Kuhn, Fleck and Archaeological Evidence: An Omnivorous Strategy to Study the History of Archaeology

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Abstract
The majority of the current histories on the social facets of scientific work rely theoretically on Kuhn's *The Structure of Scientific Revolutions*, whose 'paradigm' has since become limited due to a rethinking of the epistemology of knowledge creation. Accordingly, Ludwik Fleck, whose notions allow for better micro-historiographies to surface as a supplement to the paradigm, have come to the fore with their applicability stemming from his *The Genesis and Development of Scientific Fact*. A hybrid omnivore strategy between them may be further supplemented by the contemporary philosophy of science of evidential reasoning in archaeology.
Applying this theoretical background, specific attention in this paper is paid to the archaeology of the former Yugoslavia, in which a monumental shift occurred. Prior to World War II, it consisted of lone individuals; however, with the introduction of a culture-historical approach, considerable growth occurred in archaeology after World War II, emerging as an emancipatory force in the service of ideology. Through an omnivore perspective, an examination of the archaeology of the former Yugoslavia presents a broader picture of the mechanisms of scientific development.

Keywords
History of archaeology, Paradigm, Evidence, Evidential reasoning, Yugoslavia

Introduction

Although presented as a layering of a series of theoretical approaches, the history of archaeology is not singular but rather pluralistic in nature (Currie 2019). It is regularly represented, in stark contrast, as the historical development of three consequent paradigms of culture-historical, processual and post-processual archaeology (Babić 2018: 141). However, while such a sequence may be applicable to certain major archaeologies, it becomes quickly apparent that it is not equally valid as a means to examine historical progression when utilizing the same historical structure on marginal archaeologies. Based on the methodology for the history of archaeology applied, the fruits of research achieved may be various in nature; consequently, the

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aim of this article is to propose a more suitable methodology through an omnivorous strategy to examine the history of archaeology as transdisciplinary in its foundations. Thomas Kuhn, who examined the historical development of physics and chemistry, purported the concept of paradigm shifts as determined by changes to world views. His theories of examining historical progression, although stemming from the natural sciences, may be applied in a limited fashion to examining the history of archaeology (Kuhn 1996; Lucas 2016; Milosavljević 2020a: 14). The concepts of paradigm shifts are represented in the history of science today so frequently that their meaning is rarely questioned (Praetzellis 2015: 9–25). Kuhn's concept of the structure of scientific revolutions has been so simplified that his notion of paradigm has been largely decontextualized in relation to the process of change in science. The idea of paradigm today, due to its frequent usage in the history and philosophy of science, has lost its initial radicalism (Lucas 2016). Nevertheless, Kuhns' approach to introducing a new worldview into science is essential for the history of archaeology which this work here tries to present in its full complexity by seeking to supplement Kuhn's approach with a Fleckian perspective (Milosavljević 2020: 19–24) and combining evidential reasoning in archaeology (Chapman & Wylie 2016).

Although still unknown outside of medical history circles, Ludwik Fleck's concepts of development have been increasingly applied to the history and philosophy of science. Similar to Kuhn, Fleck argued that the strength of science is its collective nature (Löwy 1998: 133–155; Brorson & Andersen 2001:109–129; Condé 2016: 46–51; Binney 2016: 101–115). Fleck puts forward the idea that what is considered to be scientific fact is a social construct shaped by a thought-collective. The Fleckian perspective, therefore, removes the Kuhnian idea of pure paradigm-shifting, by which archaeology may be better understood when examining archaeologists who have developed their science under non-ideal circumstances. Using Fleck's conceptual toolbox, changes in the history of archaeologies may be better examined through the incorporation of Fleck's basis of scientific fact (Milosavljević 2016: 88–100; Palavestra & Babić 2016: 316–334; Matić 2018: 19–44). As Robert Chapman and Alison Wylie have pointed out, knowledge production in archaeology is not just an intellectual process, rather scientific outcome: "[...] *depends not only on holding the conceptual and technical elements of scaffolding from evidence open to critical appraisal but also on interrogating the ecologies of practice – the disciplinary culture, the training and funding system, the institutional infrastructure – that sustain (or confound) these practices.*" (Chapman & Wylie 2016: 135). Borrowing from Adrian Currie's work *Rock, Bone and Ruin: An Optimist's Guide to the Historical Sciences* (2018), the methodological omnivore strategy permits the use of multiple heterogeneous concepts into one research program substantiated by essential pillars of paradigms, thought-collectives, scientific facts and archaeological evidence. As Currie has stated, methodological optimism is still possible in difficult, non-ideal settings when evidence is fragmented and the interpretative target complex and multi-layered, as it still poses opportunistic strategies for problem-solving (Currie 2018: 138). Such a methodological strategy for the histories of archaeology, however, necessitates a flexible and transgressive mindset, limited to cases when the trading zone of ideas and methods is under the umbrella of epistemological exchange (Ribeiro 2022: 93–105).

By following the evidential reasoning put forward by Robert Chapman and Alison Wylie, the archaeological material record challenges our understanding of the human past. It poses that evidence is not simply a physical discovery as with the excavation of artefacts (Chapman & Wylie 2016: 1–12). To illustrate, archaeological records differ should an archaeologist be observing with the naked eye, magnifying glass or electronic microscope (Edgeworth 2012: 76-92).

Raw data itself does not exist by its mere nature and is generated; rather, all data interpretation calls for a theoretical pluralistic scaffolding to analyse the past. Chapman and Wylie try to refocus on archaeological practice through a "practical turn" allowing for the incorporation of ambiguity and removes the necessity of the ideality of science (as purported by Kuhn). According to evidential reasoning, the paradoxical nature of archaeological interpretation is that it necessitates theory but material traces are capable of resistance. Instead of lamenting the fragmented nature of archaeological evidence, objectivity could be reconceptualised and a pragmatic alternative for situated knowledge and reflexivity explored. Cross-filled communicative skills permit the transformation of our understanding of the history of archaeology based on new knowledge exchanged between the philosophies of science and archaeology as well as archaeology itself. In this approach, the birth of the "fact" created in fieldwork is essential to perspective on archaeology's historiography. Although Kuhn and Fleck tantamountly surmise science as unified, Chapman and Wylie focus on the epistemology and history of one particular field – archaeology (Chapman & Wylie 2016).

In order to better illustrate the change within knowledge, this paper will use the shifts in archaeology in the former Yugoslavia after the Second World War as a brief but concrete example (Palavestra & Babić 2016: 316-334; Milosavljević 2020a; 2020b; Lorber & Novaković 2020: 689–715). The change that took place in Yugoslav archaeology is intellectual (i.e., the introduction of a Kunian paradigm), social (i.e., the creation of Fleckian thought-collectives and institutions/circles) and change in the scientific standards of collecting evidence (i.e., the power of legacy data, as according to Fleck as well as Chapman and Wylie). In this regard, this work seeks to suggest a recommendation for the omnivorous strategy for the history of archaeology. The examples provided merely serve to illustrate theoretical points from their perspective of marginal archaeology and are not comprehensive for the purposes of the paper; instead, the example itself serves to stand as proof of concept in applicability as well as illustrative to demonstrate the underlying theory of an omnivore strategy as is here elaborated.

Kuhn, paradigms and crisis

Tracing back the introduction of the paradigm into science from Kuhn's *The Structure of Scientific Revolutions* (1962), it follows from Kuhn's history as a physicist as it had shaped his ideas on how science functions. Kuhn, who earned his BSc, MSc and PhD in physics from Harvard, decided to reorient himself to the history of science (Sardar 2001: 24–28). Kuhn's ideas also arose in the context of questioning what the goal of science is in general. After World War II, during which science was explicitly

instrumentalized for political purposes, the rationality, objectivity and progress of science were all called into question. Ultimately, Kuhn's importance is largely attributed to his theories overthrowing the logical positivism of the 'Vienna Circle' (Peri 2000: 590–595) and paving the way for post-positivism in the observation of science (Eichmann 2008: 19–20).

The Structure of Scientific Revolutions was a turning point in the history of science (Heking 2018: 18). Kuhn's paradigm implies a generally accepted framework for the production of scientific problems and solutions. Such an approach implies that the paradigm is equated with a corresponding theory of knowledge (Olsen 2002: 25–27). Although best known through its addressing paradigms in scientific thought, it is a disservice to merely encapsulate Kuhn's work into the paradigm as a singular concept. Indeed, Kuhn goes further in the definition of the concept of paradigm as he tries to narrow the meaning of its concept to universally accepted achievements, which provide models for scientific problems and explanations within a group over a time frame (Kuhn 1996; Kun 2018).

Kuhn accords that changes in science occur due to revolutions whose structure he describes through the following neatly organised phases: 1) the "Pre-paradigmatic state", 2) "Normal science", 3) "Anomaly and the emergence of new scientific discoveries", 4) "Crisis and the emergence of new scientific theories", 5) "Revolution in response to the crisis". Based on these, the state of science develops from a pre-paradigmatic state to a paradigmatic one (Sardar 2001: 23–36; Kuhn 1996; Kun 2018). Nevertheless, Kuhn's pursuant paradigm fails to account for specifics of a particular science (such as archaeology and other historical sciences) which is transdisciplinary and flexible in its phases of development (Milosavljević 2020a, 14).

According to Kuhn, the goal of "normal science" is the articulation and understanding of phenomena important from the paradigm as based on facts (Eichmann 2008: 21–22; Kuhn 35–42; Kun 2018: 73–79), with the paradigm thus contributing both to the expansion of the framework through cumulative credibility and to the accuracy of scientific knowledge. The characteristics of all discoveries are determined by any previous awareness of the anomaly, the gradual emergence of a new conceptual perception, and, finally, changes in categories and procedures. The novelty thus appears with aggravating factors, by which resistance has its own role (Heking 2018: 23–24).

As the paradigm blurs, the crisis itself resolves following the loose rules of 'normal science', in which the crisis is characterised through a 'desperate' willingness at the attempt for the novel to express explicit dissatisfaction. For Kuhn, new scientific discoveries are established by either young scientists or newcomers to the field. As a consequence, when paradigms do change, the view of the world also changes. A revolution is, therefore, a changed view of the world. Resolving the revolution may initiate through few supporters, but if a paradigm is accurate, it will be victorious and the number of supporters and arguments in its favour will also grow with subsequent new experiments, instruments, articles and books appearing (Heking 2018: 24–26; Kuhn 1996: 136; Kun 2018: 162).

Despite the multitude of criticism, a detailed analysis of the paradigm concept should not be outright rejected (Lucas 2016: 4–6); instead, it may be supplemented by Ludwik Fleck's concepts on thought-collectives and facts as they treat social and non-social elements of knowledge together.

Fleck, facts and the thought-collective

Born in 1896 in the city of Lvov (then Austria-Hungary), Ludwik Fleck was a microbiologist of Polish-Jewish origins. Published in Basel in 1935 in German, his seminal work is titled *The Genesis and Development of a Scientific Fact: An Introduction to the Theory of Thought Style and Thought Collective*. Representing a scientist who was equally actively involved in the biomedical research of his time as well as the history and philosophy of science (Škorić 2010, 340), Fleck is intriguing as a marginal scholar of his time. He has only been recently rediscovered due to translations of his work into English. Fleck was bilingual, writing in German and Polish (Jarnicki 2016: 1). He operated in the intellectual environment of the 'Vienna Circle' as well as within the Polish Lvov-Warsaw School of Philosophy (Eichmann 2008: 27).

The title of his seminal publication refers to the genesis and development of scientific fact, since it is precisely the understanding of fact which Fleck's conceptions revolve around (Milosavljević 2020: 16–21), Fleck used the main concepts of thought-collective, thought-style, and passive and active elements of knowledge to base his epistemology. Fleck's scientific philosophy of the margin is more than useful for understanding science on the periphery (Condé 2016: 46–51).

Fleck's concept of a thought-collective can be defined as a community of individuals who exchange ideas with one another and maintain intellectual exchange. The thought-collective is reflected in the process of cognition which Fleck claims to not merely be related to the individual but the result of social activity. For Fleck, discovery is always a social event, although it is commonly understood as something done by a genius among many (Fleck 1979: 38–39). The facts are never completely independent of one other, which is why 'discovery' is a re-creation of the whole world constructed by a thought-collective. For Fleck, power relations and hierarchies are consequential aspects of the communal mode of scientific work (Fleck 1979: 99-100). Albeit these phenomena are analysable through a Foucauldian lens, it is beyond the scope of this paper.

Thought-style, in synergy with the thought-collective, is a readiness for directed perception, accompanied by the mental and objective assimilation of what is perceived. Stylised thinking represents what is considered true in a given context. For Fleck, truth is neither relative nor subjective, but neither absolute nor objective. A change in the style of thinking opens the possibility for new discoveries and new facts. Great transformations of style, according to Fleck, most often occur in times of social crisis, when there is rivalry between differing options (Eichmann 2008: 31). According to Fleck, facts are not objectively given; on the contrary, they are categories conditioned by the thought-collective, and, as such, subject to interpretation. Facts appear as a signal of resistance in chaotic initial thinking, then as a barrier to maintaining previous views and, finally, as a form that can be directly

perceived. The fact always arises in the context of the history of thoughts and is the result of the thought-style. Science has no end in truth; knowledge exists in the collective and is continuously re-examined (Fleck 1979: 95). There are no raw facts - evidence conforms to conceptions as often as conceptions to evidence (Lucas 2023: 23–25).

Facts are often popularly perceived as definitive, constant and independent of the subjective interpretation of scientists. However, Fleck notes that facts are as changeable as theories (Fleck 1979: xxvii–xxviii). The source of thinking is not in the individual, rather the social atmosphere that the individual breathes in the scientific community (Fleck 1979: 44 Fleck 1979: 44–51).

Fleck separates passive and active elements of knowledge. The scientist asks questions, which are active elements of knowledge, while empirical verification is a passive trait. Passive elements of knowledge resist the will of the scientist. To illustrate, no matter what our perspective on the phenomenon of gravity is, the force of gravity will always act. Active elements are, therefore, necessary but insufficient to produce passive elements of knowledge. Oddly, active elements are insufficient to produce facts, with facts themselves not fully socially, historically and culturally determined (Binney 2016: 103–113). Bearing this in mind, Nicholas R. Binney believes Fleck's epistemology to rely on Kant, thereby positioning it between relativism and realism due to its so-called 'middle way' (Binney 2016: 112–113; Binney 2023). Although his work stems from natural sciences, Fleck himself highlighted the importance of active elements in knowledge of the scientific communities that produce them, stating that: "*Every epistemological theory is trivial that does not take this sociological dependence of all cognition into account in a fundamental and detailed manner. But those who consider social dependence a necessary evil and an unfortunate human inadequacy which ought to be overcome fail to realize that without social conditioning no cognition is even possible.*" (Fleck 1986: 155). However, due to misunderstanding, the active aspect is often inadequately characterised as subject to interpretation which itself is only partial (Harwood 1986: 184; Binney 2016: 107–109). The content of knowledge, in addition to the empirical corpus, always implies the assumptions that Fleck called active connections. Passive aspects of knowledge are solid elements that limit the infinity of imagined possibilities in science, yet are also a logical necessity dependent on the active aspects of knowledge (Binney 2023: 19–20). In other words, passive connections arise from active connections (Eichmann 2008: 31–32). There is no scientific statement that is based only on passive aspects of knowledge; both aspects are always in relation to each other. It is usually understood that the facts are fixed and the perspective is changeable. However, fundamentally new facts can only be discovered through a new way of thinking (Fleck 1979: 46–51).

Evidential reasoning

As a third pillar of a hybrid program for the history of archaeology, the ideas presented in *Evidential Reasoning in Archaeology* (2016) by Alison Wylie and Robert

Chapman are utilised to develop a clearer link between the Fleckian account of facts and the evidential reasoning specific to archaeology.

Alison Wylie is a professor of philosophy of social and historical sciences at the University of British Columbia and Canada Research Chair in Philosophy of Social and Historical Sciences. The author of the influential *Thinking from Things. Essays in the Philosophy of Archaeology* (2002) as well as co-editor of *Material Evidence, Learning from Archaeological Practice* (2015), Wylie is known as the philosopher of archaeology. In addition, Robert Chapman is an eminent archaeologist and emeritus professor of archaeology at the University of Reading, who, in a collaborative project with Wylie, was the second editor of *Material Evidence, Learning from Archaeological Practice*. He more recently authored the book *Archaeological Theory: The Basics* (2023).

Among the questions considered in *Evidential Reasoning in Archaeology*, the most important here is how archaeologists induce old evidence to arrive at new interpretations (Chapman & Wylie 2016: 93–136). It is posited that should only post-positivist approaches in archaeology be acceptable and every fact theory-laden, then the data constructed under the old paradigm is worthless or incommensurable with a new one (Lucas 2023: 11). However, according to Alison Wylie and Robert Chapman, there is a paradox of material evidence in archaeology so that even partially untrusted primary data may catalyse new data recovery (Chapman & Wylie 2016: 95–108). Data can be recovered by understanding empirical and conceptual factors that construct the scaffolding of an argument. Nevertheless, though much of the old data be useless for reinterpretation, archaeologists may still find it achievable to extract new knowledge from the old (Wylie 2017: 203–225).

As a theoretical basis for the analysis of old evidence, Chapman and Wylie elaborate on how new techniques may be implemented to shed new light on old data. As in other sciences, in archaeology, the conditions for conducting novel research are based on the process of gradual iterations. Old data or legacy data created within an outdated paradigm can still, under certain conditions, be reliably reinterpreted (Chapman & Wylie 2016: 135–136). Understanding something excavated or found in the scientific process is to learn to see it as something worth documenting. The assumptions and procedures in this process occur due to scaffolding, which disappears upon completion. Even though the concept of scaffolding comes from construction, the metaphor is utilized as Chapman and Wylie framed it for evidential reasoning in archaeology. Scaffolding may emerge from theoretical foundations, implicit knowledge, technical skills, social cohesion, institutional support or frameworks of reflective criticism (Chapman & Wylie 2016: 55–67).

Chapman and Wylie also utilize the metaphor of the 'bootstrap' method, a term they use for the re-sampling of data from the original data set. It follows then that when it is no longer possible to return to the field or reconstruct all and especially not the conceptual 'scaffolding' of researchers, it is worth considering attempts at reinterpretation. Yet, doing so is only possible if the emergence of old records is contextualised and the pitfalls of the implied neutrality of the archaeological record are avoided (Chapman & Wylie 2016: 5–6; 93–141). Chapman and Wylie articulate elements such as theory-ladenness, background knowledge, technical equipment and

skills, networks, institutions as well as, similarly to Fleck, the power of traces to resist theoretical or other appropriations.

A culture-historical approach in the Former Yugoslavia through a new lens

Archaeology in Yugoslavia largely had consisted of lone individuals working separately prior to World War One; yet, in the immediate years following World War II it became an emancipatory force in the service of the ideology of the state (i.e., socialist 'brotherhood and unity'). Notwithstanding, a revolution in Kuhnian terms, considerable growth did occur in archaeology in the former socialist Yugoslavia through the introduction of a culture-historical approach (Novaković 2011). Its introduction was a complex process that took place in its own local context influenced by multifactors. Not only was there a change in the social system following the experience of World War II but a generational shift in academia occurred as well in line with this new paradigm (Palavestra & Babić 2016: 316–334). During the first half of the twentieth century, the archaeology of Yugoslavia was mostly marked by regional lone authorities and individuals who actively blocked scientific debate. Miloje M. Vasić, one example, was a classical archaeologist educated in Germany in the late 19th century who excavated the archaeological site of Vinča. Through his iterative interpretation, he came to the conclusion (in 1934) that Vinča had indeed been an Ionian colony on the Danube dating from the sixth century BC by claiming to find the presence of Neolithic figurines as hoplites. After the Second World War, Vinča's interpretation changed to it belonging to the Neolithic (although multi-layered) (Palavestra 2020: 236–237). Vasić's interpretation was critiqued as having destabilized the field of archaeology in Yugoslavia and may be seen as a Kuhnian anomaly. Although there were proto-ideas of a cultural-historical approach in Yugoslav archaeology prior to World War II they were generally accepted. However, the presence of such ideas may be defined as a pre-paradigmatic state according to Kuhn (Bandović 2019).

Paradigmatic changes primarily occurred in the subfield of prehistoric archaeology in Yugoslavia through the influence of the general concepts of Gordon Childe related to the ideas of archaeological culture, social evolution and the determination of a culture-chronological framework. So wieldy was his influence, the change in Yugoslavian archaeology itself is made better evident through reading Childe's books and reviews of them in local contemporary journals as well as meeting with Childe in person in Yugoslavia (Milosavljević 2020b, 77–111). In establishing a new world of ideas, much of the existing implicit knowledge and conceptual overlaps were carried over from the interim to the post-World War II period. Some of the transfers from the old to the new world forged a conceptual palimpsest. Nevertheless, while the theory may have come from Childe, the practices of archaeological fieldwork research specific to the region were generally standardized in accordance with German academic tradition of 'archaeological practices' (Lorber & Novaković 2020: 697). Here the paradigm is seen to have stabilized producing new knowledge through novel practices that had not been actuated before.

Theories present within, the culture-historical paradigm may stem into functionalism, cultural materialism and ethnic determination that allow it to persist - its presence apparent when dissecting archaeological production in the last seventy years in the Former Yugoslavia (Milosavljević 2020b: 44; Lorber & Novaković 2020: 66). This relationship between theory introduced and practice changed is how the culture-historical approach became resilient in the region despite emerging novel archaeological perspectives that challenged it.

Turning from the Kunian to the Fleckian perspective, the basic mechanism imparting a degree of scientific standards to archaeologists after the Second World War (as opposed to the sacralization of individual authority in science prior to World War II) was a collective effort in socialist Yugoslavia composed of multiple individuals all doing research themselves. A step forward in terms of the quality of work and results was achieved due to cooperation, criticism and the control of standards in place (Milosavljević 2020b: 111).

After the Second World War in Yugoslavia, the main young figures of archaeology who had studied in the 1930s formed thought-collectives. Immediately after the war, the united crew mainly arose following the lines of communications between the academic centres Belgrade, Ljubljana and Sarajevo (Palavestra 2020: 287–288; Milosavljević 2020a: 23–29). Not only was there a systematic introduction of a new approach to archaeology, but the archaeologists throughout Yugoslavia grew into a network that included joint work, sometimes in conflict and at other times on solidarity (Lorber & Novaković 2020: 693–694). Milutin Garašanin, for instance, played a key role in the systematic introduction of the culture-historical approach into the archaeology of Serbia, introducing completely new standards for collecting archaeological facts through fieldwork. However, he could not accomplish it without the help of the Yugoslav thought-collective, which included Milutin Garašanin (1920-2002) and Draga Garašanin (1921-1997) from Belgrade and, among others, Alojz Benac (1914–1992) from Sarajevo and Josip Korošec (1909–1966) from Ljubljana (Palavestra 2020: 287–288; Milosavljević 2020a: 23–29). Part of the process of establishing a new worldview was to overcome previous field practices through thought-collectives and new networks.

These collectives lead to multiple inputs to arrive at varied decisions within fieldwork. With the modernization of Yugoslav society as a whole, archaeology also began to develop more sophisticated techniques to maximize its performance (Novaković 2015). Culture-historical foundations based on prehistoric archaeology resulted in the remnants of the past, artefacts and contexts becoming understood as evidence. Careful excavation led to monumental structures not being treated as of singular importance; smaller finds in archaeological contexts were also included. Moreover, the evidence itself grew to be better in terms of its nature as based on the meticulous work undertaken at the time (Milosavljević 2020b: 110).

Since archaeologists collect their primary data quite differently from controlled experimental conditions in other sciences, the established awareness of the uniqueness of the archaeological context has decisively influenced the change of practice towards more careful and thorough work during excavations. Archaeological fieldwork, perceived as an immediate practice and experience,

changed the perspective on prior knowledge and provided room for its revision and reinterpretation of old evidence (Witmore, Shanks & Webmore 2012: 58–78).

In Serbian archaeology, after Vasić's mistake with Vinča, it was absolutely clear that one and the same archaeological record can cause numerous interpretations, as well as that fieldwork is not merely mechanical data collection performable by just anyone. Consequently, passive and active elements of knowledge are always present. Namely, Vasić used his meticulous recording and excavation during several decades of work to create an interpretation that now merely serves as a footnote in the history of ideas. Neolithic material quality in artefacts and contexts recognisable in his work are passive elements, although his questions and interpretations are active elements of knowledge, reflecting his background and social origin of his ideas. The relation between standards of excavation and practice of interpretation transformed the identity of the professional community of archaeologists strengthened in opposition to the 'older' generation. Consequently, new thought-collectives were formed (Palavestra 2020: 290–294).

The advent of the paradigm of the culture-historical approach to the former Yugoslavia after the Second World War brought with it meticulous (for its time) fieldwork of collecting and documenting evidence in its archaeological context. Doing so was a sea change in comparison to the state of archaeology in Yugoslavia prior to the Second World War (Novaković 2015). Archaeological fieldwork's standardization was a more than merely significant factor contributing to the quality of archaeology work conducted and its recognition, it was the bedrock with which archaeology came to be practised and institutionally recognized through the former Yugoslavia (Milosavljević 2020b).

The standards of archaeological fieldwork were made to be explicit such as may be found in the *Handbook of Archaeological Excavations* (1953). Milutin and Draga Garašanin criticize the tendency to look at archaeological finds only from an aesthetic point of view, promoting a thorough contextual recording of the archaeological site as it was excavated instead. They also distinctly criticized the common unprofessional practices carried out by their predecessors, such as paying local people to merely 'dig up' an area and return anything they may have found (Garašanin & Garašanin 1953).

The novel culture-historical approach also transformed the language of archaeology, in the sense of insisting on objectivity (as conceived at the time) and technical vocabulary. In practice, excavations were conducted by at least two excavation directors sharing in the decision-making process. The *Handbook* makes an effort to specifically note: "[...] *an objective archaeologist is obliged to adjust his work in such a way that everyone can control his arguments and documentation*" (Garašanin & Garašanin 1953: 73).

Archaeological evidence and the manner it is collected are complex. Archaeological traces can be seen as incomplete and fragmented, but also less lamentably as survivors and witnesses of the past (Lucas 2023: 23–25).

The nature of archaeological evidence in Yugoslavia came to be perceived differently following the Second World War. When Vasić erroneously interpreted the Neolithic village of the Vinča site as an Ionian colony on the Danube River, he had not

eliminated the potential for constructing evidence from his original findings at a later date in the future. Bootstrapping may then be found in the culture-historical reinterpretation of Vinča's archaeological site, particularly in the reanalysis of the very remains of material culture as well as the archaeological contexts and documentation on them. Implicitly, among the archaeological community of the time in Yugoslavia, there was an implicit awareness that old evidence may yield new results through re-interpretations (Palavestra 2013: 685–693).

A shift may be seen in the thought-collective which had reflected on the practices and conclusions of procedures done in the past, actively realizing where the interpretation was made. This change in Yugoslav archaeology is but one example of how paradigms may be seen through transformation of the thought-collective and respect for evidence collecting.

Awareness of the contextual nature of knowledge construction and the possibility of reinterpretation based on background knowledge has created the need for transparent insight into the construction of archaeological evidence, similar to the examples that Chapman and Wiley analysed through scaffolding. Numerous reinterpretations of old archaeological records have been enabled as such, which not only have limitations but supra-paradigmatic potential as well. The approach to data is demonstrated as being able to bear fruit and have value even after the conceptual basis of the culture-historical approach has long been rejected.

Concluding remarks

What this case study reveals, is what changes took place in Yugoslav archaeology after the Second World War and what sparked them off. In an attempt to understand this complex change in science development, one may also look for the causes of the longevity and permanence of the culture-historical approach. Doing so helps to better understand the nature of the culture-historical approach as well as how this hybrid methodology Kuhn-Fleck-Chapman-Wiley is applied. It is evident that there was a breakthrough in the manner in which archaeological fieldwork was conducted in Yugoslavia prior to and post-World War Two in terms of meticulous excavation and collective manner of all fieldwork done. One of the main reasons why the culture-historical approach has been resilient in the Former Yugoslavia is due to archaeologists being successful in excavating old and new datasets and utilizing them in their examination. When the hybrid and omnivore strategy to the history of archaeology is utilized and analysis is placed into a concrete context, there may be unusual concluding remarks made. Indeed, the paradigm shift in the Former Yugoslavia after World War II is mostly evident through the perspective on evidence and fieldwork standards based on meticulous 'German fieldwork norms'. This change might have affected a wide circle of archaeologists due to the standardization of fieldwork and publications, the network of connections and solidarity. Although the shift should not be romanticized, much can be learned from it for the future.

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