Review of
"Platforms of Palaeolithic knappers reveal complex linguistic abilities"
Cédric Gaucherel, Camille Noûs

Overview and general recommendation:
Gaucherel and Noûs present a theoretical work focused on the understanding of flaking patterns strategies involved in Lower Paleolithic stone technologies. They use a Minimalist Grammar of Action (MGA) approach in order to describe four sequences of actions extracted from different reduction sequences: ST1–striking of a core with a hammerstone, ST2 – detaching the basic unit comprising the intended flake, ST3 – faceting of the platform in order to detach the intended flake and ST3′ – detachment of the flake following abrasion of the platform. Through the exploration of the grammatical syntax of knapping in these sequences, they conclude that different cognitive abilities are required for each of them. They also describe the potential of such approach in contributing to the theme of co-evolution of language and manual praxis of tool making and to linguistics debates (e.g. central recursion) related to the origin of human languages.

The study is original and the paper is well presented, well structured and clear (as soon as we get familiar with the approach but the essential references are cited). This paper is deliberately presented as theoretical and do not claim to propose the unic grammar for the whole lower Palaeolithic knapping. The authors are clear with the fact that this paper represents the first step of a more developed study including the integration of archaeological assemblages.

Based on that and regarding that I have only minor comments to do concerning the content of the paper (see below), I think that this paper can be recommended. It brings a new point of view about stone tool technologies and open a promising line of investigation.

Other comments:
Abstract
Clear.

Introduction
p.4 lines 125: "MGA following (Pastra and Aloimonos 2012)" should be modified to "MGA following Pastra and Aloimonos (2012)"

Materials. Lithic Reduction Sequences
p.5 lines 171 & 172: "Such action could be considered similar to the random striking of a stone (therefore without knapping), or to a monkey nut-cracking.". I do not fully agree with the sentence as non-human primate nut-cracking is far from being random, it is not as simple as it could seem. It requires for example knowledge about the hardness of the nut and of the hammer, knowledge about its own capacity to handle the hammer and about the exact amount of energy necessary to crack open the nut without smashing it so it can be properly consumed, knowledge about the size and weight of the hammer necessary to crack open the different types of nuts, etc. Therefore, I suggest to not compare nut-cracking with a "random striking of a stone".

Abundant ethological studies report such observations, among which for example:

Fragaszy, D.M., Liu, Q., Wright, B.W., Allen, A., Brown, C.W., Visalberghi, E., 2013. Wild Bearded Capuchin Monkeys (Sapajus libidinosus) Strategically Place Nuts in a Stable Position during Nut-Cracking. PLOS ONE 8, e56182. doi:10.1371/journal.pone.0056182

Fragaszy, D.M., Morrow, K.S., Baldree, R., Unholz, E., Izar, P., Visalberghi, E., Haslam, M., 2019. How bearded capuchin monkeys (Sapajus libidinosus) prepare to use a stone to crack nuts. American Journal of Primatology 81, e22958. doi:10.1002/ajp.22958

Liu, Q., Fragaszy, D.M., Visalberghi, E., 2016. Wild capuchin monkeys spontaneously adjust actions when using hammer stones of different mass to crack nuts of different resistance. American Journal of Physical Anthropology 161, 53–61. doi:10.1002/ajpa.23006

Schrauf, C., Huber, L., Visalberghi, E., 2008. Do capuchin monkeys use weight to select hammer tools? Animal Cognition 11, 413–422. doi:10.1007/s10071-007-0131-2

p. 5 & 6 lines 158 to 184: ST1 refers to the "detachment of a 'basic flake unit' and ST2 refers to "striking a core with a hammerstone". The difference between the two is not obvious here as actually both involve striking a core with a hammerstone. I found it better explained later in the paper when the different ST are listed and showing that ST1 does not actually imply the detachment of a flake but refers to the stroke of the core only. I suggest to clarify it here also.

Methods. Grammars of action
p. 7 lines 258: "in" is missing between "found" and "the previously"

Table 1 caption: "five stone technologies (ST)" while there are only four stone technologies described

Discussion
A rigorous grammar for knapping actions
p.13 lines 475-476: "The transition to deliberate tool-making certainly occurs in the transition from ST1 to ST2, while tool-shaping certainly occurs from ST2 to ST3". I suggest writing "deliberate stone tool-making" as the paper do not mention other raw materials which could have been used to make tools and that are not preserved archaeologically.

Emergence of a more complex cognition
p.15 lines 475-476: "We now have avenues to understand how to apply action trees to an actual assemblage, rather than a caricature of a time period?". I think that this is not a question, "?"can be replace by "."