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The Objectification of Meaning: A Systems-Theoretical Approach to (the History of) Knowledge

Abstract: While the history of knowledge often understands knowledge in the same way as this term is understood in the sources, the literature claims a lack of precision when defining the term. Operationally, knowledge is seen as a moveable entity, with research focusing on the effects of the environment on said entity and vice versa. The article uses systems theory to add to this perspective by focusing on the social production of knowledge. This allows to conceptualize objectivity and subjectivity, as well as definitions of validity and pseudo in their functionality within the social production. Following this path, knowledge can be defined as 'Objectified Sense/Meaning', the result of a process of interaction with the environment, previous existing knowledge, and our expectations.

Keywords: systems theory, social production of knowledge, sociology of knowledge, definition of 'knowledge,' truth and objectivity

Looking at the field of the history of knowledge, one notices, paradoxically, that the definition of the term 'knowledge' appears to be a blank spot – a fact that is noted institutionally, in practice, and in the accompanying research. In a notable article in the journal *Merkur*, Daniel Allemann argued for replacing the term knowledge with that of information, as the former had become too unclear. Similarly, in a review of two books on the 'historicity of knowledge,' Thomas Mohnike referred to the existing concept of knowledge as being mainly integrative and regretted the lack of a deeper definition and theorization. Michael Hagner has offered comparable reservations with regard to the term and its role in historical research.[1] Many

1 Daniel Allemann, "Die Wiederkunft der Information," *MERKUR* 870 (2021): 68–73. Michael Hagner, "Anstatt einer Einleitung. Rückblick auf die Wissensgeschichte," *Nach Feierabend. Zürcher Jahrbuch für Wissensgeschichte* 15 (2021): 35–47. Thomas Mohnike, "Über die Historizität des Wissens," review of *Forms of Knowledge: Developing the History of Knowledge* by Johan Östling et al. and *Knowledge in Motion: The Royal Swedish Academy of Sciences and the Making of Modern Society* by Karl Grandin et al., *H-Soz-Kult*, 4 February 2022, <www.hsozkult.de/publicationreview/id/reb-29755>.

analyses in the history of knowledge define knowledge as what contemporaries viewed and understood as knowledge.[2] This approach enables the history of knowledge not to be limited to a history of science and its conclusions, thus making it possible to look at, for example, practical day-to-day or subaltern knowledge as equally valid. Nevertheless, it does not allow for tracing societal negotiations that are part of knowledge production, which inevitably leads to the question of how people came to define something as knowledge.

So, how does something become knowledge in the interaction of societies or groups? We define this process as the social production of social knowledge, which means that knowledge is not a closed entity but the product of societal interactions and an objectification of what Niklas Luhmann refers to as *Sinn* (i.e., sense/meaning). In doing so, it is crucial that we distinguish and define various categories that are part of the production of knowledge by means of communication: facts, information, meaning, and opinion. In the following, we first explore the existing definitions of knowledge within the history of science and history of knowledge, as well as their predecessors. In the second part, we discuss systems theory and its uses in historiography as well as, specifically, when it comes to knowledge. Thirdly, we explain our proposed definitions and approach to knowledge production based on systems theory. Finally, we try to illustrate our approach through a brief empirical example – the 'scientification' of yoga in early 20th-century Germany.

Definitions in the History of Knowledge and of Science

The history of knowledge and the history of science are both vital fields within the landscape of historiography. Even though knowledge is the central object of the history of knowledge, it seems difficult to arrive at a precise definition of the term.[3] It deserves to be said that both fields seem to be extremely close to the point of being indistinguishable from one another, as they are heavily influenced

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2 Cf. Harald Fischer-Tiné, *Pidgin-Knowledge: Wissen und Kolonialismus* (Zürich and Berlin: Diaphanes, 2013), 11. This does not refer to a conceptual historical approach. Here, 'knowledge' constitutes an analytical category and not the word itself used in the sources, which of course can lead to issues of translation and meaning.

3 Cf. Suzanne Marchand, "How Much Knowledge is Worth Knowing? An American Intellectual Historian's Thoughts on the Geschichte des Wissens," *Berichte zur Wissenschaftsgeschichte* 42 (2019): 126–149, 139; Lorraine Daston, "The History of Science and the History of Knowledge," *KNOW: A Journal on the Formation of Knowledge* 1 (2017): 131–154.

by cultural studies. Both approaches analyze the production of knowledge in a specific environment, thus circumventing a general definition.

The history of knowledge finds another basis in the field of postcolonialism and colonial history. A good example of the aforementioned definition of knowledge being what people perceive as knowledge is the concept of "pidgin-knowledge," which is part of a post-colonially informed history of knowledge and was developed in Harald Fischer-Tiné's essay of the same title. In opposition to previous ideas in which knowledge more or less successfully trickles down from the Global North or is even transferred unchanged,[4] his approach highlights the entanglement of knowledge and its production by addressing contact zones and exchanges between different "knowledge systems" and their role in the local colonial production of knowledge as well as that of the colonizers. This concept aims to take those forms of knowledge seriously that may seem unscientific from a 'modern', Global Northern view, and were therefore sometimes portrayed as an opposite of and even an obstacle to *true* knowledge production.[5]

Fischer-Tiné's essay makes it clear that pidgin-knowledge constitutes an open concept of knowledge that is constantly subject to change. According to the text, this fluid body of knowledge is composed of equally changeable knowledge elements. However, these *Wissensinhalte* are not explained further.[6] The nature of knowledge is also addressed by Donna Haraway's essay "Situated Knowledges," which, adopting a feminist approach, discusses conditions and localizations of knowledge.[7] The text argues that knowledge should be situated, dependent on embodied and social conditions: "Situated Knowledges are about communities, not about isolated individuals."[8] Both approaches argue for knowledge as a social construct and a perception of knowledge that cannot be defined once and for all as it is dependent on its surroundings. To break down the hierarchies, both approaches take off from an open concept of knowledge, in which knowledge is everything considered as such. We agree that knowledge is dependent on place and time but would stress that knowledge is not an entity in itself. The focus should not be on the effects of the surroundings on a preexisting entity of knowledge but on the role of these surroundings in the production of knowledge.

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4 Cf., for instance, Richard Bauman and Charles L. Briggs, *Voices of Modernity: Language Ideologies and the Politics of Inequality* (Cambridge: CUP, 2003).

5 Cf. Fischer-Tiné, *Pidgin-Knowledge*, 9–10.

6 Cf. Fischer-Tiné, *Pidgin-Knowledge*, specifically 12–13.

7 Cf. Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (1988): 575–599.

8 Cf. Haraway, "Situated Knowledges," 590.

The literature is quick to point out that these approaches have their downsides. Historian Marian Füssel cautions that "it may be morally questionable if every historical claim to scientificity were accepted unquestionably, as the study of science in totalitarian systems will show."[9] This shows the normative nature of knowledge and, in the minds of many, the close relationship between this term and truth and science, as well as the notion that knowledge is seen as "justified true belief."[10]

Consequently, Füssel's caution is only relevant if one equates knowledge and truth. If, on the other hand, one tries to look at the *function* of knowledge in historical society, we believe that this issue will not arise. On the contrary, it is precisely the claim of scientificity with regard to science in totalitarian systems that legitimized the horrors of these regimes in the eyes of many contemporaries. If one takes a cue from the sociology of knowledge, for example, following sociologists Peter Berger and Thomas Luckmann, knowledge is understood through the lived acceptance of common realities: "'knowledge' is defined as the certainty that phenomena are real and have certain properties" while "reality" is defined as "the quality of phenomena that exist regardless of our will."[11]

The history of knowledge distinguishes between different practices and functions of knowledge as a finished product. The outputted knowledge can be differentiated conceptually and functionally, depending on the theory and discipline used, via the practices of knowledge, the actors, the localities of knowledge production and validity, or even the mediality of knowledge. What all these approaches have in common is that they adopt a praxeological approach, recognizing the existence of knowledge through its recognition within a group.

Systems Theory and History (of Knowledge)

The use of Niklas Luhmann's approach to Systems Theory can help define what knowledge is and what it is not, tracing how it comes into existence, and how it

9 Cf. Marian Füssel, *Wissen: Konzepte – Praktiken – Prozesse* (Frankfurt am Main and New York: Campus Verlag, 2021), 10.
10 Cf. Edmund L. Gettier, *Is Justified True Belief Knowledge? / Ist gerechtfertigte, wahre Überzeugung Wissen?*, trans. Marc Andree Weber and Nadja-Mira Yolcu (Ditzingen: Reclam, 2019 [1963]).
11 Cf. Peter L. Berger and Thomas Luckmann, *Die gesellschaftliche Konstruktion der Wirklichkeit: Eine Theorie der Wissenssoziologie* (Frankfurt am Main: Fischer Taschenbuch Verlag, 2016), 1.

affects communication and society as a whole.[12] Systems theory, in general, is an epistemologically driven approach to the world, understanding the world as created through and made up of systems with various functions and their interactions. Luhmann's Systems Theory has contributed to the sociology of science, especially with regard to the role of truth as a code in science[13] and subsequently, in this capacity, been touched upon in the history of knowledge.

Sociological systems theory uses the 'system' as a metaphor to describe actors, such as persons or institutions, as well as to explain their societal interactions. Sociological theorist Talcott Parsons, who along with social scientist Gregory Bateson may be seen as foundational for Luhmann's approach, defines a system as "a stable set of independent phenomena," which exists in opposition to an "ever-changing external environment."[14] These "phenomena" are held together by the function that the system serves and by the "not-serving" of the functions of other systems. Using this logic, it is possible to organize the world into different systems, containing various subsystems. These systems set themselves apart from their environment containing an infinite number of other systems, by distinctions that matter to the system and its function.

Using this approach leads to a focus on communication between said (social) systems as the driving force within society. It is through these interactions that everything social is created. The epistemological questions inherent in systems theory also allow for a deeper understanding of knowledge and its production, meaning that this appears to be a productive approach to the history of knowledge.[15] This approach prevents tautological narratives of progress and direct causality by stressing the processes of adaption and idiosyncratic interaction, while not ignoring elements of power and inequality (be they hierarchical, social, or material) that may affect the outcome.

While also criticized, especially in German-speaking historiography and cultural studies, the historiographical use of systems theory following Luhmann has been productive. For example, it has informed the works of Rudolf Schlögl, Elena Esposito, or the conference on systems theory and antiquity organized in

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12 Niklas Luhmann, *Vertrauen, Ein Mechanismus der Reduktion sozialer Komplexität* (Stuttgart: Enke, 1989). Niklas Luhmann, "Die Unwahrscheinlichkeit der Kommunikation," in *Niklas Luhmann: Aufsätze und Reden*, ed. Oliver Jahrhaus (Ditzingen: Reclam, 2001), 76–93.
13 Cf. Claudio Baraldi, Giancarlo Corsi, and Elena Esposito, *Unlocking Luhmann: A Keyword Introduction to Systems Theory* (Bielefeld: BiUP, 2021), 205–207.
14 Sandro Segre, *Talcott Parsons: An Introduction* (Lanham, MD: UPA, 2012), 7.
15 Cf. Frank Becker and Elke Reinhardt-Becker, *Systemtheorie: Eine Einführung für die Geschichts- und Kulturwissenschaften* (Frankfurt am Main and New York: Campus Verlag 2001), 9–10.

Berlin in 2022.[16] These examples all show us how the models of systems and functionality, as well as the baseline issue described by Parsons regarding so-called "double contingency" (the fact that we cannot know what others are thinking, only what we understand out of their communication),[17] allow for a better and deeper understanding of history. By understanding the world through a systems theoretical lens, Schlögl shows, among other things, the effects of communication and media on the organization and functioning of society. In her book, *Die Fiktion der Wahrscheinlichen Realität* [The Fiction of Probable Reality], Esposito demonstrates how written fiction and concepts of probability and their development in the 17th century may be seen as linked processes affecting contemporary ideas on reality and the future that still affect us today.

The history of knowledge sometimes brings systems theory and its contributions to the sociology of knowledge into its analyses, such as in Marian Füssel's book on knowledge and knowledge production, *Wissen: Konzepte – Praktiken – Prozesse* [Knowledge: Concepts – Practices – Processes], while mostly using it to explain the specific code of "truth" in the field of science as well as the field's function in society, in contrast to and interaction with other fields/systems such as "politics, religion or the economy," before moving on.[18]

This is particularly important for the history of knowledge and, subsequently, the history of science. In these two perspectives, interrelationships often come into play as a starting point. For example, Timothy Lenoir's renowned work *Politik im Tempel der Wissenschaft* [Politics in the Temple of Science] addresses the interrelations between material conditions and the production of science.[19] Focusing on interaction/communication would allow one to complement this material approach by looking at other (systemic) influences on science.

We would argue for an understanding of a production of knowledge within a system through processes of coding and decoding in communication with the environment as well as other systems within it. We try to explain both of these processes in the following paragraphs. Some of the following categories, such as envi-

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16 Rudolf Schlögl, *Anwesende und Abwesende: Grundriss für eine Gesellschaftsgeschichte der Frühen Neuzeit* (Konstanz: KUP, 2014); Elena Esposito, *Die Fiktion der wahrscheinlichen Realität*, trans. Nicole Reinhardt (Frankfurt am Main: Suhrkamp, 2019). Moritz Hinsch, "Tagungsbericht: Systemtheorie und Antike Gesellschaft," H-Soz-Kult, accessed August 17, 2022, <www.hsozkult.de/conferencereport/id/fdkn-127979>.

17 Cf. Niklas Luhmann, *"Vorbemerkung zu einer Theorie sozialer Systeme," Niklas Luhmann: Aufsätze und Reden*, ed. Oliver Jahrhaus (Ditzingen: Reclam, 2001), 7–30, 11.

18 Füssel, *Wissen*, 20.

19 Timothy Lenoir, *Politik im Tempel der Wissenschaft: Forschung und Machtausübung im deutschen Kaiserreich* (Frankfurt am Main and New York: Campus Verlag, 1992).

ronment, information, and meaning, are linked to systems theory, which is why we use the definitions of Luhmann and the translations of Esposito et al. while adapting them to knowledge and its production, as well as supplementing specifically knowledge-oriented categories, such as data, opinion, and facts.

The Social Production of Knowledge in the System

Outside a system (e.g., a person or an institution), there is an *"environment,"*[20] which describes everything that is not the system. This environment may be accessed in a variety of ways. As part of this interaction, *information* – statements about the (outer) world that "make a difference"[21] – about the environment is generated, decoded, and processed by the system. This interaction, typically understood by Luhmann as communication, can be the perception of the world directly via our senses, such as sight, hearing, or touch, but also more indirectly via media, such as through writing, other symbols, rituals, or even recordings. These interactions, like any form of communication, are not to be understood as simple processes of perception but as acts of decoding and interpreting the elements of the environment, influenced by the system's preexisting expectations and knowledge regarding it.[22] A major influence here is the specific "situation" the system finds itself in, this being a certain repeated and repeatable combination of structures, expectations, roles, and behaviors.[23] As these patterns are recognizable by systems, they result in the behavior and expectations of the other systems in a particular situation becoming more predictable, thus influencing the process of decoding and thereby easing communication.

Data is a special expression of such an information-creating interaction with the outer world. Data can be understood as images of the world filtered by certain media and thus constructed by said media. These may include figures in tables, outputs of measuring instruments, or the like. As Allemann notes, this data may be wrong. Defective equipment, errors during measuring, or other human errors may lead to incorrect data.[24] Furthermore, this data, true or false, does not repre-

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20 Baraldi, Corsi, and Esposito, *Unlocking Luhmann*, 235–237.

21 Baraldi, Corsi, and Esposito, *Unlocking Luhmann*, 109–110. Luhmann refers to Bateson for this definition.

22 Luhmann, *Unwahrscheinlichkeit der Kommunikation*, 80.

23 Segre, *Talcott Parsons*, 7.

24 Cf. Allemann, *Wiederkunft der Information*, 72–73.

sent the world or reality itself, but only what the instrument measured. Depending on methods of measurement, this image may differ and is therefore strongly influenced by said method. Nevertheless, it is possible to derive information from said data; for example, by comparing it with other results collected using the same method or with aforementioned expectations, as well as by contextualizing its method and the organization/individual responsible.[25] A single temperature measurement, for example, shows us nothing, as it represents a pure and singular unit of data. However, using a series of measurements or physical perceptions (given that they are comparable due to similar means of production), this data can be turned into information by making the difference it represents clear, meaning that it can be used to describe developments and make predictions.

However, from a system-theoretical point of view, information itself cannot be grasped, since it is deeply encoded in the media and needs to be decoded within a kind of black box inside the system using existing knowledge, expectations, and other information. This process then creates "sense" or, following Esposito et al., "meaning" [Luhmann's German term here is *Sinn*]. This allows us to perceive connections, similarities, and differences in the world. Using this meaning, we can then decide if data and the information gained from it is trustworthy or if one might be mistaken. Since these processes of 'making sense' only occur within the system itself, both information and meaning must be considered subjective, dependent only on the individual system's perception and process of decoding.[26]

Arguably, the system (e.g., the human being) is aware of this subjectivity. It knows that its view of the world is not necessarily shared by everyone, which is why systems differentiate between different forms of truth and why the categories of facts and knowledge exist. *Facts* are statements about the world believed to be objectively true. More precisely, these are statements of which we assume and trust that other systems have received the same or at least similar information, or, more accurately, that the other systems have constructed the same by decoding and interpreting the world in similar ways. If, furthermore, we can expect others to expect similar things and further contextualize these shared, objictified facts in similar ways, we arrive at a shared sense, a shared meaning, which we call *knowledge.* The answer to the question of what knowledge is would therefore be: knowledge is meaning that we believe others have arrived at as well; knowledge is objictified meaning.

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25 Uwe Schimank, "Reputation statt Wahrheit: Verdrängt der Nebencode den Code?," *Soziale Systeme* 16, no. 2 (2010): 233–242.

26 Cf. Oliver Jahrhaus, "Zur Systemtheorie Niklas Luhmanns," *Niklas Luhmann: Aufsätze und Reden*, ed. Oliver Jahrhaus (Ditzingen: Reclam 2001), 306–309; Baraldi, Corsi, and Esposito, *Unlocking Luhmann*, 137–139.

The assumption that the information one has decoded can be treated as facts and that the generated meaning can be treated as knowledge facilitates interactions and communication in society. This is not least due to the opposite: the perception of infinite possibilities serves to paralyze by creating insecurity regarding the validity of our statements on the world. The reduction in the number of possible interpretations that have to be taken into account in every situation is referred to as "complexity reduction" in systems theory[27] and is seen as an important element driving societal changes. In everyday life, we inevitably trust that we will not permanently deceive ourselves until we are convinced otherwise. We expect our behavior to be connectable and to be connected to the environment, as well as that others will act on similar knowledge and facts, and that therefore our expectations as well as our expectations of others' expectations are right. If we are unable to do so due to habitual, linguistic, or cultural barriers, we lose this sense of security, especially if we are unaware of barriers interfering with our smooth interaction with the outer world.[28] As meaning and information are not directly observable, we can only identify these categories indirectly through communication and interaction, and then through the processes of comparison with preexisting facts (for information) and knowledge (for meaning). Facts and knowledge are thus the result of social negotiations and require constant confirmation, through which humans make sure that they can trust their view of the world in practice.

When comparing our own information and meaning with those communicated by other systems, we can find that they coincide or that they do not. If we accept them as shared, as objective or objectified, and therefore as *truth*, they become facts and knowledge as described above and will be treated as such by the system in future interactions (e. g., informing future decoding processes). Information and meaning that we do not share can be dealt with in two ways: Either they (those of others or one's own) can be categorized as objectively untrue, which in some way makes them 'negative' facts or knowledge, or they can be categorized as subjective *opinions*. To do so, the production of said meaning or information is looked at and compared, keeping in mind that the system, thus the process itself, is a black box. This means that everything going into the system – all the data, the context of perception, the meaning and knowledge of uninvolved other systems, etc. – is analyzed to look for differences that may have influenced the diverging outcome. Admittedly, in day-to-day life, this process is often outsourced to institutions we trust due to their reputation and past examples of fact-checking.[29] If the reason for the

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27 Cf. Baraldi, Corsi, and Esposito, *Unlocking Luhmann*, 49–52.

28 Cf. Luhmann, *Vertrauen*, 1.

29 Cf. Schimank, "Nebencode."

difference can be found outside the systems, such as a lack of data or perception or the use of other pieces of information or meaning deemed to be untrue in the production, the difference is objectified, which leads to the categorization of true and untrue, respectively.

If, on the other hand, the differences are found within the systems, such as a legitimate difference in expectations and experiences, (e.g., taste or one's past), it becomes an opinion, or worldview if it is more fundamental. These differences can be tolerated within a society as long as they do not affect or negate other productions of meaning too much. Harmless examples of such hard-to-accept effects on other productions of meaning include optical illusions. They may lead to the system questioning the validity and objectivity of its own perception and thus its production of knowledge, which, in turn, shakes the foundation of our trust necessary for interacting with society, as discussed above. Take, for example, the image of a dress from 2015, which went viral online, in which viewers perceived the dress as either blue and black or white and gold.[30] We assume the colors in our environment to be objective, so it is difficult to digest the realization that this is not the case. However, even while there was a lot of discussion and everyone felt they had to be right in their perception of the color of said dress, in the end it was quite harmless in the end.

Things get much more serious when objectifying information that is important for the functioning of society. A suitable example would be a stance against vaccinations. While it can be, and often is, tolerated as a wrong minority opinion as long as it only affects a few individuals deciding for themselves, in cases where this stance affects the health of a sufficient number of additional individuals, the difference is less socially tolerable. The same is true of conspiracy theories. While some may be quite harmless, the claims of widespread fraud in a democratic election are more complicated. This is due to the fact that the legitimacy of a government as an objectified fact, especially one accepted by the opposition, is crucial for the state to function in democracies. If one needs to depend on a shared basis upon which to act, dissention creates difficulties as it weakens the validity of our expectations and our trust in them. This consequently may impede the functioning of whatever processes may be reliant on this shared basis.

This importance of dependable and therefore objectified knowledge applies to science in particular. "Truth" is the central "code," the difference maker and object of scientific interaction, at least in the self-image of said system.[31] This rings true if

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30 Cf. Julio Gonzáles Martín-Moro et al., "Which are the colors of the dress? Review of an atypical optic illusion," *Archivos de la Sociedad Española de Oftalmología* (English Edition) 93 (2018): 186–192, accessed February 7, 2023, doi: 10.1016/j.oftale.2018.02.003.

31 Schimank, "Nebencode," 233.

one looks at the fact that "the history of science was and is at the same time always a history of the struggle against the unscientific, of defensive rhetorics and strategies, of defining and marking divergent practices as non- or pseudoscientific."[32] This is also done by bringing the aforementioned normative and moral perspective on science into the equation. Hence, pseudoscience, being excluded from the accepted sciences, represents an interesting object within the history of knowledge. The aim of pseudoscience is not to be unscientific, quite the opposite. Its practitioners see themselves as following the same goal, which is the pursuit of truth. The differences are fundamentally in the perception of the methods and concepts used, which, in the eyes of pseudoscience are seen as unjustly dismissed by mainstream science, drawing historical comparisons to approaches and their developed knowledge that were at first ostracized before being accepted and included into the scientific canon.

It is striking that we know the term pseudoscience, but there seems to be no such thing as *pseudo-knowledge.* The term pseudo-science, although not strictly defined, refers to a pejorative classification of another system and is to be distinguished from the terms protoscience or emerging science. The ambiguity of this term, as a source and descriptive term, testifies to a relative uncertainty of research.

The subject of pseudo-science is an important object of study within the histories of science and knowledge. It allows a closer look at the "question of the inclusion and exclusion of knowledge and its carriers," which is more or less inherent in science.[33] The analysis of pseudo-knowledge may illustrate the attempts to find dependable common ground between cultures of knowledge that are, or are at least perceived to be, different. The validity of knowledge is assessed by its results and methods, with this assessment being embedded in social situations and standards, as well as scientific expectations. Our example of yoga shows the interaction of simultaneous, and somewhat different, productions of knowledge. Through comparisons of the methods and results of the other with one's own expectations and practices, knowledge is generated through communication between systems: What fits and works in the system's knowledge production is validated as 'true', while things that do not are either defined as false – if it is contradictory – or as a difference of opinion or even worldview if it does not interfere with said production itself.

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32 Dirk Rupnow et al., "Einleitung," *Pseudowissenschaft: Konzeptionen von Nichtwissenschaftlichkeit in der Wissenschaftsgeschichte*, ed. Dirk Rupnow et al. (Frankfurt am Main: Suhrkamp Verlag 2008), 7.
33 Rupnow et al., "Einleitung," 7.

Empirical Illustration: The Scientification of Yoga in Interwar Germany

When 'yoga' became of interest to society in Europe and the West in general at the beginning of the 20th century, we observe an interaction of different knowledge systems. Western systems of science, in this example mostly German-speaking, had to deal with this at first seemingly foreign and differently produced knowledge.[34] It goes without saying that because of its origin in the Global South, 'yoga' had a more difficult path of 'scientification' and possible acceptance as knowledge compared to Global Northern knowledge. This makes it a prime illustration of our suggested approach.

Next to a variety of integration attempts, three very different groups sought ways of *scientificating* ("*Verwissenschaftlichen*") yoga in their own ways. The first group was the Theosophical Society, founded in 1875 and, according to the literature, serving as a "flow heater" of esoteric ideas, led by Annie Besant.[35] The second group approached yoga from psychoanalysis, namely represented by Carl Gustav Jung, who addressed occult topics in his doctoral thesis in 1902 and was not only interested in yoga but also in various forms of mysticism with regard to psychoanalytical research.[36] Finally, there was a loose group of Indologists, religious scholars, and medical doctors around Jakob Wilhelm Hauer. Together, they wanted to popularize yoga in a 'western-scientific' understanding, founding the journal *Yoga. International Journal for the Scientific Investigation of Yoga*, which, for various reasons, was discontinued after one issue.[37]

One thing all three groups had in common was that they had the same initial conception of yoga and the same initial expectations of its orientalized practices and ideas, at the same time as all three claimed to be scientific. However, they all had some somewhat differing ideas on the subject, and while some of the differences could be tolerated, especially between Jung and Hauer, others were not and could not be. By examining these clashes and their absence regarding the

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34 This section is based on Christoph Schmitt's master's thesis, submitted to the University of Konstanz.

35 Kocku von Stuckrad, *Was ist Esoterik?: Kleine Geschichte des geheimen Wissens* (Munich: C.H. Beck, 2004), 197.

36 Cf. Kris Manjapra, *Age of Entanglement: German and Indian Intellectuals across Empire* (Cambridge, Mass.: HUP, 2014), 233.

37 Cf. Helmut Palmié, ed., *Yoga: Internationale Zeitschrift für wissenschaftliche Yoga-Forschung* 1, no. 1 (1931). For more, compare Anne Taylor, *Annie Besant: A Biography* (Oxford: OUP, 1992); Horst Junginger, "Jakob Wilhelm Hauer," *Handbuch der völkischen Wissenschaften* 1 (2017): 274–279.

ideas around yoga and the communication between these groups, we can observe the processes of how knowledge is produced.

Jung and Hauer organized a series of lectures on the subject of psychology and Kundalini Yoga in Zurich in 1932.[38] They agreed on the scientificity of the practice and that yoga could be experienced practically and was a means of "getting the machinery of the body in hand, so to speak" or that "yoga, in its healing path, addresses the whole of the soul's transmission."[39] Jung saw the possibility of medicinal healing through the study and practice of yoga and spoke, albeit not uncritically, of opportunities for doctors to use "Eastern healing systems."[40] They agreed on certain facts (thereby making them such), and they both saw yoga as a different path to the same ends as Western science. This leads to the validation and reinforcement of both Western medicine and the practice of yoga as *truth.* Their knowledge production of yoga was capable of integrating the facts, data, and previously produced knowledge, which they perceived as being of Indian origin, with little contradiction.

Besant's approach, however, differed fundamentally – in terms of perception – from that of Jung and Hauer and was vehemently rejected by both. The differences were so fundamental that they could not be tolerated and accepted due to the inner logics of Hauer's and Jung's knowledge construction. Besant, who valued mysticism equally as science, spoke of a "psychological science of India," thus opposing the idea of Western superiority, while also describing events in which practitioners could live up to 150 years or even control their body through mental effort. Neither the nature of the events described nor the equivalence of Western scientists with Indians could be accepted[41] as they endangered the Western production of knowledge by questioning its methods or claiming results too different from the Western approach, denying this information the classification of fact. Besant's description of Indian results, her data, and information had to be classified as false and her knowledge of yoga as being pseudo- or unscientific to allow the other approaches to continue as true and valid, and therefore scientific.

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38 Cf. Carl Gustav Jung, *Die Psychologie des Kundalini-Yoga: Nach den Aufzeichnungen des Seminars von 1932*, ed. Sonu Shamdasani (Ostfildern: Patmos-Verlag, 2019).

39 Annie Besant, *Hâtha-Yoga und Râja-Yoga oder Geistige Entwickelung nach altindischer Methode* (Leipzig: Theosophisches Verlags-Haus, 1909), 7.; Jakob Wilhelm Hauer, "Der Yoga im Lichte der Psychotherapie," Bericht über den V. Allgemeinen ärztlichen Kongreß für Psychotherapie in Baden-Baden, 26–29 April 1930: 1–21, 9. Here and in the following, our own translation of the German original.

40 Karl Baier, *Der Yoga auf dem Weg nach Westen: Beiträge zur* Rezeptionsgeschichte (Würzburg: Königshausen & Neumann, 1998), 239. Cf. Jakob Wilhelm Hauer, "Yoga und Zeitwende," *Yoga: Internationale Zeitschrift für wissenschaftliche Yoga-Forschung* 1, no. 1 (1931): 5–8, 6.

41 Besant, "*Hâtha-Yoga*," 1, 9–10.

As Hauer wrote: "But the journal could also become of some importance for the East. The knowledge of real yoga and yoga experience is quite rare in India today, according to my observations of several years." One problem for Hauer was primary sources not being used or being interpreted incorrectly.[42] Hauer and Jung were united as they both worked according to their common scientific approach and ensured their common facts and information in this approach through comparison.[43] In Hauer's *Der Yoga als Heilweg* [Yoga as a Healing Path], which was dedicated to Jung, the similarities were emphasized:

In particular, however, it seems to me to be an imperative of the hour to approach yoga from the point of view of psychological problems, from which the religious and philosophical spheres will again receive new light, and in this connection, a relationship must be established with Western science and healing methods, which in some areas have of themselves come to surprisingly similar results as yoga, namely with psychoanalysis and with the psychotherapy based on it.[44]

It made no difference, or rather it was a tolerable difference, whether Jung, unlike Hauer, thought that the psychoanalytical concept of driving forces was the same as the concept of "kleshas" and assigned their treatment to the field of psychology: "A medical psychology has developed among us [...] which deals specifically with the kleshas. We call this the 'psychology of the unconscious'."[45] Likewise, it was bearable for Hauer that "C. G. Jung [...] wrote a lengthy introduction to it [which] contains a number of thoughts very noteworthy for our subject, but, as it seems to me, mixed with all sorts of problematic things."[46] The important thing was that these opinions did not affect the production of meaning too much, while still leading to similar results at the level of information and meaning. These differences could be tolerated as opinions as they did not endanger the others' production of knowledge.

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42 Hauer, "Yoga und Zeitwende," 8.

43 For the relevance of synchronization and socialization, see also: Armin Nassehi, *Muster: Theorie der digitalen Gesellschaft* (Munich: C.H. Beck, 2019), 271–273. Here Nassehi makes the argument, building on Luhmann, that a narratable world requires a common ground.

44 Jakob Wilhelm Hauer, *Der Yoga als Heilweg: Nach den indischen Quellen dargestellt* (Stuttgart: Kohlhammer, 1932), VIII.

45 Cf. Baier, *Yoga auf dem Weg nach Westen*, 248. Baier here refers to C. G. Jung, *Gesammelte Werke, Bd. XI*, ed. Marianne Niehus-Jung et al. (Zürich: Rascher, 1963).

46 Hauer, "Der Yoga im Lichte der Psychotherapie," 2.

Conclusion

Our example addressed the arguments of Besant, Hauer, and Jung, each of whom had their own ideas about yoga and tried to construct and match them with their environment. It is crucial that these constructions came from within the respective productions and were not mere copies of external discourses. In doing so, we can show how the boundaries of what is considered science and knowledge are constructed by contemporaries, what is considered true and why, as well as the function of truth for society and knowledge itself.

In this essay, we attempted to show how a systems theoretical approach can help to understand knowledge and science more deeply in the past as well as in the present. It allows one to further the understanding of knowledge production and helps with the definition of what knowledge is, functionally. The classical approaches assume that knowledge exists within its surroundings (e. g., laboratories, colonial power relations, material conditions, and so on), which influence it. These approaches can examine knowledge in terms of the negotiation and struggles of interpreting existing forms of knowledge and their hybridization. But these texts frequently do not address what counts as knowledge, instead introducing new terms to pinpoint the object of the investigation. Our intention is to augment this by focusing on the internal logic and processes of said production through communication. By stating the social, procedural differences of knowledge, information, fact, and opinion, we were able to outline a model of (social) production processes, based on agreement or tolerable differences, and define knowledge as objectified sense.

The article defined knowledge as objectified sense or meaning, something we expect others to believe to be true and which will affect how they interpret the world in future interactions. This expectation is based on comparisons of the production of said meaning by comparing methods, facts, and held opinions and worldviews with our own as well as commonly held positions. This leads to the creation of a common basis of knowledge in a society, which is needed to enable interactions by reducing complexity through the resulting shared expectations. However, to reach this common basis, knowledge production involves mechanisms of inclusion and exclusion. This does not just involve external motivations, the interpretative or discursive sovereignty over knowledge, but also the systemic contexts of knowledge production and construction. To reach this position of objectivity and truth, knowledge must constantly be compared and questioned. However, these challenges, if fundamental enough, must lead to one side being excluded and delegitimized as unscientific or wrong.

We believe that this systems theoretical approach may prove helpful in addressing the difficulties of defining the object of the history of knowledge as well as understanding knowledge, science, and society in general in the past as well as in the present. We also feel it shows the importance of shared knowledge for the functioning of society as a whole and how one can and does reach this point: By the comparison of the production of knowledge.

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