From the History of Science to the History of Knowledge and Beyond

Since recently, the history of knowledge is flourishing: it has its own centers—in Berlin and Chicago, for instance, as well as in Zurich, Lund, Washington, DC, and Cambridge—its own journals, and its own conferences. Together, these offer a new forum for debate about topics, concepts, methods, and the relation of history to other disciplines that place knowledge at the heart of research. This debate is now well underway, and so far it has been organized around three main questions: What is the history of knowledge? How can it be studied? And where should we go from here?¹

Although there are different routes into the field, and different national traditions in America, England, Germany, France, and the Nordic region, the history of knowledge is widely seen as a mere expansion of the older discipline of the history of science.² Some have portrayed it as nothing more (and nothing less) than the culmination
of the broadening of scope that the history of science has undergone in the wake of Thomas Kuhn’s pioneering work of the 1960s–70s. On this reading, the scope of the history of knowledge is the same as that of the new history of science, which, because of a number of turns (e.g., practical, global, postcolonial), now also covers non-Western and nonacademic knowledge practices. Like other historians of knowledge who hold the history of science to lead the way, Lorraine Daston, in a 2017 article, has discussed the history of knowledge wholly in terms of the history of science.3 According to her, the field finds itself in the paradoxical situation where it is at once both the creation of and a contradiction to the history of science. Its expansion of the chronology and geography of science and its emphasis on practices have shown that it is impossible to separate science from other ways of knowing. At the same time, the only thing that the many fascinating contributions in this direction share is that they are decidedly not about modern, Western science. Consequently, the history of knowledge is currently defined only in a negative way.

At present, the search for a positive definition may be observed to be pulling the field in two opposite directions. On the one hand, it is widely agreed that the notion of a “singular” history of knowledge should be rejected in favor of “knowledges”—or even “histories”—in the plural. Indeed, as Daston emphasizes, much of the appeal of the history of knowledge, especially compared to the traditionally slightly snobbish history of science, has rested on its “come-one-come-all” embrace. On the other hand, it has been observed more than once that, in and of itself, the broad concept of knowledge, let alone that of knowledges, is simply too vague or “baggy” to give coherence to the field’s subject matter. This bagginess not only makes the history of knowledge a rather loose field without clear disciplinary boundaries or ambitions; as Suzanne Marchand has forcefully argued in a recent paper, it also comes with a considerable danger: historically studying knowledge without worrying what is worth knowing about
what was known may well cause the field to degenerate into a purely positivistic project of unselective mapping, covering things that are either too trivial, too large, or without any sources.4

The broadening of the history of science—to non-Western contexts, to the humanities, and so on—is, of course, widely welcomed; and so is the idea that all historians of knowledge should benefit from recent work in the history of science. However, it is also clear that the search for a positive definition of the field asks for more than mere expansion of the concept of science into that of knowledge. There are, by and large, two strategies available in this regard, which show resemblances but which are not easily compatible with one another. Daston and Jürgen Renn have called for the creation of a history of knowledge that is able to include the history of science as a special case.5 Their argument is twofold: the history of science is better understood against the background of a wider history of knowledge, and the history of knowledge has shown that the original disciplinary narrative of the history of science is untenable on scholarly grounds. What is needed for the history of science to turn into the history of knowledge is a concept of knowledge with much sharper contours—or, possibly, an alternative concept like systematics or architecture of knowledge—one that gives expression to a completely new narrative about modern, Western science and that pieces together into a larger picture the mosaic that is the history of knowledge. Peter Burke, for his part, suggests that it may be time for emancipation from the tradition of the history of science altogether.6 Sven Dupré and Geert Somsen, reasoning along the same lines, have argued that the history of knowledge should indeed serve more ambitious goals than just offering a better understanding of the history of science.7 For instance, in addition to giving new answers to old questions—some of which, as Jan Golinski and Peter Dear have emphasized, are still with us—it should also ask novel questions that do not merely expand the boundaries of the history of science but investigate those very boundaries.8
There surely are good reasons for the history of knowledge not to take this rather daunting route of emancipation. Marchand, in her 2019 paper “How Much Knowledge Is Worth Knowing?,” mentions the following two, among others. One reason is that both students and university administrators tend to respect science more than knowledge. Another is that expansion into so many new realms of knowledges in the plural waters down the focus on the natural sciences. The first of these may be practically true but, as Marchand emphasizes, is not intellectually defensible; the second seems to be the real problem, if only because it remains important to teach the history of the kinds of knowledge we today value so highly, whether it is evidence-based medicine or information technology.

With Burke, Dupré, and Somsen, I believe that there are also good, and arguably stronger, reasons for the history of knowledge to pursue the course of emancipation. Let me point out four. First, there is what may be called the evolutionary argument. We study the history of knowledge, not only or merely to better understand science but to understand the whole of humanity’s epistemic development, of which science is part. This development is not a process toward anything but from one thing to another, including both successes and failures, dead ends and indecisions. Second, we need to engage once again, and much more critically, with presentism. Since the past, whether scientific or not, is always a projection of a specific present, we should historicize our current epistemic priorities rather than only writing histories of the knowledge we currently prioritize. Third, there is an argument to be made against new forms of scientism. The idea that teaching and learning (what we nowadays classify as) nonscientific knowledges waters down science, and that this is a bad thing per se, makes sense only if we accept more and better science as the ready-made answer to (the consequences of) science’s limits. From state-of-the-art research in sociology and risk management we learn not only that for many of today’s most pressing problems the opposite holds:
they are often, directly or indirectly, the very products of more and better scientific knowledge. From these fields we can also learn that explaining that there are things that science does not and cannot know might in fact be the best strategy to increase public confidence in science. Fourth, to come full circle, there is the closely related argument from relevance. Our global fate might well be increasingly dependent on the current achievements and further extension of science and technology. But it is arguably even more so on the deeper understanding of the dynamics of knowledge, in general, and the relation between hierarchies of knowledge and cognitive authority, more specifically. What is and what isn’t a contribution to knowledge? Who is and who isn’t deemed capable of knowing? How do different kinds of knowledge and knowers define one another, and how are they valued, contrasted, and ranked? It is the history of knowledge, rather than the history of science, that is capable of historicizing such questions. And by doing so, the history of knowledge might do for the twenty-first century what the history of science did for the twentieth: to build the expertise required by the challenges posed by science and society today.

As part of their strategy to create a future history of knowledge emancipated from the history of science, Burke, Dupré, and Somsen suggest that historians of knowledge should pay more attention to the “dark” or “negative” side of their subject: failure as well as success, ignorance as well as knowledge. In this article, I will develop a programmatic outline for this disciplinary strategy, describing its prospects and challenges and pointing to some of the fruitful new avenues of study it opens up. Whereas Dupré and Somsen discuss the phenomenon of failure, my tentative exploration of the “dark side of knowledge” (a phrase ripe for rethinking) will instead focus on ignorance or, more precisely, on the much broader category of Nichtwissen of which it is part. Taken together, the aim of this article is to contribute to the endeavor to combine epistemic and agnostic histories into a future history of knowledge that is both more complete and more timely and freestanding.
Nichtwissen: A Twenty-First-Century Topic

Throughout the twentieth century, the discipline of the history of science established itself and evolved from belle époque positivism to postwar scientism and from Cold War modernism to relativism, always in response to sweeping scientific and societal transformations.16 Today, we live in different times again. Since the history of science’s last major shift, roughly its turn to “practice” and “context,” the world in which research is done has markedly changed. Given that changes in the present have prompted (and probably should prompt) historians to look at the past in new ways—to paraphrase Burke—the following question suggests itself: What would make the history of knowledge a twenty-first-century discipline? Or, put differently, given our present, how could the field make history matter to the future?

One recent suggestion has been to focus on the knowledge society. Already in his What Is the History of Knowledge?, Burke found the very reason for the transition from the history of science to the history of knowledge in its promise to historicize the “knowledge society” or “information society.”17 Burke, keenly aware of the seeming paradox of historicizing newness, urged fellow historians of knowledge to steer between two opposites: a simplistic contrast between the present and an undifferentiated past and a too-heavy emphasis on continuity. On the one hand, historians should help their fellow citizens see that every age is, in fact, an age of knowledge. A recent, four-year Dutch research project—“Creating a Knowledge Society in a Globalizing World”—was dedicated exactly to this endeavor: its aim has been to analyze and compare the origins and formation of early modern knowledge societies.18 On the other hand, next to helping avoid parochialism and provincialism, historians should also try to capture the sense in which our society is a knowledge society in its own particular way. Following up on this call, Dupré and Somsen draw attention to a change that took place over the past few decades: one from a sacralization of science
and a veneration of expertise, to which the history of science responded in the 1970s, to a regular (if often qualified) denouncement of science and an incessant questioning of expertise, to which they believe the history of knowledge should respond. According to them, this does not mean that it is the task of historians to defend science and insist on more trust in experts. Instead, historians of knowledge should try to contribute to understanding science’s predicament in the twenty-first century, primarily by addressing new questions about knowledge that cover but also go well beyond science. These questions essentially concern the boundaries, hierarchies, and mutual constitution of different forms of knowledge as well as the interactions between the epistemic categories of knowledge, failure, error, mistake, and ignorance and between epistemic virtues and vices. Take the notion of failure, which, despite, or perhaps because, contemporary society is obsessed with success, is receiving more attention lately. Whereas in the history of science it has played a minor role, what historians of knowledge are showing is that, far from pathological, failure is inherent to knowledge production, even in the case of forms that at one point appeared at the top of the hierarchy. A similar argument could be made about epistemic vices, which have traditionally been neglected by historians of science in favor of individual and collective virtues such as open-mindedness and disinterestedness. Recently, historians of knowledge such as Herman Paul and others have turned to vices such as bias, prejudice, and sloppiness, showing that these at times played enough of a role in knowledge practices to be classified as being of scholarly, if not of epistemic, relevance. Finally, Martin Mulsow has drawn attention to the need for and the possibility of alternative historiographies focused around the notion of precarious knowledge, which refers to lost and forgotten knowledge as well as to issues of its preservation and security. Taken together, it is not merely because of what the history of science cannot do but also because of what their field can do that historians of knowledge are indispensable: they are the ones able to provide the scope
of analysis needed to historicize what has been referred to—perhaps somewhat pompously—as the “fourth knowledge revolution,” to which coping with what science does not and cannot know, that is, with scientific ignorance, is of central importance.22

My proposal for the history of knowledge is to pay much more systematic attention to ignorance—to historical forms of not knowing and to historical strategies of dealing with unknowns. The first reason for doing so is a fundamental one: to paraphrase Burke, just as historians of memory need to study forgetting, historians of music need to study silence, and historians of beauty need to study ugliness, historians of knowledge need to take into account the other side of their subject matter—positions of knowing and not knowing, forms of knowns and unknowns, and perceptions of the knowable and the unknowable.23

The second reason is that a focus on ignorance—in itself as well as in its relation to the production and circulation of knowledge—connects the history of knowledge much more tightly to today’s world, to which the concept of the knowledge society arguably no longer unproblematically applies.24 Over the past decade, there has been a remarkable shift in scholarship, one from the centrality of risks and knowledge to that of unknowns and nonknowledge (Nichtwissen) as being the epoch-defining aspect of modern society.25 Despite his own turn to nonknowledge at the end of his career, the German sociologist Ulrich Beck’s notion of the “nonknowledge society” has gone unnoticed until recently in favor of his theorization of the knowledge society in terms of risks. Beck himself remained committed to risks, though his own work was increasingly a tour de force that highlighted the limits of risk thinking. Whereas Beck’s own view of nonknowledge remained limited to the absence of knowledge and the “unknown unknowns” of a complex and unpredictable world, the nonknowledge society is currently also being theorized in terms of ignorance, understood as a socially and politically produced and maintained phenomenon. Recently, so-called agnotological studies have been exploring the strategic use of
ignorance within public controversies about scientific ignorance. One example is Robert Proctor’s study of the connection between the expert knowledge deployed by the tobacco industry’s lobbyists and the knowledge political decision makers drew on.26 Another example is Linsey McGoey’s recent The Unknowers, in which she rethinks how the power to draw the boundaries between knowledge and ignorance is transforming society and democracy, for instance, through the production of “doubt” about climate change science and the creation of “fog” in the public sphere to unmake calls for reform in the wake of financial crises.27 There are also the closely related issues of positions of not knowing in the context of governing secrecy, security, and catastrophes, as explored by Brian Balmer and Claudia Aradau, among others.28

The take-home message of this rapidly growing literature is that in a self-fashioned knowledge society, the unknown is not diminished by new knowledge. Quite the contrary: the realm of the unknown is magnified, if only because the more we know, the more unknowns become known and the more it is acknowledged how little we do and can know. This raises important, and potentially emancipatory, questions about the opacity and persistence of scientific ignorance and unknowns: How to respond, who may respond, who should respond, and what needs to become known? Taking into consideration such major themes as the global financial crisis, debates about climate change, genetically modified food, and predictive genetic testing, these and other questions suggest that twenty-first-century society might better be understood and acted on, not in terms of risks and ever-increasing expert knowledge but in terms of nonknowledge. Given that nonknowledge is here to stay, we face the urgent task to move beyond the modernist assumption that not knowing is always merely temporal and to take not knowing seriously, building it into the way we approach and organize knowledge practices, whether in science or policy- and decision-making, in the current world. Other critical tasks lay ahead too, such as fleshing out the relation between
nonknowledge and a lack (or abundance) of available information in the context of democracy and big data and, of course, the complex status of scientific limits and ignorance in a “post-truth” era. But each of these tasks arguably depends on the prior acknowledgment of the reality and real-world consequences of nonknowledge.

A history of Nichtwissen could help build the expertise required in the twenty-first century, providing historical understanding that contributes to confronting the conceptual challenge of grasping the unknown and to work toward new strategies and capacities for coping with its growing centrality. Rather than only historicizing the knowledge society on the basis of common wisdom, historians of knowledge could and perhaps should also contribute to showing that and how the concept of the knowledge society itself is historically conditioned. By doing so, their field may well make history matter to the future, if only because it betters our critical sense of the specificity of our present.

Toward a History of Nichtwissen

Two important and rather thorny questions suggest themselves, to whose discussion the rest of this programmatic article is dedicated: Is a history of ignorance at all possible? And if so, what historical and methodological avenues does it open up? In what follows, I’ll address these questions simultaneously.

Cornel Zwierlein’s The Dark Side of Knowledge opens with the very succinct point that, as our ignorance is always larger than our knowledge, a complete introduction or general theory of a history of ignorance seems impossible. The historiographical challenges of writing histories of ignorance are indeed quite formidable but not insurmountable per se. They are like those of knowledge, although perhaps a little bit stranger.
The preliminary step when finding out what we are studying when we are studying ignorance historically is to shift the responsibility of definition to the actors: it is whatever they claim it is. At least one direct positive outcome of this step is that the amount of kinds, features, implications, and definitions of ignorance—today studied almost exclusively in twentieth- and twenty-first-century contexts—explodes. For example, medieval lawyers already had a rich and fine-grained terminology of *ignorantia*, emphasizing that ignorance could be either insuperable and inculpable (*ignorantia invincibilis*) or the fault of an individual (*ignorantia vincibilis*). From a recent exchange between Mulsow and Daston we know that such historicism, however indispensable and fruitful, cannot solve the historiographical problem of knowing what we study, not even in the case of knowledge. One issue is that some things that historical actors did not want to count (such as the practical knowledge of midwives or potters) we do want to include. Another is that various people in the same culture or epoch often held very different beliefs about what knowledge is. Hence, in order to avoid writing histories that either reaffirm dominant knowledge cultures or neglect marginalized ones, or both, it seems that we need to study epistemic hierarchies rather than knowledge *simpliciter*. Now, in the case of the history of ignorance, historicism does not even always seem to be an available option: we can, of course, study what people at various times and places self-consciously believed to be unknown or unknowable—itself a promising, yet largely unexplored line of research that challenges the boundaries of disciplinarity—but we cannot have the actors define what they themselves are ignorant of. Take the example of nescience, a kind of not knowing that can of necessity only be studied retrospectively—and that, as such, raises novel issues at the intersection of historicism and presentism. Here, shifting the responsibility of definition to the actors themselves is simply impossible because nescience exactly refers to situations where actors are unconscious of what they do not know.
One possible strategy of confronting the challenge of historicism in the context of a history of ignorance might be to borrow questions and terminology from ignorance studies. Over the past decade or so, this interdisciplinary field has brought together under one rubric different approaches to ignorance, including agnotology and feminist and analytic work on the epistemology of ignorance. Both approaches embrace ignorance as an object of study in its own right and have established it, for the first time, as a topic of serious scholarship. Going against the common sense of ignorance as bad and undifferentiated—which clearly resonates in labeling it as the “dark” side of (the history of) knowledge—they share a view of ignorance as something more than an empty negative and as something other than a temporary lack or absence of knowing. It has a presence of its own, which, while of course always related to knowledge, operates according to its own dynamics; it exists as a substantive epistemic practice, a deliberate activity taking place both on the level of the individual knower and the epistemic community. Nancy Tuana and Shannon Sullivan have recently argued that “we cannot fully understand the complex practices of knowledge production and the variety of features that account for why something is known, without also understanding the practices that account for not knowing.” What these studies show is not only that we cannot draw a clear-cut boundary between knowledge and ignorance; instead, both should be analyzed in their changing dialectical relationship and connections. They also make it abundantly clear that nonknowledge, and ignorance, for that matter, is inextricably connected with the production of who is and who isn’t a legitimate knower, and, therefore, with the reproduction of epistemic hegemony. Thus, for example, categorically, whenever and wherever experts define what knowledge is, they inevitably label other forms and means of knowing as either illegitimate, inferior, or irrelevant; historically, as knowledge became increasingly organized by academic disciplines, marginalized
actors and their knowledge gradually fell into obscurity. Hence, if it is epistemic hierarchies that might give the history of knowledge's subject matter sharper contours, we should begin to study knowledge's ever-changing counterpart, too.

Within ignorance studies, ignorance rather than nonknowledge has become the overarching term. This terminology is problematic as it carries the negative assumptions that the embrace of ignorance as more than the lack or absence of knowledge seeks to shed. Other sociologists, particularly those working in the tradition of reflexive modernity, prefer to use the term *Nichtwissen* in German, which is usually translated as “nonknowledge” in English, where it is a rare usage. Many other terms and concepts have been proposed over the years, and there even exist full-blown, tree-like taxonomies, which each come with their own limitations. Following Matthias Gross, who prefers to speak of there being various kinds of knowledge about what is unknown, the current consensus is that between the outer limits of knowledge, on the one hand, and nescience, on the other, there exists ignorance (i.e., knowledge about the limits of knowledge), nonknowledge (i.e., knowledge about what is not known that is further explored), and negative knowledge (i.e., knowledge about what is not known that is considered as unimportant). Further distinctions, for instance of ignorance, have been made on the basis of such criteria as its recognition (known or unknown) and motivation (willful or unintentional), which leads to such hybrids as strategic ignorance.

Zwierlein has proposed to start historical work on ignorance with a basic set of terms and contexts to know what we are looking for when studying *Nichtwissen* historically. First, the terms ignorance, non- and negative knowledge, and nescience could be used to create a first understanding, performing the task of preliminary description. Since these terms have been conceived for latter-day purposes, however, when historians reproject them back into the past, two problems
might arise: reductionism of the historical source materials to pre-
formed terms, and reification of ahistorical terminology. Second, it
has been suggested to make a prior distinction concerning the con-
texts in which not knowing occurs. Before doing historical work,
any historian allegedly wants to be able to say that there is an episte-
mic (or “agnotic”) difference, for instance, between the Enlighten-
ment mathematician and the navigator guiding Dutch merchants
across the Levant: what they do not know is different and what they
do not know they do not know is not the same either. The reason is
obvious in the first case, where what they do not know is specific to
what they know, but not so in the second case, which refers to a more
or less completely unconscious absence of knowledge. However, in
order to be able to study one historical actor’s nescience rather than
another historical actor’s nescience or the nescience of an entire cul-
ture or epoch, it seems that we must somehow assume a difference
between everything which that actor does not know he does not know
and all unknowns unspecific to what he knows. That is to say, for in-
stance, in the study of the Enlightenment mathematician, uncon-
scious practical or intuitive incompetencies are not included in the
realm of his nescience, even though there seems to be no nonarbi-
trary way to strictly separate these from any future theoretical knowl-
edge currently unavailable to him. Thus, even though making prior
distinctions concerning the character and context of what is not
known seems necessary (historiographically speaking), it is also highly
problematic (historically speaking).

It is problematic, too, because it sits uncomfortably with the histo-
rian’s aim to account for the dynamic character of knowledge produc-
tion. This production exactly takes place at the fluid border between
knowing and not knowing, for example, by turning ignorance into
nonknowledge, which eventually may lead to new knowledge. Any
historical study of ways and strategies of not knowing must allow
for connections and interactions between different kinds and forms
of knowledge of the unknown and the often unexpected and surprising ways in which these can change over time. Recently studied examples range from the relationship between specifications of ignorance by Venetian protoprobabilistic abicisti and Tuscan merchants calculating risks and the role of different unknowns in the redesign of former surface mining areas in the east of Germany.42 Put in more general terms, it is quite possible that, say, practical negative knowledge at times informs theoretical nonknowledge or, say, that theoretical nescience hides in practical know-how. With an eye to understanding the full dynamics of human epistemic development, it thus seems crucial not to make prior distinctions between the character of what one or the other actor does not know. Given that there is no direct access whatsoever from ignorance to knowledge, let alone from nescience to knowledge, any epistemic factor relevant to bringing about the intermediary step of nonknowledge should be accommodated for in historical research.

From what has been said, it may be clear that the tension between studying notions of the unknown and studying the unknown in process is related to the chosen level of analysis. Like knowledge, the production and circulation of not knowing seems to take place on many different levels (individual, society, community) and across different dimensions (space and time). I’ll briefly point to some of the methodological problems involved when studying these levels and dimensions, both as such and in their interrelations.

One interesting problem concerns the differences and overlaps between the ways in which one individual actor is able to not know something. Take the well-known example of experimental research.43 On the one hand, experimenters can create set-ups that allow them to act in a state of ignorance about one or the other unknown. On the other hand, just as there is always an indefinite amount of potentially important yet hidden knowns at play when doing experiments (what Harry Collins calls “mismatched saliences”), there also exist an infinite
number of unknowns wholly irrelevant to the experimenters’ research.44 How to account for this difference and how to distinguish relevant from irrelevant knowledge-specific ignorance on the level of individual or collective actions and choices? Another problem is whether specifications of the unknown and ways of turning ignorance into knowledge have general features that can be studied and compared for different contexts, yielding generalizations that span epochs and cultures. It might perhaps even be possible to rethink humanism, the Renaissance, and later the Scientific Revolution in terms of a part of society collectively becoming aware of what is not known, thereby propelling the major processes known under those names.45

Both unknowns and ways of knowing the unknown can be transmitted and circulated across different geographies and chronologies. These processes may involve conflicts, blockages, and translations that, via go-betweens like brokers and media, can either obscure, delegitimize, or problematize knowledge or come to exist as counter-knowledge. Their study could not only expand the scope of the currently prominent study of the circulation of knowledge but also open up another, much wider angle on the establishment and development of epistemic hierarchies.46 One example, in this regard, is furnished by migrant knowledge, a relatively new research topic at the intersection of the history of knowledge and migrant history: migrants’ own experiences of discriminatory practices can potentially counter so-called racial knowledge by exposing it as an instance of ignorance.47 Another example may be found in anarchist history, where much attention has been drawn to indigenous peoples’ deliberate choice to avoid state-based, knowledge-driven “civilization.”48 Such examples question traditional assumptions about power and knowledge and, more specifically, about global knowledge circulation, which was long held to mean transfer of knowledge from (Western) center to (colonial) periphery. The new approach of a history of Nichtwissen may advance recent, more nuanced studies of the complexities and ambiguities of
knowledge circulation in contexts of asymmetrical power relationships. (One interesting recent line of study is called “epistemic decolonization.”) What it could help lay bare are exactly the less highly valued, sometimes subversive knowledge practices and processes of marginalization of traditional and subaltern knowledges. Next to spatiality, not knowing also seems to have its own temporal significance. From twentieth-century history of science we know that scientific knowledge does not simply increase cumulatively over time. A fascinating problem is to see what this tells us about the decrease of ignorance over time. What, for instance, is the relation between the unknowns and the notions of the unknowable of modern physics as compared to those of classical physics: Are they different? Are there less or more of them? Are they somehow better, and if so, in what sense? One task of a future history of knowledge could be to write alternative histories of science, histories that explore both new geographies and new temporalities. Importantly, also here, this does not just mean to expand the subject matter of the history of science but to investigate its boundaries, by rethinking what stories we tell about knowledge as well as how we tell them. That is to say, it might be time for the history of knowledge both to retell the history of science and to tell different stories, whether these are alternative or counterhistories, counterfactual or nonlinear narratives. The topic of Nichtwissen is as much a challenge as an opportunity, in this regard: given its counterintuitive nature, studying it historically offers historians a chance to explore different, new, and sometimes counterintuitive historiographies.

Conclusion: A Future History of Knowledge

Taken together, for all its historiographical challenges, the historical study of what, for lack of a better English term, may be called not knowing has much to offer the history of knowledge. First of all, it gives further meaning to the fact that the history of knowledge
does not just expand the boundaries of the history of science but investigates the boundaries between different forms of science, different forms of knowledge, and different forms of not knowing, in all possible combinations. Moreover, it shows that many of the fundamental questions at the heart of the history of knowledge—about the production and circulation of knowledge, about basic epistemic categories as well as their interrelations and mutual constitution—are, in fact, questions about the changing and hierarchical connections between the known and the unknown, between knowing and not knowing, between the knowledgeable and the unknowledgeable. What counts as a genuine contribution to knowledge? How do classifications among kinds of knowledge reshuffle? How do new ways of knowing and new forms of knowledge emerge? To answer and perhaps even to fully and properly address such central questions, we need to ask others, too: What counts as unknown and what is believed to be unknowable in a given epoch and culture? What knowledge was delegitimized, ignored, devalued, or suppressed as ignorance? Who was held to be unknowledgable? Indeed, it is the understanding of epistemic hierarchies that rank what can and cannot be known, what is and what isn’t worth knowing, and who is and who isn’t capable of knowledge, that seems to matter most today: with an eye to ending our ignorance of ignorance in the near future and, thereby, to rethinking science in the 2020s and beyond, it might well be what matters most when studying human knowledge historically.
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1. See Peter Burke, “Response,” *Journal for the History of Knowledge* (forthcoming).

2. See Johan Östling, David Larsson Heidenblad, Erling Sandmo, Anna Nilsson Hammar, and Kari H. Nordberg, eds., “The History of Knowledge and the Circulation of Knowledge: An Introduction,” in *Circulation of Knowledge: Explorations in the History of Knowledge* (Lund: Nordic Academic Press, 2018), 9–33. There are Wissensgeschichte in Germany, Lieux de savoir in France, and kunskapshistoria in the Nordic region; cf., e.g., Peter Burke, *What Is the History of Knowledge?* (Cambridge: Polity, 2016); Johan Östling, “Vad är kunskapshistoria?,” *Historisk tidsskrift* 135 (2015): 109–19; Christian Jacob, ed., *Lieux de savoir: Espaces et communautés* (Paris: Albin Michel, 2007); Christian Jacob, ed., *Lieux de savoir: Les mains de l’intellect* (Paris: Albin Michel, 2010).

3. Lorraine Daston, “The History of Science and the History of Knowledge,” *KNOW: A Journal on the Formation of Knowledge* 1 (2017): 131–54. See also Burke, *What Is the History of Knowledge?*, 102–3.

4. Suzanne Marchand, “How Much Knowledge Is Worth Knowing? An American Intellectual Historian’s Thoughts on the Geschichte des Wissens,” *Berichte zur Wissenschaftsgeschichte* 42 (2019): 126–49, https://doi.org/10.1002/bewi.201900005.

5. See Daston, “History of Science and the History of Knowledge”; Martin Mulso and Lorraine Daston, “History of Knowledge,” in *Debating New Approaches*
to History, ed. Marek Tamm and Peter Burke (London: Bloomsbury, 2019), 159–87; and Jürgen Renn, “From the History of Science to the History of Knowledge—and Back,” Centaurus 57 (2015): 37–53.

6. Burke, “Response.”

7. Sven Dupré and Geert Somsen, “The History of Knowledge and the Future of Knowledge Societies,” Berichte zur Wissenschaftsgeschichte 42 (2019): 186–99.

8. Compare Peter Dear, “Science Is Dead; Long Live Science,” Osiris 27 (2012): 37–55; Jan Golinski, “Is It Time to Forget Science? Reflections on Singular Science and Its History,” Osiris 27 (2012): 19–36; Dupré and Somsen, “History of Knowledge.”

9. Marchand, “How Much Knowledge Is Worth Knowing?,” 144.

10. See François Hartog, Regimes of Historicity: Presentism and Experiences of Time, trans. Saskia Brown (New York: Columbia University Press, 2015); and Marek Tamm and Laurent Olivier, eds., “Introduction: Rethinking Historical Time,” in Rethinking Historical Time: New Approaches to Presentism (London: Bloomsbury Academic, 2019), 1–22.

11. See, e.g., Stefan Böschen and Peter Wehling, Wissenschaft zwischen Folgenverantwortung und Nichtwissen (Wiesbaden: VS Verlag für Sozialwissenschaften, 2004); Peter Wehling, Im Schatten des Wissens? Perspektiven der Soziologie des Nichtwissens (Konstanz: Universitätsverlag Konstanz, 2006), and “Jenseits des Wissens? Wissenschaftliches Nichtwissen aus soziologischer Perspektive,” Zeitschrift für Soziologie 30 (2001): 465–84.

12. See, e.g., Kristian H. Nielsen and Mads P. Sørensen, “How to Take Non-Knowledge Seriously, or ‘The Unexpected Virtue of Ignorance,’” Public Understanding of Science 26 (2017): 385–92; and Holger Hoffmann-Riem and Brian Wynne, “In Risk Assessment, One Has to Admit Ignorance,” Nature 416 (2002): 123, https://doi.org/10.1038/416123a.

13. Jürgen Renn makes part of this point very strongly in his new book, The Evolution of Knowledge: Rethinking Science for the Anthropocene (Princeton, NJ: Princeton University Press, 2020).

14. See, in this regard, e.g., Dupré and Somsen, “History of Knowledge”; Rens Bod, “How a New Field Could Help Save the Humanities,” Chronicle of Higher Education, February 19, 2017; and Deborah R. Coen, “Climate Change and the Humanities: A Historical Perspective,” Items, January 9, 2018.

15. The word “agnotic” is not a formally recognized word in any dictionary, and probably with good reason. It is derived from the term “agnotology,” meaning the study, logia, of not knowing, agnosis.
16. Over the past few years, interest in the history of the history of science has grown rapidly, at least partly from the wish to know where it stands now and to fathom what its future might bring. For overviews, see Lorraine Daston, “Science, History of,” in *International Encyclopedia of the Social and Behavioral Sciences*, ed. James D. Wright (Oxford: Elsevier, 2015), 241–47; Robert Fox, “Fashioning the Discipline: History of Science in the European Intellectual Tradition,” *Minerva* 44 (2006): 410–32; and James Poskett, “Science in History,” *Historical Journal* 63, no. 2 (2020): 209–42, https://doi.org/10.1017/S0018246X18000195. For recent trends, see Robert E. Kohler and Kathryn M. Olesko, eds., *Clio Meets Science: The Challenges of History* (Chicago: University of Chicago Press, 2012).

17. Burke, *What Is the History of Knowledge?*, 5.

18. “Creating a Knowledge Society in a Globalizing World (1450–1800)” was a collaboration project, 2015–19, between the Descartes Centre for the History and Philosophy of the Sciences and the Humanities (Utrecht University), Max Planck Institute for the History of Science (Berlin), Netherlands Institute for Advanced Study (Amsterdam), and Huygens ING (The Hague), with Sven Dupré and Wijnand Mijnhardt as principal investigators.

19. The last few decades of philosophical research have seen a growing interest in virtue in epistemology. As in the case of history, the systematic study of the nature, identity, and epistemic significance of intellectual vices has not yet received the same attention, although Quassim Cassam has recently provided a fruitful first philosophical step in his *Vices of the Mind: From the Intellectual to the Political* (Oxford: Oxford University Press, 2018).

20. See, e.g., Christiaan Engberts and Herman Paul, “Scholarly Vices: Boundary Work in Nineteenth-Century Orientalism,” in *Epistemic Virtues in the Sciences and the Humanities* (Cham: Springer, 2017), 79–90.

21. Martin Mulsow, *Prekäres Wissen: Eine andere Ideengeschichte der Frühen Neuzeit* (Berlin: Suhrkamp, 2015).

22. See Stevan Harnad, “Post-Gutenberg Galaxy: The Fourth Revolution in the Means of Production of Knowledge,” *Public-Access Computer Systems Review* 2 (1991): 39–53. See also, e.g., David J. Spiegelhalter and Hauke Riesch, “Don’t Know, Can’t Know: Embracing Deep Uncertainties When Analyzing Risks,” *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 369 (2011); and Jerome R. Ravetz, “The Sin of Science: Ignorance of Ignorance,” *Knowledge* 15 (1993): 157–65. Interestingly, as the science policy world began to realize the limits of risk as an all-encompassing frame, it gradually accepted the idea of uncertainty, which, however, is now also being scientized.
23. See Burke, “Response.”

24. Claudia Aradau, “Assembling (Non)knowledge: Security, Law, and Surveillance in a Digital World,” International Political Sociology 11 (2017): 327–42; Matthias Gross, “Risk as Zombie Category: Ulrich Beck’s Unfinished Project of the ‘Non-knowledge’ Society,” Security Dialogue 47 (2016): 386–402.

25. Louise Amoore, The Politics of Possibility: Risk and Security beyond Probability (Chapel Hill, NC: Duke University Press, 2013); Ulrich Beck and Peter Wehling, “The Politics of Non-knowing: An Emerging Area of Social and Political Conflict in Reflexive Modernity,” in The Politics of Knowledge, ed. Patrick Baert and Fernando Domínguez Rubio (London: Routledge, 2012), 33–57. There is an interesting history to tell of how notions of the centrality of ignorance and the unknown in science and society changed throughout the twentieth and twenty-first centuries, ranging from Du Bois-Reymond to Ravetz and from Merton to Proctor.

26. Robert N. Proctor, Cancer Wars: How Politics Shapes What We Know and Don’t Know about Cancer (New York: Basic Books, 1995).

27. Linsey McGoey, The Unknowers: How Strategic Ignorance Rules the World (London: Zed Books, 2019). See also Philip Mirowski, Never Let a Serious Crisis Go to Waste: How Neoliberalism Survived the Financial Meltdown (London: Verso, 2014); and Naomi Oreskes and Erik M. Conway, Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming (New York: Bloomsbury, 2010).

28. Brian Balmer, Secrecy and Science: A Historical Sociology of Biological and Chemical Warfare (Abingdon: Routledge, 2012); Claudia Aradau and Rens van Munster, Politics of Catastrophe: Genealogies of the Unknown (Abingdon: Routledge, 2011).

29. Compare Pierluigi Contucci, Andrea Omicini, Danilo Pianini, and Alina Sirbu, eds., The Future of Digital Democracy: An Interdisciplinary Approach (Cham: Springer, 2018); Nico Stehr, “Knowledge and Non-knowledge,” Science, Technology and Innovation Studies 8 (2012): 3–13. See also Henning Hopf, Alain Krief, Goverdhan Mehta, and Stephen A. Matlin, “Fake Science and the Knowledge Crisis: Ignorance Can Be Fatal,” Royal Society Open Science 6 (2019): 190161.

30. See Cornel Zwierlein, The Dark Side of Knowledge: Histories of Ignorance, 1400 to 1800 (Leiden: Brill, 2016), introduction.

31. See the chapters in Part I of Zwierlein, Dark Side of Knowledge.

32. Mulsow and Daston, “History of Knowledge.”

33. One particularly interesting, albeit highly theoretical, exception, in this regard, is Arkady Plotnitsky, The Knowable and the Unknowable: Modern Science, Nonclassical Thought, and the “Two Cultures” (Ann Arbor: University of Michigan Press, 2002).
34. See Matthias Gross and Linsey McGoey, eds., *Routledge International Handbook of Ignorance Studies* (London: Routledge, 2015) for an overview. For agnotology, see Robert N. Proctor and Londa Schiebinger, eds., *Agnotology: The Making and Unmaking of Ignorance* (Stanford, CA: Stanford University Press, 2008); for feminist epistemology of ignorance, see Shannon Sullivan and Nancy Tuana, eds., *Race and Epistemologies of Ignorance* (Albany, NY: SUNY Press, 2007); and Cynthia Townley, *A Defense of Ignorance: Its Value for Knowers and Roles in Feminist and Social Epistemologies* (Lanham, MD: Rowman & Littlefield, 2011); and for analytic epistemology of ignorance, see Rik Peels and Martijn Blaauw, eds., *The Epistemic Dimensions of Ignorance* (Cambridge: Cambridge University Press, 2016).

35. Nancy Tuana and Shannon Sullivan, “Introduction: Feminist Epistemologies of Ignorance,” *Hypatia* 21, no. 3 (2006): vii–ix, at vii.

36. See Simone Lässig, “The History of Knowledge and the Expansion of the Historical Research Agenda,” *German Historical Institute Bulletin* 59 (2016): 29–58, at 51.

37. Compare Lorraine Daston, “What Isn’t the History of Knowledge,” unpublished Dan David Prize Lecture, 2018, https://youtube.com/watch?v=SDzVaBj492s, accessed December 1, 2019; Mulsow and Daston, “History of Knowledge.”

38. Matthias Gross, “The Unknown in Process: Dynamic Connections of Non-Knowledge and Related Concepts,” *Current Sociology* 55 (2007): 742–59.

39. Linsey McGoey, “Strategic Unknowns: Towards a Sociology of Ignorance,” *Economy and Society* 41 (2012): 1–16.

40. Zwierlein, *Dark Side of Knowledge*, 1–2.

41. Compare Jaana Parviainen, “‘Imagine Never Not Knowing’: An Epistemological Framework for Understanding Negative Knowledge in Augmented Reality,” in *Augmented Reality: Reflections on Its Contribution to Knowledge Formation*, ed. José María Ariso (Berlin: de Gruyter, 2017), 195–216; Stuart Firestein, *Ignorance: How It Drives Science* (Oxford: Oxford University Press, 2012); Karin Knorr Cetina, *Epistemic Cultures: How the Sciences Make Knowledge* (Cambridge, MA: Harvard University Press, 1999); Hans-Jörg Rheinberger, “Science and Experiment,” in *Scientific Knowledge and the Transgression of Boundaries*, ed. Bettina-Johanna Krings, Hannot Rodríguez, and Anna Schleisiek (Wiesbaden: Springer, 2016), 23–34.

42. See Massimo Sargiacomo, Stefano Coronella, and Chiara Mio, eds., *The Origins of Accounting Culture: The Venetian Connection* (New York: Routledge, 2018); and Matthias Gross, *Ignorance and Surprise: Science, Society, and Ecological Design* (Cambridge, MA: MIT Press, 2010).
43. See, e.g., Hans-Jörg Rheinberger, “Nichtverstehen und Forschen,” in Kultur Nicht Verstehen: Produktives Nichtverstehen und Verstehen als Gestaltung, ed. Juerg Albrecht, Jörg Huber, and Kornelia Imesch (Zurich: Springer, 2005), 75–87; and Wehling, “Jenseits des Wissens?”

44. Harry Collins, Tacit and Explicit Knowledge (Chicago: University of Chicago Press, 2010), chap. 4.

45. See Zwierlein, Dark Side of Knowledge, sec. 3.3, for this suggestion.

46. On the circulation of knowledge, see Jim Secord, “Knowledge in Transit,” Isis 95 (2004): 654–72; and recent work in Östling et al., Circulation of Knowledge.

47. For an introduction to the topic of the history of migrant knowledge, see Simone Lässig and Swen Steinberg, “Knowledge on the Move: New Approaches toward a History of Migrant Knowledge,” Geschichte und Gesellschaft 43 (2017): 313–46. See also “Knowledge and Young Migrants,” special issue, KNOW: A Journal on the Formation of Knowledge 3, no. 2 (2019). Recently, Maria Alexopoulou has analyzed the relation between racial knowledge and the production of ignorance in the context of German immigration in “Producing Ignorance: Racial Knowledge and Immigration in Germany,” History of Knowledge Blog, July 25, 2018, http://historyofknowledge.net/2018/07/25/producing-ignorance-racial-knowledge-and-immigration-in-germany, accessed November 28, 2019.

48. James C. Scott, The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia (Singapore: NUS Press, 2010).

49. Fabrizio Baldassarri and Matthias Roick, the organizers of a recent conference (“Telling a Different Story: Non-Linear Narratives in Early Modern History”), which will take place in Bucharest in March 2020, have called for what they call “non-linear narratives,” urging historians to explore alternative paths in the narration of histories of knowledges. On alternate, counterfactual, and counter history, see, e.g., Richard J. Evans, Altered Pasts: Counterfactuals in History (Waltham, MA: Brandeis University Press, 2013); and Kathleen Singes, Alternate History: Playing with Contingency and Necessity (Berlin: de Gruyter, 2013).