

On Knowledge

Remarks from an Epistemological Perspective

Norbert Ricken

»One is often bewitched by a word«, Ludwig Wittgenstein noted in ›On Certainty‹—and added: »For example, by the word ›know‹.«¹ To be ›bewitched‹ here means to be as much confused as captivated, even to be estranged within one's own domain: »I don't know my way about«, which Wittgenstein himself identified as »the form« of »a philosophical problem«. ² This peculiar process of bewilderment and estrangement—of being seemingly familiar with something, yet faltering when being asked about it—may apply to many concepts, but it is of particular significance in the case of ›knowledge‹. For scarcely any other concept occupies such a central position not only in epistemological or philosophy of science discourses, but also in everyday and societal contexts, marking a fundamental dimension of human relations to the world. ›Knowledge‹—one might say—signifies the attempt to secure one's own understanding of and relation to the world, and in doing so it inevitably reawakens the very doubts it seeks to dispel.

It is thus not surprising that definitions and interpretations of ›knowledge‹ vary significantly, ranging from ›justified true belief‹ to what someone personally believes to be true, with numerous variations between these poles. These contrasting conceptions do not stand in equal opposition; rather, they form a gradient—one in which, depending on discourse and era, sometimes the strict conception of ›knowledge‹ as ›justified true belief‹ and at other times the more relativistic notion of ›individual truth‹ has been predominant. It is not unjustified to characterize the former as a traditional, sometimes even outdated, understanding of ›knowledge‹³ and, in contrast, to emphasize the (late) modernity status of the milder, because

1 Wittgenstein, Ludwig (1969): *On Certainty* [1949–1951], Oxford: Blackwell, § 435. Unless otherwise stated, the titles of the German-language publications mentioned in the text have been translated into English. Translated quotations from German-language publications are marked as own translations; all other quotations are in the original language.

2 Wittgenstein, Ludwig (1953): *Philosophical Investigations* [1945–1949], Oxford: Blackwell, § 123.

3 Cf. Pulte, Helmut (2023): »Klassisch – Modern – Digital? Eine kleine Geschichte und Systematik des Wissensbegriffs, mit einer Note zur digitalen Bildung«, in: Sandra Aßmann/Norbert

less demanding, version of knowledge. ›Knowledge‹, as we might add from this perspective, does also imply ›truth‹, since »one may [and must] assume that knowledge is true knowledge«. ⁴ Yet, as Luhmann argues, its value is not measured by its correspondence to the world, but—being a symbolically generalized medium of communication—exclusively by its capacity to facilitate further communication. Whereas for many years, indeed decades, the constructivist perspective has dominated the understanding of ›knowledge‹, in recent years—both with so-called ›new realism‹ ⁵ and especially in debates about ›post-truths‹ ⁶—representationalist or positivist conceptions of ›knowledge‹ have re-emerged, emphasizing the factuality of ›knowledge‹, albeit without addressing the well-founded objections that, since the 1980s at the latest, have caused a shift in our understanding of knowledge. ⁷

However, to avoid getting caught in such pendular movements, it seems to be advisable to recall some of the fundamental elements of the epistemological discourse, in order to develop a robust understanding of knowledge. After a brief survey of concepts and key distinctions of ›knowledge‹ (1), I will thus discuss central issues of a more traditional understanding of knowledge and describe thus connected shifts (2). This may then be followed by a praxeological view on knowledge which is also indebted to the history of knowledge (3), before concluding with a short outlook at current debates on ›knowledge in virtual worlds‹ (4). Overall, this text thus rather aims at shedding light on the background of current ›knowledge discourses‹ instead of attempting to discuss current challenges.

1.

Even the attempt to gain an initial understanding of ›knowledge‹ in the etymological sense reveals different conceptual traditions. ⁸ While the German language distinguishes between two conceptualizations—›wissen‹ and ›(er-)kennen‹—by

Ricken (eds.): *Bildung und Digitalität. Analysen – Diskurse – Perspektiven*, Wiesbaden: Springer VS, pp. 275–312.

- 4 Luhmann, Niklas (1990): *Die Wissenschaft der Gesellschaft*, Frankfurt a.M.: Suhrkamp, p. 134. Translation by the author.
- 5 Cf. Ferraris, Maurizio (2014): *Manifest des neuen Realismus*, Frankfurt a.M.: Klostermann/Vittorio.
- 6 Cf. Krasmann, Susanne (2024): »Postfaktisch«, in: Ulrich Bröckling/id./Thomas Lemke (eds.): *Glossar der Gegenwart 2.0*, Berlin: Suhrkamp, pp. 313–323.
- 7 Cf. Glaserfeld, Ernst von (1981): »Einführung in den radikalen Konstruktivismus«, in: Paul Watzlawik (ed.): *Die erfundene Wirklichkeit. Wie wissen wir, was wir zu wissen glauben? Beiträge zum Konstruktivismus*, pp. 16–38.
- 8 Cf. Hardy, Jörg et al. (2005): »Wissen«, in: Joachim Ritter/Karlfried Gründer/Gottfried Gabriel (eds.): *Historisches Wörterbuch der Philosophie*, Darmstadt: Wissenschaftliche Buchgesellschaft, Volume 12, pp. 855–902.

English ›to know‹, derived from Old English ›cnawan‹, through Latin ›(co-)gnoscere‹ and Greek ›gnosis‹ referring to Proto-Indo-European ›gno‹, a tradition has pushed through that is still present in German ›kennen‹ and ›erkennen‹. This tradition encompasses both ›to be acquainted with‹ and ›to recognize something as being true‹ or ›to distinguish something or someone‹. German ›wissen‹, by contrast—via Middle High German ›wizzen‹ and Old High German ›wizzan‹, meaning ›to have seen‹—derives from Proto-Indo-European ›vid‹, which, like Latin ›videre‹ (German: ›to see‹), is associated with ›seeing‹ and ›light‹ and has a (now obsolete) counterpart in Old English ›wit‹. Compared to the broader meaning of ›know‹ and ›kennen‹, ›wissen‹ conveys the narrower meaning of ›having knowledge of something or someone so as to be able to make reliable statements‹.⁹

Also, the numerous distinctions by which ›knowledge‹ is both delimited and differentiated further illustrate the enormous difficulty of developing a clear, unified, and universally applicable concept of knowledge. On the one hand, whereas the triad ›opinion—belief—knowledge‹ not only marks different degrees of certainty but also of (practical) bindingness, so that ›knowledge‹ refers to both tested or certain and to normatively orienting convictions, and must be distinguished from mere opinions and strong beliefs, the sequence ›signs—data—information—knowledge‹, on the other hand, focuses on the incremental attribution of meaning through contextual embedding and interpretation. Neither signs as arbitrary markers nor data as collections of measurements or observations are meaningful by themselves; they only become meaningful information within structured contexts which can then be used to answer questions or solve problems. Although the distinction between ›information‹ and ›knowledge‹ is not always drawn,¹⁰ there are good reasons to mark this difference and to interpret ›knowledge‹ as ›interpreted information‹.¹¹ Interpretation here refers both to the relation to ›somebody‹ and to the evaluation and classification of information for the purpose of orientation or shaping of (that individual's) life practices. This also raises the question of whether machine knowledge can be qualified as ›knowledge‹ or must at first be regarded as information. However, if one follows this line of reasoning, it becomes clear that the designation of claims, beliefs, and attitudes as ›knowledge‹ does not simply mean a linear representation of objects or the world as a whole, for which ›b repr a‹ would be true;¹²

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- 9 Dudenredaktion (ed.) (2019): Duden. Deutsches Universalwörterbuch, Berlin: Dudenverlag. Translation by the author.
 - 10 Exemplarily cf. Spinner, Helmut F. (1994): Die Wissensordnung. Ein Leitkonzept für die dritte Grundordnung des Informationszeitalters, Opladen: Leske + Budrich, pp. 24–26., part. p. 27.
 - 11 Breidbach, Olaf (2008): Neue Wissensordnungen. Wie aus Informationen und Nachrichten kulturelles Wissen entsteht, Frankfurt a.M.: Suhrkamp, p.12. Translation by the author.
 - 12 Sandkühler, Hans Jörg (2014): ›Wissenskulturen. Zum Status und zur Funktion eines epistemologischen Konzepts‹, in: id. (ed.): Wissen. Wissenskulturen und die Kontextualität des Wissens, Frankfurt a.M.: Peter Lang, pp. 59–72, here p. 61.

rather, this perspective on knowledge implies a fundamental perspectivity, categoriality, and contextuality, which disrupts the simple form of linear representation and dissolves it into the relational configuration of a ›world-self-other relation‹.¹³ ›Knowledge‹ can thus only be explained reflexively—by its categoriality, perspectivity, and contextuality—so that every kind of knowledge must give expression both to the ›what‹ and the ›how‹ of knowing. This, however, results in ›knowledge‹ again and too easily being interpreted just as scientific or ›propositional knowledge‹.

Now, to counter such a reduction, numerous distinctions of the concept of knowledge itself have been mentioned and introduced into the epistemological discourse. As early as 1945 Gilbert Ryle pointed out to the difference between ›knowing that‹ and ›knowing how‹,¹⁴ each associated with different logics: ›knowing that‹ refers to truth conditions, while ›knowing how‹ depends on conditions of fulfillment; in psychology, this distinction is sometimes labelled as ›declarative‹ and ›procedural knowledge‹.¹⁵ This can then be linked to Michael Polanyi's distinction between ›explicit‹ and ›implicit‹ or ›tacit knowledge‹¹⁶ which, however, does not only point out to the often underestimated significance of an implicit knowledge—typically possessed in practice, in the sense of what was formerly ›knowing how‹—but it also raises the clearly broader question of whether and to what extent ›knowledge‹ can ever be fully explicated, so that also ›dark knowledge‹ or the ›ununderstood‹ may indeed be part of (supposedly ›positive‹) knowledge. These adjustments have led to further distinctions: meanwhile, following ›knowing how‹, there is talk not only of ›technical‹ and ›behavioral knowledge‹¹⁷ but also of ›bodily knowledge‹¹⁸ which brings into focus not only (self-)perception and knowledge of movement, but also the ›corporeality‹ of all interaction and the ›doing‹ of something moves into focus. Both corporeality and the materiality of things¹⁹ are thus crucial

13 Cf. Koller, Hans-Christoph (2023): *Bildung anders denken. Einführung in die Theorie transformativischer Bildungsprozesse*, Stuttgart: W. Kohlhammer, p. 16.

14 For the first time: Ryle, Gilbert (1945): »Knowing How and Knowing That«, in: *Proceedings of the Aristotelian Society* 46, pp. 1–16. Then in more detail: Ryle, Gilbert (1949): *The Concept of Mind*, Chicago: University of Chicago Press, pp. 25–61.

15 Roelle, Julian et al. (2023): *Lernen. Theorien und Techniken*, Paderborn: Brill/Schöningh, pp. 15–17.

16 Cf. Polanyi, Michael (2009): *The Tacit Dimension* [1966], Chicago/London: University of Chicago Press.

17 Tietgens, Hans (2000): »Arten des Wissens und ihre Relevanz für die Erwachsenenbildung«, in: *Report/Literatur- und Forschungsreport Weiterbildung* 45, pp. 109–115.

18 Keller, Reiner/Meuser, Michael (eds.) (2011): *Körperwissen*, Wiesbaden: VS Verlag für Sozialwissenschaften.

19 See Latour, Bruno (2007): »Eine neue Soziologie für eine neue Gesellschaft. Einführung in die Akteur-Netzwerk-Theorie, Frankfurt a.M.: Suhrkamp, and the related debate in Herbert Kalthoff et al. (2016): *Materialität. Herausforderungen für die Sozial- und Kulturwissenschaften*, Paderborn: Wilhelm Fink.

structural moments of (not only) sociological praxeology. However, the significance of ›non-knowledge‹ or ›negative knowledge‹²⁰ has also been moved into focus, insofar as ›knowledge‹ and ›non-knowledge‹ can precisely not be understood as being just complementary; rather, any kind of ›knowledge‹—simply for reasons of the fundamental revisability of all knowledge—is structurally permeated with ›non-knowledge‹ and itself contains much that is understood or is not fully explicable. To this—also significant for this volume—reformulation of knowledge one can finally add one last distinction, developed by Gottfried Gabriel in his initially rather traditional epistemological reflections.²¹ His distinction between ›propositional‹ and ›non-propositional knowledge‹ at first takes up the direction of both Gilbert Ryle and Michael Polanyi who also consider kinds of knowledge that cannot simply be reduced to factual statements and propositions; if this distinction is also related to the categoriality of all knowledge, it becomes clear that even propositional knowledge by itself refers to and depends on non-propositional knowledge.²² This coupling of the ›what‹ and ›how‹ of knowledge can, with Werner Heisenberg, be described as a kind of ›uncertainty relation‹, in that one cannot bring structural moments into sharp focus and a positive form at the same time, so that both structural obscurities of knowledge and a permanent reversibility of knowledge (through categorial shifts) are the inevitable result.

Even this—admittedly cursory—survey of the various concepts and theories of knowledge makes clear the difficulty, indeed the impossibility, of developing a somewhat consistent and coherent concept of knowledge. One might understand and accept this as a late-modern awareness of complexity, but conceptually one is constantly confronted with the intuition that the aspects of ›knowledge‹ described are not and cannot merely separate phenomena. Also the observation that ›knowledge‹ denotes both an epistemic content, an epistemic ability, and a thus resulting epistemic state²³ reinforces this perspective. Now, in his ›Philosophical Investigations‹, Ludwig Wittgenstein sketched a conceptual figure that may be helpful also here: »I can think of no better expression to characterize these similarities than ›family resemblances‹.«²⁴ These »family resemblances« are indeed not based on »common properties« but on their structural connections: »And I shall say: ›games‹ form a family.«²⁵ By ›knowledge‹, one might say, a structural aspect of human relations to the world might be marked by which ›propositional knowledge‹ only

20 Cf. Wehling, Peter (2006): *Im Schatten des Wissens? Perspektiven der Soziologie des Nichtwissens*, Konstanz: UVK.

21 Gabriel, Gottfried (2015): *Erkenntnis*, Berlin/Boston: de Gruyter.

22 Cf. *Ibid.*, pp. 57–69.

23 Hardy et al.: *Wissen*, p. 855.

24 Wittgenstein: *Philosophical Investigations*, § 67.

25 *Ibid.*

represents the tip of the iceberg. Against the tendency to regard the distinctions of knowledge sketched here as sometimes separate aspects of the same phenomenon and thus to render them inert, their (albeit non-substantial) interconnectedness should thus be emphasized.

2.

Like hardly any other formulation, Plato's definition of knowledge—namely, ›justified true belief‹, particularly developed in the Theaetetus dialogue—has been continuously transmitted and is until now the vanishing point of all definition attempts. In many respects, this definition is not only regarded as the philosophical epitome of ›knowledge‹ but also marks the core of a lifeworld understanding of knowledge. In Plato's argument, three elements—subjective conviction or opinion (»δόξα«), objective truth or correctness (»ἀλήθεια«), and logical justification or explanation (»λόγος«)—are connected in such a way that only their interplay can be considered an ›episteme‹ (»ἐπιστήμη«): »Now when a man gets a true judgment about something without an account, his soul is in a state of truth as regards that thing, but he does not know it; for someone who cannot give and take an account of a thing is ignorant about it. But when he has also got an account of it, he is capable of all this and is made perfect in knowledge«. ²⁶ Even though in the course of the dialogue also this conception of knowledge proves to be aporetic—since no clear distinction between presumably and demonstrably correct conceptions is possible (as Socrates concludes by the end of Theaetetus: »And so, Theaetetus, knowledge is neither perception nor true judgment, nor an account added to true judgment«²⁷)—, this definition is frequently invoked and as vehemently defended as it is contested whenever ›knowledge‹ is an issue. ²⁸ At the heart of these debates there is the question of how, after all, the ›truth‹ of a statement can be adequately grasped and justified.

However, the intensity of these debates can be understood only when one considers the ›crisis of truth‹²⁹—and often this crisis concerns a traditional, representationalist notion of truth.³⁰ Without being able here to consider the complex history of conceptions of truth,³¹ ›truth‹ was for a long time understood as the ›correspon-

26 Plato (1997): Complete Work. Edited, with Introduction and Notes, by Thomas M. Cooper, Indianapolis/Cambridge, MA: Hackett Publishing, p. 224/202c.

27 Ibid., p. 233/210b-c.

28 Cf. Pulte: Klassisch – Modern – Digital?, pp. 275–312.

29 Trawny, Peter (2021): Krise der Wahrheit, Frankfurt a.M.: S. Fischer.

30 Cf. Sandkühler, Hans Jörg (2009): Kritik der Repräsentation. Einführung in die Theorie der Überzeugungen, der Wissenskulturen und des Wissens, Frankfurt a.M.: Suhrkamp.

31 See e.g. Enders, Markus/Szaif, Jan (eds.) (2006): Die Geschichte des philosophischen Begriffs der Wahrheit, Berlin/New York: de Gruyter.

dence of a statement with the object« or—as in the classical formulation by Thomas Aquinas—as »adaequatio rei et intellectus«. ³² But what still appears plausible in everyday life—that a statement is true if it »fits«, i.e. if it corresponds to the facts—has, especially in twentieth-century philosophical discourses, become highly problematic. ³³ Two arguments are repeatedly raised against this »realist« conception: on the one hand, the limitation and, particularly, the conditionality of human perception, thus introducing the relevant Kantian distinction between the »object in itself« and »object as appearance«, ³⁴ sometimes translated as »thing in itself« and »thing as appearance«. ³⁵ »What the things may be in themselves I do not know, and also do not need to know, since a thing can never come before me except in appearance«. ³⁶ This emphasis on experience (as far as it depends on the senses), on the other hand, provokes the question of who could ever verify that any statement corresponds with a matter if each person can only know the thing according to their own perception, ³⁷ so that at best agreement is possible on the perspectival statements about something. Since the early 1980s at the latest it has thus become common to speak not of »representation« but of the »construction of reality«, ³⁸ thereby emphasizing both the impossibility of a realistic depiction and the constructivity and perception-dependence of every perspective—even down to the logic of neurological processes. These insights have long since become a matter of course in both scientific and everyday self-understandings and rarely provoke outrage—despite repeated attempts to rehabilitate some philosophical realism. ³⁹ For the concept of truth this means that the traditional, correspondence-theoretical version is now widely regarded as

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- 32 Thomas von Aquin (1986): *Von der Wahrheit [De veritate (Quaestio I)]*. Lateinisch-deutscher Text, ausgewählt, übersetzt und herausgegeben von Albert Zimmermann, Hamburg: Meiner, p. 8; see in more detail Kobusch, Theo (2006): »Adaequatio rei et intellectus. Die Erläuterung der Korrespondenztheorie der Wahrheit in der Zeit nach Thomas von Aquin«, in: Markus Enders/Jan Szaif (eds.): *Die Geschichte des philosophischen Begriffs der Wahrheit*, Berlin/New York: de Gruyter, pp. 149–166.
- 33 Cf. Skirbekk, Gunnar (ed.) (1977): *Wahrheitstheorien. Eine Auswahl aus den Diskussionen über Wahrheit im 20. Jahrhundert*, Frankfurt a.M.: Suhrkamp.
- 34 Kant, Immanuel (1781–1787/1998): *Critique of Pure Reason*. Translated and edited by Paul Guyer and Allen W. Wood, Cambridge: Cambridge University Press, p. 190/B69.
- 35 Cf. *ibid.*, p. 536/B567.
- 36 *Ibid.*, p. 375/A276–277.
- 37 Cf. Foerster, Heinz von (1990): »Wahrnehmen wahrnehmen«, in: Karlheinz Barck/Peter Gente/Heidi Paris (eds.): *Aisthesis. Wahrnehmung heute oder Perspektiven einer anderen Ästhetik*, Leipzig: Reclam, pp. 434–443.
- 38 Glasersfeld, Ernst von (1995): »Konstruktion der Wirklichkeit und des Begriffs der Objektivität«, in: Heinz Gumin/Armin Mohler (eds.): *Einführung in den Konstruktivismus*, München: Piper, pp. 9–40.
- 39 Cf. Ferraris: *Manifest des neuen Realismus*; Gabriel, Markus (2013): *Warum es die Welt nicht gibt*, Berlin: Ullstein.

being outdated or unfounded, even unfoundable, and has long since given way to other—especially coherence- and consensus-theoretical—notions of truth.⁴⁰ In addition to the (coherence and consistency) relations of knowledge to other kinds of knowledge and to the overall architecture of knowledge—which can be negotiated under the heading of ›knowledge order‹—precisely the social dimension of ›truth‹ as the capacity for assent and social validation has gained (perhaps excessive) weight.

For the concept of knowledge, this fundamental shift in the tectonics of truth at first results in a bracketing of (traditional) claims to truth and certainty in knowledge, so that ›knowledge‹ is understood as that which, at a given time and in a given society, can be »recognized as being true«.⁴¹ This basic attitude—to behave basically agnostically towards possible claims to truth« and not to examine whether and to what extent the arguments presented »were already one step closer to today's truth than others«⁴²—shapes the epistemological and, in particular, knowledge-historical discourses. This not only opens up the space for ›situated truths‹ but also—following Michel Foucault—draws attention to the interrelations of ›savoir‹ and ›pouvoir‹,⁴³ which then allows for focusing the question of the »fabrication of truth«—that is, the question of »how what counts as true and thus guides our speaking, thinking, acting, and deciding is made acceptable and enforced«, as described by the Research Training Group 2945 »Knowledge—Belief—Assertion« at Ruhr University Bochum.⁴⁴ This fundamental bracketing of knowledge claims thus also entails a plea for an understanding of ›knowledge‹ as »situated knowledges«,⁴⁵ which arises from an unrelenting critique of a merely asserted and impossible »objectivity«;⁴⁶ the (specifically male) epistemic posture of ›objectivity‹, it says, is only possible because—starting out from an »unmarked position«⁴⁷—it denies its own perspectivity, contingency, and social constructedness, establishing a kind of »god trick of seeing everything from nowhere«.⁴⁸ However, the reception of this understanding of »situated knowledges« often overlooks that not even the relativistic reversal of

40 Cf. Habermas, Jürgen (1973): »Wahrheitstheorien«, in: Helmut Fahrenbach (ed.): *Wirklichkeit und Reflexion. Walter Schulz zum 60. Geburtstag*, Pfullingen: Neske, pp. 211–266.

41 Sarasin, Philipp (2011): »Was ist Wissensgeschichte?«, in: *Internationales Archiv für Sozialgeschichte der deutschen Literatur (IASL)* 36:1, pp. 159–172, here p. 167. Translation by the author.

42 *Ibid.*, p. 172. Translation by the author.

43 Cf. Foucault, Michel (1975): *Surveiller et punir. Naissance de la prison*, Paris: Gallimard.

44 Cf. online: <https://grk2945.blogs.ruhr-uni-bochum.de> (last access: 13.11.2025). Translation by the author.

45 Haraway, Donna (1988): »Situated Knowledges. The Science Question in Feminism and the Privilege of Partial Perspective«, in: *Feminist Studies* 14:3, pp. 575–599.

46 *Ibid.*, p. 575.

47 *Ibid.*, p. 581.

48 *Ibid.*

›objectivity‹, based on a ›very strong social constructionist argument for all forms of knowledge claims‹,⁴⁹ offers a way out but is itself merely a variant of this ›god trick‹: ›Relativism is a way of being nowhere while claiming to be everywhere equally. [...] Relativism is the perfect mirror twin of totalization in the ideologies of objectivity‹.⁵⁰ Even in epistemological debates this has resulted in not only marking one's own situatedness within processes of recognition and knowledge but also in understanding it as a possible indicator of the validity of one's own perspective⁵¹—even if, as Florian Sprenger impressively demonstrates in his recent ›Genealogy of Situatedness‹,⁵² the positive determination of this situatedness does not and cannot succeed but itself produces fundamental distortions.

Against this background now, a proposal by Albrecht Koschorke, developed in his narratological reflections on ›Truth and Invention‹,⁵³ is of particular interest. There Koschorke at first distinguishes ›object reference‹, ›inference‹, and ›social reference‹ as ›three referential dimensions of cultural sign systems‹⁵⁴ which, at a second glance, can then be read as partial aspects of a narratologically conceived theory of truth and offer a possible way out of previous oppositions between correspondence, coherence, and consensus theories of truth. While social reference points out to how statements are ›embedded in communicative events and are attuned to the cognitive conditions of their human users‹,⁵⁵ so that social assent or assentability is foregrounded here, object reference marks the way in which, to which, and how one refers to extra-linguistic phenomena; in this context, the formulation of ›referring‹ to extra-linguistic realities, events, or phenomena does precisely not aim at any (im)possible ›correspondence‹ with them but seeks to uncover the mode of this reference: for instance, as an eyewitness and based on experience, but also on observation and experiment, I can refer to ›something‹, without any possibility and necessity to pass off this reference as an image or representation of this ›something‹; rather, it is a matter of marking the respective mode—that is the ›how‹—of reference and of specifying its relevance for the ›what‹. ›Both dimensions are necessary for the production of knowledge but cannot be reduced to or subsumed under one another‹.⁵⁶ Finally by inference Koschorke takes up the structuralist insight that the meaning of signs arises from their relation to one another—from their reference not to states

49 Ibid., p. 576.

50 Ibid., p. 584.

51 Cf. Sprenger, Florian (2024): ›Situiertheit‹, in: Ulrich Bröckling/Susanne Krasmann/Thomas Lemke (eds.): *Glossar der Gegenwart 2.0*, Berlin: Suhrkamp, pp. 346–358.

52 Sprenger, Florian (2025): *Ich-Sagen. Eine Genealogie der Situiertheit*, Berlin: August.

53 Koschorke, Albrecht (2017): *Wahrheit und Erfindung. Grundzüge einer Allgemeinen Erzähltheorie*, Frankfurt a.M.: Fischer.

54 Ibid., p. 343. Translation by the author.

55 Ibid. Translation by the author.

56 Ibid. Translation by the author.

of world affairs or ego states but to other, preceding or succeeding, signs⁵⁷—thus marking their mutual relations and (linguistic-)logical correlations.

Backed by this threefold reference, it becomes possible to do justice not only to the different aspects of knowledge—declarative and procedural knowledge, theoretical and practical knowledge, explicit and implicit knowledge—by their respective modalities, without giving a (misunderstood) priority to propositional knowledge. Rather, these dimensions of knowledge can also be understood as different modes of referring to something, each of which (must) satisfy different inferential logics of consistency and coherence—eyewitness accounts cannot be refuted by experimental measurements; theoretical insight does not invalidate practical experience—and (may) also be met with different forms of social assent. In my opinion, what is productive here is that ›object reference‹ is (again) recognized at all as a relevant dimension of statements, so that not only social assentability (social reference) and logical or semantic correlation (inference, especially consistency) are considered criteria for evaluating statements; to have it pointedly: it must be possible for one's own understandings of reality to fail in relation to the ›world‹, even if one has been subjectively convinced and has consensually agreed with others. Social reference and inference do not replace the aspect of referring to ›something‹, as some conceptions sometimes suggest; only the interweaving of all three dimensions allows for a specification of the respective degrees of certainty and may also help to moderate the pendular movements between ›objectivism‹ or ›realism‹ on the one hand and responding ›relativism‹ on the other.

While there is wide agreement on the significance of (linguistic-)logical inference and social reference for the understanding of knowledge, it remains at least open, if not contested, how the modally dimensioned object or factual reference can be conceptualized more precisely. Both ›representation‹ and ›construction‹ seem to carry associations that can be misleading; above all, it is the always assumed duality of ›world‹ and ›self‹ or ›object‹ and ›subject‹ that proves to be problematic and provokes oppositional figures of ›projection‹ and ›introjection‹. Whereas, realistically, the world is conceived as an ›external counterpart‹, in a constructivist sense the ›internal‹ and (multi-)perspectival construction of this world is emphasized; in both cases, however, the question of the adequacy of world apprehension comes to the fore. Even the (often cognitive-psychological) intertwining of both aspects—we represent ›world‹ internally and must then ›externally‹, i.e., symbolically, represent these ›internal representations‹⁵⁸—only reinforces this oppositional configuration. If, however, one focuses on ›involvement‹ (›Involviertsein‹) in each case,⁵⁹ as Agnes

57 Ibid., p. 332. Translation by the author.

58 Cf. Renn, Jürgen (2020): *The Evolution of Knowledge. Rethinking Science for the Anthropocene*, Princeton: Princeton University Press, pp. 60ff.

59 Heller, Agnes (1981): *Theorie der Gefühle*, Hamburg: VSA Verlag, pp.19-32.

Heller suggested decades ago (albeit with regard to emotions), then ›reality‹ arises first of all from the relational engagements of humans in the world. »Instead of saying what reality is like«, as Hans Jörg Sandkühler formulates in his ›Critique of Representation‹, »we should say of reality that it *comes into being* from open intentional (directed), engaged acts by knowing subjects«. ⁶⁰ Sandkühler continues: »By cognition, phenomenal reality is constituted insofar as it confers meaning to ›in itself‹ amodal reality by way of signs and symbols«⁶¹—which Sandkühler then terms »(re-)presentation«, meaning »to represent something as something«. ⁶² This way, representation as a »pictorial reproduction«⁶³ is rejected, without, conversely, giving too much space to the »burdens of subjectivity and relativity«⁶⁴ of the constructivist principle. Rather, within the framework of the concept of the ›embodied mind‹—developed, among others, by Francisco J. Varela in the wake of phenomenological traditions⁶⁵—it is now widely emphasized⁶⁶ that ›reality‹ arises in and from concrete, (inter-)corporeal and socially situated engagement with and within the world. ⁶⁷ What is thus gained is not only a perspective that leaves behind the duality of ›inside‹ and ›outside‹; rather, object reference—especially in its fundamental categoriality, i.e. the question of ›how‹ I refer to ›what‹—becomes understandable as the result of (always also) practical engagement with this ›what‹. For the concept of knowledge, precisely this doubling seems to be of great significance, so that ›knowledge‹ is always also reflexively constituted—as knowledge of the ›how‹.

Now these considerations, which can only be sketched here, allow for the formulation of an initial concept of knowledge:⁶⁸ knowledge in each case can now be understood as those conceptions and understandings that, at a given time, culture, and social community, (a) are regarded as being true (in the sense of a proven object or

60 Sandkühler: Kritik der Repräsentation, pp. 23f. Translation by the author.

61 Ibid., pp. 56ff. Translation by the author.

62 Ibid., p. 62. Translation by the author.

63 Ibid. Translation by the author.

64 Ibid., p. 24. Translation by the author.

65 Varela, Francisco J. et al. (2018): The Embodied Mind. Cognitive Science and Human Experience, Cambridge, MA: MIT Press.

66 Cf. Fingerhut, Joerg et al. (2017): Philosophie der Verkörperung. Grundlagentexte zu einer aktuellen Debatte, Berlin: Suhrkamp; Etzelmüller, Gregor et al. (eds.) (2017): Verkörperung. Eine neue interdisziplinäre Anthropologie, Berlin/Boston: de Gruyter.

67 See, with regard to ›knowledge‹: Fuchs, Thomas (2017): »Verkörperter Wissen – verkörperter Gedächtnis«, in: Gregor Etzelmüller/id./Christian Tewes (eds.): Verkörperung. Eine neue interdisziplinäre Anthropologie, Berlin/Boston: de Gruyter, pp. 57–78.

68 Cf. Ricken, Norbert et al. (2023): »Transformationen des Bildungswissens. Eine wissenstheoretische und -geschichtliche Perspektive auf digitale Wissenskulturen«, in: Sandra Aßmann/Norbert Ricken (eds.): Bildung und Digitalität. Analysen – Diskurse – Perspektiven, Wiesbaden: Springer VS, pp. 313–347, here pp. 319–326.

factual reference), (b) are socially shared (social reference), (c) can be plausibly justified and integrated into existing bodies of knowledge (inference), and thus (d) can be discussed or reflected upon in terms of their epistemic status (e.g. methodically or methodologically), and (e) are action-orienting or even action-guiding. From a historical point of view, this referential understanding of knowledge includes the fact that earlier—however also contemporary—cultures may maintain conceptions of ›something‹ as knowledge which they can justify and utilize within their own knowledge orders but which, in other—later, but sometimes also earlier—cultures must be regarded as unjustified or not well founded. Furthermore, the embedding of all knowledge in (encompassing) knowledge orders and architectures also makes clear that the ways of producing, storing, using, and socially sharing knowledge cannot be separated from each existing knowledge, and points out to concrete knowledge practices (and their materialities, locations, and infrastructures)—more precisely: the production and reception, storage or preservation as well as distribution and circulation—on the one hand and to encompassing knowledge cultures on the other (see chapter 3). At the same time, what is marked in each culture, time, and region as non-knowledge or even as ›precarious knowledge‹⁶⁹ is also an elementary component of these knowledge orders—and this is less (though also) because non-knowledge marks the field of which actors (as yet) have no knowledge (in the sense of a clearly delimited domain) but rather as a structural moment of every (however positive) knowledge, since every knowledge—at least in the modern understanding—is considered revisable due to its perspectivity and categoriality and thus always contains an element of non-knowledge (e.g. in the form of different knowledge).

3.

Against the background of a referential conception of knowledge it is understandable that also practices of knowledge have been attracting growing attention for a couple of years now. In this context, practices refer to routinized ways of doing things, thereby not only transcending the dual logic of action and structure and moving the interplay of embodied agents, material objects, and structuring frameworks such as places and infrastructures into focus.⁷⁰ With regard to knowledge, the focus is thus at first on the ways in which knowledge is produced and received, stored, and

69 Mulsow, Martin (2012): *Prekäres Wissen. Eine andere Ideengeschichte der Frühen Neuzeit*, Berlin: Suhrkamp.

70 Cf. Schatzki, Theodore R. (2002): *The Site of the Social. A Philosophical Account of the Constitution of Social Life and Change*, The University Park: The Pennsylvania University Press; Schäfer, Hilmar (ed.) (2016): *Praxistheorie. Ein soziologisches Forschungsprogramm*, Bielefeld: transcript; Alkemeyer, Thomas (2026): »The (Non-)Knowledge of Practice. Praxeological Reflections on the Concerted Formation of Knowledge in Practice«, in this volume.

circulated; even this dimensioning demonstrates that knowledge cannot at all be limited to ›propositional knowledge‹ and its discussion or verification but that even its validity depends on a much broader bundle of practices. If furthermore the scope is expanded, practices of observing, measuring, and experimenting, of publishing and discussing, as well as practices of reading, annotating, excerpting, and note-taking can be distinguished. Finally the various practices of collecting and ordering as well as the practices of transmission and tradition, teaching, and examination are of particular significance.⁷¹

Meanwhile the sheer volume of praxeological studies has become almost unmanageable:⁷² Early on, Bruno Latour and Steve Woolgar⁷³ as well as particularly Karin Knorr Cetina⁷⁴ independently addressed issues of natural-scientific knowledge production and, in their ethnographic studies of natural-scientific laboratory work, highlighted the fabricated nature of knowledge. What could initially be read as a critique of the traditional self-understanding of science—Latour and Woolgar wrote: »scientists [...] also systematically conceal the nature of activity which typically gives rise to their research reports«⁷⁵—has increasingly transformed into a new focus »on the architecture—and the diversity—of the manufacturing systems from which truth effects arise [...], on the empirical strategies of these systems, on their configuration of objects, technologies, and epistemic subjects, on the role of the laboratory etc.«.⁷⁶ The insight into the constitutive significance of scientifically established practices has changed the perspective on knowledge and enabled a critique of representation without at the same time lapsing into constructivist relativism. Rather, (natural-scientific) knowledge production becomes understandable as a way of generating knowledge in both socially and institutionally and materially structured ways; the constructedness of knowledge does precisely not correspond to subjective arbitrariness. Knowledge arises from knowledge-cultural contexts and owes its validity indeed to these contexts.⁷⁷

71 Cf. Füssel, Marian (2021): *Wissen. Konzepte – Praktiken – Prozesse*, Frankfurt a.M.: Campus.

72 See Rheinberger, Hans-Jörg (2017): »Historische Epistemologie«, in: Marianne Sommer/Staffan Müller-Wille/Carsten Reinhardt (eds.): *Handbuch Wissenschaftsgeschichte*, Stuttgart: J.B. Metzler, pp. 32–45 for an introduction.

73 Cf. Latour, Bruno/Woolgar, Steve (eds.) (1979): *Laboratory Life. The Social Construction of Scientific Facts*, London: Sage.

74 Cf. Knorr Cetina, Karin (1980): »Die Fabrikation von Wissen. Versuch zu einem gesellschaftlich relativierten Wissensbegriff«, in: *Kölner Zeitschrift für Soziologie und Sozialpsychologie (KZfSS)* (Sonderheft 22: Wissenssoziologie, Edited by Nico Stehr und Volker Meja), pp. 226–245.

75 Latour/Woolgar: *Laboratory Life*, p. 28.

76 Knorr Cetina, Karin (1999): *Epistemic Cultures. How the Sciences Make Knowledge*, Cambridge, MA: Harvard University Press, p. 12.

77 See Sandkühler: *Wissenskulturen* for a more detailed discussion.

Analogous to these thus far natural science-oriented studies, Steffen Martus and Carlos Spoerhase have recently presented a ›praxeology of the humanities‹,⁷⁸ by which they seek to reconstruct the practices of scholarly work in the humanities—often with reference to the works by Peter Szondi and Friedrich Sengle—and drew a long line from ›preparatory work‹⁷⁹ via ›coordinating reading practices‹⁸⁰ and ›problematizing‹⁸¹ to ›theorizing and publishing‹.⁸² Unlike the studies on scientific knowledge cultures, however, this praxeology is less concerned with highlighting the ›constructedness‹ of knowledge in the humanities and with countering objectivity claims—which, after all, have never been asserted in the humanities—rather, the authors intend to but break up the image of ›intellectual work‹ as a ›solitary desk activity‹.⁸³ Also within sociology the question of specifically sociological knowledge practices and cultures is now being addressed.⁸⁴

In terms of knowledge, however, the above sketched shift towards the question of the constitution and internal logic of knowledge cultures is eminently stimulating. ›Knowledge cultures‹ are initially defined as ›those amalgams of arrangements and mechanisms—bonded through affinity, necessity, and historical coincidence—which, in a given field, make up *how we know what we know*. Epistemic cultures are cultures that create and warrant knowledge‹.⁸⁵ Knowledge cultures do thus not only determine the genesis of knowledge but also its validity, by regulating ›questions posed, epistemic aims, possible solutions, claims to validity and standards of justification, as well as culture-specific practices and techniques and, in this context, recognized norms, values, and rules‹.⁸⁶ As specific cultures, however, they only become apparent by their difference, by their shifts in the course of historical change—and are only rarely as visibly staged as in Umberto Eco's novel ›The Name of the Rose‹,⁸⁷ where the monastic culture of merely passed on religious knowledge clashes with the modern ideal of hypothesis-driven and progressive in-

78 Martus, Steffen/Spoerhase, Carlos (2023): *Geistesarbeit. Eine Praxeologie der Geisteswissenschaften*, Berlin: Suhrkamp.

79 Ibid., p. 71. Translation by the author.

80 Ibid., p. 292. Translation by the author.

81 Ibid., p. 264. Translation by the author.

82 Ibid., p. 186. Translation by the author.

83 Ibid., p. 11. Translation by the author.

84 Cf. Schmidt, Robert (2016): ›Theoretisieren. Fragen und Überlegungen zu einem konzeptionellen und empirischen Desiderat der Soziologie der Praktiken‹, in: Hilmar Schäfer (ed.): *Praxistheorie. Ein soziologisches Forschungsprogramm*, Bielefeld: transcript, pp. 245–263; Keller, Reiner/Poferl, Angelika (eds.) (2018): *Wissenskulturen der Soziologie*, Weinheim/Basel: Beltz Juventa.

85 Knorr Cetina: *Epistemic Cultures*, p. 1.

86 Sandkühler: *Wissenskulturen*, p. 60. Translation by the author.

87 Eco, Umberto (1982): *Der Name der Rose*, München: Hanser.

quiry—and ultimately collapses.⁸⁸ Even though the sharp opposition of paradigms of scientific forms of knowledge, as early on advocated by Thomas Kuhn as the »structure of scientific revolutions«,⁸⁹ was sharply criticized and has meanwhile been modified,⁹⁰ since the change of scientific knowledge happens rather slowly and, through engagement with previous knowledge, often only step by step and peaceably—that is, rather evolutionarily instead of revolutionarily⁹¹—it is nevertheless possible, albeit only in retrospect, to distinguish knowledge cultures which differ from each other because of their respective internal logics. In their book ›Objectivity‹,⁹² Lorraine Daston and Peter Galison have impressively reconstructed such a transformation within the sciences—at first by the example of scientific atlases, but then, among others, with regard to historiography⁹³—and doing so, not coincidentally they deconstructed ›objectivity‹ as a supposedly universal epistemic ideal. One may certainly question the empirical basis of this study when it comes to the possibility to reconstruct a specific manifestation of an entire knowledge culture based on the example of scientific atlases and their transformation under the keyword of ›objectivity‹; one may also argue over the chronological classifications and localizations of this epistemic ideal between 1850 and 1950⁹⁴—but the central distinctions and figures of scientific cognition can hardly be fundamentally rejected. Precisely contrasting ›objectivity‹ to the earlier orientation towards ›impartiality‹ and ›disinterestedness‹ which, as epistemic virtues, demanded work on oneself—following the maxim ›sine ira et studio‹⁹⁵—as well as contrasting to the later figure of ›trained judgement‹ or ›expertise‹, demonstrate eminently vividly that ›objectivity‹ was only a specific, spatially and temporally bound guiding ideal of scientific cognition, which is due to its—albeit illusory—proximity to the object and its differentiated representation.

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- 88 Cf. Eco, Umberto (1986): *Nachschrift zum »Namen der Rose«*, München: Deutscher Taschenbuch-Verlag.
- 89 Kuhn, Thomas S. (1970): *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.
- 90 Cf. Hoyningen-Huene, Paul (1989): *Die Wissenschaftsphilosophie Thomas S. Kuhns. Rekonstruktion und Grundlagenprobleme*, Wiesbaden: Springer.
- 91 Cf. Renn: *The Evolution of Knowledge*.
- 92 Daston, Lorraine/Galison, Peter (2007): *Objectivity*, Brooklyn, NY: Zone.
- 93 Daston, Lorraine (2019): ›Objektivität und Unparteilichkeit. Epistemische Tugenden in den Geisteswissenschaften‹, in: Andreas Gelhard/Ruben Hackler/Sandro Zanetti (eds.): *Epistemische Tugenden. Zur Geschichte und Gegenwart eines Konzepts*, Tübingen: Mohr Siebeck, pp. 201–216.
- 94 Cf. Daston, Lorraine/Galison, Peter (2008): ›Objectivity and its Critics‹, in: *Victorian Studies* 50:4, pp. 666–677; Dear, Peter/Hacking, Ian/Jones, Matthew L./Daston, Lorraine/Galison, Peter (2012): ›Objectivity in Historical Perspective‹, in: *Metascience* 21:1, pp. 11–39.
- 95 Daston: *Objektivität und Unparteilichkeit*, p. 203.

Within the framework of knowledge-cultural research, finally two angles of inquiry would be of interest: On the one hand, it would be worthwhile, in addition to the procedures of knowledge production and legitimation, to also trace the history of the procedures by which respective ›untruths‹ are identified or constructed and delimited from legitimate knowledge. Here, too, a change in practices would likely become visible, which may tell more about the logic of each respective knowledge culture; only exemplarily one may refer to practices of distinguishing between orthodoxy and heresy,⁹⁶ between knowledge and ideology,⁹⁷ and, more recently, between so-called facts and ›post-factual truths‹ or ›fakes‹,⁹⁸ whose differences can only be explained in the context of different knowledge cultures. On the other hand, however, also within the framework of a history of ›Bildungswissen‹ (engl.: ›educational knowledge‹) different practices of passing on—and thereby also regulating—knowledge to the next generation⁹⁹ could be reconstructed. Here, ›Bildungswissen‹ (engl.: ›educational knowledge‹) refers not only to the knowledge that elders seek to bindingly pass on to the younger generation but, as ›knowledge of knowledge‹,¹⁰⁰ also to all ways of dealing with knowledge—from the acquisition of knowledge to its organization and classification as far as to the handling of non-knowledge.

4.

Given the current, digitally induced transformations permeating all areas of knowledge production and circulation, the here sketched systematic view on knowledge may appear almost traditional. Yet, perhaps precisely this understanding may provide perspectives which go beyond some, sometimes indeed fashionable, assessments, since the concept of knowledge is not simply adapted to changing technologies. For, interestingly, some (also pedagogical) debates on the use of digital technologies for working with and on knowledge often do without addressing the ques-

96 Cf. Pieper, Irene/Schimmelpfennig, Michael/Soosten, Joachim von (eds.) (2003): *Häresien. Religionshermeneutische Studien zur Konstruktion von Norm und Abweichung*, München: Fink.

97 E.g. Jaeggi, Rahel (2009): ›Was ist Ideologiekritik?‹, in: id./Tilo Wesche (eds.): *Was ist Kritik? Philosophische Positionen*, Frankfurt a.M.: Suhrkamp, pp. 266–298.

98 Cf. Klimczak, Peter/Zoglauer, Thomas (eds.) (2021): *Wahrheit und Fake im postfaktisch-digitalen Zeitalter. Distinktionen in den Geistes- und IT-Wissenschaften*, Wiesbaden: Springer Vieweg.

99 Cf. Detel, Wolfgang (2003): ›Wissenskulturen und epistemische Praktiken‹, in: Johannes Fried/Thomas Kailer (eds.): *Wissenskulturen. Beiträge zu einem forschungsstrategischen Konzept*, Berlin: Akademie, pp. 119–132, here p. 120.

100 Ricken et al.: *Transformationen des Bildungswissens*, p. 324. Translation by the author.

tion of how, as a result, knowledge itself changes its status, logic, and function, or whether—and to what extent—it is still appropriate to speak of knowledge at all. Often enough, calls not to close one's mind to these new technologies but rather to use them—albeit critically—confront rather traditionalist assessments which then fear the possible loss of established orientations and routines.

If at first one asks about the transformation of knowledge in *virtual (life-)worlds*, certainly several—albeit only roughly outlined—phases can be distinguished.¹⁰¹ Accordingly, initially digital technologies in the (here primarily considered) human sciences could be understood as improved substitutes for previous analog knowledge practices; for example, word processing programs were treated as improved typewriters, search engines increasingly replaced laborious research in libraries, and digital encyclopedias such as Wikipedia, despite ostentatious disparagement, were increasingly utilized.¹⁰² Moreover, digital communication tools—from e-mail to Zoom—revolutionized all forms of communication and interaction, making traditional forms almost disappear. Even the exponentially growing possibilities of digital data processing, the thus possible (now automated) handling of up to then unmanageable amounts of data, the management of complexity and differentiation, however also new ways of preserving, circulating, and distributing knowledge or texts (as far as to the completely reversed publishing policies of an ›open access‹ culture) have made clear that digital technologies in knowledge work cannot at all be understood as the ›digitization‹ and optimization of previous practices but have themselves by and by fundamentally transformed knowledge work. Once again, just to give some examples: vast and otherwise unmanageable amounts of data and text can now be made accessible and usable in the shortest span of time, full-text search allows for accessing individual texts and entire works without laborious full-text reading, and virtually all information is available on the World Wide Web at any time, accessible through any query. However, changed ways of dealing with these technologies also depend on (not always already) changed conceptions, that is they depend on what one believes to be dealing with (in the respective digitally generated mode of appearance).¹⁰³ In this context, and in order to conceptually grasp the thus connected qualitatively altered internal logic of digital media (also in knowledge

101 See the overview in Baecker, Dirk (2017): »Wie verändert die Digitalisierung unser Denken und unseren Umgang mit der Welt?«, in: Rainer Gläß/Bernd Leukert (eds.): *Handel 4.0. Die Digitalisierung des Handels – Strategien, Technologien, Transformation*, Berlin/Heidelberg: Springer Gabler, pp. 3–24.

102 Cf. Pscheida, Daniela (2010): *Das Wikipedia-Universum. Wie das Internet unsere Wissenskultur verändert*, Bielefeld: transcript.

103 See for the early distinction between conception and technology Esposito, Elena (1998): »Virtualität und Fiktion«, in: Sybille Krämer (ed.): *Medien, Computer, Realität. Wirklichkeitsvorstellungen und Neue Medien*, Frankfurt a.M.: Suhrkamp, pp. 269–296.

work), particularly Stefan Rieger proposed¹⁰⁴ using the concept of the ›virtual« or of ›virtuality«, to mark the (since long common) ways of dealing with digital technologies (and the modes of appearance and conception implied therein) and to distinguish them from ›digitization«. For, with the use of generative technologies based on large language models at the latest—such as ChatGPT, Claude, Gemini, or Mistral Large—it has become obvious how profoundly these technologies have qualitatively transformed what we call ›knowledge« in all its dimensions.¹⁰⁵ Apart from the technologically induced problem of structurally embedded ›epistemological conformism«, ¹⁰⁶ also the question of whether and to what extent machine-generated knowledge can be considered knowledge at all—in the sense of both legitimate and verifiable knowledge¹⁰⁷—may also mark this radical transformation.

Now, if one follows these conceptual changes of course, in these debates on the (in)appropriate use of these technologies¹⁰⁸ frequently the necessity is pointed out to that dealing with automatically generated knowledge requires critical reflection. At the same time, however, it often remains unclear how this can be achieved and also learned—precisely if reflexivity also arises from contradictions and also relates to the difference between propositional content and categorial structures; both, however, are largely smoothed out in the smart formulations of a generative language model. At the same time, however, this aspect of (critical) reflexivity as a (necessary) aspect of knowledge can also be specified by the vocabulary of the virtual. This, however, requires that the ›virtual« is not merely be reserved as a designation for virtual objects in the sense of ›virtual reality« but must instead be connected to the long and rich, albeit confusing, conceptual tradition of ›virtuality«¹⁰⁹ and, beyond often habitual dualisms—such as factuality and fictionality, reality and possibility, reality and

104 Cf. Kasprowicz, Dawid/Rieger, Stefan (2020): »Einleitung«, in: id. (eds.): *Handbuch Virtualität*, Wiesbaden: Springer VS, pp. 1–22.

105 Cf. Fiedler, Mariana (2022): »Wissenstheorie. Michael Polanyi und Künstliche Intelligenz (KI)«, in: Katharina Block et al. (eds.): *10 Minuten Soziologie. Digitalisierung*, Bielefeld: transcript, pp. 17–30; Bajohr, Hannes/Hiller, Moritz (eds.) (2024): *Das Subjekt des Schreibens. Über Große Sprachmodelle*, München: edition text + kritik.

106 Richter, Christoph/Allert, Heidrun (2025): »Generative Sprachmodelle als Herausforderung für erziehungswissenschaftliche Vorstellungen von Lernen und Sozialisation?«, in: *Erziehungswissenschaft* 36:1, pp. 19–25, here p. 21. Translation by the author.

107 Cf. Susnjak, Teo (2022): »ChatGPT. The End of Online Exam Integrity?«. Online: <http://arxiv.org/pdf/2212.09292v1> (last access: 13.11.2025).

108 See for an example de Witt, Claudia/Gloerfeld, Christina/Wrede, Silke Elisabeth (eds.) (2023): *Künstliche Intelligenz in der Bildung*, Wiesbaden: Springer VS.

109 Cf. Knebel, Sven K./Grötter, Ralf (2001): »Virtualität«, in: Joachim Ritter/Karlfried Gründer/Gottfried Gabriel (eds.): *Historisches Wörterbuch der Philosophie*, Darmstadt: Wissenschaftliche Buchgesellschaft, pp. 1062–1068; Weber, Julia (2024): *Dynameis. Bausteine einer Geschichte der Virtualität*, Berlin/Boston: de Gruyter.

simulation, being and appearance, or clarity and ambiguity¹¹⁰—must be interpreted as a specific and processual difference, namely as ›virtualization‹.¹¹¹ Accordingly, following the work of Gilles Deleuze, it was above all Pierre Lévy who—as early as in 1995—interpreted ›virtuality‹ as ›virtualization‹ and thus marked a specific form of problematization:

»But what is virtualization? No longer the virtual as a way of being but virtualization as a dynamic. Virtualization can be defined as the movement of actualization in reverse. It consists in the transition from the actual to the virtual, an exponentiation of the entity under consideration. Virtualization is not a derealization (the transformation of a reality into a collection of possibles) but a change of identity, a displacement of the center of ontological gravity of the object considered. Rather than being defined principally through its actuality (a solution), the entity now finds its essential consistency within a problematic field. The virtualization of a given entity consists in determining the general question to which it responds, in mutating the entity in the direction of this question and redefining the initial actuality as the response to a specific question«.¹¹²

If one applies this operation—embedding ›something‹ back into its problem constellation—and thus, in the really classically hermeneutic sense, asking what, after all, the question is to which this ›something‹ is supposed to be the answer—then it becomes possible to reasonably speak both of knowledge *as a (form of) virtualization* and also of virtualization as a way of generating knowledge.¹¹³ Yet, often enough it is precisely this moment of relationing (and implicit reflection) what is made disappear by the machine production of virtual knowledge—and which must thus explicitly be made visible and conceivable again. Reflexivity is strictly bound to the contradictoriness of perspectives, to working out and processing the respective categoriality of statements, and to the thus resulting relationing of categories to one another.

Both aspects—*knowledge in virtual (life-)worlds* and *knowledge as virtualization*—however, provoke the question of the *virtuality of knowledge* itself. Perhaps it

110 Cf. Rieger, Stefan/Schäfer, Armin/Tuschling, Anna (2021): »Virtuelle Lebenswelten: Zur Einführung«, in: id. (eds.): *Virtuelle Lebenswelten. Körper – Räume – Affekte*, Berlin/Boston: de Gruyter, pp. 1–12, here 3–6.

111 See for a more detailed discussion Ricken, Norbert/Röhr, Henning (2026): »Virtualität als Differenz. Erkundungen«, in: Armin Schäfer/Stefan Rieger (eds.): *Die unruhige Differenz der Virtualität*. Bielefeld: transcript (in press).

112 Lévy, Pierre (1998): *Becoming Virtual. Reality in the Digital Age*, New York/London: Plenum Trade, p. 26.

113 See also, with regard to ›learning‹, Ricken, Norbert/Flügel, Kristin/Röhr, Henning (2026): »Lernen«, in: Patrizia Breil/Florian Sprenger (eds.): *Virtuelle Universität. Geistes- und gesellschaftswissenschaftliche Zugänge*, Bielefeld: transcript, pp. 73–85.

is precisely a classical understanding of virtuality, different from mere ›potentiality‹—namely: »a virtual X is ... not an X, [but] has the efficiency of an X«¹¹⁴—that attempts to describe the internal logic of knowledge and allows us to think beyond the dichotomy of representation and construction. From this vantage point, if one looks back at the distinctions and inescapable problem constellations presented—particularly regarding the concept of truth—as well as to the recent praxeological shifts, it becomes clear that and why the dispute on ›knowledge‹ must be started again and again: as an ongoing attempt to reflexively bring one's own relation to and understanding of the world reflexively into view and to test its viability.

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114 Peirce, Charles Sanders (1920): »Virtual«, in: James Mark Baldwin (ed.): *Dictionary of Philosophy and Psychology*, New York: Macmillan, pp. 763–764, here p. 763.

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