Paleolithic aesthetics: Collecting colorful flint pebbles at Middle Pleistocene Qesem Cave, Israel

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Abstract:

This paper sheds light on the presence and significance of unusually small, colorful, unmodified, flint pebbles unearthed at Qesem Cave, a late Lower Paleolithic site in Israel. For over two million years, early humans were noticing, collecting and bringing "home" various non-utilitarian objects with aesthetic visible characteristics, in what seems to reflect a basic human trait. Archaeological findings suggest that as early as the Lower Paleolithic, prehistoric humans were also guided by considerations other than economic, cost-benefit ones. Such is the case at Qesem Cave, where seventeen pebbles that are clearly smaller than the smallest pebbles used in the lithic industry on-site were found. These objects do not show any traces of use. Based on archaeological and anthropological evidence, I suggest that the small, natural flint pebbles exhibit noticeable visual characteristics, and therefore they might have been selected and brought to the cave due to their aesthetic traits. Various materials such as animal carcasses, fire-wood and lithic materials were systematically procured and brought to the cave, indicating that the inhabitants must have been well acquainted with different sources of resources. In this light, the presence of the pebbles seems to be the result of conscious, purposeful decisions. Their presence at the cave reveals a fraction of some of the aesthetic and perceptual preferences of the early humans that inhabited Qesem Cave, and their rich cultural world.

Keywords: Qesem Cave; Lower Paleolithic; flint pebbles; aesthetic perceptions; human evolutio

1. Introduction

For over 3 million years humans were collecting stone for different purposes, mostly for the production of tools. Bringing stone to a habitation site, a center of human activities, is a behavioral pattern suggested for hominins starting as early as the Lower Palaeolithic (hereafter LP) (*e.g.*, Isaac 1978; Potts 1991; Rolland 2004; Stiles 1991). The collection and transportation of specific materials is, however far from being trivial and raises questions concerning the mode of adaptation, cost-benefit considerations and choices made by early humans (Beck 2002; Brantingham 2003; Dibble 1991; Wilson 2007). Many studies emphasize considerations of stone quality, size, and ease of extraction from the enclosing matrix as well as proximity of occupation sites to stone sources, as leading reasons for selection, transportation and use of specific stone outcrops (Braun *et al.* 2009; Browne &

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Wilson 2011; Shick 1987; Stout *et al.* 2005). Notwithstanding these technological and economic considerations, there might be other factors that influence specific choices of stone that can be classified as "the human factors" (Conneller 2012: 76-102; Wilson 2007). These may embody interesting aspects regarding perception and cultural behaviors of early humans. The purpose of this paper is to shed light on the significance of unusually small, colorful and round flint pebbles unearthed at Qesem Cave, a late LP site in Israel (dated to 420,000-200,000 BP). These rounded, shiny, colourful objects (n=17) are smaller than the smallest pebbles used in the lithic industry on-site. Moreover, they do not show any traces of use. It is clear that the cave's inhabitants were familiar with several flint sources in the surroundings of the cave and brought in a large array of pebbles and cobbles (Boaretto *et al.* 2009; Shimelmitz *et al.* 2011; Verri *et al.* 2004; Wilson *et al.* 2016), most of which were subsequently used for producing stone tools. In this light, the presence of the pebbles seems to be the result of conscious, purposeful decisions. While we have intensively studied lithic technology, typology and function of shaped and reduced flint nodules and pebbles (Assaf *et al.* 2016; Gopher *et al.* 2005; Parush *et al.* 2016; Shimelmitz *et al.* 2011), we have not paid much attention to the unmodified pebbles as is the case in many lithic studies of Paleolithic sites. In this paper these small items are the focus of our attention. It should be clearly stated that flint pebbles are non-existent within the rock formation of the cave itself (Qesem is a karstic cave, its natural deposits include calcite speleothems, bedrock collapse debris and clay fill, see Frumkin *et al.* 2009) and were thus clearly collected and brought in by the cave's inhabitants. Why were these small pebbles brought to the cave? Can we identify the "human factors" related to their selection?

Among recent indigenous societies, including hunter-gatherer societies, stones are not perceived as passive objects destined to be exploited for economic benefit (Conneller 2012: 76-102). Rather, they are considered as part of the cosmos, not very different than human themselves, and are perceived as playing an active role in the social, cosmological and epistemological realms of life (Naveh & Bird-David 2014). The aesthetic aspect of stones is often meaningful in these contexts. As shown in many ethnographic studies, aesthetic perceptions allow self-expression, mate attraction, messaging, re-enacting events and improving the sense of group identity.

In this light, and based on archaeological and anthropological evidence, we suggest that the small, natural flint pebbles from Qesem Cave exhibit noticeable visual characteristics, and therefore they might have been selected and brought to the cave due to their aesthetic traits in a broader context related to a cosmological aspect.

2. The Archaeology of Qesem Cave

Qesem Cave is a Middle Pleistocene site in Israel located 12 km east of Tel-Aviv (Figures 1 and 2) and dated to 420-200 BP (Falgueres *et al.* 2016; Mercier *et al.* 2013). The stratigraphic sequence is generally divided into two parts: lower (~3 m thick), consisting of sediments with clastic content and gravel, and upper (~4.5 m thick), mostly consisting of cemented sediment with a large ashy component. The lower part was deposited in a time when the cave was a closed karstic environment, while the upper part was deposited when the cave was more open as indicated by the presence of calcified rootlets (Karkanas *et al.* 2007).

The habitual use of fire is apparent throughout the stratigraphic column by the presence of wood ash in the sediments (Karkanas *et al.* 2007; Shahack-Gross *et al.* 2014) and by large numbers of burnt bones and flints (Blasco *et al.* 2014; Mercier *et al.* 2013). The faunal remains are dominated by fallow deer of which selected animal body parts were brought into the cave (Blasco *et al.* 2014; Stiner *et al.* 2009; 2011). The very large lithic assemblages show a number of major trajectories, including: systematic blade production (Amudian industry);

large scale production of Quina and demi-Quina scrapers (Yabrudian Industry, see Lemorini *et al.* 2016); various recycling trajectories (Lemorini *et al.* 2015; Parush *et al.* 2016); a small scale production of bifaces; and the presence of spheroids (Barkai & Gopher 2016). A study of flint procurement strategies ('flint' is referred here as "*a sedimentary rock which forms in limestone, composed mainly of grains of quartz, SiO_2, also called silica*", see Shepherd 1972: 29), based on measuring the cosmogenic isotope ^{10}Be shows that some of the flint at Qesem Cave was quarried and used for specific purposes such as handaxe and scraper production (Boaretto *et al.* 2009), while others were collected from secondary sources (Verri *et al.* 2004). An on-going study indicates the use of a variety of flint types from sources around the cave and farther afield (up to 30 km, see Wilson *et al.* 2016). These studies indicate that the cave inhabitants were well acquainted with the stone sources at their disposal. Flint pebbles (and other lithic materials like flint nodules and slabs) were routinely procured and transported to the cave similarly to preferable animal body parts and fire-wood.

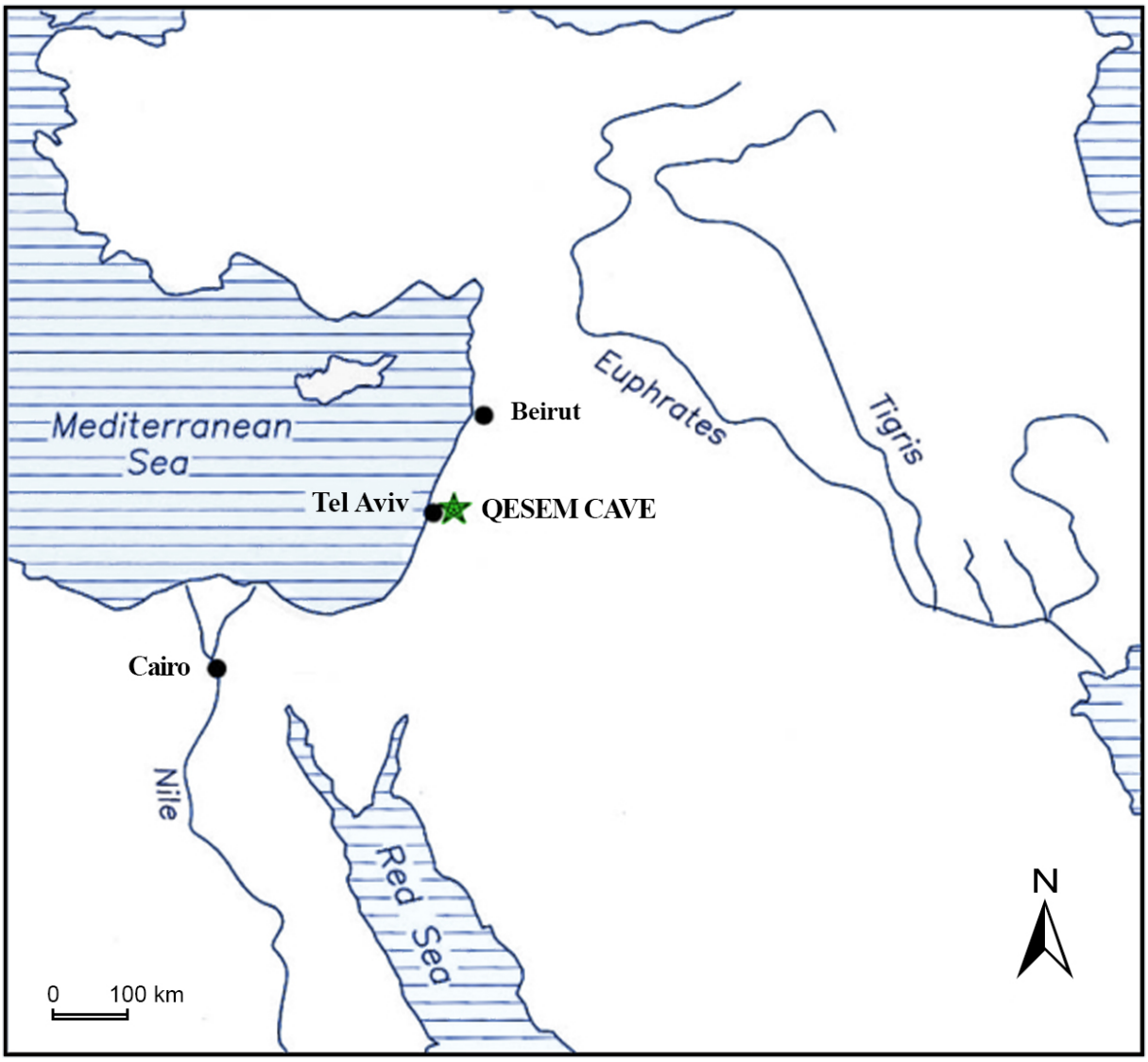

Figure 1. Location map of Qesem Cave.

Figure 2. Qesem Cave, excavation season of 2012.

3. The pebbles and their distribution

In this study, the word 'pebble' is used to describe water-rolled flint stones, either recently (thus found upon the surface) or deposited long ago in geological contexts and re-exposed as a result of erosion. Worn by water, these stones became round, smooth and shiny. Other flint stones are referred as 'nodules', 'slabs' or 'blocks'- these are amorphous or quadrate shaped raw materials not associated with water transportation. It important to note that while large amounts of limestone cobbles were found at the cave, small, rounded limestone pebbles similar to the flint pebbles described in this paper are very scarce.

Seventeen, small unmodified flint pebbles are presented in this study. The localization of the possible source of the pebbles was done in the framework of a wider project of sourcing and mapping the flint materials that were potentially used by the Qesem Cave inhabitants, (see Wilson *et al.* 2016 for details). The sourcing was conducted following the methods described in Wilson (2007) and Browne & Wilson (2011), and included the exploration of the area surrounding the cave, either in outcrops or in alluvial deposits (*wadis*). The systematic survey indicated that at least some of the pebbles originate from a specific location - an outcrop in a small stream channel about 1-1.5 km east to the cave (Figure 3), in which a few similar pebbles were found (out of a large variety of pebbles in different dimensions, colors, symmetry and sheen degree that were observed in this stream) (Figure 4). In the framework of this wide project of lithic sourcing mentioned above dozens of pebbles of varied size, color, and sheen degree were sampled and collected. The majority of these do not show similar noticeable characteristics that were observed in the Qesem sample. For example, out of 40 items yielded from both the *wadi* mentioned above and from another possible source (Horashim), only 3 items have dark reddish colors (none are similar to the deep red -purple coloring of items *e*, *h*, and *f*); none of them show unique cortex pattern similarly to item *j*, only 2 items are well- rounded similarly to items *b*, *c*, *d*, and *e*. These observations further strengthen my view that the pebbles presented in this study were selected for their distinctive visual traits.

Figure 3. Qesem cave and the possible origin of the pebbles (stream channel).

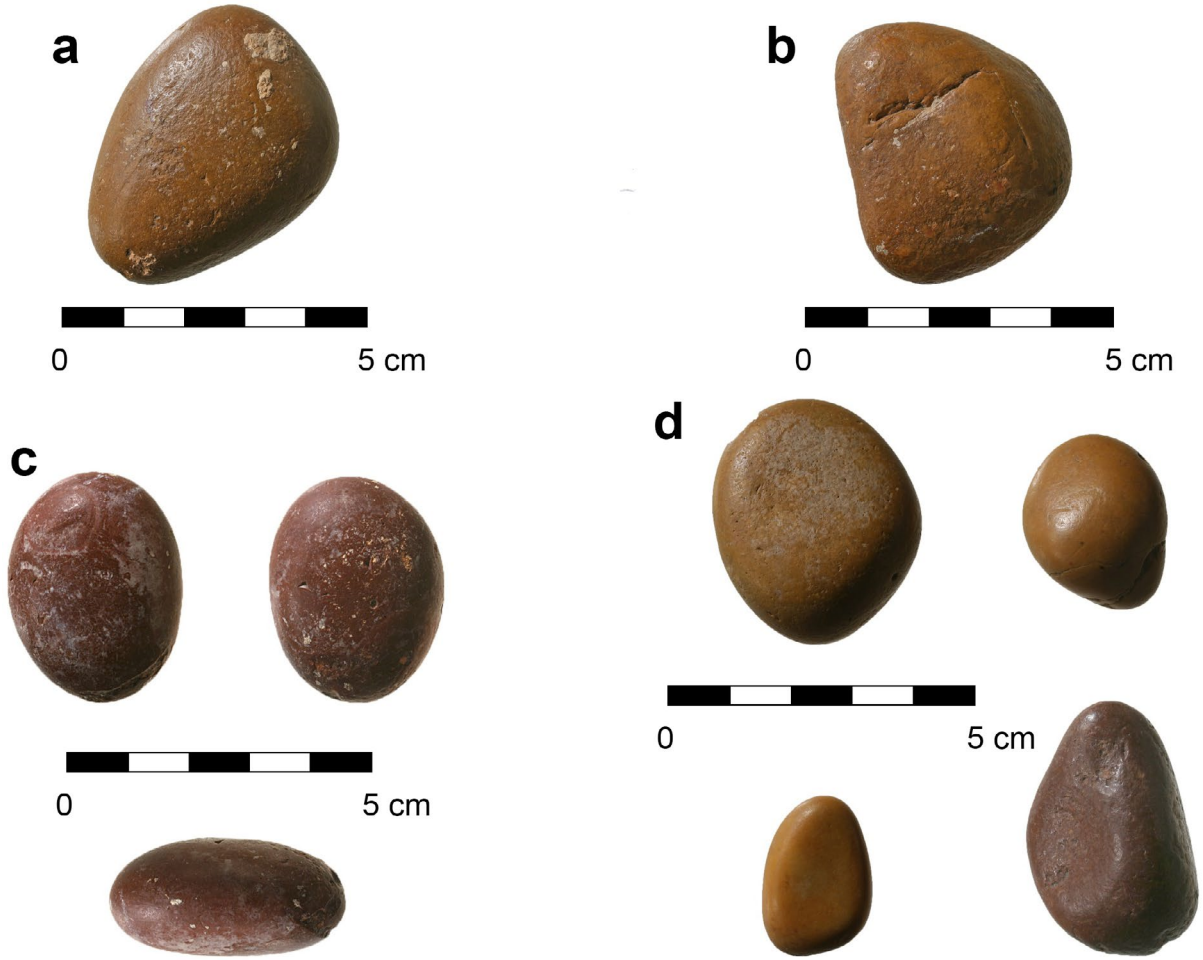

Figure 4. (**a-c**): Flint pebbles originating from the archaeological layers of the cave. (d) Flint pebbles that were found at the stream channel 1.1-5 km east of the cave.

The unmodified pebbles were classified by metrics (length, width and thickness); shape (round, oval, "tear-shaped", "bean-shaped" and amorphous); and color of cortex (brown, beige, grey, red). Attention was paid to symmetry and cortex wear (sheen) as well.

The pebbles included in this study originate from different areas and stratigraphic contexts of the cave of which varying volumes were excavated (Table 1). All of the pebbles originate from layers assigned to the Amudian industry, the majority of which (n=10) originate from the southern areas of the cave in various elevations (based on the stratigraphic position and radiometric dating at hand it can be suggested that these assemblages are earlier than 300,000 bp, see Gopher *et al.* 2010; Falgueres *et al.* 2016), suggesting a patterned spatial distribution. As we see no possible natural, depositional or post depositional explanation for such a pattern, it is possible that their noticeable presence in these areas reflects specific human activities that took place at these locations. It is of note that a recent study regarding the densities and spatial distribution of lithic assemblages at the cave (Gopher *et al.* 2016), supported by a reconstruction of hearth-centered activities (Blasco *et al.* 2016) are strongly in favor of behavioral spatial patterning at the cave. Several unmodified pebbles were found in the “rock shelf” area (n=6) at the north-western part of the cave in various elevations (see Table 1). A single pebble was found in the hearth area (Figure 5). The total number of the unmodified flint pebbles does not allow a detailed quantitative study; however their clear presence in two different archaeological contexts of the cave might reflect a behavioral pattern that indicate preferences of the cave inhabitants practiced for over 200,000 years.

Table 1. The archaeological context of the pebbles within the cave.

Item no.	Context	Area in the cave	Length (cm)	Width (cm)	Thickness (cm)	Weight (g)
a	C/7 b-c-d	shelf area	2.1	1.8	1.6	7
b	G/15d 675-680	southern areas	3.3	2.9	2.5	37
c	F/15 c-d 645-680	southern areas	3.3	3	2.6	41
d	F/10b 645-650	shelf area	3.8	3.4	3.5	65
e	H/16b 605-610	southern areas	4.1	3.1	2	42
f	G8/b 680-685	shelf area	4.1	2.8	2.3	40
g	C7/c 1050-1055	shelf area	3.6	3.3	3.1	50
h	G/19	southern areas	unknown	2.8	2.2	40
i	G/21 705-710	southern areas	5	3	1.8	45
j	E/16a 665-670	southern areas	4.7	2.7	2.4	45
k	D7/a 1130-1135	shelf area	4.1	3.5	3.5	68
l	C/7c	shelf area	5.2	3.1	2.8	57
m	C16/a 700-705	southern areas	4.4	4	1.7	45
n	D/17b 650-655	southern areas	5.1	3.8	2.1	66
o	F/16b 720-725	southern areas	4.6	3.7	2.2	66
p	I12/d 525-550	hearth area	4.6	4.1	2.5	70
q	D17/a 695-700	southern areas	4.8	4.2	1.5	55

The unmodified pebbles were classified as “rounded” and “well rounded” according to the Powers Scale of Roundness Chart (Powers 1953). The colors of their cortex are brown, light beige and grey. Three items have a unique "scarlet" colored cortex (Figures 6a,e,h and 7e), and another item has a red and yellow colored patinated cortex with grey spots (Figure 7j).

The cortex is usually abraded and worn, probably as a result of transportation by water, and therefore they are smooth and sometimes shiny.

The average weigh of these items is 49 grams, the length, width and thickness is 4.2x3.2x2.4 cm respectively. The items were examined under a stereo-microscope (Olympus SZ-PT) with oculars magnification 10X, and they do not show signs of practical use (personal communications with C. Lemorini on(in) 2013). They are below the size range of pebbles commonly used to produce flint items at the site. It should be made clear that small pebbles were not in any way part of the trajectory of producing small flakes by way of recycling (using old "parent flakes", see Lemorini *et al.* 2015; Parush *et al.*2016). Neither was bipolar reduction employed at Qesem. Additionally, it is rather clear that the Cave's inhabitants operated within a flint-rich environment (Boaretto *et al.* 2009; Verri *et al.* 2004; Wilson *et al.* 2016) and were not confronted by stone shortage or limitations. The surroundings of Qesem Cave provide a variety of natural flint types that were procured by and used for the production of various tool types:

The surroundings of Qesem Cave provide a variety of natural flint types that were procured by and used for the production of various tool types: flat quadrate slabs suitable for the production of laminar items following Amudian strategies that reach a maximum of 15 cm in length (Figure 8) (Shimelmitz *et al.* 2011); large-sized nodules for scrapers production (the scrapers themselves measure, on average, 60 mm long, 40 mm wide, 14.5 mm thick and weigh 40 g, reflecting the large size of the nodules selected for their production, Barkai *et al.* 2013); and cobbles and pebbles in different shapes and sizes for the production of flake and laminar blanks (Shimelmitz *et al.* 2011). A sample of over 1000 cores yielded from different assemblages originating from all parts of stratigraphic sequence of the cave (Assaf 2018

unpublished manuscript) reflects varied exploitation degrees - most of them to a high degree, weighing less than 50 g. It is important to note, however, that tested flint nodules imported to the cave weigh, on average, 140 g (while the small pebbles described in this paper weigh, on average 49 g), implying that at least some of the original raw materials used for shaping cores were significantly larger than the cores found at the cave (at the last phase of their life history).

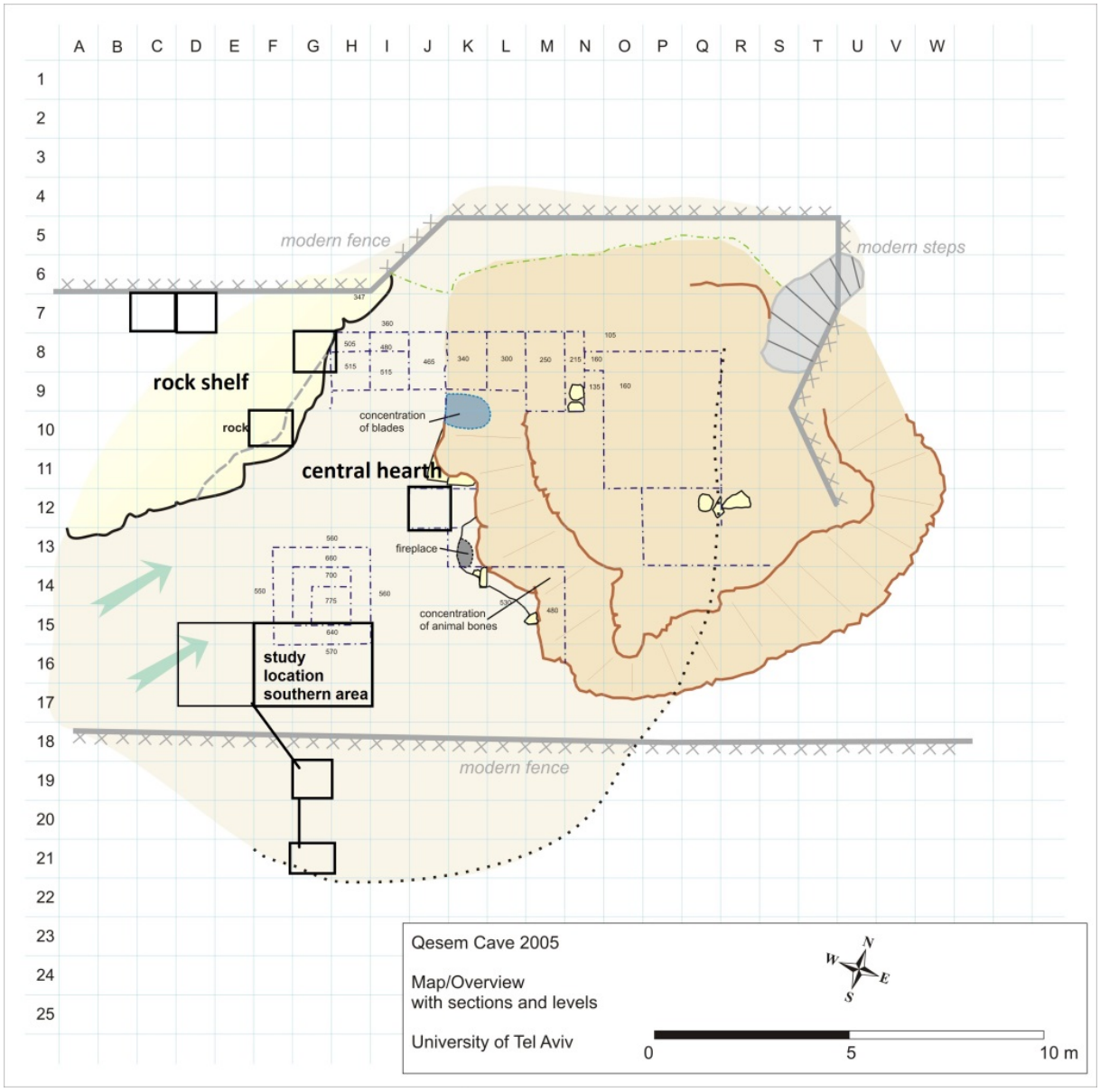

Figure 5. Plan view of Qesem Cave, including the excavation grid. The light-brown area corresponds to the lower sequence, whereas the dark-gray area corresponds to the upper one. The arrows mark the former entrance of the cave. The areas in which the pebbles were found are marked by black squares.

Figure 6. The "light" group pebbles.

Figure 7. A close-up look at items of the "light" group.

The presence of hundreds of thousands of knapped flint items at the cave must reflect profound knowledge in selecting and collecting flint raw materials for knapping, and the lithic industries found on-site are good proof for that, indicating high technological capabilities. As it is clear that the cave's inhabitants were familiar with several different flint sources, quarried flint for specific proposes, and brought a large array of flint stones to the cave, we contend that decision-making regarding selection, transportation and use of stone material was highly structured. The flint pebbles we described above should be discussed and explained within this context. The fact they were found in two main contexts throughout the cave's occupation would not support, in our view, chaotic explanations such as items simply forgotten, or items left unused for some unexplained reason. We will thus make an attempt to discuss the reasons behind the presence of these items in the cave under the umbrella of cultural preferences.

Figure 8. (a-b): flat quadrate slabs suitable for the production of laminar items.

4. Aesthetic and cosmological aspects relating to the pebbles

Collecting and bringing stone to habitation sites is a phenomenon known since the early LP (Isaac 1978; Goldman-Neuman & Hovers 2009; Potts 1991; Stiles 1991). Unmodified lithic materials most probably brought by hominins were identified in early archaeological sites by Mary Leakey (from Olduvai Gorge), who referred to them as “manuports”. Leakey pointed out that these items are deposited in contexts which differ from the sedimentary context where they were deposited naturally. Therefore, she considered them as lithic objects (Leakey 1966). Manuports presence was also observed in later archaeological sites (*e.g.*, Tabun Cave, Israel (personal communication with R. Shimelmitz in 2013), Dederiyeh cave, Syria (Nishiaki *et al.* 2012), Gran Dolina TD6 and TD10, Spain (Ollé *et al.* 2013), Bau de

l'Aubesier (personal communication with L. Wilson in 2013), and La Combe, France (Maccurdy 1914)).

When examining possible reasons for bringing the pebbles to Qesem cave, it seems reasonable to assume that medium to heavy pebbles and cobbles were brought for future knapping needs. It is possible that some were also brought for training and learning knapping procedures conducted on site (Assaf *et al.* 2016). The small size pebbles, however, were probably not collected for technological reasons by an experienced knapper, and they show no signs of processing soft materials. It is possible that they reflect choices of unexperienced knappers or were brought for children for play (as can be seen in Aboriginal Australian societies, *e.g.*, Edwards 2012: 22, 51; Haagen 1994: 51-52). In any case, I would like to argue that these small pebbles might have been collected for reasons other than practical flint knapping, relating to their noticeable aesthetic characteristics - *i.e.*, their symmetry, smooth and shiny surfaces (due to their worn cortex), and the fact that they are colorful.

Many studies ascribing evolutionary origins to human's aesthetic considerations show that our tendency to symmetry, roundness, certain colors and bright shiny objects can be traced to the earliest stages of mankind's history. It has been shown that these tendencies are innate, as young children's aesthetic and visual choices exist long before their verbal communication skills develop, when showing interest in colors, textures, shapes, and so on (Meert *et al.* 2013). It might be a common trait in all primates; a recent study (Borel *et al.* 2016) shows that orangutans are responsive to the physical properties of non-utilitarian objects, particularly visually striking, bright, and colorful objects (although they do not show a tendency to preserve them).

Another visual preference is of curved over sharp-angled lines, which is thought to have played an adaptive role throughout human evolution, in avoiding potentially harmful objects (Munar *et al.* 2015). Several studies suggest that humans were always attracted to shiny objects. Meert suggests that the preference for glossy is related to an inborn preference for fresh water as a valuable resource (Meert *et al.* 2013).

As for the role of colors, their part in human evolution is not clear. Studies suggest a physiological basis for color preferences (*e.g.*, Ball 1965; Wreschner *et al.* 1980). For our primate ancestors, the distinction of ripe fruit which is usually red or yellow among the green trees and foliage surrounding it became much easier when color vision was developed. Accordingly, humans (from infancy) tend to prefer "warmer" brighter colors like red and yellow (Melin *et al.* 2014; Regan *et al.* 2000).

Some scholars argue that over time, colors and aesthetics had a social role in past societies: color has been used to make statements, to communicate ideas or a sense of identity, to express or emphasize individual and group features. It was suggested that colors, and specifically red (in the form of red ochre), were a key factor in the evolving of symbolism among *Homo sapiens* humans in Africa (Knight *et al.* 1995) and in the Levant (Hovers *et al.* 2003), and even earlier (on a small scale) in South Africa as early as ~500 KA (Watts *et al.* 2016).

As was described above, it has been argued that aesthetics provided various advantages related to human survival: the ability to assess landscape and food quality, to track water sources and to assess potential mate health (Brown & Dissanayake 2009; Enquist & Arak, 1994; Fink & Penton-Voak 2002; Grammer *et al.* 2003; Meert *et al.* 2013; Palmer *et al.* 2013). Furthermore, aesthetic perceptions provided social benefits acting as a mechanism for maintaining good communication and cooperation in human societies in which conflicts might arise. It is possible that our aesthetic perceptions are different from those of our ancestors, but it has been argued that aesthetics is a cross-cultural aspect, as it concerns sensory capacities of which human beings are capable in every society (Berleant 2007). And so, this action of identifying an object with aesthetic visible characteristics and collecting it

may reflect a basic human activity, something we all tend to do to this very day (Moncel *et al.* 2012). The archaeological evidence that will be described below further support this notion.

5. The archaeological record of aesthetic expressions

In recent years, a growing body of archaeological evidence shows that aesthetics was part of past societies conventions, and its importance can be argued for the archaeological record from the Paleolithic to historical periods. In this part, I will discuss the presence of various "non-practical or economic" behaviors with a focus on the selection and collection of “non-economic” objects observed in early prehistoric sites of the LP. Although there are claims that the absence non-economic behaviors earlier than the MP indicates that non-economic behaviors emerged with *Homo sapiens* (Moncel *et al.* 2012), evidence for such behaviors are possibly emerging from LP Acheulian, or even earlier, around 2 Ma ago in Africa. Several artifacts were found in Oldowan sites and were said to be artificially shaped (by grooves), framing probable geometric shapes some were brought from a distance (Bednarik 2014; Harrod 2014). Objects that were not used for economic activities were collected by humans during the Acheulian in Eurasia and the ESA in Africa, most of them were distinguishable by their color, transparency, shape, surface texture, *etc.*, that have attracted the attention of the collector (Moncel *et al.* 2012). In Java, a shell was collected and geometrically engraved (Joordens *et al.* 2015). Fossils, quartz crystals and other minerals were found as single finds in occupation levels of several sites like Gesher benot ya’aqov, Israel and other sites in Europe and Africa (Beaumont and Vogel 2006; Bednarik 2014; Goren-Inbar & Kislev 1991). Most of them were not modified, do not bear use marks, and were not deposited by natural agents. At Choukoutien, Locality I (China), the remains of over forty human individuals were recovered, in addition to about twenty pieces of quartz prisms and one crystal (Edwards 1978), suggesting a possible symbolic interpretation. Another phenomenon is the early probable examples of imagery, like the Acheulian stone figure from Berekhat Ram, Israel - a pebble that had been grooved (d’Errico & Nowell 2000; Goren-Inbar 1986; Marshack 1997) and the possible stone "statues" from Tan-Tan and Erfoud, Morocco (Bednarik 2014). According to the prevailing approach, aesthetic conventions of prehistoric humans were expressed largely by the use of pigments. Evidence for the use of ochre in the LP is rare. Red lumps, sometimes deliberately shaped (Howell, 1966: 129) were found in Africa (*e.g.*, Wonderwerk Cave Katu Pan 1 and site 8-B-11 in northern Sudan), Europe (*e.g.*, Terra Amata and Ambrona) and in India (*e.g.*, Hunsgi). These lumps are suggested to be occasionally found in association with stone tools and butchered mammal remains (Harrod 2014; Howell 1966: 129; Moncel *et al.* 2012), and in the case of site 8-B-11, in the context of grinding activities, specialised lithic production and blade production technologies (Van Peer *et al.* 2004). The use of pigments was also observed at early Middle stones age sites in Africa (*e.g.*, Twin Rivers dated to 230,000 bp, see Barham 2002).

It was suggested that stone tools can also attest to the aesthetic and symbolic conventions of past human societies (Brumm 2010; Duff *et al.* 1992; Graves-Brown 1995). Stones have sensory qualities, including aesthetic and acoustic ones, but many prehistoric activities that involved these qualities do not leave physical traces (Boivin *et al.* 2007). Quarrying and knapping activities generate sounds, and features like texture, hardness, shimmer, color, fracture, and susceptibility to polish are inseparable characteristics of stones which cannot be ignored. The remoteness of time tends to preclude consideration of the sensory aspects, and therefore lithic studies are mostly conceived in techno-typological terms, creating a most probably mistaken distinction between objects and their meanings (Taçon 1991; Graves-Brown 1995).Yet, some scholars argue that aesthetics are expressed through various (if not all) aspects of human culture, including technology (Duff *et al.* 1992; Jones & Bradley in

Gage 1999). As regards to technology, it might be problematic to separate the coincidental from the intentional in terms of form and color. However, a growing body of archaeological evidence, some presented below, suggests that the aesthetic aspects are inseparable from other cultural elements, including technology (Graves-Brown 1995), and should be examined when investigating prehistoric humans' aesthetic conventions. A number of scholars have argued that LP hominins had specifically selected certain rock types from a range of suitable raw materials in order to produce stone tools (*e.g.,* Belfer-Cohen & Goren-Inbar 1994), sometimes choosing by color, texture or brightness. Obsidian handaxes, for example, were found at Kariandusi, an Acheulean site in Kenya (Bourlière & Howell 1963: 622) and at Gadeb and Melka-Kunture in Ethiopia (Moncel *et al.* 2012; Piperno *et al.* 2009). Tools made on green lava cobbles were found in Beds I and II at Olduvai. A grooved phonolite cobble from Olduvai FLK North displays a line of four symmetrical pits (Edwards 1978). One unique example demonstrates a possible combination of technology, aesthetics and symbolism drives from the Middle Pleistocene site of Sima de los Huesos, Sierra de Atapuerca (Spain). In this locality, which is not a habitation site, many human remains were found along with a single handaxe, made from a reddish-light brown quartzite - a rock type rarely selected for use at nearby sites. The particular nature of the deposit points to a symbolic meaning both of the single tool found and the human accumulation (Carbonell & Mosquera 2006).The unique color of the stone could have been a key reason for which it was chosen for these specific symbolic activities. Several flint artefacts from Acheulian sites in Britain bear fossils which might reflect an aesthetic impulse in the minds of the one who selected them. One handaxe from West Tofts, Norfolk bears a fossil of a bivalve mollusk shell embedded in the flint. The author suggests that the fossil was noticed before the block of flint was selected and the knapper avoided flaking the area that bore the fossil. The second example is an Acheulian handaxe found at the Middle Gravels at Swanscombe, with a "shepherd's crown" symmetrical fossil embedded in the flint. The author suggests that it was intended to be the central feature of the tool (Oakley 1981).

Aspects of symmetry observed in stone tools produced in the LP may also reflect aesthetic conventions. It has been argued that LP artefacts, mainly bifaces, often exhibit patterns of symmetry that are not dictated solely by technological considerations (functionality or material constraints) (Gowlett 2011; Kohn & Mithen 1999; Mithen 2003;Wenban-Smith 2004; Wynn 1995). Handaxes might be viewed as products of socially constructed choices between valid functional alternatives (Graves-Brown 1995).

What about unmodified lithic materials? As mentioned, manuports presence was detected in many lower Paleolithic sites, but this phenomenon is not often being discussed. However, there are some examples in the Upper Paleolithic record for unmodified stones collected and brought to sites for non-economic activities, and it can be perhaps assumed that these were chosen due to their aesthetic characteristics, among other reasons. In several sites, pebbles presence (mostly of quartz) is frequent, and often they were brought to sites either as ornaments, for mortuary practices (in burials) or for other unknown but apparently non-practical (in the sense of tools) purposes. Many of these pebbles have particular shapes and or colors, and they are usually small in size. They differ from larger lithic materials that have economic or technological functions (as hammerstones for example). Some have been decorated and or perforated for hanging. But in other cases, smooth small pebbles (3-5 cm long) of different rock types were found without marks of modification or use, like in the case of Abri Pataud rock shelter in Les Eyzies (Moncel *et al.* 2012).

Among HG societies, stones are also being collected due to their aesthetic characteristics (Conneller 2012: 76-102), and being incorporated in both symbolic and daily activities. Their prominent colors, transparency, shapes, and brightness "give" them gender, human characteristics and powers, and they are personified. This is part of a much wider world view

of some HG societies, in which keen attention to the subtleties of trees, stones, and other facets of the world becomes a kind of conversation with these entities. The Nayaka (India) and the Ojibwa (Canada) communicated with animals and objects such as stones in their local environment. These are served as social partners or spiritual guides under certain circumstances (Bower 1999; Naveh & Bird-David 2014). Stone piles and rows made by Australian aborigines were used in sacred rituals (Taçon 1991). In the ethnographic record there are examples for creating artefacts for technological practical reasons, while the sensual and symbolic aspects are embodied in the production process and use. Many forms of stone tools produced over the past 6000 years in Australia have both aesthetic and symbolic value. The Aborigines of the Western Desert in Australia have a special category for stones with distinctive color, shape, or texture, such as quartz crystals, mica, and oddly shaped bits of agate. Several quartzite shelter sites were used as quarries; the raw material was believed to be the petrified remains of the bones of certain Ancestral Beings (Taçon 1991). Studies show that particular quarried stone outcrops were preferred over those of identical or equivalent quality as the focus for intensive axe production and long-distance exchange – the Mt William greenstone axe quarry for example (Brumm 2010). Certain types of colorful stones were chosen to make the most significant stone tools, such as quartzite blades and axe heads or other tools made from banded colourful "chert" (term used by Taçon (2008) without explanation), which was considered to be the most powerful (Taçon 2008). Dickau reports the discovery of a cache of twelve unusual stones at Casita de Piedra in Panama (4800-4000 cal. BP). The researchers suggest that the objects were used by a ritual specialist, based on more recent parallels (Dickau *et al.* 2013). Various unmodified stone pebbles were found in the ancient village of Joya de Ceren (600 C.E.), El Salvador. Based upon studies of the Maya, the researcher links them to several ritualistic symbolic activities (Brown 2000). In the historical societies of South America, shamanic and ritualistic activities often involved the agency of objects gleaned from the environment. Stones are inherited after apprenticeship, passed down many generations, and sometimes they are part of initiation ceremonies. Their colors, shapes and origins have meaning. Among the Cabecar and Bribri (indigenous people of Costa Rica) for example, there was a distinction between 'male' stones (spherical shapes) and 'female' stones - obtained from a river or pool (flat and round). In ceremonies the stones function as a medium through which a shaman could help contact and communicate with the spirits (Brown 2000).

The ethnographic and archaeological examples presented in this paper suggest a possible connection between stones and social activities in past societies. The aesthetic aspects of these stones are meaningful in the context of these activities. Clearly, the direct and immediate use of ethnographic analogy should be made with caution. However, evolutionary studies show that assessments of aesthetics are universal, while their importance can be culturally and socio-economically dependent (Flannery 1993; Grammer *et al.* 2003). We can suggest that some stone pebbles unearthed at Paleolithic sites attracted the attention of early humans by their aesthetic characters and were thus collected and brought in. These specific items were not intended for use in stone tool manufacture or any other practical use but took part in social discourse.

6. Discussion and conclusions

Over a decade of excavation at LP Qesem Cave, a noticeable phenomenon was observed - the presence of exceptionally small, naturally colorful flint pebbles in different contexts within the cave. These pebbles were selected, collected and brought from specific sources by the cave inhabitants. Qesem cave was used repeatedly for various time spans during a time range of over 200kyr. During that time, the cave's inhabitants collected incredible amounts of

raw material and produced hundreds of thousands of lithic items. It should be kept in mind that not only flint raw material items were procured and brought to the cave. The inhabitants of Qesem hunted large numbers of ungulates and brought selected body parts to the cave (Blasco *et al.* 2014; Stiner *et al.* 2011). The habitual use of fire (Shahack-Gross *et al.* 2014) necessitated a constant wood supply. Hence it is clear that stones, animal carcasses and fire-wood were systematically procured and brought to the cave on a daily basis, and the inhabitants must have been well acquainted with different sources of these resources. Such a statement reinforces our claim that the presence of unmodified flint pebbles in the cave is the result of conscious, well-educated and purposeful decisions made by the individuals that brought them. The fact that such pebbles were brought throughout the 200,000 years of the cave's use suggests that this was a repeated component of human behavior at that time. Their increased presence in the southern areas of the cave might reflect specific human activities that took place at these locations. Notwithstanding the fact that we could not directly infer the exact role of such round and shiny pebbles in LP adaptation strategies, we believe that the data presented in this paper, emphasizing the role of aesthetics perceptions in human evolution as well as the cosmological importance of stones among traditional societies sets a framework for understanding the probable significance of such items at Qesem Cave.

The pebbles carry some noticeable aesthetic characteristics, leading us to suggest that “human factors” were a main reason behind their selection, especially since we can rule out the possibility that they were collected for technological reasons related to flint knapping. It is possible that they reflect choices of children, or were brought for children for play (As observed in traditional societies, *e.g.,* Edwards 2012: 22; Haagen 1994: 51-52), however even if this was the case we would like to suggest that such choices as well may have been dictated by preferences related to aesthetic characteristics as well as to the central role of stones in the world of early humans lives.

Many studies suggest an ancient origin to human aesthetic perceptions and the attraction to roundness, brightness and colorful objects. In recent HG societies, aesthetic perceptions have a significant role in maintaining social coherence, and stones, specifically, are central in these realm. In the eyes of the archaeologist, stones are perceived as still objects, and mainly as raw materials for the production of stone tools. But beyond their economic role, stones are connected directly to the senses. They make sounds when they are knapped and used, and their visual aspects cannot be ignored. Being an inseparable part of the landscape and of daily life, stones must have had a special significance in the world of prehistoric humans, possibly acting in the cosmological realm as well (Conneller 2012: 76-102). Their presence in archaeological sites thus reflects the choices of those who picked them up specifically, and reveals, if even indirectly, the aesthetic conventions of early humans.

While some of the examples presented in this paper suggest that 'colorful' materials were chosen for "special" items, unrelated to daily use, I think that the aesthetic aspects are part of everyday activities. A "special" context can make it easier for us to identify an aesthetic consideration, but "everyday" objects, like flint pebbles (and other lithic materials for knapping), also embodied the aesthetic aspects of those who chose them. Aesthetic considerations probably affected their initial selection and the desire to keep them as such at the cave.

It is obvious that the significance of aesthetics in these early humans' lives, and the many ways in which it was manifested, is only slightly known to us. The colorful pebbles presented here might reveal a fraction of some of the aesthetic and perceptual preferences of the early humans that inhabited Qesem Cave, and their rich cultural world.

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