eskimo*. Washington, DC: The Smithsonian Institution.
- . 1912. “Changes in the bodily form of descendants of immigrants.” *American Anthropologist* 14: 530–62.
- . 1934. *Aryans and Non-Aryans*. New York: Information Service Associates.
- . 1940. *Race, Language, and Culture*. New York: Macmillan.
- Boas, Franz, Maurice Fishberg, Ellsworth Huntington, and Max J. Kohler. 1934. *Aryan and Semite: With Particular Reference to Nazi Racial Dogmas*. New York: B’nai B’rith.
- Boeckx, Cedric, and Massimo Piatelli-Palmarini. 2005. “Language as a natural object—Linguistics as a natural science.” *Linguistic Review* 22: 447–66.
- Bolling, George. 1917. “Review of Bloomfield’s *Introduction to the Study of Language*.” *The Classical Weekly* 10. Reprinted in Bloomfield and Hockett 1970, 50–54.
- Boole, George. 1854. *An Investigation of the Laws of Thought*. Reprinted, Cambridge: Cambridge University Press, 2009.
- . 1997. *Selected Manuscripts on Logic and Its Philosophy*. Edited by Ivor Grattan-Guinness and Gerard Bornet. Berlin: Springer.
- Bopp, Franz. 1820. *Analytical Comparison of the Sanskrit, Greek, Latin and Teutonic Languages*. Annals of Oriental Literature. London: Longman.
- . 1856. *Vergleichende Zergliederung des Sanskrits und der mit ihm verwandten Sprachen*. Published in English as *Comparative Grammar of the Sanskrit, Zend, Greek, Latin, Lithuanian, Gothic, German, and Slavonic Languages*, 1885. London: Williams and Norgate.
- Boring, Edwin G. 1929a. *A History of Experimental Psychology*. New York: D. Appleton–Century.
- . 1929b. “The psychology of controversy.” *Psychological Review* 36: 97–121.
- . 1942. “Human nature vs. sensation: William James and the psychology of the present.” *American Journal of Psychology* 55: 310–27.
- . 1948. “Masters and pupils among the American psychologists.” *American Journal of Psychology* 61: 527–34.
- . 1952. “Edwin Garrigues Boring.” In *A History of Psychology in Autobiography*, vol. 4, edited by E. G. Boring, H. Werner, R. M. Yerkes, and H. S. Langfeld, 27–52. Worcester, MA: Clark University Press.
- . 1953. “A history of introspection.” *Psychological Bulletin* 50: 169–89.
- . 1961. *Psychologist at Large*. New York: Basic Books.
- . 1963a. “Eponym as placebo.” In Boring 1963b, 5–25.
- . 1963b. *History, Psychology and Science: Selected Papers*. New York: Wiley.
- Boudewijnse, Gert-Jan A. 1999. “The rise and fall of the Graz School.” *Gestalt Theory* 21: 140–58.

—1
—0
—+1

- Boudon, Raymond. 1986. *L'idéologie*. Paris: Le Seuil.
- . 1990. *L'art de se persuader*. Paris: Le Seuil.
- Bouquet, Simon. 1997. *Introduction à la lecture de Saussure*. Paris: Payot.
- Bourdieu, Pierre. 1975. "The specificity of the scientific field and the social conditions of the progress of reason." *Social Science Information* 14, no. 6: 19–47.
- . 1980. "Le mort saisit le vif." *Actes de la recherche en sciences sociales* 32: 3–14.
- . 1984. *Homo academicus*. Paris: Editions de Minuit.
- . 2001. *Science de la science et réflexivité*. Paris: Raisons d'agir.
- Bouveresse, Jacques. 2012. *Essais VI*. Marseille: Editions Agone.
- Bras, Gérard. 2018. *Les voies du peuple*. Paris: Editions Amsterdam.
- Brentano, Franz. 1874. *Psychologie vom empirischen Standpunkte*. Leipzig: Duncker and Humblot. Translated as *Psychology from an Empirical Standpoint*, 1995. London: Routledge.
- . 1982. *Deskriptive Psychologie*. Hamburg: Meiner.
- Bridgman, Percy Williams. 1927. *The Logic of Modern Physics*. New York: Macmillan.
- Bringmann, Wolfgang G., and Gustav A. Ungerer. 1980. "The Foundation of the Institute for Experimental Psychology at Leipzig University." *Psychological Research* 42: 5–18.
- Brooks, John I. 1998. *The Eclectic Legacy*. Newark: University of Delaware Press.
- Brouwer, Luitzen Jan. 1905. "Life, Art, and Mysticism." In translation in *Notre Dame Journal of Formal Logic* 38 (1996): 389–429.
- Bruce, Darryl. 1998. "The Lashley-Hull debate revisited." *History of Psychology* 1: 69–84.
- Brugmann, Karl. 1861. *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen*. Translated as *Elements of the Comparative Grammar of the Indo-Germanic Languages*, vol. 1, 1886. New York: Westermann.
- Bruner, Jerome. 1983. *In Search of Mind*. New York: Basic Books.
- Buckley, Kerry W. 1989. *Mechanical Man: John Broadus Watson and the Beginnings of Behaviorism*. New York: Guilford.
- Buffon, Georges-Louis Leclerc de. 1749–1789. *Histoire naturelle, générale et particulière, avec la description du Cabinet du Roy*. Paris: Imprimerie royale.
- Bühler, Karl. 1908. "Antwort auf die von W. Wundt erhobenen Einwände gegen die Methode der Selbstbeobachtung an experimentell erzeugten Erlebnissen." *Archiv für die gesamte Psychologie* 1: 93–123.
- . 1919. *Abriss der geistigen Entwicklung des Kindes*. Leipzig: Quelle & Meyer.
- . 1931. "Phonetik und Phonologie." Reprinted in *Phonometrie*, vol. 2, edited by Eberhard Zwirner and Kennosuke Ezawa, 1968, 190–222. Basel: Karger.
- . 1934. *Sprachtheorie*. Reprinted in English as *Theory of Language*, 2011. Amsterdam: John Benjamins.

-1—
0—
+1—

- Bundgaard, Peer F. 2004. "The ideal scaffolding of language: Husserl's fourth logical investigation in the light of cognitive linguistics." *Phenomenology and the Cognitive Sciences* 3: 49–80.
- Burridge, Kate. 2013. "Nineteenth-century study of sound change from Rask to Saussure." In *The Oxford Handbook of the History of Linguistics*, edited by Keith Allen, 141–65. Oxford: Oxford University Press.
- Buss, Mareike, Lorella Ghiotti, and Ludwig Jaeger. 2003. "Notes sur l'accentuation lituanienne." In *Cahiers de L'Herne "Saussure"* no. 76, edited by Simon Bouquet, 505–26. Paris: L'Herne.
- Cahan, David. 2003. *From Natural Philosophy to the Sciences*. Chicago: University of Chicago Press.
- Caldwell, William. 1898. "Professor Titchener's view of the self." *Psychology Review* 5: 401–8.
- . 1899. "The postulates of a structural psychology." *Psychology Review* 6: 187–91.
- Campbell, Lyle, and William J. Poser. 2008. *Language Classification, History and Method*. Cambridge: Cambridge University Press.
- Cao, Tian Yu. 1997. *Conceptual Development of 20th Century Field Theories*. Cambridge: Cambridge University Press.
- Cardone, Felice, and J. Roger Hindley. 2009. "Lambda-calculus and combinators in the 20th century." In Gabbay and Woods, 723–817.
- Carnap, Rudolf. 1928. *Der Logische Aufbau der Welt*. Translated as *The Logical Structure of the World*, 1967. Berkeley: University of California Press.
- . 1934. "On the character of philosophical problems." *Philosophy of Science* 1: 5–19.
- . 1937. *Logische Syntax der Sprache*. Translated as *The Logical Syntax of Language*, 2014. London: Routledge.
- . 1963. "Intellectual biography." In *The Philosophy of Rudolf Carnap*, edited by Paul Schilpp, 3–86. La Salle, IL: Open Court.
- Carroll, John B. 1980. "The tale of a theoretical and applied linguistic psychologist." In Davis and O'Cain, 31–52.
- Casadio, Claudia. 2002. *Logic for Grammar*. Rome: Bulzoni.
- Cassirer, Ernst. 1910. *Substanzbegriff und Funktionsbegriff: Untersuchungen über die Grundfragen der Erkenntniskritik*. Berlin: Bruno Cassirer.
- . 1950. *The Problem of Knowledge*. New Haven, CT: Yale University Press.
- Cassirer, Toni. 1981. *Mein Leben mit Ernst Cassirer*. Hildesheim, Germany: Gerstenberg.
- Cassou-Noguès, Pierre. 2007. *Les démons de Gödel*. Paris: Le Seuil.
- Chamberlain, Houston Stewart. 1899. *Die Grundlagen des neunzehnten Jahrhunderts*. Munich: F. Bruckmann.
- Chamberlain, Lesley. 2007. *Lenin's Private War: The Voyage of the Philosophy Steamer and the Exile of the Intelligentsia*. New York: St. Martin's Press.

—1
—0
—+1

- Chater, Nick, Alex Clark, John Goldsmith, and Amy Perfors. 2015. *Empiricism and Language Learnability*. Oxford: Oxford University Press.
- Chevalier, Jean-Claude. 1997. "Trubetzkoy, Jakobson et la France, 1919–1939." *Cahiers de l'ILSL*, no. 9: 31–43.
- Chomsky, Noam. 1957. *Syntactic Structures*. Janua Linguarum, Series Minor 4. The Hague: Mouton.
- . 1979. *Language and Responsibility*. New York: Pantheon.
- . 2002. *On Nature and Language*. Cambridge: Cambridge University Press.
- Chomsky, Noam, and Morris Halle. 1968. *The Sound Pattern of English*. New York: Harper and Row.
- Chomsky, William. 1945. "How the study of Hebrew grammar began and developed." *Jewish Quarterly Review* 35, no. 3: 281–301.
- Church, Alonzo. 1932. "A set of postulates for the foundation of logic." *Annals of Science* 33: 346–66.
- . 1935. "An unsolvable problem of elementary number theory (abstract)." *Bulletin of the American Mathematical Society* 41: 332–33.
- Coffa, J. Alberto. 1991. *The Semantic Tradition from Kant to Carnap*. Cambridge: Cambridge University Press.
- Cohen, David. 1979. *J. B. Watson: The Founder of Behaviorism*. London: Routledge and Kegan Paul.
- Cohen, I. Bernard. 1952. "Orthodoxy and scientific progress." *Proceedings of the American Philosophical Society* 96: 505–12.
- . 1960. *The Birth of a New Physics*. New York: Norton.
- Collins, Randall. 1998. *The Sociology of Philosophy: A Global Theory of Intellectual Change*. Cambridge, MA: Harvard University Press.
- Collitz, Hermann. 1925. "The scope and aims of linguistic science." *Language* 1: 1–13.
- Comte, Auguste. 1830. *Cours de philosophie positive*. Paris: Bachelier.
- . 1996. *Philosophie des sciences (Anthologie de textes et de discours)*. Paris: Gallimard.
- Comtet, Roger. 1995. "L'école phonologique de Leningrad et l'école phonologique de Moscou." *Histoire Épistémologie Langage* 17: 183–209.
- Coneybeare, William D. and William Phillips. 1822. *Outline of the Geology of England and Wales*. London: William Phillips.
- Corry, Leo. 1997. "David Hilbert and the axiomatization of physics (1894–1905)." *Archive for History of Exact Sciences* 51: 83–198.
- Costantini, Michel. 2010. "Reconnaissance de dette: Jakobson et Lévi-Strauss." *Actes sémiotiques*, no. 113. <http://epublications.unilim.fr/revues/as/1764>.
- Cowan, Robert. 2010. *The Indo-German Identification: Reconciling South Asian Origins and European Destinies, 1765–1885*. Rochester, NY: Camden House.
- Culicover, Peter W., and Andrzej Nowak. 2003. *Dynamical Grammar: Minimalism, Acquisition, and Change*. Oxford: Oxford University Press.

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–1—
 0—
 +1—

- Cuvier, Georges. 1817. *Le règne animal distribué d'après son organisation: pour servir de base à l'histoire naturelle des animaux et d'introduction à l'anatomie comparée*. Paris: Chez Déterville.
- Danziger, Kurt. 1979a. "The positivist repudiation of Wundt." *Journal of the History of the Behavioral Sciences* 15: 205–30.
- . 1979b. "The social origins of modern psychology: Positivist sociology and the sociology of knowledge." In *Psychology in Social Context: Towards a Sociology of Psychological Knowledge*, edited by A. R. Buss, 27–45. New York: Irvington.
- . 1980a. "The history of introspection reconsidered." *Journal of the History of the Behavioral Sciences* 16: 241–62.
- . 1980b. "Wundt's psychological experiment in the light of his philosophy of science." *Psychological Research* 42: 109–22.
- . 1983. "Origins and basic principles of Wundt's *Völkerpsychologie*." *British Journal of Social Psychology* 22: 303–13.
- . 2001. "Wundt and the temptations of psychology." In *Wilhelm Wundt in History: The Making of a Scientific Psychology*, edited by Robert W. Rieber and David K. Robinson, 69–94. Berlin: Springer.
- Darnell, Regna. 1990. *Edward Sapir: Linguist, Anthropologist, Humanist*. Berkeley: University of California Press.
- . 1998. "Camelot at Yale: The construction and dismantling of the Sapirian synthesis, 1931–1939." *American Anthropologist* 100: 361–72.
- Darnell, Regna, and Dell Hymes. 1986. "Edward Sapir's six-unit classification of American Indian languages: The search for time perspective." In *Studies in the History of Western Linguistics*, edited by Theodora Bynon and F. R. Palmer, 202–44. Cambridge: Cambridge University Press.
- Darwin, Charles. 1859. *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. London: John Murray.
- . 1871. *The Descent of Man, and Selection in Relation to Sex*. London: John Murray.
- Dauben, Joseph W. 1990. *George Cantor: His Mathematics and Philosophy of the Infinite*. Princeton, NJ: Princeton University Press.
- Davies, Anna Morpurgo. 1978. "Analogy, segmentation and the early Neogrammarians." *Transactions of the Philological Society* 71: 36–60.
- . 2006. "Saussure and Indo-European linguistics." In *The Cambridge Companion to Saussure*, edited by Carol Sanders, 9–29. Cambridge: Cambridge University Press.
- Davis, Boyd H., and Raymond K. O'Cain, eds. 1980. *First Person Singular*. Vol. 1. Amsterdam: John Benjamins.
- Davis, Martin. 1958. *Computability and Unsolvability*. New York: McGraw-Hill.

—1
—0
—+1

- Daylight, Edgar G. [Karel Van Oudheusden]. 2011. "Dijkstra's rallying cry for generalization: The advent of recursion in programming, 1950s–1960s." *Computer Journal* 54: 1756–72.
- De Mauro, Tullio. 1972. "Notes." In Saussure 1972, 405–77.
- Demetz, Peter. 1998. *Prague in Black and Gold: Scenes from the Life of a European City*. New York: Hill and Wang.
- Demopoulos, William, and Peter Clark. 2005. "The logicism of Frege, Dedekind, and Russell." In Shapiro, 129–65.
- Demoule, Jean-Paul. 1999. "Destin et usages des Indos-Européens." *Mauvais Temps*, no. 5: 63–74.
- . 2003. "Les pierres et les mots: Freud et les archéologues." *Alliage*, no. 52.
- . 2014. *Mais où sont passés les Indo-Européens?* Paris: Le Seuil.
- Dennes, Maryse. 1997. "Husserl et l'école russe de phénoménologie." *Slavica Occitania* 4: 153–75.
- Dennett, Daniel. 1991. *Consciousness Explained*. Boston: Little, Brown.
- Despres, Leon. 1987. "My recollections of Leonard Bloomfield." In *Leonard Bloomfield: Essays on His Life and Work*, edited by Robert A. Hall Jr., 3–13. Amsterdam: John Benjamins.
- Detlefsen, Michael. 2005. "Formalism." In Shapiro, 236–317.
- Dewey, John. 1884. "The new psychology." *Andover Review* 2: 278–89.
- . 1910. "William James." *Journal of Philosophy* 7: 505–8.
- Dummett, Michael. 1993. *Origins of Analytic Philosophy*. Cambridge, MA: Harvard University Press.
- Dwight, Benjamin W. 1859. *Modern Philology: Its Discoveries, History and Influence*. Vol. 1. New York: A. S. Barnes and Burr.
- Edgerton, Franklin. 1928. "Maurice Bloomfield: 1855–1928." *Language* 48: 193–99.
- Ehrens, Christian von. 1890. "Über 'Gestaltqualitäten.'" 1890. *Vierteljahrsschrift für wissenschaftliche Philosophie* 14: 242–92.
- Ellis, Willis D. 1938. *A Source Book of Gestalt Psychology*. New York: Harcourt Brace.
- Emeneau, Murray B. 1943. "Franz Boas as a linguist." *Memoirs of the American Anthropological Association* 61: 35–38.
- . 1988. "Bloomfield and Pāṇini." *Language* 64: 755–60.
- Erasmus, Desiderius. 1992. *Collected Works of Erasmus*. Edited by James F. Brady and John C. Olin. Toronto: University of Toronto Press.
- Espagne, Michel. 1998. "Wilhelm Wundt. La 'psychologies des peuples' et l'histoire culturelle." *Revue Germanique Internationale* 10. <http://rgi.revues.org/688>.
- Esper, Erwin Allen. 1968. *Mentalism and Objectivism in Linguistics: The Sources of Leonard Bloomfield's Psychology of Language*. New York: American Elsevier.

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-1—
0—
+1—

- Evans, Rand B. 1972. "E. B. Titchener and his lost system." *Journal of the History of the Behavioral Sciences* 8: 168–80.
- Fabian, Reinhard, ed. 1986. *Christian von Ehrenfels: Leben und Werk*. Amsterdam: Rodopi.
- . 1996. "Christian von Ehrenfels (1859–1932)." In Albertazzi et al., 161–74.
- Falk, Julia S. 2014. Ninetieth Anniversary of the Linguistic Society of America: A Commemorative Symposium, January 4. *The LSA Linguistic Institutes*.
- Fechner, Gustav. 1860. *Elemente der Psychophysik*. Leipzig: Breitkopf und Härtel. In translation in *The Classical Psychologists*, edited by Benjamin Rand, 1912. Boston: Houghton Mifflin.
- Feest, Uljana. 2007. "Science and experience/Science of experience: Gestalt psychology and the anti-metaphysical project of the *Aufbau*." *Perspectives on Science* 15: 1–25.
- Feferman, Anita Burdman, and Solomon Feferman. 2004. *Alfred Tarski: Life and Logic*. Cambridge: Cambridge University Press.
- Feigl, Herbert. 1981. *Inquiries and Provocations: Selected Writings, 1929–1974*. Berlin: Springer.
- Ferguson, Charles. 1962. "Review of *The Sound Pattern of Russian* by Morris Halle." *Language* 38: 284–98.
- Ferreirós, José. 2007. *Labyrinth of Thought: A History of Set Theory and Its Role in Modern Mathematics*. Berlin: Springer. First edition 1999. Barcelona: Birkhäuser.
- . 2009. "Hilbert, logicism, and mathematical existence." *Synthese* 170: 33–70.
- Ferry, Luc, Jean-Pierre Person, and Alain Renaut. 1979. *Philosophies de l'université: l'idéalisme allemand et la question de l'université*. Paris: Payot.
- Feuer, Lewis S. 1969. *The Conflict of Generations*. New York: Basic Books.
- . 1975. *Ideology and the Ideologists*. New York: Harper and Row.
- Fichte, Johann Gottlieb. 1808. "Reden an die deutsche Nation." In *Philosophische Bibliothek*, vol. 24, edited by Alexander Aichele. Hamburg: Meiner.
- Fisette, Denis. 2009. "Stumpf and Husserl on phenomenology and descriptive psychology." *Gestalt Theory* 31: 175–90.
- Flack, Patrick. 2007. "Roman Jakobson and the transition of German thought to the structuralist paradigm: Towards a new historiography of structuralism." *Acta Structuralica* 1: 1–15.
- Florovsky, Georges, P. N. Savitsky, Nikolai Trubetzkoy, and Pierre Souvtchinsky. 1921. *Exodus to the East: Forebodings and Events: An Affirmation of the Eurasians*. Reprint, edited by Ilya Vinkovetzky and Charles Schlacks Jr., 1996. Idyllwild, CA: Charles Schlacks Jr.
- Focht, Mildred. 1935. *What Is Gestalt-Theory?* New York: George Grady Press.
- Fodor, Jerry. 1983. *Modularity of Mind*. Cambridge, MA: MIT Press.

—1
—0
—+1

- Fontaine, Jacqueline. 1997. "S. Karcevski et R. Jakobson, grammairiens de la langue russe à l'époque du Cercle linguistique de Prague." *Cahiers de L'ILSL*, no. 9: 75–86.
- Forster, Michael. 2010. *After Herder: Philosophy of Language in the German Tradition*. Oxford: Oxford University Press.
- Foucault, Michel. 1969. *L'archéologie du savoir*. Translated as *The Archaeology of Knowledge*. 2nd ed. Classics Series, 2002. London: Routledge.
- Fought, John, ed. 1999. *Leonard Bloomfield: Critical Assessments of Leading Linguists*. London: Routledge.
- Fraenkel, A. A., and Yehoshua Bar-Hillel. 1958. *Foundations of Set Theory*. Amsterdam: North-Holland.
- Frege, Gottlob. 1879. *Begriffsschrift: Eine der arithmetischen nachgebildete Formelsprache des reinen Denkens*. Halle: Louis Nebert. Reprinted in translation in Heijenoort 1967, 1–82.
- . 1884. *Die Grundlagen der Arithmetik*. Published in translation as *The Foundations of Arithmetic*, 1968. Evanston, IL: Northwestern University Press.
- . 1997. *The Frege Reader*. Edited by Michael Beaney. Oxford: Blackwell.
- Freud, Sigmund. *Zur Psychopathologie des Alltagsleben*. 1901. In English, *Psychopathology of Everyday Life*, 1915. New York: Macmillan.
- Friedman, Michael. 1991. "The re-evaluation of logical positivism." *Journal of Philosophy* 88: 505–19.
- . 2000. *A Parting of the Ways: Carnap, Cassirer, and Heidegger*. Chicago: Open Court.
- . 2012. "Scientific philosophy from Helmholtz to Carnap and Quine." In *Rudolf Carnap and the Legacy of Logical Empiricism*, edited by Richard Creath, 1–11. Berlin: Springer.
- Fries, Charles Carpenter. 1952. *The Structure of English: An Introduction to the Construction of English Sentences*. New York: Harcourt Brace.
- . 1970. "The 'Bloomfield School.'" In *Trends in European and American Linguistics: 1930–1960*, edited by Christine Mohrmann, Alf Sommerfelt, and Joshua Whatmough, 196–224. Utrecht: Spectrum.
- Fronek, Josef. 1988. "T. G. Masaryk and Prague School linguistic structuralism." In *On Masaryk*, edited by Josef Novák, 81–96. Amsterdam: Rodopi.
- Gabbay, Dov M., and John Woods, eds. 2009. *Logic from Russell to Church*. Volume 5 of *Handbook of the History of Logic*. New York: Elsevier.
- Gadet, Françoise. 1995. "Jakobson sous le pavillon saussurien." *Linx* 7: 449–59.
- Gall, Franz Joseph, and Johann Gaspar Spurzheim. 1810. *Anatomie et physiologie du système nerveux en général, et du cerveau en particulier, avec des observations sur la possibilité de reconnoître plusieurs dispositions intellectuelles et morales de l'homme et des animaux, par la configuration de leurs têtes*. Paris: F. Schoell.

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(IP)

-1—
0—
+1—

- Gandy, Robin. 1991. "The confluence of ideas in 1936." In *The Universal Turing Machine: A Half-Century Survey*, edited by Rolf Herken. Oxford: Oxford University Press.
- Gardies, Jean-Louis. 1986. *Rational Grammar*. Munich: Philosophia.
- Gardner, Howard. 1985. *The Mind's New Science*. New York: Basic Books.
- Gardner, Sheldon, and Gwendolyn Stevens. 1992. *Red Vienna and the Golden Age of Psychology, 1918–1938*. New York: Praeger.
- Gasparov, Boris. 1987. "The ideological principles of the Prague school phonology." In *Language, Poetry and Poetics*, edited by Krystyna Pomorska, Elzbieta Chodakowska, Hugh McLean, and Brent Vine, 49–78. Berlin: De Gruyter.
- . 2013. *Beyond Pure Reason: Ferdinand de Saussure's Philosophy of Language and Its Early Romantic Antecedents*. New York: Columbia University Press.
- Gengerelli, Joseph A. 1976. "Graduate school reminiscences: Hull and Koffka." *American Psychologist* 31: 685–88.
- Gérard, René. 1963. *L'orient et la pensée romantique allemande*. Paris: Marcel Didier.
- Gerring, John. 2010. "Causal mechanisms: Yes, but. . . ." *Comparative Political Studies* 43: 1499–526.
- Gibbs, Josiah W. 1853. "Remarks on the preceding essay." *Journal of the American Oriental Society* 3: 469–72.
- . 1857. *Philological Studies with English Illustrations*. New Haven, CT: Durrie and Peck.
- Gilbert, William. 1600. *De Magnete*. London: Peter Short.
- Gleason, H. A., Jr. 1955. *Introduction to Descriptive Linguistics*. New York: Henry Holt.
- . 1988. "Theories in conflict." Unpublished manuscript.
- Glebov, Sergey. 2003. "Science culture and empire: Eurasianism as a modernist movement." *Slavic and East European Information Resources* 4: 13–31.
- . 2015. "N. S. Trubetskoi's Europe and Mankind and Eurasianist Antievolutionism." In Bassin et al., 48–67.
- Gobineau, Arthur. 1853. *Essai sur l'inégalité des races humaines*. Paris: F. Didot frères.
- Gödel, Kurt. 1995. *Collected Works*. Edited by S. Feferman. Oxford: Oxford University Press.
- Godel, Robert. 1957. *Les sources manuscrites du Cours de linguistique générale de Ferdinand de Saussure*. Geneva: Droze.
- Godfrey, J. J. 1967. "Sir William Jones and Père Coeurdoux: A philological footnote." *Journal of the American Oriental Society* 87: 57–59.
- Goldschmidt, Walter Rochs. 1959. *The Anthropology of Franz Boas: Essays on the Centennial of His Birth*. Menasha, WI: American Anthropological Association.

—1
—0
—+1

- Goldsmith, John A. 1990. *Autosegmental and Metrical Phonology*. Oxford: Blackwell.
- . 2011. “The syllable.” In *The Handbook of Phonological Theory*, edited by John Goldsmith, Alan Yu, and Jason Riggle, 162–96. Oxford: Wiley Blackwell.
- Goldstein, Doris S. 1968. “‘Official philosophies’ in modern France: The example of Victor Cousin.” *Journal of Social History* 1: 259–79.
- Goldstein, Jan. 2005. *The Post-Revolutionary Self: Politics and Psyche in France, 1750–1850*. Cambridge, MA: Harvard University Press.
- . 2013. “Neutralizing Freud: The lycée philosophy class and the problem of the reception of psychoanalysis in France.” *Critical Inquiry* 40: 40–82.
- Gordin, Michael D. 2006. “‘Le Premier Cercle’: le Kruzhok de Heidelberg et la nationalisation de la chimie russe.” *Sociologie du Travail* 48: 286–307.
- Gossett, Thomas. 1963. *Race: The History of an Idea in America*. Oxford: Oxford University Press.
- Gould, Stephen Jay. 1981. *The Mismeasure of Man*. London: Penguin.
- Grafton, Anthony. 2004. “Review of *In No Man’s Land*.” *New York Review of Books*, February 26.
- Grammont, Maurice. 1912. “Review of *Mélanges linguistiques offerts à M. Ferdinand de Saussure*.” *Revue des langues romanes* 55: 387–89.
- . 1933. “Review of *Eléments de phonologie française*, by Georges Gougenheim.” *Revue des langues romanes* 67: 574–76.
- Grattan-Guinness, I. 1981. “On the development of logics between the two world wars.” *American Mathematical Monthly* 88: 495–509.
- . 2000. *The Search for Mathematical Roots, 1870–1940: Logics, Set Theories and the Foundations of Mathematics from Cantor Through Russell to Gödel*. Princeton, NJ: Princeton University Press.
- Gray, Jeremy. 2008. *Plato’s Ghost: The Modernist Transformation of Mathematics*. Princeton, NJ: Princeton University Press.
- Greenberg, Joseph. 1960. “A quantitative approach to the morphological typology of language.” *International Journal of American Linguistics* 26: 178–94.
- . 1986. “On being a linguistic anthropologist.” *Annual Review of Anthropology* 15: 1–24.
- Grimm, Jacob. 1848. *Geschichte der deutschen Sprache*. 3rd ed., 1868. Leipzig: S. Hirzel.
- Gross, Alan G. 1998. “Do disputes over priority tell us anything about science?” *Science in Context* 11: 161–79.
- Grout, Lewis. 1853. “An essay on the phonology and orthography of the Zulu and kindred dialects in Southern Africa.” *Journal of the American Oriental Society* 3: 421–68.
- Guillin, Vincent. 2004. “Théodule Ribot’s ambiguous positivism: Philosophical and epistemological strategies in the founding of French scientific psychology.” *Journal of the History of the Behavioral Sciences* 40: 165–81.

–1—
 0—
 +1—

- Gulyás, László. 2007. *Beneš: Statesman or Charlatan? The Plans and the Reality 1908–1948*. Toronto: Corvinus.
- Gundlach, Horst. 2014. “Max Wertheimer, *Habilitation* Candidate at the Frankfurt Psychological Institute.” *History of Psychology* 17: 134–48.
- Hackenberg, Timothy D. 1995. “Jacques Loeb, B. F. Skinner, and the legacy of prediction and control.” *Behavior Analyst* 18: 225–36.
- Haeckel, Ernst. 1879. *Les preuves du transformisme: réponse à Virchow*. Paris: G. Baillière.
- Hahn, Hans, Otto Neurath, and Rudolf Carnap. 1929. *Wissenschaftliche Weltauffassung: Der Wiener Kreis*. Vienna: Artur Wolf.
- . 1973. “The scientific conception of the world: The Vienna Circle.” In *Empiricism and Sociology*, edited by M. Neurath and R. S. Cohen, 299–318. Dordrecht: Reidel.
- Hajičová, Eva. 2006. “Old linguists never die, they only get obligatorily deleted.” *Computational Linguistics* 32: 457–69.
- Hall, Robert A., Jr. 1949. “In Memoriam Leonard Bloomfield (April 1877–April 18, 1949).” *Lingua* 2: 117–23.
- . 1990. *A Life for Language*. Amsterdam: John Benjamins.
- Halle, Morris. 1962. “Phonology in generative grammar.” *Word* 18: 1–3, 54–72.
- . 1979. “Roman Jakobson.” In *International Encyclopedia of the Social Sciences*, vol. 18, 335–41. New York: Free Press.
- Hannush, Mufid James. 1987. “John B. Watson remembered: An interview with James B. Watson.” *Journal of the History of the Behavioral Sciences* 23: 137–52.
- Harris, Marvin. 1968. *The Rise of Anthropological Theory: A History of Theories of Culture*. New York: Thomas Y. Crowell.
- Harris, Zellig. 1951. *Methods in Structural Linguistics*. Chicago: University of Chicago Press.
- . 1954. “Distributional structure.” *Word* 10: 146–62.
- . 1973. “Review of Charles F. Hockett (Ed.), *A Leonard Bloomfield Anthology*.” *International Journal of American Linguistics* 39: 252–55.
- . 1990. “The background of transformation and metalanguage analysis.” Reprinted in *The Legacy of Zellig Harris: Language and Information in the 21st Century*, edited by Bruce Nevin, 2002, 1–14. Amsterdam: John Benjamins.
- Harvey, David Allen. 2014. “The lost Caucasian civilization: Jean-Sylvain Bailly and the roots of the Aryan myth.” *Modern Intellectual History* 11: 279–306.
- Hauser, Marc D., Noam Chomsky, and W. Tecumseh Fitch. 2002. “The faculty of language: What is it, who has it, and how did it evolve?” *Science* 298 (November): 1569–79.
- Heidbreder, Edna. 1933. *Seven Psychologies*. New York: D. Appleton–Century.
- Heider, Fritz. 1989. “Fritz Heider.” In *A History of Psychology in Autobiography*, vol. 8, edited by Gardner Lindzey, 127–56. Stanford, CA: Stanford University Press.

—1
—0
—+1

- Heijenoort, Jean van, ed. 1967. *From Frege to Gödel*. Cambridge, MA: Harvard University Press.
- Heis, Jeremy. 2013. "Ernst Cassirer, Kurt Lewin, and Hans Reichenbach." In *The Berlin Group and the Philosophy of Logical Empiricism*, edited by Nikolay Milkov and Volker Peckhaus, 67–94. Berlin: Springer.
- Helmholtz, Hermann. 1885. *On the Sensations of Tone*. New York: Dover.
- Helson, Harry. 1925. "The psychology of 'Gestalt.'" *American Journal of Psychology* 36: 342–70.
- Hendel, Charles W. 1949. "Ernst Cassirer." In *The Philosophy of Ernst Cassirer*, edited by Paul A. Schilpp, 55–60. New York: Tudor.
- Henle, Mary. 1984. "Robert M. Ogden and Gestalt psychology in America." *Journal of the History of the Behavioral Sciences* 10: 9–19.
- Herrnstein, R. J. 1972. "Nature as nurture: Behaviorism and the instinct doctrine." *Behaviorism* 1: 23–52.
- Hesseling, Dennis E. 2003. *Gnomes in the Fog: The Reception of Brouwer's Intuitionism in the 1920s*. Basel: Birkhäuser.
- Hilbert, David. 1899. *Grundlagen der Geometrie*. Reprinted in 2015. Berlin: Springer.
- . 1918. "Axiomatic thinking." Published in *Philosophia Mathematica*, vols. 1–7, issue 1–2 (1970): 1–12.
- . 1927. "The foundations of mathematics." Reprinted in Heijenoort 1967, 464–79.
- Hill, Archibald A. 1980. "How many revolutions can a linguist live through?" In Davis and O'Cain, 69–76.
- . 1991. "The LSA and North American linguistics, 1950–1968." *Historiographia Linguistica* 18: 49–152.
- Hindeland, Michael J. 2006. "Edward Bradford Titchener: A pioneer in perception." *Journal of the History of the Behavioral Sciences* 7, no. 1: 23–28.
- Hiž, Henry. 1998. "Between logic and linguistics." In *First Person Singular III: Autobiographies by North American Scholars in the Language Sciences*, edited by E. F. K. Koerner, 71–80. Amsterdam: John Benjamins.
- Hobbes, Thomas. 1651. *The Leviathan*. Critical edition by Noel Malcolm, 2014. Oxford: Oxford University Press.
- Hobsbawm, Eric. 1962. *The Age of Revolution 1789–1848*. New York: World Publishing.
- . 1975. *The Age of Capital, 1848–1875*. New York: Vintage.
- . 1987. *The Age of Empire, 1875–1914*. London: Weidenfeld and Nicholson.
- Hockett, Charles F. 1942. "A system of descriptive phonology." *Language* 18: 3–21.
- . 1949. "Two fundamental problems in phonemics." *Studies in Linguistics* 7: 29–51.
- . 1958. *A Course in Modern Linguistics*. New York: Macmillan.
- . 1980. "Preserving the heritage." In Davis and O'Cain, 99–110.

–1—
0—
+1—

- . 1987. "Letters from Bloomfield to Michelson and Sapir." *Historiographia Linguistica* 14: 39–60.
- Holenstein, Elmar. 1975. "Jakobson and Husserl: A contribution to the genealogy of structuralism." *Human Context* 7: 61–83. Reprinted in *Edmund Husserl: The Web of Meaning*, vol. 4, edited by Rudolf Bernet, Donn Welton, and Gina Zavota, 2005, 11–48. London: Routledge.
- . 1976. *Roman Jakobson's Approach to Language*. Bloomington: Indiana University Press.
- Holmboe, C. A. 1855. "Respecting an alphabet suited to the languages of Southern Africa." *Journal of the American Oriental Society* 5: 427–29.
- Holms, Linda. 2009. "Norwegian academics and their contribution to international reconciliation and peace: The Institute for Comparative Research in Human Culture." In *Academics as Public Intellectuals*, edited by Sven Eliasson and Ragnvald Kalleberg, 87–100. Cambridge, UK: Cambridge Scholars Publishing.
- Holton, Gerald. 1998. "Einstein and the cultural roots of modern science." *Daedalus* 127, no. 1: 1–44.
- Honeybone, Patrick. 2005. "Brugmann, Karl." In *Key Thinkers in Linguistics and the Philosophy of Language*, edited by Siobhan Chapman and Christopher Routledge, 45–48. Edinburgh: Edinburgh University Press.
- Hoyningen-Huene, Paul. 1995. "Two letters of Paul Feyerabend to Thomas S. Kuhn on a draft of *The Structure of Scientific Revolutions*." *Studies in History and Philosophy of Science* 26: 353–87.
- Hull, Clark L. 1935. "The conflicting psychologies of learning—a way out." *Psychological Review* 42: 491–516.
- . 1952. "Autobiography." In *A History of Psychology in Autobiography*, vol. 4, edited by E. G. Boring, H. S. Langfeld, H. Werner, and R. M. Yerkes, 143–62. Worcester, MA: Clark University Press.
- . 1984. *Mechanisms of Adaptive Behavior*. Edited by Abram Amsel and Michael E. Rashotte. New York: Columbia University Press.
- Hull, Clark L., Arthur I. Gladstone, John M. Felsing, and Harry G. Yamaguchi. 1947. "A proposed quantification of habit strength." *Psychological Review* 54: 237–54.
- Humboldt, Alexander von. 1849. *Cosmos: A Sketch of a Physical Description of the Universe*. Vol. 2. London: Longman.
- . 1858. *Cosmos: A Sketch of a Physical Description of the Universe*. Vol. 1. New York: Harper.
- Humboldt, Wilhelm. 1836. *Über die Kawi-Sprache auf der Insel Java*. Berlin: Duemmler.
- . 1999. *On Language*. Cambridge: Cambridge University Press.
- Hume, David. 1738. *Treatise on Human Nature*. London: John Noon.
- Husserl, Edmund. 1900a. *Logical Investigations*. Vol. 1. 2nd ed. 1913. London: Routledge. Translation of *Logische Untersuchungen*. Reprinted by Routledge, 2001.

—1
—0
—+1

- . 1900b. *Logical Investigations*. Vol. 2. 2nd ed. 1913. London: Routledge. Translation of *Logische Untersuchungen*. Reprinted, London: Routledge, 2001.
- . 1919. “Remiscences of Franz Brentano.” Reprinted in translation in McAlister 1976, 47–55.
- Isaac, Joel. 2005. “W. V. Quine and the origins of analytic philosophy in the United States.” *Modern Intellectual History* 2: 205–34.
- . 2012. *Working Knowledge: Making the Human Sciences from Parsons to Kuhn*. Cambridge, MA: Harvard University Press.
- Ivanov, Vjačeslav. 1983. “Roman Jakobson: The future.” In *A Tribute to Roman Jakobson 1896–1982*, edited by Morris Halle, 47–57. Berlin: De Gruyter.
- Jacquette, Dale. 2009. “Review of Guillermo E. Rosado Haddock, ‘The Young Carnap’s Unknown Master: Husserl’s Influence on *Der Raum* and *Der Logische Aufbau der Welt*.’” *History and Philosophy of Logic* 30: 194–200.
- Jakobson, Roman. 1927. “Remarques sur l’évolution phonologique du russe.” Reprinted in SW1, 7–116.
- . 1928a. “The concept of the sound law and the teleological criterion.” Reprinted in SW1, 1–2.
- . 1928b. “Proposition au premier congrès international de linguistes.” Reprinted in SW1, 3–6.
- . 1929. “Theses presented to the First Congress of Slavic Philologists in Prague, 1929.” Reprinted in *The Prague School: Selected Writings, 1929–1946*, edited by P. Steiner, 3–31. Austin: University of Texas Press, 1983.
- . 1930. “Problems of language in Masaryk’s writings.” Reprinted in *T. G. Masaryk in Perspective*, edited by M. Čapek and K. Hrubý, 1981, 63–82. New York: SVU Press.
- . 1931a. “Die Betonung und ihre Rolle in der Wort- und Syntagmaphonologie.” Reprinted in SW1, 117–36.
- . 1931b. “La linguistique eurasiennne.” In Russian. Reprinted in SW1, 144–201.
- . 1931c. “Phonemic notes on Standard Slovak.” Reprinted in SW1, 221–30.
- . 1931d. “Über die phonologischen Sprachbünde.” Reprinted in SW1, 137–43.
- . 1931e. “Les unions phonologiques des langues.” *Le Monde Slave* 8: 371–78.
- . 1932a. “Phoneme and Phonology.” Reprinted in SW1, 231–33.
- . 1932b. “Zur Struktur des russischen Verbums.” Reprinted in SW2, 3–15.
- . 1937a. “On Ancient Greek prosody.” Reprinted in SW1, 262–71.
- . 1937b. “Orthographe du vieux russe.” Reprinted in SW1, 247–53.
- . 1937c. “Über die Beschaffenheit der prosodischen Gegensätze.” Reprinted in SW1, 254–61.
- . 1939. “The Czech part in Church Slavonic culture.” Reprinted in SW6, 129–52.

–1—
0—
+1—

- . 1941. *Kindersprache, Aphasie und allgemeine Lautgesetze*. Uppsala: Almqvist & Wiksell. Published in English translation as *Child Language, Aphasia, and Phonological Universals*. The Hague: Mouton, 1968.
- . 1944. "Franz Boas' approach to language." *International Journal of American Linguistics* 10: 188–95.
- . 1960. "Parts and wholes in language." Reprinted in SW2, 280–84.
- . 1962a. "Retrospect." Reprinted in SW1, 631–52.
- . 1962b. *Selected Writings: Word and Language*. Vol. 1. Abbreviated SW1. Paris: Mouton.
- . 1963a. "Efforts toward a means-ends model of language in interwar continental linguistics." *Trends in Modern Linguistics* 2:104–8. Utrecht: Spectrum. Reprinted in SW2, 522–26.
- . 1963b. "Implications of language universals for linguistics." In *Universals of Language*, edited by Joseph Greenberg, 208–18. Cambridge, MA: MIT Press. Reprinted in SW2, 580–92.
- . 1971a. "An example of migratory terms and institutional models (On the fiftieth anniversary of the Moscow Linguistic Circle)." Reprinted in SW2, 527–38.
- . 1971b. *Selected Writings: Word and Language*. Abbreviated SW2. Paris: Mouton.
- . 1973a. *Main Trends in the Science of Language*. London: Allen and Unwin.
- . 1973b. "Relations entre la science du langage et les autres sciences." In *Essaies de linguistique générale II*. Paris: Éditions de Minuit. Translated as *Main Trends in the Science of Language*. New York: Harper and Row, 1973.
- . 1975. "Foreword." In *N. S. Trubetzkoy's Letters and Notes*, edited by Roman Jakobson. The Hague: Mouton.
- . 1982. "Einstein et la science du langage." *Le débat* 20: 131–42.
- . 1985. *Selected Writings: Early Slavic Paths and Crossroads*. Abbreviated SW6. Berlin: Mouton.
- . 1997. *My Futurist Years*. Edited by Bengt Jangfeldt and Stephen Rudy. New York: Marsilio.
- Jakobson, Roman, and R. GeorGIN. 1978. "Entretien avec Roman Jakobson." In *Jakobson, Cahiers Cistre* 5, 11–27. Lausanne: L'Age d'Homme.
- Jakobson, Roman, and Morris Halle. 1964. "The term Canaan in Medieval Hebrew." In *For Max Weinreich on His Seventieth Birthday*, 147–72. The Hague: Mouton.
- Jakobson, Roman, and Krystyna Pomorska. 1980. *Dialogues*. Paris: Flammarion.
- . 1983. *Dialogues*. Cambridge, MA: MIT Press.
- Jakobson, Roman, Krystyna Pomorska, and Benjamin Hrushovski. 1980. "Dialogue on time in language and literature." *Poetics Today* 2: 15–27.
- Jakobson, Roman, and Linda Waugh. 1979. *The Sound Shape of Language*. Bloomington: Indiana University Press.

—1
—0
—+1

- James, William. 1890. *The Principles of Psychology*. 2 vols. New York: Dover.
- . 1895. "The knowing of things together." *Psychological Review* 2: 105–24.
- Jangfeldt, Bengt. 1997. "Roman Jakobson in Sweden 1940–41." *Cahiers de L'ILSL* ~~10~~ 9: 141–49.
- Janik, Allan, and Stephen Toulmin. 1973. *Wittgenstein's Vienna*. New York: Simon and Schuster.
- Jespersen, Otto. 1922. *Language: Its Nature, Development and Origin*. London: Allen and Unwin.
- Jones, William. 1798. "Third anniversary discourse: On the Hindus." *Asiatick Researches* 1: 415–31.
- Joos, Martin. 1957. *Readings in Linguistics: The Development of Descriptive Linguistics in America 1925–1956*. Chicago: University of Chicago Press.
- Joseph, John. 2002. *From Whitney to Chomsky: Essay in the History of American Linguistics*. Amsterdam: John Benjamins.
- . 2012. *Saussure*. Oxford: Oxford University Press.
- Jussieu, Antoine Laurent de. 1824. "Méthode naturelle des végétaux." In *Dictionnaire des sciences naturelles*. Vol. 30. Strasbourg: F. G. Levrault.
- Kant, Immanuel. 1781. *Kritik der reinen Vernunft*. Translated as *Critique of Pure Reason*. The Cambridge Edition of the Works of Immanuel Kant, 1998. Cambridge: Cambridge University Press.
- Karchevsky, Serge. 1927. *Système du verbe russe, Essai de linguistique synchronique*. Prague: Plamja.
- Kemmer, Suzanne. 2013. "Observations on the 'Neogrammarian Manifesto.'" <http://www.ruf.rice.edu/~kemmer/Found/ostbrugessay.html>.
- King, D. Brett, and Michael Wertheimer. 2005. *Max Wertheimer and Gestalt Theory*. Piscataway, NJ: Transaction Publishers.
- Kiparsky, Paul. 1974. "From Paleogrammarians to Neogrammarians." In *Studies in the History of Linguistics: Traditions and Paradigms*, edited by Dell Hymes, 331–45. Bloomington: Indiana University Press.
- Koerner, E. F. K. 1975. "European structuralism: Early beginnings." In *Current Trends in Linguistics*, vol. 13, edited by Thomas A. Sebeok, 717–827. Paris: Mouton.
- . 1980. "L'importance de William Dwight Whitney pour les jeunes linguistes de Leipzig et pour Ferdinand de Saussure." *Linguisticae Investigationes* 4: 379–94.
- . 1987. "On the problem of 'Influence.'" In *Papers in the History of Linguistics: Proceedings of the Third International Conference on the History of the Language Sciences 1984*, edited by Hans Aarsleff, Louis G. Kelly, and Hans-Josef Niederehe, 13–28. Amsterdam: John Benjamins.
- . 1990. "The place of Friedrich Schlegel in the development of historical-comparative linguistics." In *Leibniz, Humboldt, and the Origins of Compar-*

-1—
0—
+1—

- ativism*, edited by Tullio De Mauro and Lia Formigari, 239–61. Amsterdam: John Benjamins.
- , ed. 1991. *First Person Singular*. Vol. 2. Amsterdam: John Benjamins.
- Koffka, Kurt. 1922. “Perception: An introduction to the Gestalt-Theorie.” *Psychological Bulletin* 19: 531–85.
- . 1935. *Principles of Gestalt Psychology*. New York: Harcourt Brace.
- Köhler, Wolfgang. 1920. *Die Physische Gestalten in Ruhe und stationären Zustand: Eine naturphilosophische Untersuchung*. Braunschweig: Friedr. Vieweg & Sohn.
- . 1929. *Gestalt Psychology*. New York: Liveright.
- . 1959. “Gestalt psychology today.” *American Psychologist* 14: 727–34.
- . 1969. *The Task of Gestalt Psychology*. Princeton, NJ: Princeton University Press.
- Kreiser, Lothar. 2001. *Gottlob Frege: Leben–Werk–Zeit*. Hamburg: Felix Meiner.
- Kripke, Saul. 2013. “The Church–Turing ‘thesis’ as a special corollary of Gödel’s completeness theorem.” In *Computability: Turing, Gödel, Church, and Beyond*, edited by B. Jack Copeland, Carl J. Posy, and Oron Shagrir, 77–104. Cambridge, MA: MIT Press.
- Kroeber, Alfred Louis. 1984. “Reflections on Edward Sapir, scholar and man.” In *Edward Sapir: Appraisals of His Life and Word*, edited by E. F. K. Koerner, 131–39. Amsterdam: John Benjamins.
- Krueger, Robert G., and Clark Hull. 1931. “An electro-chemical parallel to the conditioned reflex.” *Journal of General Psychology* 5: 262–69.
- Kuroda, S.-Y. 1973. “Edmund Husserl, *Grammaire Générale et Raisonnée* and Anton Marty.” *Foundations of Language* 10: 169–75.
- Kusch, Martin. 1995. *Psychologism: A Case Study in the Sociology of Philosophical Knowledge*. London: Routledge.
- . 2005. *Psychological Knowledge: A Sociological History and Philosophy*. London: Routledge.
- Kyllingstad, Jon Røyne. 2014. *Measuring the Master Race: Physical Anthropology in Norway, 1890–1945*. Cambridge, UK: Open Book Publishers.
- Labov, William. 1981. “Resolving the Neogrammarian controversy.” *Language* 57: 267–309.
- . 1994. *Principles of Linguistic Change: Internal Factors*. Oxford: Blackwell.
- . 2001. *Principles of Linguistic Change: Social Factors*. Oxford: Blackwell.
- . 2007. “Transmission and diffusion.” *Language* 83: 344–87.
- Lagemann, Ellen Condcliffe. 1989. *The Politics of Knowledge: The Carnegie Corporation, Philanthropy, and Public Policy*. Middletown, CT: Wesleyan University Press.
- Laks, Bernard. 2007. “Genetics and language: Comparatism and genealogy.” In *Origins and Evolution of Languages: Models, Theories, Paradigms*, edited by

1c

—1
—0
—+1

- S. Cleuziou, J.-P. Demoule, Pierre Encrevé, and Bernard Laks, 157–92. London: Equinox.
- . 2012. “La phonotactique saussurienne: système et loi de valeur.” *Langages* 185: 91–109.
- . 2013. “Why is there variation instead of nothing?” *Language Sciences* 39: 31–53.
- Lane, George S. 1955. “Carl Darling Buck.” *Language* 31: 181–89.
- Lanman, Charles R., ed. 1897. *The Whitney Memorial Meeting: A Report of that Session of the First American Congress of Philologists, Which Was Devoted to the Memory of the Late Professor William Dwight Whitney, of Yale University: Held at Philadelphia, Dec. 28, 1894*. Boston: Ginn.
- Larson, Cedric A., and John J. Sullivan. 1965. “Watson’s relation to Titchener.” *Journal of the History of the Behavioral Sciences* 1: 338–54.
- Laruelle, Marlène. 2001. “Les idéologies de la ‘Troisième Voie’ dans les années 1920: le mouvement eurasiste russe.” *Revue d’histoire* 70: 31–46.
- . 2006a. “The Eurasianist ideology and the Eurasian history: Empire as the natural solution for the post-Soviet space.” Unpublished manuscript.
- . 2006b. “Regards sur la réception du racialisme allemand chez les panslavistes et les eurasistes russes.” *Revue germanique internationale* 3: 145–55.
- . 2008. *Russian Eurasianism: An Ideology of Empire*. Baltimore: Johns Hopkins University Press.
- Lashley, Karl. 1923. “The behavioristic interpretation of consciousness I.” *Psychological Review* 30: 237–72.
- . 1931. “Cerebral control versus reflexology: A reply to Professor Hunter.” *Journal of General Psychology* 5: 3–19.
- Lashley, Karl, and M. Wade. 1946. “The Pavlovian theory of generalization.” *Psychological Review* 53: 72–87.
- Leahey, Thomas H. 1981. “The mistaken mirror: On Wundt’s and Titchener’s psychologies.” *Journal of the History of the Behavioral Sciences* 17: 273–82.
- Lehmann, Winfred P., ed. and trans. 1967. *A Reader in Nineteenth-Century Historical Indo-European Linguistics*. Bloomington: Indiana University Press.
- Lemov, Rebecaa. 2005. *World as Laboratory: Experiments with Mice, Mazes, and Men*. New York: Hill and Wang.
- Lenci, Alessandro, and Gabriel Sandu. 2004. “Logic and linguistics in the twentieth century.” In *Development of Modern Logic*, edited by Leila Haaparanta, 775–847. Oxford: Oxford University Press.
- Leśniewski, Stanisław. 1929. “Grundzüge eines neuen Systems der Grundlagen der Mathematik.” *Fundamenta Mathematicae* 14: 1–81.
- . 1992. *Collected Works*. 2 vols. Dordrecht: Kluwer.
- Levelt, Wilhelm. 2014. *A History of Psycholinguistics: The Pre-Chomskyan Era*. Oxford: Oxford University Press.

-1—
0—
+1—

- Lewis, Herbert S. 2001. "The passion of Franz Boas." *American Anthropologist* 103: 447–67.
- Li, Ming, and Paul M. B. Vitányi. 2008. *An Introduction to Kolmogorov Complexity and Its Applications*. 3rd ed. Berlin: Springer.
- Lindenfeld, David. 1981. *The Transformation of Positivism: Alexius Meinong and European Thought, 1880–1920*. Berkeley: University of California Press.
- Linn, Mary S., Tessie Naranjo, Sheilah Nicholas, Inée Slaughter, Akira Yamamoto, and Ofelia Zepeda. 2002. "Awakening the languages: Challenges of enduring language programs; Field reports from fifteen programs from Arizona, New Mexico and Oklahoma." In *Indigenous Languages across the Community*, edited by Barbara Burnaby and Jon Reyhner, 105–26. Washington, DC: ERIC Clearinghouse.
- Loeb, Jacques. 1912. *The Mechanistic Conception of Life*. Chicago: University of Chicago Press.
- Lowie, Robert H. 1944. "Franz Boas 1858–1942." *Journal of American Folklore* 57: 59–64.
- Lukes, Igor. 1996. *Czechoslovakia between Stalin and Hitler: The Diplomacy of Edward Beneš in the 1930s*. Oxford: Oxford University Press.
- Mach, Ernst. 1897. *Contributions to the Analysis of the Sensations*. Chicago: Open Court.
- . 1901. *Die Mechanik in ihrer Entwicklung*. 4th ed. Leipzig: F. A. Brockhaus.
- . 1905. *Erkenntnis und Irrtum*. Leipzig: Barth. Translated as *Knowledge and Error*, trans. T. J. McCormack and P. Fouldes, 1976. Dordrecht: Reidel.
- Magee, Glenn. 2001. *Hegel and the Hermetic Tradition*. Ithaca, NY: Cornell University Press.
- Malkiel, Yakov. 1980. "Early years in America." In Davis and O'Cain, 79–98.
- Mancosu, Paolo. 1999. "Between Russell and Hilbert: Behmann on the foundations of mathematics." *Bulletin of Symbolic Logic* 5: 303–30.
- Mancosu, Paolo, Richard Zach, and Calixto Badesa. 2004. "The development of mathematical logic from Russell to Tarski: 1900–1935." In *The Development of Modern Logic*, edited by Leila Haaparanta, 318–470. Oxford: Oxford University Press.
- Mannheim, Karl 1923. "The problem of generations." Reprinted in *Essays on the Sociology of Knowledge*, vol. 5, edited by Paul Kecskemeti, 1952, 276–320. Oxford: Oxford University Press.
- . 1938. *Ideology and Utopia*. London: Routledge and Kegan Paul.
- Marchand, Suzanne L. 2009. *German Orientalism in the Age of Empire: Religion, Race, and Scholarship*. Cambridge: Cambridge University Press.
- Marthelot, Perrine. 2012. *Karl Bühler: du contexte à la signification*. Paris: Armand Colin.
- Masaryk, Tomáš. 1887. *Versuch einer concreten Logik*. Vienna: Konegen.

—1
—0
—+1

- Matthews, P. H. 1993. *Grammatical Theory in the United States from Bloomfield to Chomsky*. Cambridge: Cambridge University Press.
- McAlister, Linda L. 1976. *The Philosophy of Brentano*. Atlantic Highlands, NJ: Humanities Press.
- McCumber, John. 2007. *Reshaping Reason: Toward a New Philosophy*. Bloomington: Indiana University Press.
- McDavid, Raven. 1980. "Linguistics, through the Kitchen Door," in Davis and O'Cain, 4–20.
- McDougall, William. 1912. *Psychology: The Study of Behaviour*. New York: Henry Holt.
- . 1929. "Fundamentals of psychology: Behaviorism examined." In *The Battle of Behaviorism: An Exposition and an Exposure*, edited by John B. Watson and William McDougall, 40–85. New York: W. W. Norton.
- McMahon, William E. 1983. "Did Montague invent 'Montague Grammar'?" *Historique Épistémologie Langage* 5: 117–37.
- Meillet, Antoine. 1926. *Linguistique historique et linguistique générale*. Paris: Champion.
- . 1966. "F.d.S." Reprinted in *Portraits of Linguists: A Biographical Source Book for the History of Western Linguistics, 1746–1963*, vol. 2, edited by T. A. Sebeok, 92–99. Bloomington: Indiana University Press.
- Menabrea, Federico Luigi. 1842. "Notions sur la machine analytique de M. Charles Babbage." *Bulletin de la bibliothèque universelle de Genève* 41: 352–76.
- . 1884. *Comptes-rendus hebdomadaires de l'Académie des sciences* 99. Paris.
- Mendeleev, Dmitrii. 1889. "The periodic law of the chemical elements." *Journal of the Chemical Society* 55: 634–56.
- Merchant, Jason. 2001. *The Syntax of Silence*. Oxford: Oxford University Press.
- Merz, J. T. 1903. *A History of European Thought in the Nineteenth Century*. Vol. 2. Edinburgh: W. Blackwood.
- Metcalf, George J. 1974. "The Indo-European hypothesis in the sixteenth and seventeenth centuries." In *Studies in the History of Linguistics: Traditions and Paradigms*, edited by Dell Hymes, 233–57. Bloomington: Indiana University Press.
- Mill, John Stuart. 1865. *Auguste Comte and Positivism*. 2nd ed., 1866. London: N. Trübner.
- Mises, Richard von. 1939. Reprinted as *Positivism: A Study in Human Understanding*, 1951. Cambridge, MA: Harvard University Press.
- Monod, Gabriel. 1876. "Du progrès des études historiques en France depuis le XVIème siècle." *Revue historique* 1: 5–38.
- Moore, Jay. 1999. "The basic principles of behaviorism." In *The Philosophical Legacy of Behaviorism*, 41–68. Dordrecht: Kluwer.

—1—
 0—
 +1—

- Morawski, J. G. 1986. "Organizing knowledge and behavior at Yale's Institute of Human Relations." *Isis* 77: 219–42.
- Moulton, William. 1970. "Leonard Bloomfield as a Germanist." In *A Leonard Bloomfield Anthology*, edited by Charles F. Hockett, 512–23. Bloomington: Indiana University Press.
- Mugdan, Joachim. 1984. *Jan Baudouin de Courtenay (1845–1929): Leben und Werk*. Munich: Wilhelm Fink.
- Müller, Max. 1862. *The Science of Language*. New York: Charles Scribner.
- . 1864. *Lectures on the Science of Language*. London: Longman.
- . 1868. *On the Stratification of Language*. London: Longman.
- . 1887. *The Science of Thought*. New York: Charles Scribner.
- Mulligan, Kevin. 1988. "On structure: Bühler's linguistic and psychological examples." In *Karl Bühler's Theory of Language/Karl Bühlers Sprachtheorie: Proceedings of the Conference held at Kirchberg, August 26, 1984 and Essen, November 21–24, 1984*, vol. 2, edited by Achim Eschbach, 203. Philadelphia: John Benjamins.
- Mulligan, Kevin, and Barry Smith. 1985. "Franz Brentano on the ontology of mind." *Philosophy and Phenomenological Research* 45: 627–44.
- . 1988. "Mach and Ehrenfels: The foundations of Gestalt theory." In *Foundations of Gestalt Theory*, edited by Barry Smith, 124–57. Munich: Philosophia.
- Murchison, Carl Allanmore, ed. 1961. *A History of Psychology in Autobiography*. Vol. 2. New York: Russell and Russell.
- Murray, Stephen O. 1991. "The first quarter century of the Linguistic Society of American, 1924–1949." *Historiographia Linguistica* 18: 1–48.
- . 1994. *Theory Groups and the Study of Language in North America*. Amsterdam: John Benjamins.
- Musolff, Andreas. 1997. "Bühler, Karl." In *Handbook of Pragmatics*, edited by Jef Verschueren, Jan-Ola Östman, Jan Blommaert, and Chris Bulcaen, 1–15. Amsterdam: John Benjamins.
- Næss, Arne. 2005. "Logical empiricism and the uniqueness of the Schlick seminar: A personal experience with consequence." In *The Selected Works of Arne Næss*, edited by Alan Drengson, 1765–83. Amsterdam: Springer Netherlands.
- Nerlich, Brigitte, and David D. Clarke. 2001. "Mind, meaning and metaphor: The philosophy and psychology of metaphor in 19th-century Germany." *History of the Human Sciences* 14: 39–61.
- Neurath, Otto. 1930. "Protokollsatz." *Erkenntnis* 3: 204–14.
- Newman, Stanley S. 1932. "The Yawelmani dialect of Yokuts." *International Journal of American Linguistics* 7: 85–89.
- . 1946a. "The Yawelmani dialect of Yokuts." In *Linguistic Structures of Native America*, edited by H. Hoijer, 222–48. New York: Johnson.
- . 1946b. *Yokuts Language of California*. New York: Viking.

—1
—0
—+1

- Newmeyer, Frederick J. 1986. *Linguistic Theory in America: The First Quarter-Century of Transformational Generative Grammar*. 2nd ed. New York: Academic Press.
- Newton, Isaac. 1687. *Philosophiae Naturalis Principia Mathematica*. London: Benjamin Motte.
- Nicolas, Serge. 2013. *Histoire de la psychologie*. Paris: Dunod.
- Nicolas, Serge, and Ludovic Ferrand. 2002. "Alfred Binet and higher education." *History of Psychology* 5: 264–83.
- Nicolas, Serge, and David J. Murray. 1999. "Théodule Ribot (1839–1916), founder of French psychology: A biographical introduction." *History of Psychology* 2: 277–301.
- Norman, Frederick. 1929. "'Indo-European' and 'Indo-Germanic.'" *Modern Language Review* 24: 313–21.
- Novák, Josef. 1988. "Masaryk and the Brentano school." In *On Masaryk: Texts in English and German*, edited by Josef Novák, 27–38. Amsterdam: Rodopi.
- Nylund, Jan H. 2013. "The Prague School of Linguistics and its influence on New Testament language studies." In *The Language of the New Testament*, edited by Stanley E. Porter and Andrew W. Pitts, 155–224. Leiden: Brill.
- Ogden, C. K., and I. A. Richards. 1923. *The Meaning of Meaning*. New York: Harcourt Brace.
- Oldroyd, David R. 2003. "The earth sciences." In *From Natural Philosophy to the Sciences*, 88–128. Chicago: University of Chicago Press.
- Olender, Maurice. 1992. *The Languages of Paradise: Race, Religion, and Philology in the Nineteenth Century*. Cambridge, MA: Harvard University Press.
- Osthoff, Hermann, and Karl Brugmann. 1878. "Introduction." In *Morphologische Untersuchungen auf dem Gebiete der Indogermanischen Sprachen*, vol. 1, 3–20. Leipzig: S. Hirzel.
- Padovani, Flavia. 2013. "Genidentity and topology of time: Kurt Lewin and Hans Reichenbach." In *The Berlin Group and the Philosophy of Logical Empiricism*, vol. 273, edited by Nikolay Milkov and Volker Peckhaus, 97–122. Berlin: Springer.
- Paul, Harry W. 1972. *The Sorcerer's Apprentice: The French Scientist's Image of German Science, 1840–1919*. Gainesville: University of Florida Press.
- Paul, Hermann. 1886. "Review of H. Schuchardt, *Über die Lautgesetze*." *Literaturblatt für germanische und romanische Philologie* 7: 1–6.
- Peckhaus, Volker. 1999. "19th century logic between philosophy and mathematics." *Bulletin of Symbolic Logic* 5: 433–50.
- Pedersen, Holger. 1931. *The Discovery of Language: Linguistic Science in the 19th Century*. Bloomington: Indiana University Press.
- Percival, Keith. n.d. "On the genealogy of linguistic structuralism."
- Petzold, Charles. 2008. *The Annotated Turing*. Hoboken, NJ: Wiley.

lc

—1—
 0—
 +1—

- Pickering, Mary. 1993. *August Comte: An Intellectual Biography*. Vol. 1. Cambridge: Cambridge University Press.
- Pietarinen, Ahti-Veikko. 2009. "Significs and the origins of analytic philosophy." *Journal of the History of Ideas* 70: 467–90.
- Pike, Kenneth. 1989. "Recollections of Bloomfield." *Historiographia Linguistica* 16: 217–23.
- Poincaré, Henri. 1908. *Science et méthode*. Paris: Flammarion.
- Poliakov, Leon. 1965. *The History of Anti-Semitism*. New York: Vanguard.
- Pomorska, Krystyna, ed. 1987. *Language, Poetry and Poetics*. Berlin: De Gruyter.
- Popov, Igor. 2008. "Orthogenesis versus Darwinism: The Russian case." *Revue d'histoire des sciences* 61: 367–97.
- Popper, Karl. 1935. *Logik der Forschung: Zur Erkenntnistheorie der moderner Naturwissenschaft*. Berlin: Springer.
- Pos, Hendrick. 1938. "La notion d'opposition en linguistique." In *Onzième congrès international de psychologie*, edited by H. Piéron and I. Myerson, 246–47. Paris: Alcan.
- Posy, Carl. 1974. "Brouwer's constructivism." *Synthese* 27: 125–59.
- . 2005. "Intuitionism and philosophy." In Shapiro, 318–55.
- Pullum, Geoffrey K. 2013. "The central question in comparative syntactic metatheory." *Mind and Language* 28: 492–521.
- Pullum, Geoffrey K., and Barbara C. Scholz. 2005. "Contrasting applications of logic in natural language syntactic description." In *Logic, Methodology and Philosophy of Science: Proceedings of the Twelfth International Congress*, edited by Petr Hájek, Luis Valdés-Villanueva, and Dag Westerståhl, 481–503. London: King's College Publications.
- Quine, Willard Van Orman. 1940. *Mathematical Logic*. Cambridge, MA: Harvard University Press.
- . 1971. [No title.] In *PSA 1970: In Memory of Rudolf Carnap; Proceedings of the 1970 Biennial Meeting, Philosophy of Science Association*, vol. 8, edited by Roger C. Buck and Robert S. Cohen, xxii–xxv. Boston Studies in the Philosophy of Science. Dordrecht: Reidel.
- Radwanska-Williams, Joanna. 1994. *A Paradigm Lost: The Linguistic Thought of Mikołaj Kruszewski*. Amsterdam: John Benjamins.
- Ratzel, Friedrich. 1882. *Anthropogeographie*. Vol. 1. Stuttgart: J. Engelhorn.
- Reck, Erich H., and Steve Awodey. 2004. "Frege's lectures on logic and their influence." In *Frege's Lectures on Logic: Carnap's Jena Notes, 1910–1914*, edited and translated by Erich H. Reck and Steve Awodey, 17–42. Chicago: Open Court.
- Reed, Edward. 1997. *From Soul to Mind: The Emergence of Psychology from Erasmus Darwin to William James*. New Haven: Yale University Press.
- Reichenbach, Hans. 1938. *Experience and Prediction*. Chicago: University of Chicago Press.

—1
—0
—+1

- . 1947. *Elements of Symbolic Logic*. New York: Macmillan.
- . 2012. *Selected Writings, 1909–1953*. Edited by Maria Reichenbach and Robert S. Cohen. Berlin: Springer.
- Reisch, George A. 2005. *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic*. Cambridge: Cambridge University Press.
- Renan, Ernest. 1862. *De la part des peuples sémitiques dans l'histoire de la civilisation: discours d'ouverture des cours de langue hébraïque, chaldaïque et syriaque au Collège de France*. Paris: Michel-Lévy frères.
- Riasanovsky, Nicholas. 1964. "Prince N. S. Trubetskoi's 'Europe and Mankind.'" *Jahrbücher für Geschichte Osteuropas* 13: 207–20.
- Ribot, Théodule. 1870. *La psychologie anglaise contemporaine: la méthode expérimentale*. Paris: J.-B. Baillière.
- . 1877. "Philosophy in France." *Mind* 2: 366–86.
- . 1879. *La psychologie allemande contemporaine*. 2nd ed., 1885. Paris: Librairie G. Baillière.
- . 1881. *Les maladies de la mémoire*. Paris: Librairie G. Baillière.
- . 1883. *Les maladies de la volonté*. Paris: Librairie G. Baillière.
- Richards, Robert. 2002. "The linguistic creation of man: Charles Darwin, August Schleicher, Ernst Haeckel, and the missing link in 19th-century evolutionary theory." In *Experimenting in Tongues: Studies in Science and Language*, edited by Matthias Doerres, 21–48. Stanford, CA: Stanford University Press.
- Richardson, Alan W. 1992. "Logical idealism and Carnap's construction of the world." *Synthese* 93: 59–92.
- . 1998. *Carnap's Construction of the World: The Aufbau and the Emergence of Logical Empiricism*. Cambridge: Cambridge University Press.
- Ricoeur, Paul. 1974. "Science et idéologie." *Revue philosophique de Louvain* 72: 328–56.
- Rieber, Robert W., and David K. Robinson. 2001. *Wilhelm Wundt in History: The Making of a Scientific Psychology*. Berlin: Springer.
- Riskin, Jessica. 2016. *The Restless Clock: A History of the Centuries-Long Argument over What Makes Living Things Tick*. Chicago: University of Chicago Press.
- Ritchie, Benbow F. 1964. *Edward Chace Tolman*. Biographical Memoirs, vol. 37. Washington, DC: National Academy of Sciences.
- Robel, Leon. 1978. "Les années de formation." In *Jakobson*. Cahiers Cistre 5, 34–39. Lausanne: L'Age d'Homme.
- Robins, Robert H. 1990. "Leibniz and Wilhelm von Humboldt and the history of comparative linguistics." In *Leibniz, Humboldt, and the Origins of Comparativism*, edited by Tullio De Mauro and Lia Formigari, 85–102. Amsterdam: John Benjamins.
- Rodin, Andrei. 2014. *Axiomatic Method and Category Theory*. Berlin: Springer.
- Rorty, R. 1990. *Philosophy and the Mirror of Nature*. Oxford: Blackwell.

ital

—1—
 0—
 +1—

- Rosado Haddock, Guillermo E. 2008. *The Young Carnap's Unknown Master: Husserl's Influence on "Der Raum" and "Der Logische Aufbau der Welt."* Aldershot, UK: Ashgate.
- Rosenbloom, Paul. 1950. *The Elements of Mathematical Logic*. New York: Dover.
- Ross, Dorothy. 1972. *G. Stanley Hall: The Psychologist as Prophet*. Chicago: University of Chicago Press.
- Rota, Gian-Carlo. 1989. "Fundierung as a logical concept." *The Monist* 72: 70–77.
- Rousselot, Jean-Pierre. 1897. *Principes de phonétique expérimentale*. Paris: Didier.
- Royce, Josiah. 1892. *The Spirit of Modern Philosophy: An Essay in the Form of Lectures*. Boston: Houghton Mifflin.
- Rudy, Stephen. 1990. *Roman Jakobson: A Bibliography of His Writings*. Berlin: De Gruyter.
- Rüegg, Walter. 2004. *A History of the University in Europe*. Vol. 3, *Universities in the Nineteenth and Early Twentieth Centuries (1800–1945)*. Cambridge: Cambridge University Press.
- Russell, Bertrand. 1903. *Principles of Mathematics*. Cambridge: Cambridge University Press.
- . 1914. *Our Knowledge of the External World*. London: Allen and Unwin.
- . 1945. *A History of Western Philosophy*. New York: Simon and Schuster.
- Saint-Hilaire, Geoffroy. 1818. *Philosophie anatomique*. Paris: Méquignon-Marvis.
- Sapir, Edward. 1921. *Language*. New York: Harcourt Brace.
- . 1929. "The status of linguistics as a science." *Language* 5: 207–14.
- . 1949. *Selected Writings in Language, Culture, and Personality*, edited by David G. Mandelbaum. Berkeley: University of California Press.
- . 2011. *The Psychology of Culture: A Course of Lectures*. Edited by Judith T. Irvine. Berlin: De Gruyter.
- Sarton, G., J. R. Mayer, J. P. Poule, and Sadi Carnot. 1929. "The discovery of the law of conservation of energy." *Isis* 13: 18–44.
- Saussure, Ferdinand de. 1879. *Mémoire sur le système primitive des voyelles dans les langues indo-européennes*. Leipzig: Teubner.
- . 1916. *Cours de linguistique générale*. Edited by Charles Bally and Albert Sechehaye, with the collaboration of Albert Riedlinger. Lausanne: Payot.
- . 1960. "Souvenirs de F. de Saussure concernant sa jeunesse et ses études." *Cahiers Ferdinand de Saussure* 17: 12–25.
- . 1968. *Cours de linguistique générale*. Edited by Rudolph Engler. Wiesbaden: Otto Harrassowitz.
- . 1972. *Cours de linguistique générale*. Edited by Tullio De Mauro. Paris: Payot.
- . 1978 [1874]. "Essai pour réduire les mots du grec du latin et de l'allemand à un petit nombre de racines." *Cahiers Ferdinand de Saussure* 32: 76–101.
- . 1995. *Phonétique: Il manoscritto di Harvard*. Edited by Maria Pia Marchese. Padua: Unipress.

—1
—0
—+1

- . 2002a. *Ecrits de linguistique générale*. Edited by Simon Bouquet and Rudolf Engler. Paris: Gallimard.
- . 2002b. *Théorie des sonantes: Il manoscritto du Ginevra (BPU Ms Fr 3955)*. Edited by Maria Pia Marchese. Florence: Università degli studi di Firenze.
- . 2006. *Writings in General Linguistics*. Edited by Simon Bouquet, Rudolf Engler, Carol Sanders, and Matthew Pires. Oxford: Oxford University Press.
- Sayers, Frances Clarke. 1987. "The small mythologies of Leonard Bloomfield." In *Leonard Bloomfield: Essays on His Life and Work*, edited by Robert A. Hall Jr., 15–23. Amsterdam: John Benjamins.
- Schilpp, Paul Arthur. 1949. *The Philosophy of Ernst Cassirer*. New York: Tudor.
- . 1963. *The Philosophy of Rudolf Carnap*. Chicago: Open Court.
- Schlegel, Friedrich von. 1808. *Über die Sprache und Weisheit der Indier*. Reprinted in 1977. Heidelberg: Mohr and Zimmer.
- . 1849. "On the language and wisdom of the Indians." In *The Aesthetic and Miscellaneous Works of Frederick von Schlegel*. London: Henry G. Bohn.
- Schleicher, August. 1863. *Die Darwinsche Theorie und die Sprachwissenschaft: Offenes Sendschreiben an Herrn Dr. Ernst Haeckel*. Weimar: H. Boehlau.
- . 1874. *A Compendium of the Comparative Grammar of the Indo-European, Sanskrit, Greek and Latin Languages*. London: Trübner.
- Schlick, Moritz. 1915. Die philosophische Bedeutung des Relativitätsprinzips. *Zeitschrift für Philosophie und philosophische Kritik* 159: 129–75. Reprinted in 1979 as "The philosophical significance of the principle of relativity," in *Moritz Schlick Philosophical Papers*, vol. 1. Berlin: Springer.
- . 1930. "Die Wende der Philosophie." *Erkenntnis* 1: 4–11. Translated as "The turning point in philosophy," in *Logical Positivism*, edited by A. J. Ayer, 1959, 53–59. Glencoe, IL: Free Press.
- Schmit, Roger. 1992. "Die Idee der logischen Grammatik bei Husserl: Eine begriffsgeschichtliche Betrachtung." *Husserl Studies* 9: 31–49.
- Schnaitter, Roger. 1999. "Some criticisms of behaviorism." In *The Philosophical Legacy of Behaviorism*, edited by Bruce Thyer, 209–49. Dordrecht: Kluwer.
- Scholz, Barbara C., and Geoffrey K. Pullum. 2007. "Tracking the origins of transformational generative grammar." *Journal of Linguistics* 43: 701–23.
- Schrijnen, Joseph. 1928. "Le Premier Congrès International de Linguistes à la Haye du 10 à 15 avril 1928. Résumé, donné à la clôture du Congrès." *Anthropos* 23: 259–62.
- Schuchardt, Hugo. 1885. *Über die Lautgesetze: Gegen die Junggrammatiker*. Berlin: Oppenheim.
- . 1979. *The Ethnography of Variation: Selected Writings on Pidgins and Creoles*. Cambridge: Cambridge University Press.
- Schuhmann, Karl. 1988. "Husserl and Masaryk." In *On Masaryk: Texts in English and German*, edited by Josef Novák, 129–56. Amsterdam: Rodopi.

“a”

-1—
0—
+1—

- Searle, John. 1992. *The Rediscovery of the Mind*. Cambridge, MA: MIT Press.
- Sebeok, Thomas A. 1987. "Karl Bühler." In *Classics of Semiotics*, 129–45. Berlin: Springer.
- Seifrid, Thomas. 2005. *The Word Made Self: Russian Writings on Language, 1860–1930*. Ithaca, NY: Cornell University Press.
- Sellars, Roy Wood. 1939. "Positivism in contemporary philosophic thought." *American Sociological Review* 4: 26–42.
- Sériot, Patrick. 1993. "La double vie de Troubetzkoy, ou la clôture des systèmes." In *Le gré des langues* 88–115. Paris: L'Harmattan.
- . 1994. "Aux sources du structuralisme: une controverse biologique en Russie." *Etudes de lettres* (janv–mars 1994): 89–103.
- . 1999. *Structure et totalité*. Paris: Presses Universitaires de France.
- . 2014. *Structure and the Whole: East, West and Non-Darwinian Biology in the Origins of Structural Linguistics*. Berlin: De Gruyter.
- Shanker, Stuart. 2005. "Turing and the origins of AI." In *Mathematics and the Historian's Craft*, edited by Glen Van Brummelen and Michael Kinyon, 297–328. Berlin: Springer.
- Shapin, Steven. 1981. "Of gods and kings: Natural philosophy and politics in the Leibniz–Clarke disputes." *Isis* 72: 187–215.
- Shapiro, Stewart. 2005. *The Oxford Handbook of Philosophy of Mathematics and Logic*. Oxford: Oxford University Press.
- Shibatani, Masayoshi, and Theodora Bynon. 1995. "Approaches to language typology: A conspectus." In *Approaches to Language Typology*, edited by M. Shibatani and ~~B. Theodora~~, 1–27. Oxford: Oxford University Press.
- Sieg, Wilfried. 2008. "On computability." In *Philosophy of Mathematics*, edited by Andrew Irvine, 535–630. Amsterdam: Elsevier.
- Siegmund-Schultze, Reinhard. 2001. *Rockefeller and the Internationalization of Mathematics between the Two Wars*. Berlin: Springer.
- Sievers, Eduard. 1881. *Grundzüge der Phonetik*. Leipzig: Breitkopf & Härtel.
- Silverstein, Michael, ed. 1971. *Whitney on Language*. Cambridge, MA: MIT Press.
- . 2014. "In praise of 'exceptionless': Linguistics among the human sciences at Bloomfield and Sapir's Chicago." *History and Philosophy of the Language Sciences*. <https://hiphilangsci.net/2014/11/26/in-praise-of-exceptionless-linguistics-among-the-human-sciences-at-bloomfield-and-sapirs-chicago>.
- Skidelsky, Edward. 2011. *Ernst Cassirer: The Last Philosopher of Culture*. Princeton, NJ: Princeton University Press.
- Smail, Daniel Lord. 2008. *On Deep History and the Brain*. Berkeley: University of California Press.
- Smith, Barry. 1982. *Parts and Moments: Studies in Logic and Formal Ontology*. Munich: Philosophia.
- . 1988. "Austrian origins of logical positivism." *Nijhoff International Philosophy Series* 38: 19–53.

2/5:

Theodora Bynon

—1
—0
—+1

- . 1994. *Austrian Philosophy: The Legacy of Franz Brentano*. Chicago: Open Court.
- Smith, Barry, and Kevin Mulligan. 1982. "Pieces of a theory." In *Parts and Moments: Studies in Logic and Formal Ontology*, edited by Barry Smith, 15–110. Munich: Philosophia.
- Smith, Laurence D. 1986. *Behaviorism and Logical Positivism: A Reassessment of the Alliance*. Stanford, CA: Stanford University Press.
- Soare, Robert. 1996. "Computability and recursion." *Bulletin of Symbolic Logic* 2: 284–321.
- Sokal, Michael M. 1990. "G. Stanley Hall and the institutional character of psychology at Clark 1889–1920." *Journal of the History of the Behavioral Sciences* 26: 114–24.
- . 1994. "Gestalt psychology in America in the 1920s and 1930s." In *Gestalt Psychology: Its Origins, Foundations and Influence*, edited by Stefano Poggi, 87–119. Florence: Leo S. Olschki.
- Stratton, A. W., and A. H. Ewing. 1920. *Studies in Honor of Maurice Bloomfield Professor of Sanskrit and Comparative Philology in the Johns Hopkins University*. New Haven: Yale University Press.
- Stumpf, Carl. 1919. "Reminiscences of Brentano." Reprinted in McAlister 1976, 10–46.
- Swadesh, Morris. 1934. "The phonemic principle." *Language* 10: 117–29.
- . 1971. *The Origin and Diversification of Language*. New York: Aldine, Atherton.
- Sweet, Henry. 1877. *A Handbook of Phonetics*. Oxford: Henry Frowde.
- . 1908. *The Sounds of English: An Introduction to Phonetics*. Oxford: Clarendon.
- Sweet, Paul R. 1980. *Wilhelm von Humboldt: A Biography*. Vol. 2. Columbus: Ohio State University Press.
- Taylor, Richard. 1843. *Scientific Memoirs*. Vol. 3. London: Richard and John E. Taylor.
- Tchougounnikov, Sergueï. 2009. "L'effet 'néo-grammarien' entre la Russie et l'Allemagne." *Slavica Occitania* 29: 115–42.
- Teeter, Karl. 1964. "Descriptive linguistics in America: Triviality vs. irrelevance." *Word* 20: 197–206.
- Ter Hark, Michel. 2003. *Popper, Otto Selz, and the Rise of Evolutionary Epistemology*. Cambridge: Cambridge University Press.
- Tesnière, Lucien. 1936. "Antoine Meillet." *Bulletin de la faculté des lettres de Strasbourg* 2: 1–10.
- Tifrit, Ali. 2005. "Marque et syllabe: de la représentation des fricatives du français dans le Modèle à Contours." PhD thesis, Université de Paris X–Nanterre.
- Titchener, Edward B. 1898. "The postulates of a structural psychology." *Philosophical Review* 7: 449–65.

- . 1899. "Structural and functional psychology." *Philosophical Review* 8: 290–99.
- . 1925. "Experimental psychology: A retrospect." *American Journal of Psychology* 36: 313–23.
- Tocqueville, Alexis de. 1840. *Democracy in America*. New York: Heffner.
- Tolman, Edward C. 1932. *Purposive Behavior in Animals and Men*. New York: The Century Co.
- Tomalin, Marcus. 2006. *Linguistics and the Formal Sciences: The Origins of Generative Grammar*. Cambridge: Cambridge University Press.
- Toman, Jindrich. 1995. *The Magic of a Common Language: Jakobson, Mathesius, Trubetzkoy, and the Prague Linguistic Circle*. Cambridge, MA: MIT Press.
- . 1997a. "Jakobson and Bohemia/Bohemia and the East." *Cahiers de L'ILSL*, no. 9: 229–39.
- . 1997b. "Notes on Roman Jakobson's culture of scholarship." *Acta Linguistica Hafniensa* 29: 89–100.
- Torbakov, Igor. 2008. *Rethinking the Nation: Imperial Collapse, Eurasianism, and George Vernadsky's Historical Scholarship*. Occasional Papers no. 302. Washington, DC: Woodrow Wilson International Center for Scholars.
- . 2015. "Becoming Eurasian: The intellectual odyssey of Georgii Vladimirovich Vernadsky." In Bassin et al., 113–36.
- Trager, George L. 1942. "The phoneme 'T': A study in theory and method." *American Speech* 17: 144–48.
- Trautmann, Thomas R. 2006. *Languages and Nations: The Dravidian Proof in Colonial Madras*. Berkeley: University of California Press.
- Trautmann-Waller, Cécile. 2004. *Quand Berlin pensait les peuples—Anthropologie, ethnologie et psychologie (1850–1900)*. Edited by Cécile Trautmann-Waller. Paris: CNRS Editions.
- Trubetzkoy, Nikolai. 1920. "Europe and mankind." Reprinted in Trubetzkoy 1991, 1–64.
- . 1921. "The upper and lower stories of Russian culture." Reprinted in Trubetzkoy 1991, 81–100.
- . 1923. "The Tower of Babel and the confusion of Tongues." In English translation in Trubetzkoy 1991, 147–60. In French translation in Trubetzkoy 1996, 115–26.
- . 1927a. "Le nationalisme pan-eurasien." In Trubetzkoy 1996, 181–91.
- . 1927b. "Sur le problème de la connaissance de la Russie par elle-même." Reprinted in Trubetzkoy 1996, 175–80.
- . 1933. "La phonologie actuelle." *Journal de psychologie normale et pathologique* 30: 227–46.
- . 1935. "On racism." Reprinted in Trubetzkoy 1991, 277–88.
- . 1936. "D'une théorie des oppositions phonologiques." *Journal de psychologie normale et pathologique* 33: 5–18.

—1
—0
—+1

- . 1939a. *Grundzüge der Phonologie*. Prague: Travaux du Cercle linguistique de Prague.
- . 1939b. “Zur allgemeinen Theorie der phonologischen Vokalsysteme.” *Travaux du Cercle linguistique de Prague* 1: 39–67.
- . 1950. *The Common Slavic Element in Russian Culture*. Edited by Leon Stilman. New York: Columbia University Department of Slavic Languages.
- . 1969. *Principles of Phonology*. Translation of 1939 edition. Berkeley: University of California Press.
- . 1975. *N. S. Trubetzkoy's Letters and Notes*. Edited by Roman Jakobson, H. Baran, O. Ronen, and Martha Taylor. The Hague: Mouton.
- . 1991. *The Legacy of Genghis Khan and Other Essays on Russia's Identity*. Edited by Anatoly Liberman. Ann Arbor: Michigan Slavic Publications.
- . 1996. *L'Europe et l'humanité*. Edited by Patrick Sériot. Liège, Belgium: P. Mardaga.
- . 2001. *Studies in General Linguistics and Language Structure*. Edited by Anatoly Liberman. Durham, NC: Duke University Press.
- . 2006. *Correspondence avec Roman Jakobson et autres écrits*. Edited by Patrick Sériot. Lausanne: Payot.
- Turing, Alan M. 1936–37. “On computable numbers, with an application to the Entscheidungsproblem.” *Proceedings of the London Mathematical Society* 42: 230–65.
- Uebel, Thomas E. 1996. “Anti-foundationalism and the Vienna Circle's revolution in philosophy.” *British Journal for the Philosophy of Science* 47: 415–40.
- . 2004a. “Carnap, the Left Vienna Circle, and neopositivist antimetaphysics.” In *Carnap Brought Home: The View from Jena*, edited by Steve Awodey and Carstein Klein, 247–77. Chicago: Open Court.
- . 2004b. “Education, enlightenment and positivism: The Vienna Circle's scientific world-conception revisited.” *Science and Education* 13: 41–66.
- . 2008. “Writing a revolution: On the production and early reception of the Vienna Circle's manifesto.” *Perspectives on Science* 16: 70–102.
- Uriagereka, Juan. 1998. *Rhyme and Reason*. Cambridge, MA: MIT Press.
- Urquhart, Alasdair. 2008. “Emil Post.” In Gabby and Wood, 617–66.
- Velupillai, K. Vela. 2011. “Freedom, anarchy and conformism in academic research.” *Interdisciplinary Journal of Economics and Business Law* 1: 76–101.
- Verburg, P. A. 1949. “The background to the linguistic conceptions of Bopp.” *Lingua* 2: 438–68.
- Viel, Michel. 1984. *La notion de marque chez Trubetzkoy et Jakobson: un épisode de la pensée structurale*. Paris: Didier.
- Voegelin, Carl F., and Florence M. Voegelin. 1963. “On the history of structuralizing in 20th century America.” *Anthropological Linguistics* 5: 12–37.
- Vonk, Frank. 2004. “La Sprachtheorie de Karl Bühler d'un point de vue linguistique.” *Les dossiers de HEL*. <http://dossierhel.hypotheses.org>.

—1—
 0—
 +1—

- Vucinich, Alexander. 1989. *Darwin in Russian Thought*. Berkeley: University of California Press.
- Wagemans, Johan, James H. Elder, Michael Kubovy, Stephen E. Palmer, Mary A. Peterson, Manish Singh, and Rüdiger von der Heydt. 2012. "100 Years of visual Gestalts." *Psychological Bulletin* 138: 1172–217.
- Wagner, Pierre. 1998. *La machine en logique*. Paris: Presses Universitaires de France.
- Wang, Hao. 1974. *From Mathematics to Philosophy*. London: Routledge and Kegan Paul.
- . 1990. *Reflections on Kurt Gödel*. Cambridge, MA: MIT Press.
- . 1996. *A Logical Journey: From Gödel to Philosophy*. Cambridge, MA: MIT Press.
- Watson, John B. 1913. "Psychology as the behaviorist views it." *Psychological Review* 20: 158–77.
- . 1919. *Psychology from the Standpoint of a Behaviorist*. Philadelphia: J. B. Lippincott.
- . 1929. "Behaviorism—The Modern Note in Psychology." Remarks delivered publicly in 1924. In John B. Watson and William McDougall, *The Battle of Behaviorism*. New York: W. W. Norton.
- . 1930a. *Behaviorism*. 2nd ed. New York: W. W. Norton.
- . 1930b. *Psychology*. Rev. ed. Chicago: University of Chicago Press.
- Watson, John B., and Karl Lashley. 1913. "Notes on the development of a young monkey." *Journal of Animal Behavior* 3: 114–39.
- Weidman, Nadine M. 1999. *Constructing Scientific Psychology: Karl Lashley's Mind-Brain Debates*. Cambridge: Cambridge University Press.
- Weimer, Walter B. 1974. "The history of psychology and its retrieval from historiography: I. The problematic nature of history." *Science Studies* 4: 235–58.
- Weiss, Albert Paul. 1919. "The relation between physiological psychology and behavioral psychology." *Journal of Philosophy, Psychology, and Scientific Methods* 16: 626–34.
- Wellek, Albert. 1968. "The impact of German immigration on the development of American psychology." *Journal of the History of the Behavioral Sciences* 4: 207–29.
- Wertheimer, Max. 1922. "Untersuchungen zur Lehre von der Gestalt I." *Psychologische Forschung* 1: 47–58.
- . 1923. "Untersuchungen zur Lehre von der Gestalt II." *Psychologische Forschung* 4: 301–50.
- . 1938. "Gestalt theory." In *A Source Book of Gestalt Psychology*, edited by Willis D. Ellis, 71–88. New York: Harcourt Brace.
- . 1945. *Productive Thinking*. New York: Harper.
- Wettersten, John. 1988. "Külpe, Bühler, Popper." In *Karl Bühler's Theory of Language*, edited by Achim Eschbach, 327–47. Amsterdam: John Benjamins.

—1
—0
—+1

- Whewell, William. 1832. "Review of Lyell's *Principles of Geology*, V. 2." *Quarterly Review* 47: 103–32.
- . 1839. "Excerpts from the Anniversary Address of the Rev. Wm. Whewell before the Geological Society of London." *American Journal of Science and Arts* 37: 238.
- . 1858. *History of Scientific Ideas: Being the First Part of the Philosophy of the Inductive Sciences*. London: John W. Parker and Son.
- Whitehead, Alfred North. 1916. "The organization of thought." *Science* 22: 409–19.
- Whitehead, Alfred North, and Bertrand Russell. 1910–1913. *Principia Mathematica*. 3 vols. Cambridge: Cambridge University Press.
- Whitfield, Steven J. 2010. "Franz Boas: The anthropologist as public intellectual." *Society* 47: 430–38.
- Whitman, Charles O. 1898. "Animal behavior." *Biological Lectures Delivered at the Marine Biological Laboratory (Woods Hole)* 6: 285–338.
- Whitney, William Dwight. 1865. "On the relation of vowels and consonants." *Journal of the American Oriental Society* 8: 357–73. Reprinted in Silverstein 1971, 198–214.
- . 1867a. "Languages and dialects." *North American Review* 104: 30–64.
- . 1867b. *Language and the Study of Language*. New York: Scribner. Reprinted in Silverstein 1971, 7–110.
- . 1872. "Steinthal on the origin of language." *North American Review* 114: 272–308. Reprinted in Silverstein 1971, 133–69.
- . 1874. "The relation of vowel and consonant." In *Oriental and Linguistic Studies*, second series, 277–300. New York: Scribner.
- . 1875. *Life and Growth of Language*. New York: Appleton.
- . 1879. *Sanskrit Grammar*. Cambridge, MA: Harvard University Press.
- Whorf, Benjamin Lee. 1956. *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf*. Cambridge, MA: MIT Press.
- Winston, Andrew S. 2001. "Cause into function: Ernst Mach and the reconstruction of explanation in psychology." In *The Transformation of Psychology: Influences of 19th-Century Philosophy, Technology, and Natural Science*, edited by Christopher D. Green, Marlene Shore, and Thomas Teo, 107–31. Washington, DC: American Psychological Association.
- Witte, A. J. J. de. 1956. "Towards a New Grammar." *Synthese* 10: 91–101.
- Wolf, Theta H. 1973. *Alfred Binet*. Chicago: University of Chicago Press.
- Wood, Mary McGee. 1993. *Categorical Grammars*. London: Routledge.
- Wozniak, Robert H. 1997. *Theoretical Roots of Early Behaviorism: Functionalism, the Critique of Introspection, and the Nature and Evolution of Consciousness*. London: Routledge.
- Wright, Cory, and William Bechtel. 2007. "Mechanisms and psychological explanation." In *Philosophy of Psychology and Cognitive Science*, edited by Paul Thagard, 31–79. Amsterdam: Elsevier.

–1—
0—
+1—

- Wundt, Wilhelm. 1894. "Über psychische Kausalität und das Prinzip des psychophysischen Parallelismus." *Philosophische Studien* 10: 1–124.
- . 1896. *Grundriss der Psychologie*. Leipzig: Engelmann. Translated as *Outlines of Psychology*, 1897. New York: Stechert.
- Yates, Frances A. 1939. "Giordano Bruno's conflict with Oxford." *Journal of the Warburg Institute* 2: 227–42.
- . 1968. "The hermetic tradition in Renaissance science." In *Art, Science, and History in the Renaissance*, edited by Charles Singleton, 255–74. Baltimore: Johns Hopkins Press.
- Zahavi, Dan, and Frederick Stjernfelt. 2002. *One Hundred Years of Phenomenology: Husserl's Logical Investigations Revisited*. Dordrecht: Kluwer.
- Zenkovsky, V. V. 1953. *Russian Thinkers and Europe*. Ann Arbor, MI: J. W. Edwards.
- Zipf, G. K. 1936. *The Psycho-biology of Language: An Introduction to Dynamic Philology*. Cambridge, MA: MIT Press.
- Zuckerman, Harriet. 1977. *Scientific Elite: Nobel Laureates in the United States*. New York: Free Press.

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—+1