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The Controversial Rise of Skilled Intentionality Reconsidering Hylonoetic Agency in Malafouris' Material Engagement Theory

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Abstract In this paper some features of 'skilled intentionality' are considered. It is specified what has to be intended for Material Engagement Theory and why Malafouris' formulation of it deserves a prominent role. Then, it is indicated how the transition from the holomorphic theory to the hylonoetic one is prepared in his works. In the third paragraph, Malafouris' approach is partially criticised by confronting his theses with Bergson's. In the final section, the criticism is made more explicit, considering the case of the Acheulan hand axe's symmetry.

Keywords Malafouris. Skill. Field. Knapping. Blind man's stick.

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“Which came first, the chicken or the egg?”
“The rooster.”

Predestination, M. and P. Spierig (2014)

1 In the Beginning Was the Stick: Malafouris’ Material Engagement Theory in a Nutshell

Arguably, it all started with ‘the blind man stick’ dilemma, and to this everything may return (Malafouris 2008c; Malafouris 2013, 4). This good renowned example of an alternative, substitutive ‘sense-experience’ sample, was first paradigmatically highlighted by the French phenomenologist Maurice Merleau-Ponty (2002), along with the Hungarian philosopher Michael Polanyi (1962, 8-64) and the American cognitive anthropologist Gregory Bateson (1973). What does this topic involve? Why is it so relevant?

1.1 The Blind Man’s Stick

This classic pattern was originally apt to explain the complex ethological reorganisation a man who has tragically lost sight had to face to manage ‘seeing’ once again. This example depicts the awaking of the ability this unlucky man ought to develop to appreciate – once again – a reliable aesthetic knowledge of his still rich, surrounding physical environment. So, the stick this blind man counts on, Merleau-Ponty, Polanyi, and Bateson pointed out, ceases – and so does in this specific case of upsurging, anyhow matured, blindness – to be an ‘object’, qua material entity separated by this man’s mental, spiritual self, and thus becomes something integrated, namely a ‘part’ of this blind man’s inner being or, to put it simply, body expression. For this blind man, Merleau-Ponty states, the stick’s point, i.e., its very edge,

has [now] become an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight. In exploration of things, the length of the stick does not enter expressly as a middle term; the blind man is rather aware of it through the position of objects than of the position of objects through it. The position of things is immediately given through the extent of the reach which carries him to it, which comprises besides the arm’s own reach the stick’s range of action. (2002, 165-6; see also Hoel, Carusi 2018, 60; Malmqvist, Zeiler 2010, 140; Reynolds 2017, 424)

By using this haptic tool as a prosthetic corporeal means of effective gesture proficiency, this blind man can somehow overcome – through time passing by and a considerable amount of untiring practice – his critical sense deficiency. Therefore, he can perform with surprising

ease, accordingly, several concrete, habitual operations. This process of training can be patiently led to such an extent that, under certain and rare circumstances, the loss of sight becomes a pretty negligible fact.

This practical feature has been stressed by Alexander Riegler, too. Recalling the famous story of Virgil, a man who recovered his sight at the age of fifty, Riegler emphasises the principal difficulties this man had to face to get finally acquainted with his new condition. Virgil at first declared he was living better in his former condition, and it continued to be so for a while since he was accustomed to “living in a world of anticipation, of subsequent checkpoints which acted like the handling-over in a relay race” (2001, 414). Indeed Virgil, given his previous condition, trained so hard to survive ‘his’ world, according to his means and his capacities, and it should not come as a surprise that this incredible novelty took him unprepared.

1.2 Malafouris’ Material Engagement Theory

Yet this impressive, technological bodily addition raises the issue of how far the human agency can extend itself. Specifically, this involvement concerns how far human sensitive investigation can suitably go further, when not necessarily applied to help physically impaired people. Finally, some commentators ask how far does this prodigy run – if it can, this is what is at stake here – beyond human physical limits without properly losing its constitutive ‘human’ or ‘human-like’ status of body act, this latter considered as an action whose a ‘body’, qua guiding agent, may be addressed as responsible for.

The debate concerning this post-humanistic topic, concerning human body boundaries, has nowadays reached a large audience. This debate also comprehends post-phenomenological technoscientific arguments, like Don Ihde’s (1979; 1993; 2009), and involves ideologists of the Material Engagement Theory too, such as the cognitive archaeologist Lambros Malafouris. This latter, in particular, taking up the Batesonian question about the ambiguous power-extension of the above-mentioned blind man prosthetic stick, i.e., “[w]here does the blind man self begin?” (Bateson 1973, 318; Malafouris 2005, 56), next formulates his inquiries about the nature and the uniqueness of human creative action, like, for instance,

- i. “[w]here does the mind stop and the rest of the world begin?” (Malafouris 2005, 55; 2008b, 403; see also Ihde, Malafouris 2019, 205-7; Roberts 2005, 4; Tewes 2016, 33; van Dijk 2018); or, in a very specific context that will be further examined,
- ii. “[w]here does the knapper’s mind end and the stone tool begin?” (Malafouris 2010b, 14; 2013, 162; Ingold 2013, 45; see also Malafouris 2021, 11-17; Overman, Winn 2019a, 459, 474-6;

- Overmann, Wynn 2019b, 45; Wynn, Gowlett 2018, 22-7); and, comparably, again on the knapper's case,
- iii. "[w]here does the 'thinking' stop and the 'flaking' begin? Where do we draw the boundaries of the mind with respect to the body, materials, and techniques?" (Malafouris 2021, 108); and, finally, relating to a similar setting,
 - iv. "[w]here does the mind of the potter stop and the form of the object begin?" (Malafouris 2016, 295; see also Malafouris 2008a, 31-5; Malafouris 2010b, 59-60; Malafouris 2013, 209-26; Vaesen 2012, 215-16).

Consequently, in answering these questions, Malafouris reconsiders the mainstream outlines of human agency. He does so by broadly criticising the notable Cartesian legacy of rigid ontological dualism, which divides the mental, spiritual *res cogitans* from the material, bodily *res extensa* (Brown, Toadvine 2003, ix-ix; Malafouris 2005, 53-4; Malafouris 2010b, 17; Malafouris 2013, 25-6, 57-9, 163, 173, 234; Overmann, Wynn 2019b, 42; Roberts 2005; Spahn 2016, 78-9; Walls, Malafouris 2016, 628, 632).

Malafouris fundamentally asserts that human effectiveness, i.e., body agency, is not to be intended as bounded by the narrow limits imposed by the human, physical body. Moreover, in addition to this statement, he replies that the material, 'extensional' correlates of human activities play a pivotal role in deciding the course of human action's final result, as the potter's wheel case aforementioned visibly illustrates. 'Shaping' something, i.e., the act of giving form to matter, it can be argued following Malafouris' statements, is more about indulging the natural veins of the block of marble, than rigidly commanding, 'informing' some inert and passive piece of matter.

1.3 The Case of Writing: Memorising and Forgetting

Malafouris takes into account the material reckoning, i.e., the report of the hard, efficient 'matter' in casting our actions and in formulating our thoughts. Given that the "human mind remains an incomplete and unfinished project" (Malafouris 2013, 244; see also Malafouris 2016, 290; Idhe, Malafouris 2019, 203), and so echoing Bernard Stiegler's motif of man's essential, technical 'incompleteness' (Stiegler 1998, 260; 2009, 198; James 2013, 70; 2019, 39-41), Malafouris claims humans need the sustain of a material relief to fully operate on this world. He testifies this by providing the example of the Linear B scriptural notes on wax tablets, as these are preciously collected and retrieved from the secret rooms of the Mycenaean palaces.

On the same topic, Overmann highlights the proportional relationship which lays between the "availability of counting devices" (2016, 45)

and the growing complexity of administration in ancient societies: the more men can successfully count, i.e., giving an order, rationalise, the more they can profit from material supports (just like fingers, for instance), the more they benefit of tools in their intellectual proficiency backwards (see also Malafouris 2010a, 38-41).

The act of writing – i.e., the performance of putting down relevant stocks of information or pinning mental shortcuts to promptly recall something pertinent to a related task – has to be intended as the ‘prostheticisation’ of an active, creative material engagement of operating, working memory. This ‘material’ memory mixes up biological capacities, Malafouris argues, mnemonic affordances, and, among these features, a significant data storage capacity. As these archaeological records stress, writing, thus, appears to be a trustworthy cognitive artefact. It is something inscribed and incorporated in mnemotechnical practices and, most importantly, something coactively designing a “hybrid historical synergy” that synthesises ‘form’ and ‘matter’, mind and material body, the spirit of the writer along with the frame of the scriptures (Malafouris 2012, 72-5; see also Rietveld, Kiverstein 2014, 326-30).

In Malafouris reading, Mycenaean Linear B not only serves a purpose for recording pieces of information but also provides a ‘thinking’ process, enabling an active, cognitive role to matter. This given, the Mycenaean scribes do not need to remember everything they work on, according to this process of reliable, cognitive ‘unloading’ method. As Malafouris writes, following the Material Engagement Theory, “Linear B is [...] seen as a situated technology instantiating a new way of remembering and a new way of forgetting. The Mycenaean simply reads what the Linear B tablet remembers” (2013, 79).

2 From the Hylomorphic to the Hylonoetic Account for Object Creation

One of the most decisive Malafouris’ achievements, as he states in his famous work *How Things Shape the Mind*, is the depiction of the “human cognitive processing as a hylonoetic field – a mindscape quite literally extending into the extra-organistic environment and material culture” (2013, 227). Elsewhere, in his most recent paper, Malafouris coherently speaks once more about the proper composition of this singular “hylonoetic [...] field of intentional, anticipatory and attentive material engagement” (2021, 112).

2.1 Ingold's and Malafouris' Criticism

Employing the truly inspiring neologism of hylonoetic field, which unifies the Greek terms of *hyle* (matter) and of *nous* (or *noesis*, for 'mind', i.e., the conscious and intentional act which is properly referred to a *noema*, a sensible content of meaning), Malafouris intends criticising what the anthropologist Tim Ingold once polemically defined the "holomorphic ontology of mind over matter, which mislead us to read creativity backward" (2010b, 97; quoted in Malafouris 2013, 235; see also Ingold 2013, 20-50, 95; Walls, Malafouris 2016, 627).

Again, by "holomorphic model of making –, Ingold defines – the imposition of pure form that raises naturally given raw material to an artificial state" (2013, 81). This paradigmatic model of thinking neglects the contribution of an active material playing a part in any phase of the complex process of object creation and form's sensible constitution. This latter is erroneously considered qua the immediate, atemporal application of an abstract, intellectual 'project', subtracted by any 'form', by any manner of material influence or obligation. The 'inner' brain, the soul, thus, appears to be in full charge here, according to the holomorphic theory. The creator's brain directly acts on his 'outer' body and, subsequently, by the means of this body, he operates on the 'outer' material world and does so without any acceptable room for any 'archaeological', i.e., material, compromise.

Against this theoretical setting, Malafouris analyses some noticeable examples of human creation over a considerable period of humankind's history. Among these, he examines the world-shaking formation of the 'biface', Acheulan hand axe, and finally holds that human thought and action, acknowledged qua the practical performance of co-constitution and consequent modification of a living *Umwelt*, is just inconceivable without implying the material, environmental concrete support.

2.2 From Thinking About the Matter to Thinking Through the Matter

Trying to overwhelm what Malafouris affirms to be a historical, "asymmetric approach to evolution based on the split between the organism and environment" (Malafouris 2021, 110), the Material Engagement Theory (MET) engages in the formulation of a revolutionary, ecological hypothesis according to which human mind and human action are fundamentally situated, i.e., operating and evolving in bodies, exclusively 'through' bodies, these latter located in an open, interrelated physical world of omnipresent causal relations. Respectively, the MET radically claims that "organism and environment form a necessary unit" (Malafouris 2021, 110).

In this [remodelled, ontological] context of transactive distributed intelligence, the conventional meaning of biologic adaptation as the fitting of organism to environment mediated by natural selection gives away to a more extensive, enactive and largely semiotic view of adaptability [...]. This is what in the context of MET [i.e., the Material Engagement Theory] is referred as creative thinging [...]. The knapping process will be approached as a creative entanglement, a co-constitution of mind and matter. Tool making is not a transposition, externalization or the imposition of form on raw material but the gathering together of all the different elements - internal or external; neural, bodily or material - needed in order to make an edge of a stone [...]. [T]ool making provides a unique case for metaplasticity demonstrating the complex exchange of energies and materials between the human organism and its niche. (Malafouris 2021, 110; see also 2021, 117; 2014, 141-52; 2019, 3-13; 2020, 5-7)

The ideal pattern proposed by hylomorphic ontology or hylomorphic model making, as critically defined by Tim Ingold, is thus opposed by the way of creative “thinging” lately highlighted by Malafouris in attentively focusing on Acheulan knapper’s action (Malafouris 2013, 44-146). The ontology Malafouris wishes to develop is then one of “thinking through and with the matter”, in the same way, arguably, the blind man above-mentioned suitably thinks ‘with’ his vital support, as Merleau-Ponty highlighted,

[t]hrough the ‘stick’ [...] [and so, at the same time and in the same way the blind man] feels, discovers, and makes sense of the environment [...] [and] also enacts the way forward. (2013, 236, 244)

The ‘matter’ here at stake, however, may be intended in many ways. On the same wavelength, I argue, cognitive psychologist Michael Tomasello speaks about “cultural learning” in his work, trying to define an imitative learning process according to which a child is “not just learning from the other person but is learning through them” (2001, 141; see also Tomasello 2016, 643; Buskes 2019, 3; Mcelreath, Boesh, Köhl, Mcelreath 2018, 193; Nungesser 2012, 8). As Tomasello points out in the present, eye-opening paper “Cultural Learning”, “what is learned is learned *through* the youngster’s direct interaction with the physical environment”, i.e., ‘through’ the operative effectiveness children, can operate on the physical world they are laying on (Tomasello 1993, 496).

2.3 How an Acheulan Axe is (not) Made

The knapper mentioned, the one “detaching flakes from a flint core” (Malafouris 2021, 107), is indeed one of the most striking pieces of evidence experimentally cognitively archaeological related for the heuristic revision Malafouris would like to recommend in his long-standing research. In forging the ‘biface’ hatchet or the so-called “Acheulan handaxe” (Malafouris 2021, 110; see also 2013, 9; Garofoli 2016, 314; Idhe 2009, 72; Idhe, Malafouris 2019, 207-8; Ingold 2013, 33-6; Overmann, Wynn 2019a, 463; Vaesen 2012, 207; Wynn, Gowlett 2018, 21), this ancestor from Lower Paleolithic age manifestly shows, according to Malafouris and most of his colleagues taking part in this appealing discussion, how he appears not to be in full control on the ‘intentional’ action of knapping he is running and, consequently, Malafouris infers, this axe creation exhibits how a few things somehow, inevitably, wrest from this knapper’s grasp.

Still, this is not how the forgery of this particular tool, i.e., the Acheulan ‘biface’, actually works. In this intriguing yet enigmatic ‘lithic’ study, the ‘formal’ shaping the knapper tries to perform is not - in this explicit, practical context of tool fabrication - ‘anterior’ to the material association the form needs to handle to be ‘materially’ generated, i.e., to be truly effective into the physical realm of instrument’s production. The character of the knapper Malafouris insists on does not “spoils everything” by eventually losing touch on what he is currently, skilfully doing, as by accident, just like a clumsy apprentice could regrettably do, if not properly taught by his master on how to deal with some sort of delicate stuff. What is Malafouris’ point, then? In the action of knapping, Malafouris argues, the knapper is not the one and only protagonist of his final, practical deed. He is not the sole and relevant participant in the process of axe formation, just like an internalist, cognitivist, computational, representationalism-based theory of action would erroneously hold.

2.4 How an Acheulan Axe is Made: The Matter Strikes Back

On the contrary, as Malafouris remarks, the stone which is repeatedly hit by the knapper to correctly forge the hand axe, a bit surprisingly, “strikes back through the manipulative complexity (inseparably cognitive, bodily and technical) that it affords” (2021, 110). “In this dynamic vision of participatory mentality - Malafouris states a few lines before - bodily acts and material affordances generate and constitute through processes rather than merely execute them” (109).

This is sensibly remarkable. But this is not all. According to 2019 Idhe’s and Malafouris’ manifesto “Homo Faber Revisited: Postphenomenology and Material Engagement Theory”, which resumes some

of the most brilliant ideas of both authors, we humans, as natural producers, do not only “make things” but we also – and most importantly – “are made by them” (Idhe, Malafouris 2019, 209). This is also retrievable in many more Malafouris contributions. For instance, in “Beads for a Plastic Mind” human “behaviourally important experiences – are – often constituted [...] by the use of material objects and artifacts which for that reason should be seen as continuous integral parts of the human cognitive architecture” (2008b, 404). Again, in “Knapping Intentions and the Marks of the Mental”, commenting on the process of axe formation, Malafouris holds that the “flaking intention is constituted, at least partially, by the stone itself” (2010b, 17). Finally, in “Creativity as a Developmental Ecology”, illustrating a hunting scene, Walls and Malafouris maintain that the

hunter’s posture [within this complex dynamic of targeting and hitting a huge caribou] is altered by the force of the bow straightening itself, or by the sudden release of tension between the arms, that alteration will become a condition of the arrow’s path that it leaves the bow. (2016, 630)

This aspect is somehow also recovered in Stiegler’s work, as some of his commentators suggested. According to the very title of the first volume of Stiegler’s philosophical masterpiece, the ‘human’ essential feature, namely the property which makes us humans is, properly speaking, an act of ‘invention’. Yet this invention is a two-way one: “the human invents the tool while being invented by it in turn”, Michael Haworth observes (2015, 6). The operation of flint knapping is, indeed, according to Stiegler, the “first reflective memory, the fist mirror” (1998, 142; also quoted in Johnsons 2013, 38). Following this statement

human achieves self-reflective consciousness – once again – through its manual engagement with the material world [...] The artefact endures as a trace, a record of the process of manufacture external to the human agent. (Johnson 2013, 38)

Despite the fact that the operational sequence of knapping “presupposes a certain intentionality, a capacity for anticipation in the agent of technology – Christopher Johnson continues – the what [the technological] invents the who [the human] just as much as it is invented by it” (see Stiegler 1998, 177). Stiegler declares: “[t]ool is, before anything else, memory” (1998, 255). In this regard, Daniel Ross also writes that “the global retentional apparatus we have constructed also constructs us, that is, interacts with processes of psychic and collective individuation” (2013, 249).

But how does the peculiar ‘causal’ backlash mentioned above, the material ‘striking back’, have to be understood in this two-folded ac-

tion? How, or better, ‘through’ what – as quoted before, taking up Malafouris’ lexical reformulation inferred by material engagement theory –, the knapper learns to cope with this inevitable exterior resistance, if is it the case? And, most importantly, “who” or “what”, quoting once again Stiegler’s assumptions (1998, 134-79), is being held responsible for the emergence, over a pertinent amount of time, of the so-called ‘skilled action’ or ‘intentionality’, i.e., for the advent of the required ‘craftmanship’ in knapper’s ‘intention’ of forging a ‘biface’ axe as normatively wished? How, then, the biface is done in a ‘workmanlike manner’?

3 The Rise of Skilled Action

In his most recent piece of work, namely, “How Does Thinking Relate to Tool Making?” (2021), Malafouris compellingly tries to answer these tricky questions. The large diffusion, over time and geographical span of the fabrication of Acheulan hand axe, brings Malafouris to consider

- i. the huge material ‘affordance’ this tool has reached (and then successfully provided for newcomers, trainee young knappers); and, controversially, given the Material Engagement theory postulates aforementioned, to take into account;
- ii. the ample ‘intentional’, skilful, intake the knapper efficiently offers in continuously ‘affording’ the operation of knapping, along with its technical conservation and spatial-temporal (re)iteration, far beyond, as it is evident, Lower Paleolithic era. The undeniable, wide distribution of the making of this paradigmatic tool, its intrinsic value and usefulness for everyday life survival, makes wonder about the relevance that the ‘noetic’ side of this hylonoetic action paradigm must unmistakably recover in Malafouris’ theory.

3.1 The Noetic Side of the Intention

In effect, Malafouris does not neglect this crucial, ‘complementary’ aspect of human agency in tool making. In taking advantage of the precious commitment of Rietveld and Kiverstein (2014, 335), he underlines that skilled performance, i.e., the active development and improvement of knapping technique over time and never-stopping practice, just like the Merleau-Ponty’s blind man’s example, requires, to be effective, some smooth and “dexterous movements, fine manipulative abilities and eye-end coordination” out by the knapper (2021, 107).

The good knapper can indeed predict the effects his hammering would eventually produce on the stone’s surface right before knapping it. At the very same time, he can efficiently organise the mani-

fold, difficult phases of his yet repetitive, monotonous manual work. On the other hand, the operation of knapping would be impossible to fit without a certain material affordance, i.e., without a certain material intervention. This is the reason why, to different materials, the good knapper, i.e., the ‘expert’ one, yields different knapping techniques, depending on the occasion. This said, the hylonoetic field just instituted must both consider the “role that changing forms of materiality and situated action might have played in the constitution of cognitive processes, especially over longer time scales”. As Malafouris makes explicit, “human dexterity depends on both muskolo-skeletal and neurobiological capacities and constraints” (2021, 108).

This coercive aspect has been also highlighted by Christine Boesh and Michael Tomasello in the context of normative social patterns’ dissemination within human populations. As the two scholars claim social “constraints not only determine what will be acquired but also limit the possible modification of the cultural variants throughout their existence” (Boesh, Tomasello 1999, 595). This seems again deeply in consonance with Malafouris’ “cognitive dialectic” argument provided by the potter’s wheel illustration: since this distributed activity equally involves the potter’s brain, potter’s muscles, along with the “affordances [...] of the potter’s wheel, the material property of the clay” and, this given, it cannot tell which component can properly determine “the contours of activity in isolation”, Malafouris concludes this interaction lays in a perpetual “state of becoming through the process of accomodation and resistance” (2005, 59).

3.2 The Bergsonian Heritage: Organ and Obstacle

Following the previous, fascinating Malafouris’ quotation, the ‘material’ capacities and constraints just evoked seem to also implicitly refer to the metaphysical features of Henri Bergson’s ‘matter’, such as exposed in *Creative Evolution*, and as these have been brilliantly pointed out by the French philosopher and musicologist Vladimir Jankélévitch. For this commentator, the Bergsonian materiality both offers to the *élan vital* an “organ” (i.e., a tool, an instrument of playing), and, at once, an “obstacle”, a counteracting resistance (2015, 139-49). According to this specific causal dynamic, the immaterial, spiritual *élan* could not make a move of any sort, i.e., it could not be a creative force, without the mediated support provided by ‘its’ material income and, at the same time, quite paradoxically, this very ‘matter’ constitutes – for Bergson – an oppositive force which prevents *élan vital* from operating all sorts of things, and so, to bear a physical unrestricted faculty of invention.

Malafouris, in the wake of Bergson, offers an even more energetic, fluid paradigm for sustaining this material authority, underly-

ing the subsistence of a mysterious ‘cognitive life’ hidden in – knapper’s – stones. This cognitive life allows the human evolution of “anatomy and manipulative abilities” via the construction of proper ‘stone’ tools which are “developmentally incorporated [through active processes] into our very own constitution as biological organism and cognitive agents” (Malafouris 2021, 108-9).

This outstanding means of this external scaffolding, deeply influenced by the upraising of different material affordances, these latter forming a variety of “melodies of tool making”, which concede the “sense of learning to move with and think through the materiality of the stone” (Malafouris 2021, 110; see also 2021, 114), represents the main source for the formation of the so-called “skilled intentionality” (2021, 113).

3.3 The Skilled Intentionality

It is hard to define what skilled intentionality could represent in Malafouris’ study, how could it be properly defined, given the scarce information he advances for this specific topic. This occurs maybe because Malafouris rapidly abandons this model of intentional agency for the ‘enactive’ one. The enactive intentionality is interpreted as a more suitable pattern for distributed agency theory, according to the hylonoetic revolution he wants to start. The rise of skilled intentionality could be intended, in my reading, as a sort of ‘trained’ faculty of selection (of “images”, Bergson says in *Matter and Memory*, 1991, 30), a spring of possible, virtual and even premeditated action, and this even admitting the total absence of any representational or mental content (in knapper’s mind), according to Malafouris. The skilled intentionality is the exercised power to benefit from matter, the proficiency derived from its use (or abuse), eventually without implying the subject to be actually ‘involved’ by it. This could be read as something in deep contrast with the beliefs of Material Engagement Theory.

So, Malafouris manifestly prefers to speak about the “perceptual involvement, or attunement with the tools and materials involved” (2021, 113), which is a reasonable terminological choice also retrievable in Merleau-Ponty’s *Phenomenology of Perception* (2002, 86, 98), and thus this option seems justifiable for his original purpose. Malafouris argues that since the “stone projects towards the knapper as much as the knapper projects towards the stone”, it is clear, in his opinion, that the intentional action, the ‘learning’ to control knapping, i.e., the mastery of knapping resides in the knapping “process”, i.e., as a happy result of this latter, rather than in the knapper’s mind, as the mere application of a mental scheme which would come before any proper intentional, effective “action” (Malafouris 2021, 111-12).

Again, it is the action of knapping itself which is somehow “causing the hand to move, drawing the attention to the brain to the changing state of the stone [...]. Knapping – Malafouris pursues – binds time as it binds intentions” (2021, 113). Mind or intentional state is thus guided by its noematic correlate, phenomenologically speaking.

3.4 The Anticipatory Character of the Action

This seems legit and leaves no room for any doubt about that. Yet, Malafouris admits, human agency is, as told before, ‘fundamentally situated’ and thus unequivocally distributed. This means this faculty is not located out of time and space, for it could not be the case in Material Engagement Theory. Conversely, human agency is deeply rooted in the spatial and temporal ground of action. That being said, I conclude, as Malafouris indeed does, Lower Paleolithic knappers can accumulate an appreciable amount of experience over time and ‘through’ exercise, just like do – or did – the scribes working on wax tablets in the Mycenaean palaces, helping themselves to collect and use valuable pieces of information over the Linear B writing supports; or as the potters do with the spinning wheel or, again, as the blind man does with his inseparable stick, stalking regularly across the rooms of his house to get more and more used to its foreseeable perimetry.

This enables the drill of the controversial – I hold – “anticipatory character”, as Malafouris indicates, a specific feature that allows the knapper to eventually master his forging art (2021, 114). According to this principle, the knapper can treasure the lesson derived by the past material ‘involvement’ from which the matter structurally held him back. This means that, according to his previous, reliable experience, the knapper can ultimately come to foretell the future of knapping process, the very end of its action. As a consequence of this, the knapper would not commit the same mistakes, because he would now have the means to constantly improve his body technic. He would then manage to escape from his material ‘slavery’, in a certain sense. At the hypothetic end of this learning procedure, if led to its extreme, like the blind man’s case, the knapper could finally succeed in controlling the matter.

3.5 Remembering the Past, Imagining the Future

For Malafouris, this point is not a significant issue: as far as this specific ‘tool cognition’ is situated, and, most importantly, in cases in which we accept it is ‘born this way’, the upsurging of this temporal ability or material mastery does not pose any kind of problem to

him. So, he posits that the constitution of “human deliberation [is] based on enactive intentional skill”, and it does not matter whether what he names by “reflective awareness” then successfully arises, through experience, for this is not what is at stake in his version of Material Engagement Theory (2021, 114).

Yet even though the “computational system”, i.e., an intellectual, full-grown subject-object relation “emerges out of an acting and moving body”; and, once again, even if “[k]napping movements always happen in context”, these movements are necessary actions that, Malafouris quotes, “remember their past (leaving their traces on rock’s surface) and imagine a future (anticipating and predicting the position of the next strike)” (2021, 115).

Malafouris’ last word about this theme seems to pay attention to the “sensuous prosthetic becoming by which humans learned to attend and to transform their world”, as it to stress once more the material roots of this possible, idealistic world transformation: the key feature is, for Malafouris, the “continuity” generated by “the persistence practice of percussive stone tool making” which brings forth a “network of constituent processes with sufficient unity” (2021, 117). But is it ‘our’ last word about this complex ‘materiality of mind’?

4 The Origin of Symmetry: A Genuine Paradigm Shift?

One thing remains to be said, and this is something potentially troubling for the Material Engagement Theory, in my opinion. The birth of skilled intentionality, through time and practice, is only possible via the co-constitution of a larger word of practice typically afforded by a certain material engagement. That is for sure. Nonetheless, facing some human products of unquestionable expertise, such as the fabrication of the magnificent Acheulan hand axe, which has been reproduced so many times and in different scales in human history, and in so many disparate regions of the Ancient world, a few questions may then arise. Apparently insignificant particular strikes the eye: this Acheulan ‘biface’, hand axe, appears to be in most cases almost perfectly symmetrical.

4.1 Knapping as an Intermediate Process: An ‘Unintentional’ Step Aside?

Where does this symmetry come from? Is this a purely random feature, an incidental fact that may be then rapidly overlooked? Or is it, on the opposite, an essential aspect of the Acheulan tool? Can we still call ‘biface’ an admittedly asymmetric hand axe? Indeed, “[d]oes the knapper – Malafouris asks himself, – aim to create a tool with bilater-

al symmetry [...] or just a large cutting tool whose sides converge on a pointed tip?" (2021, 111). The point is not trivial. The intrinsic, stunning beauty of this old tool kindly supports the first viewpoint. Its extrinsic usefulness, and its adaptability in various circumstances, on the other hand, is the second one. Malafouris then resumes – again in “How Does Thinking Relate to Tool Making?” – the main opinions the major scholars hold on this famous topic, concluding that either intentional outcome or a poor, minor coincidence of bifacial flaking, done so for obtaining a sharper blade, these premises do not collide with the Material Engagement Theory. In both formulations, mind and tool appears to be separate, as if the mind properly were “behind the tool” (2021, 111). This criticism is consistent and in total synchrony with the overall Malafouris’ argument, which is no use to be summoned here once again.

In hindsight, however, maintaining the first view, i.e., the finalist assumption according to which symmetry would be premediated result of a conscious, skilled modelling action, would mean necessary to consider the ‘first’ stone, the one knapping the ‘second’, i.e., the modelled one, as an intermediate, ‘middle term’ in the process creation, which is something Merleau-Ponty, in his blind man stick’s proof quoted in the first paragraph, strongly denied too. This conclusion implies a different interpretation of the ‘middle’ technological tool, which is no more, according to this pattern, an integrated extension of corporeal efficacy, but the extrinsic good for achieving a deliberate goal.

4.2 Intelligence in the *Creative Evolution*

On close examination, this is precisely what Bergson was principally afraid of. Despite the fact he does not reject the empirical intake of time and habit in human developmental and continuously improving action, as the snowball example in *Creative Evolution* may best tell, Bergson holds a negative opinion on human ‘intelligence’ and adaptability, for it drives human understanding away from the real, ‘flowing’ nature of things. As Bergson claims, though, “memory is – always – there, [and it is something] which conveys swelling with the duration which it accumulates: it goes increasing – rolling up itself, as a snowball on the snow” (1944, 4). In addition to this, as Edward Casey cleverly highlights, in retrieving one of Bergson’s most famous claims, “there is no perception that is not full of memories” (Bergson 1991, 133; cited in Casey 2000, 43; see also the still fundamental Casey 1984, 279-85 on Bergson’s habit body).

Still, the nature of ‘intelligence’ is one out of the three different directions the evolution of life originally took, among ‘torpor’ and ‘instinct’, in *Creative Evolution*, and which is the one belonging to

human, concrete action ‘on’ things – and consequently not ‘through’ things, as Malafouris would have argued instead – is that of a tendency in the geometrising natural world, i.e., making it controllable, foreseeable. Bergson firmly criticises the impurity of this life direction, for it brings fundamental “hesitations” in action, separating or detaching human beings from the rest of the natural, ‘actual’ world (Bergson, 1944, 123).

One might then wonder ‘where’ this intelligence comes from. Intelligence is undisputedly born with the matter, action is indeed born with passion, and maybe from it since the matter is told to be “in tune” with intelligence (Bergson 1944, 214). The matter is also profoundly “determined” by intelligence backwards (1944, 218). But this is not Bergson’s final say on this topic. Being one of the three tendencies which “have bifurcated with their growth” (1944, 111), intelligence, instinct, and torpor have the same inception. That is not all. Again, these tendencies rely upon “one great [vital] effort” (1994, 140); or, just like the “shell” bursting sample (109) or, furthermore, to the vessel full of steam one put on evidence, these forces, though sharing the same origin, find themselves in a situation of perpetual conflict, this latter due to an irreparable “difference of rhythm” (1994, 141) which inevitably separates their ‘tunes’. Is it not hard to see, then, how intelligence has somehow emerged from matter, or rather how Bergsonian matter may be reputed as ‘intelligent’, just like Malafouris’ Linear B example clarified. For the same reason, it is not hard to see, likewise, where this difference of rhythm resides, even if “mind exists through material expressions” (Malafouris 2021, 117).

Intelligence is, according to Bergson, the most natural inclination in human behaviour, given our innate wish to influence and modify our encompassing living world. It is the most prevalent and yet detrimental one, because it introduces the category of ‘possibility’, of ‘virtuality’, in the heart of the action, i.e., a time discontinuity, a rhythmical, irredeemable desynchrony. Although Bergson reprimands the effects of this intelligent behaviour, manifestly preferring the ‘intuitive’ one, i.e., the quasi-absorption into the flux of things humans sometimes can perform, the fact remains that intuition “is of no help in directing our action on things” (1944, 53), and thus intelligent conduct remains a shred of incontestable evidence. Since intelligent outcomes would not rise without intelligent performances causing them, human finality, the strongest evidence of causality in the world, is thus paradigmatically an intelligence-based behaviour.

4.3 Cognitive, Exploratory Geography: As a Conclusion

Is it the same procedure at play in Malafouris' argument concerning the key differences which separate skilled intentionality from the enactive one? It could be argued so. Despite the fact Malafouris seems to pass over the most relevant outcomes of human learning processes, in this reading, I tried to highlight the crucial role 'skilled intentionality' retains in his works, notwithstanding this aspect remains anyhow latent and not duly expressed in his major writings.

Malafouris' principal concern is that of elucidating the rise of exploratory movement, as it appears to be evident once again in the lines of his last piece of work. This movement, "enacted during knapping" is so designed that

each flaking act (striking the core), like the tapping with the [blind man's] stick, enacts the way forward. Flaking stone brings forth the exploratory movement that will produce the edge of the tool; tapping with the stick brings forth the exploratory movement that will allow the blind to travel from point 'A' to point 'B'. (Malafouris 2021, 114)

Malafouris describes how every human step 'enacts' the way forward, such as the exploratory movement provides the constitution of a step-by-step 'mental' - yet not representative - map for the blind man. Anyway, I tried to highlight, this exploratory movement is in reality more complex than it may appear. First of all, this movement is not only present-located: to be located, distributed, properly means to have a past together with a related future. Remembering would be impossible without performing some kind of anticipatory progress, although we cannot tell which comes first.

This also means this exploratory movement has to cope with some kind of opposite forces, just like Bergsonian matter pointily hinted. The Material Engagement Theory, as portrayed by Malafouris, renders a reliable "cognitive geography of action and the distribution of cognitive labor" (2021, 116). We shall also remember though, reliving for one last time the example of the knapping process, which is the very core of the process of learning in Malafouris' theory, that this operation is not only composed of the skills offered by the knapper's hand and by the material affordances of the stone on which he is working. I conclude that the material remains of the knapper's knapping 'past' should be considered as the trait d'union of *noesis* and *hyle* in the hylonoetic field of practice.

Perhaps, a possible answer to this ever-lasting dilemma may be found in Tomasello's formulation of cultural learning or Stiegler's tertiary memory hypothesis. According to Tomasello, the history of "hammerlike tools shows a gradual increase in complexity over time

in human prehistory”, as the symmetry case aforementioned testifies (1993, 508; see also Haidle, Schlaudt 2020, 169; Reindl, Tennie 2018).

One of the most relevant features of human ‘cultural’ uniqueness is, in Tomasello’s opinion, the ability to accumulate modifications of many sorts over multiple generations. This marvellous ability of data, skill, and knowledge storing, is described via the inspiring metaphor of the so-called ‘ratchet effect’: the ratchet intuitive figure prevents human culture to downgrade itself, by providing the good sustain to further develop its story. As it is now evident, the origin of symmetry may be not accounted for the genuine creation of a single, extraordinary genius: on the contrary, such revolutionary achievements are true products of “sociogenesis”, namely a process according to which “something new is created through social interaction of two or more individuals in cooperative interaction” (Tomasello 1999, 41, also quoted in Nungesser 2012, 8).

Similarly, Stiegler affirms the existence of a “‘tertiary memory’, the ground of epiphylogenesis, a witnessing of dead’s past” (2009, 6). This is a specific kind of recollection which is a sort of “material substrate of the collective knowledge about the experience that has conditioned the formation of each individual consciousness always already situated in its historical and ethnocultural milieu” (Crogan 2013, 109). Comparable to the ratchet effect outcomes, this typical form of human, technical memory, which overcomes the limits of the genetic and the epigenetic one, corresponds to the proper constitution and maintenance of human culture over an incalculable time of learning.

These examples do not fully resolve the issue just exposed, but they express at least the status of the human culture background upon which any further creative action is thus instantiated. Commenting on the dual origin of the human, i.e., the natural and the technical one in Stiegler’s work, a problem which also takes up Rousseau and Leroi-Gourhan ideas, along with the Malafouris’ ‘knapping process’, Michael Haworth tries to close the books on this case. As he quotes

[n]either man nor tool comes ‘first’: rather it is a movement conceived as an exteriorization with no preceding interior. The exteriorizing process (technics as material memory support) constitutes the interior that is exteriorized, which once again comes back to epiphylogenesis. (2013, 11)

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