Periodization

Ryan Shaw

The University of North Carolina at Chapel Hill Ringgold standard institution – School of Information and Library Science, 100 Manning Hall, Chapel Hill, North Carolina 27599, United States, <ryanshaw@unc.edu>

Ryan Shaw is associate professor in the School of Information and Library Science, University of North Carolina at Chapel Hill. He is interested in how information technologies are used to conceptualize and model our worlds and pasts. His personal website is aeshin.org.

Shaw, Ryan. 2023. "Periodization". *Knowledge Organization* 50 (7): 489-495. 33 references. DOI:10.5771/0943-7444-2023-7-489.

Abstract: This article first focuses on the emergence of a scholarly discourse on periodization. That discourse includes historians' efforts to diversify criteria for individuating periods, and philosophers' analyses of periodization as a form of historiographical theorizing. Next the article turns to the dynamic interaction between scholarly periodization and the broader institutionalization of periodizations. This is followed by a brief review of arguments against periodization. The article ends with a look at how periodizations are treated in knowledge organization systems (KOS).

Received: 18 September 2023; Accepted 02 November 2023

Keywords: periodization; concepts; knowledge organization systems

* Derived from the article titled "Periodization" in the *ISKO Encyclopedia of Knowledge Organization*, Version 1.0 published 2020-05-22. Article category: Ko in specific domains

1. Introduction

Periodization is the division of time in order to describe it. The historian Marc Bloch (1953, 28) observed that because time is both a continuum and a process of perpetual change, any description of time must emphasize continuity at some points and difference at others. It is these emphases of continuity and difference that respectively develop into periods and the boundaries between them. A period groups together points in time under a unifying concept or continuous process, and it highlights differences between these points and those not included in the period. Periodization is a form of classification: it is the process of distinguishing and distributing time into different phases.

Much of the scholarly discourse on periodization focuses on the periodization of human history. But not only human history is subject to periodization. Any process can be divided into phases. Cosmologists' models of the origins and structural development of the universe divide that development into epochs (Smeenk and Ellis 2017). Geologists and paleontologists work to achieve consensus on the division of Earth's history through the identification of standard reference points in geological strata (Cohen et al. 2013). Judson (2017) proposed an alternative periodization of Earth's history based on expansions in the forms of energy exploitable by living beings. Griesemer (1996) examined developmental biologists' variant periodizations of ontogenesis, the process of maturation and development that unfolds over a biological individual's lifetime. Scientists, like historians, choose periodizations to facilitate description and explanation, and the particular periodizations they choose will vary according to the nature of the processes they are trying to describe and explain. Mandelbaum (1977, 33) considered "special histories" of cultural phenomena such as French literature, or Gothic architecture, or chemistry. Such histories need not focus on human activity and may instead trace the contours of purely formal development across "works" such as literary texts, cathedrals, or scientific theories. As in developmental biology, an unfolding process of development is constructed from some discontinuous series of observations and then divided into phases in order to describe and explain those observations.

2. The emergence of a scholarly discourse on periodization

The practice of dividing historical time into periods is as old as narrative. Creation myths often enumerate periods to es-

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY

tablish narrative continuity between mythical events and political rulers (Cajani 2011). With the advent of writing, it became possible for historians to give accounts of the past based on the study of surviving traces, but they continued to use political reigns to demarcate historical time. Both trends are evident in the two sequences of periods that came to dominate medieval European historiography: Six Ages demarcated by events such as the Biblical flood and the life of the patriarch Abraham, and a succession of Four Empires as prophesied in the Book of Daniel (Besserman 1996; Cajani 2011).

While dividing the past into parts may be an ancient practice, reflection on periodization as an aspect of historical method does not seem to have appeared until relatively recently. The Oxford English Dictionary (2019) traces the first printed appearance of the word *periodization* to an 1898 article in the *American Historical Review*, which had been founded only three years earlier. Conscious reflection on periodization emerged with the consolidation of historiography as a discipline with shared standards for methodology. This reflection brought to the fore a question familiar to any student of classification: is periodization about discerning ontological kinds or about constructing epistemological tools? Periodizations grounded in biblical prophesies, or in speculative philosophies of history as the unfolding of a divine plan, could be understood as the former: objectively existing structures of change brought to light through historians' scholarship. But with the emergence of a disciplinary discourse on historical method came arguments for understanding periodizations as the latter: conceptual tools or strategies invented by historians to make the past intelligible and having no independent existence outside of historical narrative. This shift opened a space for historiographical debate about principles for periodization.

3. Diversifying criteria for individuating periods

As noted above, periodizations often focus on the succession of empires and kings, divine or otherwise. Bloch (1953, 183) observed that political events such as accessions and revolutions provide convenient and seemingly precise points of demarcation for periodizations. But he warned against the "false precision" of political events: "Metamorphoses of social structure, economy, beliefs, or mental attitude cannot confirm to an overly precise chronology without distortion" (Bloch 1953, 184). The move that historians like Bloch advocated, away from histories focused on political events and toward broader social histories, raises the question of how else periods might be demarcated.

Bloch's successor in the Annales school of social history, Fernand Braudel (1980) famously argued against "event history," exhorting historians to pay attention to longer-term dynamics of historical change. From economics he borrowed the concept of the conjuncture, a trend such as a boom-bust cycle that integrates a number of correlations observed across multiple quantitative time series. From sociology he borrowed the notion of the *longue durée* as the timescale necessary to discern very long-term changes in the structures constraining human development.

Braudel's arguments often resurface in critiques of periodizations that privilege political events. Geographer David Wishart (2004, 313), responding to histories of the Plains Indians that "fold their ethnographies into periods that are derived from American, not indigenous, realities," suggested as alternatives periodizations grounded in economic cycles or patterns of population change. Literary scholar Wai Chee Dimock (2001, 758) proposed abandoning the "decades and centuries" scale of conventional literary periods in favor of a "deep time" of "extended and nonstandardized duration."

4. Periodization as a form of historiographical theorizing

Can historians make objective claims about the coherence and character of the periods they perceive? Philosophical analyses of periodization have often been motivated by a desire to defend historical explanations against claims that it is purely subjective or non-informative. One such analysis is historicism, the idea that "thoughts, activities, and institutions are best described and explained as somehow fitting together in the era in which they are said to occur" (Berkhofer 2008, 76). Originating among the historians and philosophers of nineteenth century Germany, historicism emphasizes the internal coherence of periods consisting of mutually interrelated occurrences close to one another in space and time. Rather than identifying key events in transhistorical processes driven by political or social forces, the historicist looks for the unique qualities of a period and tries to identify the "overarching character" or "dominant note" of these qualities. From a historicist perspective, periodizations reflect changes in these "dominant notes."

More recent analyses of periodization have focused on how historians use writing to produce coherent periods. The philosopher Arthur Danto (2007) analyzed how written history employs narrative sentences—sentences that describe past events in terms of their later consequences—to construct temporal structures such as periods. These structures, he argued, produce an "organization of the past," and the specific choice of organizing scheme depends on what aspects of the past the historian is interested in (Danto 2007, 111). However, he did not consider this to be a purely subjective choice but analogous to how a scientific theory imposes an organizing scheme on empirical investigation.

The historian and philosopher Gordon Leff (1972) similarly characterized periodizations as frameworks for organ-

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY

izing historical investigation. He contrasted periods with scientific concepts, arguing that while the latter are purely generalizing, the former are both particularizing and generalizing, enabling them to be used to highlight differences and collect those differences under a common term.[1] A term like *Tudor period* provides "artificially established" criteria for grouping together diverse particularities—"Henry VIII, Elizabeth I, the dissolution of the monasteries, Spenser, Shakespeare, Tallis, the Armada"—under a common name that can be related to and compared with what came before and after, e.g. a *Lancastrian period* or a *Stuart period* (Leff 1972, 156).

The philosopher James Griesemer (1996) focused on the role of periodization in historical sciences such as evolutionary biology, specifically examining how developmental biologists periodize the process of ontogenesis. In his view, periodization divides time into "explanatorily homogenous" stages. Each of these stages is explanatorily homogenous because it can be explained using a single causal-mechanical model. Breaks between periods indicate points at which explanation must shift to a different model. Historical scientists may contemplate which models make sense given a fixed periodization, or they may contemplate how alternative periodizations temporally frame a given set of models. Periodization thus links ahistorical causal-mechanical explanation with historical narrative description: "periods structure our views of the data as represented in models and at the same time organize the terms of the narrative" (Griesemer 1996, 24).

The librarian Knut Tore Abrahamsen (2003, 149) examined how the periodizations employed by music historians reflect the explanatory traditions within which they work. Historians working within a tradition that focuses on the formal development of musical works choose periodizations that highlight stylistic differences. In contrast, historians coming from a tradition that treats music as entangled with other cultural and social phenomena choose periodizations that emphasize the different functions of music at different times and places, the influence of economic interests, and the effects of power differentials. Here the differences in periodization reflect not only differences in the temporal framing of models used to explain phenomena, but more fundamental differences in how the phenomena of "music" are conceptualized and distinguished (or not) from other social and cultural phenomena.

5. Institutionalization of periodizations

Treating periodization as a methodological tool emphasizes investigators' freedom to define their own periodizations. However, investigators are not entirely free in this regard. "Successful periodizations become organizing principles not only for historical scholarship but for the culture at large" (Jordanova 2000, 122). Periods, like other concepts, are useful in proportion to their stability and to the extent that they gain acceptance. Common periodizations are reflected in the organization of university history departments, academic journals, and conferences as well as history textbooks and curricula. One group of history curriculum designers argued that standardizing on a periodization used in museums and popular media would allow pupils to relate information more easily from outside school to what they were learning in school (Vereniging voor Leraren Geschiedenis 1999).

Successful periodizations thus have a kind of inertia that resists scholars' efforts to dislodge them. This is evident from the persistence of periodizations organized around political events, which still dominate the popular consciousness of history as well as formal systems of KO. The historian Ludmilla Jordanova (2000, 124) noted that "events as period organisers ... lend themselves to symbolisation. Because they can be presented as unitary, simple, discrete units, they easily get a grip on us, fit into larger patterns, and work their magic through all the means cultures afford them." The widely accepted periodizations at any given point in time constitute part of the context within which historical investigations proceed, and even attempts to change or replace those periodizations serve in part to solidify their position.

6. Arguments against periodization

Some scholars, not content to simply replace dominant periodizations with new ones, have argued for abandoning periodization altogether. The literary scholar Russell Berman (2001) contrasted periodization in literary history with the establishment of literary canons, arguing that periodic borders obscure patterns of literary reception involving influences from the distant past or anticipation of an envisioned future. Literary scholar and historian Lisa Brooks (2012, 309) considered the possibility that digital media disrupts the linear conception of time implied by periodization such that "the measuring tape of time will become decreasingly useful and, perhaps, increasingly (self)destructive." Literary scholar and information scientist Ted Underwood (2013) suggested that the penchant for periodization among literary scholars stems not from a desire to neatly sort history into standardized bins, but from a disciplinary identity rooted in theories of discontinuity and rupture. He too sees digital media as challenging that identity by providing tools and a vocabulary for describing gradual, continuous changes.

Perhaps the most ambitious attempt to develop an alternative to periodization for thinking about historical time can be found in the work of historian Reinhart Koselleck. According to Koselleck, historical time should be under-

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY

stood not as a single continuum to be divided into periods, but as consisting of layers of different kinds of time, each of which has its own rhythm and velocity (Jordheim 2012). Koselleck was particularly interested in how shared language links individual, concrete experience with collective, accumulated experience, both of which have their own temporal structure: an event may be individually novel and yet also reinforce a collective memory. Further complicating this picture is the fact that language has its own temporality, a phenomenon that Koselleck investigated extensively in his work on the history of concepts (*Begriffsgeschichte*).[2] Koselleck's theory of clashing layers of temporal experience throws into question the very possibility of establishing stable periodizations.

All of these arguments against periodization warn against reifying periods, emphasizing that they are products of discourse. These warnings are worth heeding, but we cannot dispense with periodization entirely. Even if human thinking about change over time were to move beyond periodization, periodizations would still be important keys to understanding the thinking about change over time reflected in written records. Furthermore, it is precisely the fact that periods are products of discourse that makes them useful. Periods, like other named concepts, enable discourse despite disagreement on details. The philosopher John Searle (1958) argued that "the uniqueness and immense pragmatic convenience of proper names in our language lie precisely in the fact that they enable us to refer publicly to objects without being forced to raise issues and come to agreement on what descriptive characteristics exactly constitute the identity of the object." [3] Periodizations are temporally structuring frameworks within which we can meaningfully disagree.

7. Periodization in KOS

As is hopefully clear from the discussion above, periodization can be examined at two different levels. At one level is individual scholarly practice. Scholars bring to their data organizing schemes that both structure their views of that data and set the terms of how they will communicate their findings. Periodization is one such organizing scheme (Shaw 2013). At another level is the reification of these schemes in systems of institutional organization and collective understanding. Scholars are influenced by and responsive to institutionalized periodizations, just as those institutionalized periodizations are influenced by and responsive to the work of scholars. Institutionalized periodizations are not simply successful scholarly periodizations; instead they reflect common patterns of scholarly periodization over time.

KOS are part of the institutional apparatus at this second level, hence they primarily deal with patterns of periodization rather than specific divisions of time. An excellent example is the Getty Research Institute's *Art and Architecture Thesaurus (AAT)*, which is widely used for cataloging cultural heritage resources. The *AAT* includes hundreds of period terms, but no specific temporal extents are associated with these terms—they are treated as subjects rather than divisions of time. The reasons for this are straightforward: the temporal extent of a period such as Iron Age will vary widely from place to place (since the production of iron developed in different places at different times), and even in the same place different scholars may assert different temporal boundaries for the period. The *AAT* aims to control a vocabulary of periodization but not to adjudicate disputes over specific definitions.

Another strategy to avoid being mired in disputes over periodization is to favor purely chronological subdivisions. For example, in the *Library of Congress Subject Headings (LCSH)*, headings such as "Television—History" may be made more specific through the addition of an arbitrary chronological subdivision like "20th century." The arbitrary yet regular subdivisions of time established by a particular dating system provide a way to reference temporal extents in a way that drains them of any particular significance. This use of a "neutral" reference system is the temporal analog of the use of spatial reference systems to identify arbitrary geographical locations and extents in terms of latitude and longitude.

In addition to arbitrary chronological subdivisions, the *LCSH* also demonstrates other strategies for organizing time. The subject headings include many period terms, but as in the *AAT* these are typically not associated with temporal extents. The lack of temporal extents arguably limits the usefulness of these subject headings. For example, it is not possible to create timeline visualizations of bibliographic records linked to *LCSH* period terms, unless some processing is carried out to associate "canonical" temporal extents with those terms (Petras et al. 2006). However, for some politically individuated periods such as empires and wars—enumerated by the Library of Congress in various editions of the *LC Period Subdivisions Under Names of Places* (Library of Congress and Quattlebaum 1975)—the *LCSH* do provide temporal extents. These are typically cases where the temporal footprints of an overarching historical period or event vary by place, as exemplified by the headings "Japan—History—Allied occupation, 1945–1952," "Austria—History—Allied occupation, 1945–1955," and "Berlin (Germany)—History—1945–1990." Here the temporal extent of "Allied occupation" varies according to the place being occupied. This can be considered a form of periodization in which period names are constructed through the combination of standardized elements.

Some specialized KOS focus solely on periodization and do include representations of temporal extent. Informaticist Martin Doerr and his collaborators created a multilin-

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY

gual thesaurus of time period names with the objective of helping to resolve disagreements about the definitions of time periods among different communities of archaeologists (Doerret al. 2010). This goal has been more fully realized by the German Archaeological Institute with their ChronOntology Project, which also attempts to provide canonical definitions of period terms for resolving disagreement but distinguishes among definitions with significantly different individuation criteria or temporal extents (Schmidle et al. 2016). Rather than identify canonical definitions, the PeriodO project attempts to catalog all formally and informally published scholarly and institutional periodizations that include in their period definitions both temporal extent and an indication of spatial coverage (Rabinowitz et al. 2016). Each periodization is linked to the specific scholarly source in which it was defined. PeriodO allows one to see that period terms have their own histories, visible as changing patterns of periodization over time.

Political periodizations aside, the temporal extents of periods are often vague—necessarily so, Searle would argue. Bloch (1953, 189) observed that "Reality demands that its measurements be suited to the variability of its rhythm and that its boundaries have wide marginal zones." Designers of KOS that include temporal extents for their period concepts must choose how to represent these wide marginal zones. One common approach is to use four points in time: earliest start, latest start, earliest end, and latest end. The beginning and ending of the temporal extent are each represented as intervals. Some KOS have taken more sophisticated approaches to representing imprecise temporal extents, such as using fuzzy set theory (Kauppinen et al. 2010).

8. Conclusion

Periods resemble regions, such as the Midwest of the United States, the boundaries of which are drawn differently by different people at different times (Wishart 2004). Divisions of space into regions often presuppose certain periodizations and vice versa. Intertwined periods and regions together resemble other concepts, such as *cultures*, which are similarly understood as having both spatial and temporal dimensions. It is possible to augment the standard representations of such concepts in KOS with spatial and temporal boundaries, in order to enable more sophisticated querying and visualization. This can be useful for applications like describing archaeological data or aggregating periodized data across institutions. More detailed modeling of the temporal and spatial extent of concepts also has interesting possibilities for integrating KO at the level of the individual scholar with KO at the level of the institution (Shaw 2010; Shaw 2013). For many purposes, it will not be worth investing in such additional modeling of time and space, and periodizations will be treated the same as other kinds of classifications.

Whether or not periodizations play an important role in the production of the specific knowledge they seek to organize, designers of KOS can learn from periodizations as exemplars of more general issues in knowledge organization. Periods as they appear in KOS are collectively constructed from a large number of accounts that may differ greatly in the way they individually define and characterize the period. But this is also true of many other kinds of concepts found in KOS (Shaw 2013). Like periods, these other concepts also serve as frameworks that both support and constrain discourse. By building KOS around such schemes, designers risk reifying them in the ways warned against by critics of periodization, perhaps constraining discourse too tightly. One way to hedge that risk is to design KOS that do not mutely assert a "neutral" choice of scheme but are in themselves well-supported arguments for a particular choice of scheme, given the nature of the knowledge being organized and the interests of those for whom it is being organized.

Notes

1. The idea that scientific concepts are purely generalizing is not unique to Leff. Carnap (1967) famously asserted that science is concerned with the structure and form of relations and not with any particular individuals participating in those relations. Hempel (1942) believed that historical narratives of particular events could function only as "sketches" for explanations, since true explanations require the generalizing laws of science. Positivist views like these have been subject to ample criticism by philosophers of science. But even if we accept a positivist account of scientific theories, it is still the case that any *application* of those theories to explain observed phenomena functions not only to emphasize what is true in general of those phenomena, but also unavoidably highlights the differences among those phenomena, now newly salient against the common background established by the theory. We might question whether, in practice, there is a useful distinction to be made between concepts that are "purely" generalizing and those that are not.
2. *Begriffsgeschichte* is the name given to the systematic effort by a number of German-speaking scholars to write the history of cultural and political concepts. A major part of this effort was the multivolume *Geschichtliche Grundbegriffe (Fundamental Concepts of History)*, published between 1972 and 1997, of which Koselleck was the third editor (Christians 2020).
3. The pragmatic appeal of proper names as a way of avoiding the difficult work of exactly specifying descriptive characteristics is reflected in the distinction between KOS such as thesauri and classification schemes that

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY

enumerate and link the former, and KOS such as ontologies that focus on the latter.

References

Abrahamsen, Knut Tore. 2003. "Indexing of Musical Genres. An Epistemological Perspective." *Knowledge Organization* 30, no. 3/4: 144–169. doi.org/10.5771/0943-7444-2003-3-4-144

Berkhofer, Jr., Robert F. 2008. *Fashioning History: Current Practices and Principles*. New York: Palgrave Macmillan.

Berman, Russell A. 2001. "Politics: Divide and Rule." *Modern Language Quarterly* 62, no. 4: 317–30.

Besserman, Lawrence. 1996. "The Challenge of Periodization: Old Paradigms and New Perspectives." In *The Challenge of Periodization: Old Paradigms and New Perspectives*, 3–27, edited by Lawrence Besserman. New York: Garland.

Bloch, Marc. 1953. *The Historian's Craft*. Translated by Peter Putnam. New York: Knopf.

Braudel, Fernand. 1980. "History and the Social Sciences: The *Longue Durée*." In *On History*, translated by Sarah Matthews, 25–54. Chicago: University of Chicago Press.

Brooks, Lisa. 2012. "The Primacy of the Present, the Primacy of Place: Navigating the Spiral of History in the Digital World." *PMLA* 127, no. 2: 308–16. https://doi.org/10.1632/pmla.2012.127.2.308.

Cajani, Luigi. 2012. "Periodization." In *The Oxford Handbook of World History,* edited by Jerry H. Bentley, 54-71. Oxford, UK: Oxford University Press, https://doi.org/10.1093/oxfordhb/9780199235810.013.0004

Carnap, Rudolf. 1967. *The Logical Structure of the World.* Berkeley: University of California Press.

Cohen, Kim M., Stan C. Finney, Phil L. Gibbard, and JunxuanFan. 2013. "The ICS International Chronostratigraphic Chart." *Episodes* 36, no. 3: 199–204. https://dspace.library.uu.nl/handle/1874/289106

Danto, Arthur C. 2007. *Narration and Knowledge*. New York: Columbia University Press.

Dimock, Wai Chee. 2001. "Deep Time: American Literature and World History." *American Literary History* 13, no. 4: 755–75. https://doi.org/10.1093/alh/13.4.755.

Doerr, Martin, Athina Kritsotaki, and Steven Stead. 2010. "Which Period Is It? A Methodology to Create Thesauri of Historical Periods." In *Beyond the Artefact: Digital Interpretation of the Past*, edited by Franco Niccolucci and Sorin Hermon. Budapest: Archaeolingua.

Griesemer, James R. 1996. "Periodization and Models in Historical Biology." In *New Perspectives on the History of Life: Essays on Systematic Biology as Historical Narrative*, edited by Michael T. Ghiselin and Giovanni Pinna, 19–30. San Francisco: California Academy of Sciences.

Hempel, Carl G. 1942. "The Function of General Laws in History." *The Journal of Philosophy* 39, no. 2: 35–48. http://www.jstor.org/stable/2017635.

Jordanova, Ludmilla. 2000. *History in Practice*. London: Oxford University Press.

Jordheim, Helge. 2012. "Against Periodization: Koselleck's Theory of Multiple Temporalities." *History and Theory* 51, no. 2: 151–71. https://doi.org/10.1111/j.1468-2303.2012.00619.x.

Judson, Olivia P. 2017. "The Energy Expansions of Evolution" *Nature Ecology & Evolution* 1, Article number: 0138. https://doi.org/10.1038/s41559-017-0138.

Kauppinen, Tomi, Glauco Mantegari, Panu Paakkarinen, Heini Kuittinen, Eero Hyvönen, and Stefania Bandini. 2010. "Determining Relevance of Imprecise Temporal Intervals for Cultural Heritage Information Retrieval." *International Journal of Human-Computer Studies* 68, no. 9: 549–60. https://doi.org/10.1016/j.ijhcs.2010.03.002.

Leff, Gordon. 1972. "Models Inherent in History." In *The Rules of the Game: Cross-Disciplinary Essays on Models in Scholarly Thought*, edited by Teodor Shanin, 148-60. London: Tavistock.

Library of Congress and Marguerite V. Quattlebaum. 1975. *LC Period Subdivisions Under Names of Places.* Washington: Library of Congress.

Mandelbaum, Maurice. 1977. *The Anatomy of Historical Knowledge.* Baltimore: Johns Hopkins University Press.

Oxford English Dictionay Online, s.v. "periodization, n." accessed December 14, 2019. Oxford University Press. https://www-oed-com.libproxy.lib.unc.edu/view/Entry/140978?redirectedFrom=periodization.

Petras, Vivien, Ray R. Larson, and Michael Buckland. 2006. "Time Period Directories: A Metadata Infrastructure for Placing Events in Temporal and Geographic Context." In *Proceedings of the 6th ACM/IEEE-CS Joint Conference on Digital Libraries (JCDL)*. Chapel Hill, North Carolina: ACM Press, 151–60. https://doi.org/10.1145/1141753.1141782.

Rabinowitz, Adam, Ryan Shaw, Sarah Buchanan, Patrick Golden, and Eric Kansa. 2016. "Making Sense of the Ways We Make Sense of the Past: The PeriodO Project." *Bulletin of the Institute of Classical Studies* 59, no.2. https://doi.org/10.1111/j.2041-5370.2016.12037.x.

Schmidle, Wolfgang, Nathalie Kallas, Sebastian Cuy, and Florian Thiery. 2016. "Linking Periods: Modeling and Utilizing Spatio-temporal Concepts in the ChronOntology Project." *Computer Applications and Quantitative Methods in Archaeology (CAA)*. Oslo.

Searle, John. 1958. "Proper Names." *Mind* 67, no. 266: 166–73.

Shaw, Ryan. 2010. "Events and Periods as Concepts for Organizing Historical Knowledge." PhD diss.; University

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY

of California, Berkeley. ProQuest ID: Shaw_berkeley_0028E_10835. Merritt ID: ark:/13030/m53n27cf. https://escholarship.org/uc/item/4111f1fw.

Shaw, Ryan. 2013. "Information Organization and the Philosophy of History." *Journal of the American Society for Information Science and Technology* 64, no. 6: 1092–1103. https://doi.org/10.1002/asi.22843.

Smeenk, Christopher and George Ellis. 2017. "Philosophy of Cosmology." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta https://plato.stanford.edu/archives/win2017/entries/cosmology/.

Underwood, Ted. 2015. *Why Literary Periods Mattered*. Stanford University Press.

Vereniging voor Leraren Geschiedenis. 1999. *Historical Formation: Design of Vision*. https://web.archive.org/web/20200405181208/http://users.telenet.be/michel.vanhalme/historical.htm.

Wishart, David. 2004. "Period and Region." *Progress in Human Geography* 28, no. 3: 305–19. https://doi.org/10.1191/0309132504ph488oa.

https://doi.org/10.5771/0943-7444-2023-7-489 https://www.inlibra.com/de/page/agb - Open Access - (cc) BY