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Investigating the opportunistic debitage – an experimental approach

[Alice Leplongeon](#) based on reviews by [David Hérissou](#) and 1 anonymous reviewer

A recommendation of:

Marco Carpentieri, Marta Arzarello. For our world without sound. The opportunistic debitage in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente. (2020) OSF Preprints, 2ptjb, ver. 9 peer-reviewed and recommended by PCI Archaeology. [10.31219/osf.io/2ptjb](https://doi.org/10.31219/osf.io/2ptjb)

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The paper “For our world without sound. The opportunistic debitage in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente” [1] submitted by M. Carpentieri and M. Arzarello is a welcome addition to a growing number of studies focusing on flaking methods showing little to no core preparation, *e.g.*, [2–4]. These flaking methods are often overlooked or seen as ‘simple’, which, in a Middle Palaeolithic context, sometimes leads to a dichotomy of Levallois vs. non-Levallois debitage (*e.g.*, see discussion in [2]).

The authors address this topic by first providing a definition for ‘opportunistic debitage’, derived from the definition of the ‘Alternating Surfaces Debitage System’ (SSDA, [5]). At the core of the definition is the adaptation to the characteristics (*e.g.*, natural convexities and quality) of the raw material. This is one main challenge in studying this type of debitage in a consistent way, as the opportunistic debitage leads to a wide range of core and flake morphologies, which have sometimes been interpreted as resulting from different technical behaviours, but which the authors argue are part of a same ‘methodological substratum’ [1].

This article aims to further characterise the ‘opportunistic debitage’. The study relies on four archaeological assemblages from Italy, ranging from the Lower to the Upper Pleistocene, in which the opportunistic debitage has been recognised. Based on the characteristics associated with the occurrence of the opportunistic debitage in these assemblages, an experimental replication of the opportunistic debitage using the same raw materials found at these sites was conducted, with the aim to gain new insights into the method. Results show that experimental flakes and cores are comparable to the ones identified as resulting from the opportunistic

debitage in the archaeological assemblage, and further highlight the high versatility of the opportunistic method.

One outcome of the experimental replication is that a higher flake productivity is noted in the opportunistic centripetal debitage, along with the occurrence of 'predetermined-like' products (such as *déjeté* points). This brings the authors to formulate the hypothesis that the opportunistic debitage may have had a role in the process that will eventually lead to the development of Levallois and Discoid technologies. How this articulates with for example current discussions on the origins of Levallois technologies (*e.g.*, [6–8]) is an interesting research avenue. This study also touches upon the question of how the implementation of one knapping method may be influenced by the broader technological knowledge of the knapper(s) (*e.g.*, in a context where Levallois methods were common *vs* a context where they were not). It makes the case for a renewed attention in lithic studies for flaking methods usually considered as less behaviourally significant.

[1] Carpentieri M, Arzarello M. 2020. For our world without sound. The opportunistic debitage in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente. OSF Preprints, doi:10.31219/osf.io/2ptjb

[2] Bourguignon L, Delagnes A, Meignen L. 2005. Systèmes de production lithique, gestion des outillages et territoires au Paléolithique moyen : où se trouve la complexité ? Editions APDCA, Antibes, pp. 75–86. Available: <https://halshs.archives-ouvertes.fr/halshs-00447352>

[3] Arzarello M, De Weyer L, Peretto C. 2016. The first European peopling and the Italian case: Peculiarities and “opportunism.” *Quaternary International*, 393: 41–50. doi:10.1016/j.quaint.2015.11.005

[4] Vaquero M, Romagnoli F. 2018. Searching for Lazy People: the Significance of Expedient Behavior in the Interpretation of Paleolithic Assemblages. *J Archaeol Method Theory*, 25: 334–367. doi:10.1007/s10816-017-9339-x

[5] Forestier H. 1993. Le Clactonien : mise en application d'une nouvelle méthode de débitage s'inscrivant dans la variabilité des systèmes de production lithique du Paléolithique ancien. *Paléo*, 5: 53–82. doi:10.3406/pal.1993.1104

[6] Moncel M-H, Ashton N, Arzarello M, Fontana F, Lamotte A, Scott B, et al. 2020. Early Levallois core technology between Marine Isotope Stage 12 and 9 in Western Europe. *Journal of Human Evolution*, 139: 102735. doi:10.1016/j.jhevol.2019.102735

[7] White M, Ashton N, Scott B. 2010. The emergence, diversity and significance of the Mode 3 (prepared core) technologies. Elsevier. In: Ashton N, Lewis SG, Stringer CB, editors. *The ancient human occupation of Britain*. Elsevier. Amsterdam, pp. 53–66.

[8] White M, Ashton N. 2003. Lower Palaeolithic Core Technology and the Origins of the Levallois Method in North-Western Europe. *Current Anthropology*, 44: 598–609. doi:10.1086/377653

Revision round #2

2020-12-18

Dear authors,

Thank you for your detailed answer to the reviewers' comments and the changes you have made to the manuscript. Reviewer #1 does not have any further comment. Reviewer #2 (David Hérison) details further comments and suggestions (in blue in the attached pdf) that I recommend taking into account in your revised manuscript before it can be formally accepted, in particular the comments regarding the definition for 'opportunistic debitage'.

Thank you for uploading supplementary data on Zenodo. As noted by Reviewer #2, please make sure all data within these files are translated into English. In addition, I have noted some typos in the manuscript and you may find it helpful to have your article proofread.

I am looking forward to reading the revised version of your manuscript,

Best regards,

Preprint DOI: [10.31219/osf.io/2ptjb](https://doi.org/10.31219/osf.io/2ptjb)

Reviewed by anonymous reviewer, 2020-11-06 09:33

Once the new version of the paper carried out by Carpentieri and Arzarello and entitled "For our world without sound. The opportunistic debitage in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente " are reviewed and analyzed, we accept the manuscript in its current form. The comments previously exposed have been attended correctly so no new changes are required.

Reviewed by [David Hérison](#), 2020-11-30 15:18

Dear editors,

Please find in attached file the pdf with my comments inserted in blue for the second round of review. I especially encourage the authors to fully consider the central question of the definition of the "opportunistic debitage" taking into account our remarks included in the following file, and to rework it before submitting the reviewed version.

Best regards,

David Hérison

[Download the review \(PDF file\)](#)

Author's reply:

[Download author's reply \(PDF file\)](#)

Revision round #1

2020-09-29

Dear authors,

I have received two expert reviews on your preprint entitled "For our world with no sound. The concept of opportunism in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente".

Both reviewers agree that your paper addresses an interesting question and is a welcome contribution to an understudied topic in lithic analysis. They however suggest some revisions to improve the paper before it can be recommended. These are detailed below this message and as additional in-text comments for Reviewer 1 (see pdf file attached). In particular, both reviewers recommend to further define the concept of opportunism, and to place it in a wider context with specific references to other debitage systems / methods. They also both recommend the addition of details on the figures and in particular diacritic diagrams. Reviewer 1 also recommends to clarify the aims of the experimental programme as well as to provide definitions or references for the terminology used throughout the paper (e.g. bipolar, orthogonal, etc.). In addition, some parts of the texts pointed out by the reviewers require clarification and the additions of subsections would improve the reading. Following the reviewers' comments, I would also suggest to give additional details on the experimentation procedures (how many knappers, their level of skills, awareness of the goal of the study, potential biases in relation with the aim of the study, etc.), in

text or as appendices. Please also note that the raw data used in the paper (such as the spreadsheet with the measurements taken on flakes and cores) **must** be available to readers in the text or through an open data repository such as Zenodo, Dryad or some other institutional repositories (as stated here: https://archaeo.peercommunityin.org/about/help_generic#For%20authors).

I would therefore invite you to submit a revised version of your preprint for another review, taking the reviewers' suggestions into account, and explaining in details how you have dealt with each of the points they raised. If possible, I would appreciate receiving your revised preprint within 4 weeks.

I look forward to reading your revised manuscript,

Kind regards,

Alice Leplongeon

Preprint DOI: [10.31219/osf.io/2ptjb](https://doi.org/10.31219/osf.io/2ptjb)

Reviewed by [David Hérison](#), 2020-09-29 00:49

The paper “For our world with no sound. The concept of opportunism in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente.” discusses the question of weekly predetermined debitage in Lower and Middle Palaeolithic Italian assemblages. These productions were systematically under-estimated and under-studied by scholars because they have been considered as “simple” debitage with low behavioural significance. This study enters in the current dynamic of the definition of these weekly predetermined chaînes opératoires, often present in the lithic assemblages since the Lower Pleistocene and the first peopling of Europe. Such a study is thus welcomed, exploring an under-studied aspect of lithic technology.

I think some elements has to be improved to deliver a paper fully publishable. I just discuss some points here, detailed remarks have been done directly in the attached paper (see commentary column).

I suggest improving the figure of artefacts adding diacritic diagram (just adding arrows and numbers to the photographs or delivering the diacritic diagram that have been made as written by the authors). In fact, only with the photograph, it is hard to see the removal negative directions. Arrows or diacritic diagram will be helpful for readers.

If possible, the authors could add 3D schemes like fig. 1 to deliver a better view of the described chaînes opératoires. A or some examples of such a 3D scheme could be added to show the archaeological refits and the reconstructed chaînes opératoires.

It may be helpful to better distinguish the archaeological and the experimental description. A solution could be to insert a sub-title.

I think the objectives of the experimentation could be more precisely explained.

I invite the authors to rephrase some sentences and to review the technological description paying attention to the use of correct technological terminology, or if terminological creation or rarity to precise the definitions employed.

And finally, I invite the authors to deeply explained and clarified the use of « opportunistic », is it a method, a concept, a debitage? The authors must give a detailed definition for these elements. It is a central question in the paper and the proposed definition and explanation are not enough clear and complete. I also suggest you to discuss the concept of « affordance » recently introduced in lithic technology by Eric Boëda, or also his proposal of the type C debitage (Boëda, 2013). It could give you the opportunity to clarify your position comparing the two proposals.

[Download the review \(PDF file\)](#)

Reviewed by anonymous reviewer, 2020-08-30 14:51

The paper entitled *For our world with no sound. The concept of opportunism in the Italian context: a methodological evaluation of the lithic assemblages of Pirro Nord, Cà Belvedere di Montepoggiolo, Ciota Ciara cave and Riparo Tagliente* by Marco Carpentieri and Marta Arzarello is indisputably a strong and large work on the explanation of the opportunistic débitage concept. To do this, the authors use four interesting Italian sites spanning the entire Pleistocene sequence. Data given by the authors are proper and attest a large amount of work, which is remarkable. However, there are several questions that must be explained and qualified in the text before being published. I would suggest some changes to enhance the paper:

First of all, in the introductory section, a bit of the discussion around the definition problems of the SSDD and other systems such as Quina, branched/ramified productions, etc. is missing. This would give greater consistency to the debate and to the problems raised in this work.

Regarding to section 3, in table 4, it would be interesting to see which are also the removal directions of the core-on-flakes. I also wonder if there are kombewa-type flakes and, if there are, what is the explanation given and to which operational chain they belong (are they independent? Why and how?).

The paper should also include more sub-sections with unequivocal titles helping the reading, which is dense and sometimes difficult to follow. Each sub-section would be devoted to one idea.

On the other hand, when the authors talk about “Pirro Nord and Cà Belvedere di Montepoggiolo’s flakes share common features. Quadrangular non-standardized shapes are widely attested, slightly longer than larger and with at least one cutting edge, usually on the lateral margin (Fig. 4,5). The dimensional range of the flakes, bearing or not cortex, is quite homogenous, confirming the shortness of the reduction sequences”, it would be a good option to present a detailed graphic device with the typometry of the elements analyzed. Likewise, quantify and measure the negatives of the last removals from cores. This would allow us to see the sizes and their relationship with the objectives of lithic production, the economy of the raw material, etc.

In this same section and in the following ones, we think that in figures 4, 5, 7, 14, 22 and 23, it would be positive to add the profiles and striking platforms of the pieces to see the morphology, if they are some prepared, etc. In the same way, it would help to better understand the analysis of the archaeological cores drawing on the photos with the negatives removals, adding the direction of the flakes with arrows, making a drawing of the cores with a diacritical lecture, etc. (for example in figures 2, 3, 12, 14 and 21 in the same way as in figure 1).

Also, it is necessary to highlight the piece that is being discussed when explaining some relevant point in the text, since otherwise it is difficult to follow what the authors are trying to underline. In most cases, reference is made to the figure but not to the part. For example, it would be better to put Fig. 2.1, 2.2, or 2.3.

Finally, a paper on lithic strategies without drawings of some relevant artifacts, schemes of the main reductions methods, etc., seems odd.

In section 4, the following statement should be qualified and explained in detail: “The presence of Levallois and Discoid productions within the context proves, on one side, that the exploitation of raw materials qualitatively regarded as inferior does not invalidate the possibility of using more complex flaking methods. On the other side, it underlines how the opportunistic débitage persists during these chronological phases resulting in being as much as an efficient and independent method for the manufacturing of functional products”. On the one hand, it is widely attested, as in many sites, the raw material does not condition the development of more complex technologies such as Levallois and discoid. There are also cases in which these are documented in other lower quality raw materials such as limestone, quartzite, sandstone, etc. And, on the other hand, in the presence of typical palimpsests that we have for most of the sites of these chronologies, it should be taken into account that it is difficult to link which populations have one technology and which another. That is to say, that complex productions such as Levallois or discoid coexist with other opportunists and it could be due to different occupations of diverse groups within the same palimpsest and what is the relationship between them is very difficult to determine.

Finally, we think that there is a lack of a section dedicated exclusively to the data discussion provided in the paper. This would be compared with other sites in the area and others in the nearby European region. This would help us to have a broader view of the resource management carried out by these populations in Western Europe and along a chronological range as broad as the one covered in this study.

Author's reply:

[Download author's reply \(PDF file\)](#)