Éric Boëda
Techno-logic and technology. A Paleo-history of Knapped Lithic Objects
Routledge, London 2023, pp. 264
ISBN 9781003359081, € 35.07

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The book *Techno-logic and Technology: A Paleo-history of Knapped Lithic Objects,* authored by French archaeologist and physician Éric Boëda and translated by Michael Chazan, is the 2023 English translation of the original French edition, *Techno-logique et Technologie* (2013), published by Archéo-Éditions. To grasp the profound impact of this work on prehistoric and lithic studies, it is worth noting that this edition follows the Spanish translation published by Ediciones Bellaterra Arqueología in 2020, and a Chinese translation is scheduled for release in 2025.

The book opens with a preface in the form of an interview between Chazan and the author, followed by a short introduction and three chapters: "An Epistemological Perspective", "The Techno-logic of Evolution: A Key to Understanding Human Technicity," and "The Anthropological Sense: A Paleo-history of the Lineages of Blade Production and Blade Products in the Middle East during the Pleistocene," concluding with a final reflection. Chazan, an archaeologist specializing in Paleolithic stone tool technology, introduces the reader to the depth and significance of *Techno-logic and Technology* as "a work of philosophical ambition" (p. xxiii) – one that extends beyond prehistory to engage with broader theories of technology and materiality. The Preface serves as both an introduction to the book's core themes and an exploration of Boëda's intellectual trajectory. Through this conversation, Boëda reflects on the formation of his theoretical framework and the key influences that have shaped his approach. The author presents the reader with a thorough methodological and theoretical exposition of the principles underpinning his framework for analyzing stone tool technology. This is particularly evident in Boëda's examination of the Levallois method, where the transformation of raw materials into tools is understood as a sequence of deliberate operational

19

Universa. Recensioni di Filosofia | vol. 14, n 1 (2025)

choices that are deeply influenced by both cultural patterns and evolving technical systems. In his detailed study, Boëda shows how the Levallois technique is not just a simple process of flake removal, but instead a highly structured operation that involves complex decisions regarding core preparation, the management of energy transfer, and the selection of optimal striking structures. Each step in this process is reflective of a broader cognitive and cultural framework that guides tool production. This approach allows Boëda to reveal the intentionality behind these seemingly mechanical acts, offering a deeper understanding of how early human societies interacted with their material environment and developed systematic strategies for tool-making.

Boëda's theoretical exposition is robustly supported by a rich iconographic apparatus, featuring a wide array of detailed illustrations and diagrams of lithic tools. These visual representations are integral to his analysis, as they allow the reader to closely follow the *chaîne opératoire*, providing clarity on the operational sequences that lead from raw material to finished artifact. Through these images, Boëda demonstrates the nuanced technical systems at play in ancient stone tool industries, illustrating the subtle but significant differences between various lithic production techniques. By linking theoretical insights with concrete visual examples, Boëda offers a more comprehensive view of prehistoric tool-making, allowing for a detailed examination of the technological sophistication of Middle Pleistocene stone industries in the Near East. These studies reveal not only the functional aspects of tools but also the underlying cultural and cognitive frameworks that influenced their production and use across time.

Boëda's methodological refinement of the *chaîne opératoire*, informed by his study of the Biache-Saint-Vaast assemblage, was instrumental in reshaping lithic analysis within French archaeology from the 1980s onward. His approach represents a significant departure from traditional typological classifications, which emphasize artifact morphology over production processes. By contrast, the author's method focuses on reconstructing the internal technical logic of lithic assemblages, seeking to uncover the intentionality embedded within each phase of artifact production. This methodological shift reflects a broader transformation in archaeological thought, moving away from static typologies toward a dynamic understanding of technological processes.

Boëda's background in both medicine and archaeology in-

20

Universa. Recensioni di Filosofia | vol. 14, n 1 (2025)

forms his semiotic approach, which draws parallels between lithic analysis and clinical diagnosis. He suggests that, just as symptoms reveal but do not fully explain an illness, the visible form of a knapped stone provides clues to but does not fully reveal an underlying technical rationale that must be inferred through detailed examination. This perspective aligns with the French anthropological tradition of studying material culture as a structured system of gestures and operational choices. It also highlights the interpretative complexity inherent in archaeological analysis, where surface observations must be integrated into broader conceptual frameworks to yield meaningful insights into past human behaviors.

A central tenet of Boëda's work is that artifacts acquire meaning only when analyzed in relation to their internal coherence and technical function. He argues that reconstructing the *chaînes opératoires* underlying lithic production allows archaeologists to discern the logic governing an assemblage. This view challenges the notion that typological classifications can sufficiently capture the complexity of technical systems. By shifting the focus from external morphology to the principles governing artifact manufacture, Boëda contributes to broader debates about the autonomy of technological evolution. His position engages with Leroi-Gourhan's concept of tendance, which attributes a degree of independence to technological development, thereby contrasting with perspectives that see technology as strictly adaptive to environmental or cognitive constraints.

Boëda's work, as presented in *Technogenesis*, is deeply informed by Gilbert Simondon's philosophy of technical objects. Drawing on Simondon, Boëda reframes prehistoric technology not as a sequence of isolated artifacts but as an evolving system governed by principles of invention, adaptation, and transformation. This theoretical orientation challenges the longstanding hylomorphic model in archaeology, which tends to separate form from material and construe artifacts through static typological classifications. In Boëda's view, such approaches obscure the dynamic, processual nature of technological change and fail to situate artifacts within their operational and developmental contexts.

In particular, Boëda critiques synchronic approaches to technological analysis for isolating production sequences from their historical trajectories. Like typology, these methods risk reducing technology to a set of practical solutions rather than understanding

21

Universa. Recensioni di Filosofia | vol. 14, n 1 (2025)

it as a system shaped by recursive interactions between technical logic and socio-cultural conditions. To address these limitations, Boëda advocates for an analytic model that incorporates historical, functional, and semiotic dimensions—a move that significantly broadens the interpretative potential of lithic studies.

A central tenet of *Technogenesis* is that technical evolution should be conceptualized as a process of coevolution between humans and technology. In this framework, artifacts are embedded within what Simondon terms a *milieu* — a dynamic network of technical and cultural elements that both constrain and enable innovation. Rather than treating artifacts as autonomous units or passive instruments, Boëda positions them as relational components of evolving technical systems, continuously reshaped by feedback loops between material, gesture, and environment.

This reconceptualization entails understanding technical objects through their structural coupling with human activity. The notion of inorganic exteriorization is crucial here: technical objects mediate the relation between humans and their environments, and in doing so, generate new cognitive and social configurations. Boëda emphasizes that the evolutionary potential of a tool lies less in its functional efficiency than in its capacity to integrate new inputs and undergo structural transformations. As such, technological change is neither linear nor solely utilitarian but emerges from internal constraints, operational logics, and emergent trajectories.

To this end, Boëda proposes a "genetic" approach that situates artifacts within historical lineages and traces their transformations over time. Rather than privileging morphology, he urges archaeologists to identify the structural dynamics that shape technical continuity and variation. Each artifact represents an unstable equilibrium which is subject to reinvention and reconfiguration in ways that resist teleological or functionalist reduction. Crucially, Boëda draws attention to cycles of transformation that do not necessarily correspond to increasing efficiency, thereby complicating assumptions of progressive technical rationality.

A particularly generative concept in this framework is the transition from abstract to concrete technical objects. Abstract objects consist of loosely connected components functioning independently, whereas concrete objects exhibit internal synergy and systemic coherence. This transition reflects not merely adaptation to environmental demands but also a deeper convergence in response to internal systemic constraints. For Boëda, this internal-

22

Universa. Recensioni di Filosofia | vol. 14, n 1 (2025)

ization of coherence is a marker of technogenesis, or technology's capacity to shape its own evolutionary path.

This view aligns with post-humanist and materialist theories that challenge anthropocentric accounts of technology. Boëda proposes that technical objects are not merely passive tools manipulated by human intention but rather active participants in shaping the cognitive and social dimensions of human life. Once introduced, artifacts exert pressures on their users, prompting new gestures, practices, and innovations, which often lead to developments that exceed or subvert their original purposes. In this sense, the technological system is not just a reflection of human intentionality, but also a co-constitutive domain of action and transformation.

By advancing this conceptual framework, Boëda's *Technogenesis* offers a significant theoretical and methodological reorientation in the study of lithic technology. His approach pushes beyond typological rigidity, repositioning stone tools as dynamic participants in broader technical, cognitive, and cultural systems. For archaeologists, this entails not simply refining classificatory schemas but instead rethinking the epistemological foundations of the discipline. Boëda's contribution thus resonates well beyond lithic analysis, offering a compelling model for how archaeology might engage with the long-term co-evolution of humans and technology.

Through his refined approach, Boëda repositions archaeology to focus on the complex interplay between human cognition, culture, and technology, opening new pathways for future research in the field.

Bibliography

Éric Boëda, *Le concept Levallois: variabilité des méthodes*, CNRS (Monographie du CRA, n 9), 2014

Gilbert Simondon, *On the Mode of Existence of Technical Objects*, Univocal Publishing, 2016

Useful links

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23

Universa. Recensioni di Filosofia | vol. 14, n 1 (2025)