Chapter 14

The Chipped Stone from TPC Area

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Introduction

The 2017 chipped stone assemblage, retrieved from the TPC Area, was studied for four weeks during July 2017. Several major tasks were pursued:

- A basic typo-technological analysis was performed on chipped stones from a list of units, selected for analysis for the final publication. Other specialists have also concentrated on respective materials from the same list of units in order to achieve a comprehensive overview of specific contexts.
- A quantitative comparison of different chipped stone assemblages, comparing major chronological levels/phases recognized in TPC Area (diachronic change), and comparison of different buildings and spaces (synchronic differences).
- In-depth analysis of chipped stones originating from selected contexts such as the special purpose room in Building 150 (Spaces 585, 637 and 639), burials, construction make-up of platforms, a midden (Sp.638) and so on.
- On-going registration and analysis of continuously excavated material of the 2017 season.

The following report will present a qualitative description of chipped stone from a selected context – the special purpose room of B.150, and preliminary results of the quantitative analysis and comparison of different TPC levels.

The special purpose room

Here we refer to a room in the south-western corner of B.150. Many interesting and unique artifacts were found in this room, including chipped stone. The chipped stone assemblage from the room includes ordinary as well as rare and unique items. The assemblage includes 176 obsidian items and four flint artifacts, retrieved by hand picking, dry sieving and heavy residue analysis. They derive from 15 units which represent the room infill, bins infill, clusters, etc.

Several phenomena concerning the chipped stone assemblage found in the southwest room were noticed. The first I would like to point out is the size, elaboration and good preservation of some of the obsidian artifacts. Obsidian items in TPC Area tend to be small – including mostly blades and bladelets, small flakes and fragments, small *ad hoc* tools, and occasionally tubular bifacial points or wedges (Schechter 2016) (Fig. 1). However, the largest, best preserved and most invested items found in the area, were found in the southwest room. These include, among others:

- A bullet core (23784.x1) (Fig. 2), measuring 8cm x 2.5cm x 2cm and weighing 43.7g, was beautifully shaped on Nenezi Dağ obsidian, and used to produce pressure blades. It is significantly larger than other cores found in TPC Area, which tend to be used to bits, leaving only small chunks or fragments. Why was it deposited and not further reduced? It may have been considered as "finished" by the knapper, as it does show several hinge termination scars.

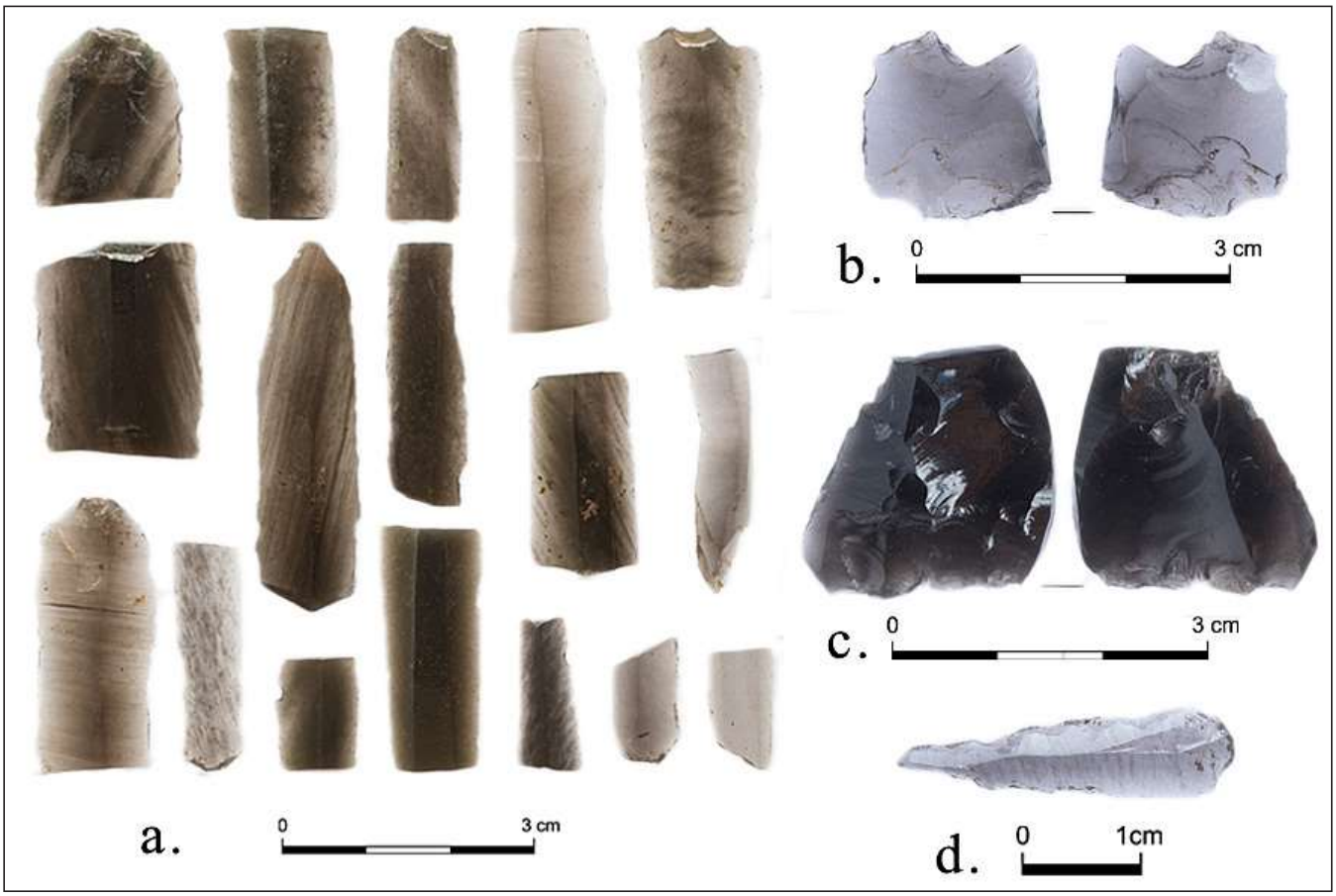

Figure 1. *A typical array of small obsidian finds from TPC Area: (a) blades and bladelets; (b) a wedge on a flake; (c) an exhausted core; (d) a perforator.*

Figure 2. *Bullet core (23784.x1).*

However, it was probably not abandoned due to exhaustion but rather purposefully stored, for an unknown purpose or reason. Though this type of core has not been found in TPC Area yet, it is probably of the kind used regularly in the uppermost levels of the site, as is reflected by the abundance and type of core trimming elements found in the area. The core was found in a posthole (23784), yet had probably rolled into it rather than deposited there.

• A large, symmetrical, leaf-shaped, bifacial point (23765.x1) (Fig. 3a), measuring 10cm x 2.9cm x 1cm. It was carefully and skillfully crafted on Göllü Dağ obsidian. Due to its size and thickness it was probably made on a lever-pressure or indirect percussion blade. Its dorsal face is covered by pressure retouch, appearing also on the circumference of the ventral face. It is the largest and most complete biface found at TPC Area. It was found as part of a large cluster (23765) of special artifacts placed in a pit (23959).

• A large trapezoidal end-scraper (23765.x35) (Fig. 3b), made on Nenezi Dağ obsidian, measuring 5.7cm x 3.9cm x 1.1cm. It is considerably larger and thicker than other scrapers found in TPC Area. It was shaped on the hinged distal end of a large flake/blade. The dorsal face is almost covered by invasive, semi-abrupt pressure retouch, coming from both left and right sides. The end opposite the hinge, what was probably a proximal break, is covered by long abrupt pressure retouch, basically truncating that end, and creating what may have been a steep scraper working edge. The end product is a trapezoidal, or perhaps axe-shaped, uniface or scraper.

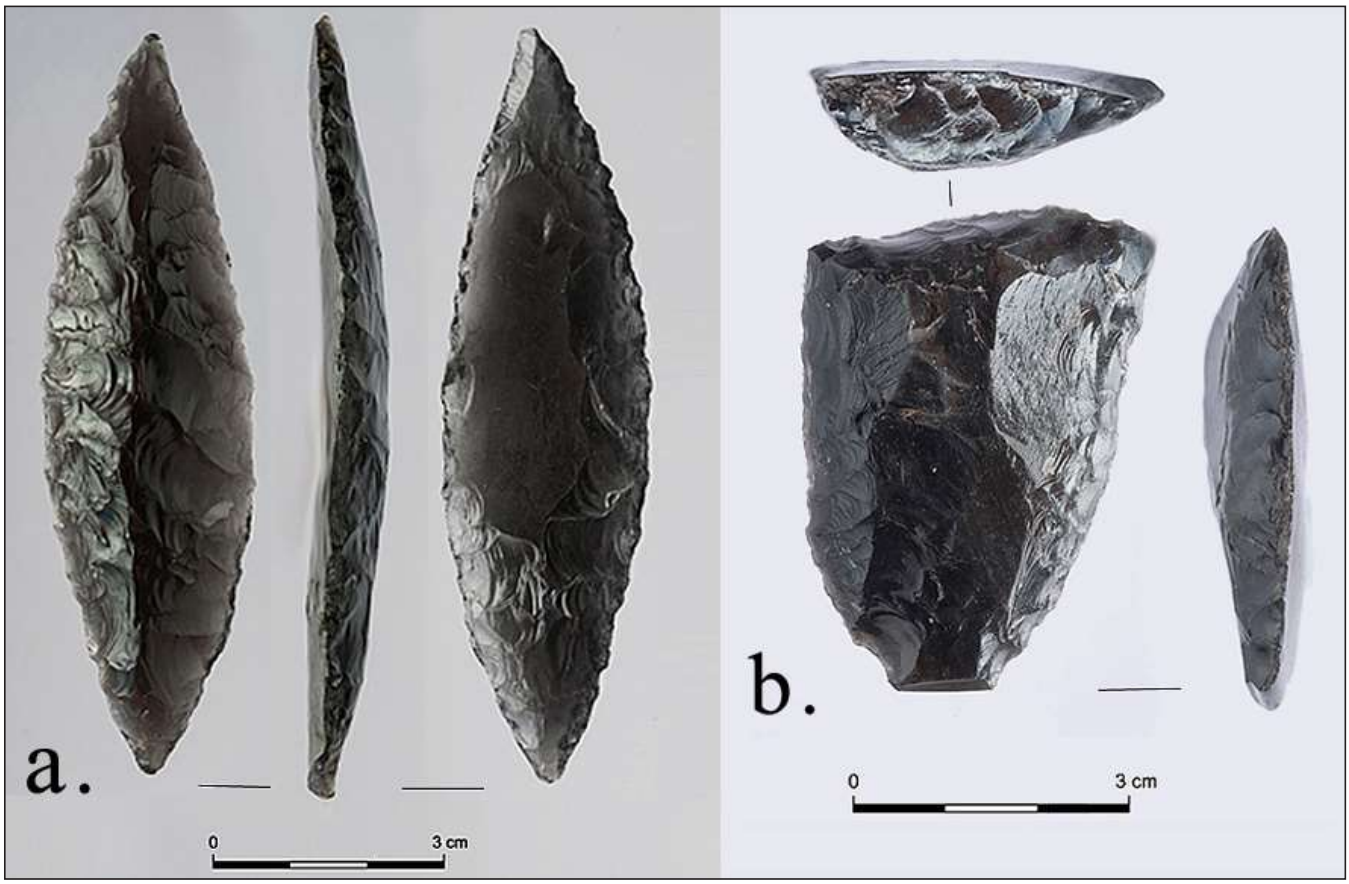

Figure 3. *(a) leaf-shaped bifacial point (23765.x1); (b) trapezoidal end-scraper (23765.x35).*

Another phenomenon is the appearance of clusters in the southwest room, a depositional practice practically absent from TPC Area. As mentioned above concerning the bifacial point, many obsidian artifacts from the room were found as part of clusters. For example, a cluster (32860), made of an array of artifacts intentionally deposited inside a bin (32864), including several obsidian items. Of them we may mention an oval scraper, made on a large quarry flake (primary element), retaining about 30% of the outer surface of the raw material (Fig. 4a). It was shaped by direct retouch on three sides, mostly percussion but with additional invasive pressure retouch all around the distal end. Primary elements – preserving some of the natural outer surface of an obsidian raw material chunk – are rare in the TPC Area, as the initial stages of shaping the cores was performed off site, probably at the quarry. Another item is a point-tip, it has a plano-convex cross section, and is bifacially covered with bilateral pressure retouch (Fig. 4b).

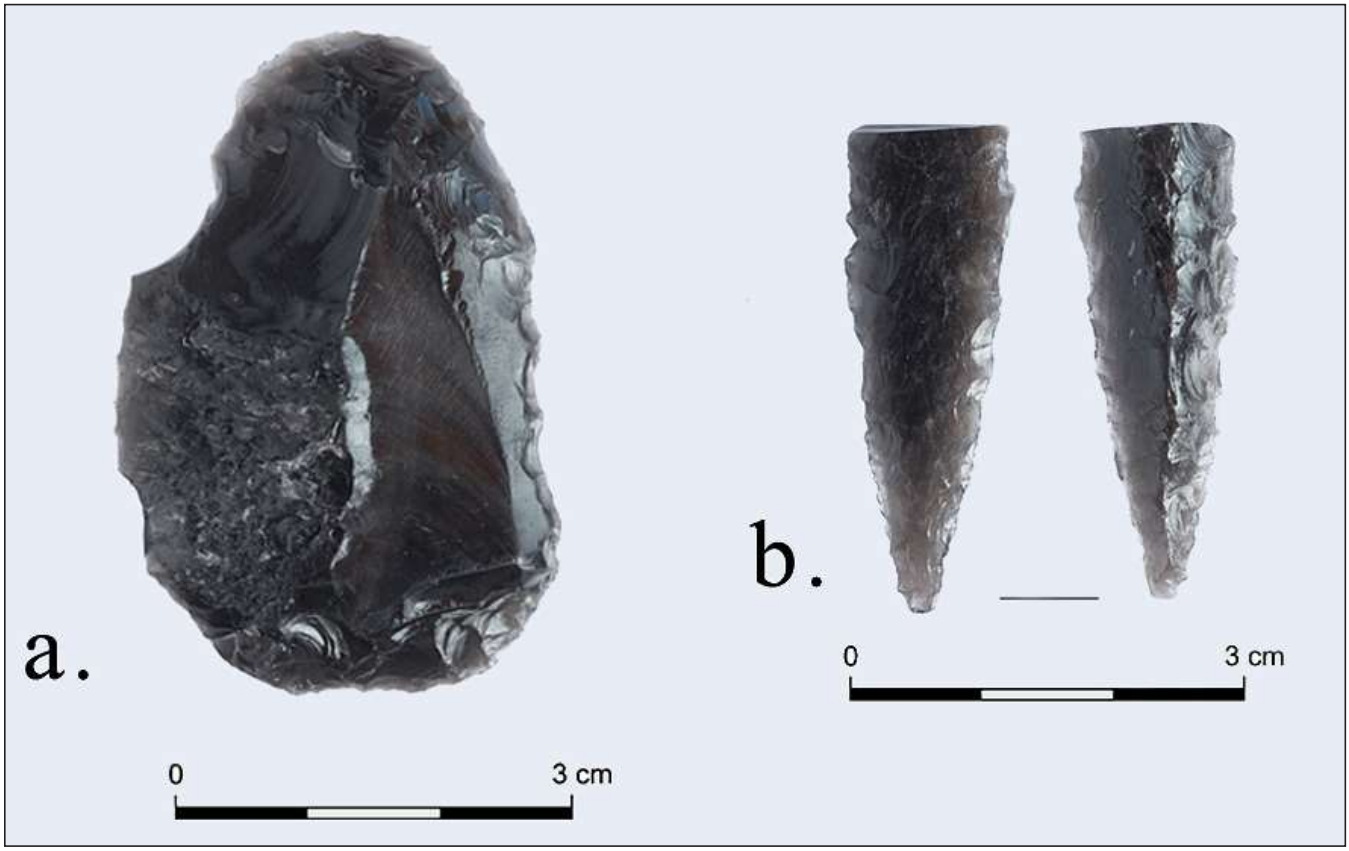

Figure 4. *Obsidian items from cluster (32860): (a) scraper on a quarry flake; (b) bifacial point tip.*

In addition to the above mentioned clusters, another, smaller and very different cluster of obsidian (23919.x11), was found. This cluster does not contain large beautiful tools, rather it is a collection of different waste items, some of which are unique to this cluster. Some of the out-of-the-ordinary items in the cluster include:

- Retouching of obsidian tools was a common activity in TPC Area, and many heavy residue samples produced micro-flakelet waste items associated with pressure or percussion retouching. While in most cases only few of them are found together, more than 25 were found in the cluster.
- The cluster included a primary pressure blade retaining the outer surface of the raw material on about 20% of its dorsal face. This is not unique, other primary element have also been

found in TPC Area, such as the scraper mentioned above, but it is definitely rare and probably intentional.

- A pressure blade fragment resembling a side-blow-blade-flake (SBBF) was found in the cluster. SBBFs are a type of spall, a waste product, of blade-segmenting procedures, usually found in the Levant (Nishiaki 1996; Vardi and Gilead 2011).

- A group of six small overshooting flakes was found in the cluster. They were all removed from the side of an item – meaning they all have a plunging part with a flat face, and a lateral side with a flat face. This is not a common waste product in TPC Area, and is not a standardized waste type usually referred to in lithic studies, yet for some reason, the inhabitants of the building chosen to collect these six similar items and place them together in this cluster.

- An elongated core trimming element was found in the cluster, detached along the line of points of percussion, removing the front of the striking platform as well as the proximal end of the debitage plane. The removed striking platform was completely flat and untouched, perhaps reflecting early stages of production. The proximal end of the debitage plane had intensively retouched perpendicular bladelet scars, probably as preparation for further bladelet removals. In TPC Area, most platform rejuvenation flakes reflect multi-facetted platforms, without the retouching preparation for further detachments on the debitage plane. This means that the CTE found in the cluster reflects a different tradition or core reduction/maintenance technology than the one typical to TPC Area. It is not the only one of its type to be found in TPC Area, yet it is definitely rare.

These and other finds included in the cluster, are not beautiful or impressive, yet they are all rare, sometimes unique, and possibly foreign, compared to the typical waste products usually found in TPC. The reason for clustering them all together is unknown.

Of the four flint items, I would like to mention two:

- A rounded, leaf-shaped point of some sort (Fig. 5a) found in (23736). It was made on an orange speckled, medium-grain flint, using a standardized blade blank, probably produced by indirect percussion. It was shaped by bilateral, direct, semi-abrupt retouch, converging to a blunted distal end. It was probably not a perforator as it is not pointy, however, it does have some micro-chipping on the distal blunted end pointing to its use.

- A very large flake, of Palaeolithic proportions (6cm x 7.5cm x 1.5cm, 62.2g), found in (32858). It was detached from a corticated nodule of light and dark beige, medium-grain flint. The proximal end of the debitage plane was heavily retouched as preparation for detachment – the knapper wanted a thick flake, and know it was going to be difficult to produce. The flake also retains a double-bulb, reflecting the use of a large heavy hammer. Possible retouch or use wear appears in a few spots.

As mentioned above, parts of the assemblage are completely ordinary, representing the general obsidian presence at the site. General statements, concerning standard lithic analysis, may also be mentioned:

- 78% of the obsidian items come from Nenezi Dağ and 22% from Göllü Dağ. These are typical proportions for TPC Area.

- 45% of the assemblage was produced by pressure and includes blank and retouched blades, bladelets and cores. The use of pressure is more dominant on material from Göllü Dağ (56%) than on material from Nenezi Dağ (41%). The rest were produced by direct percussion (32%),

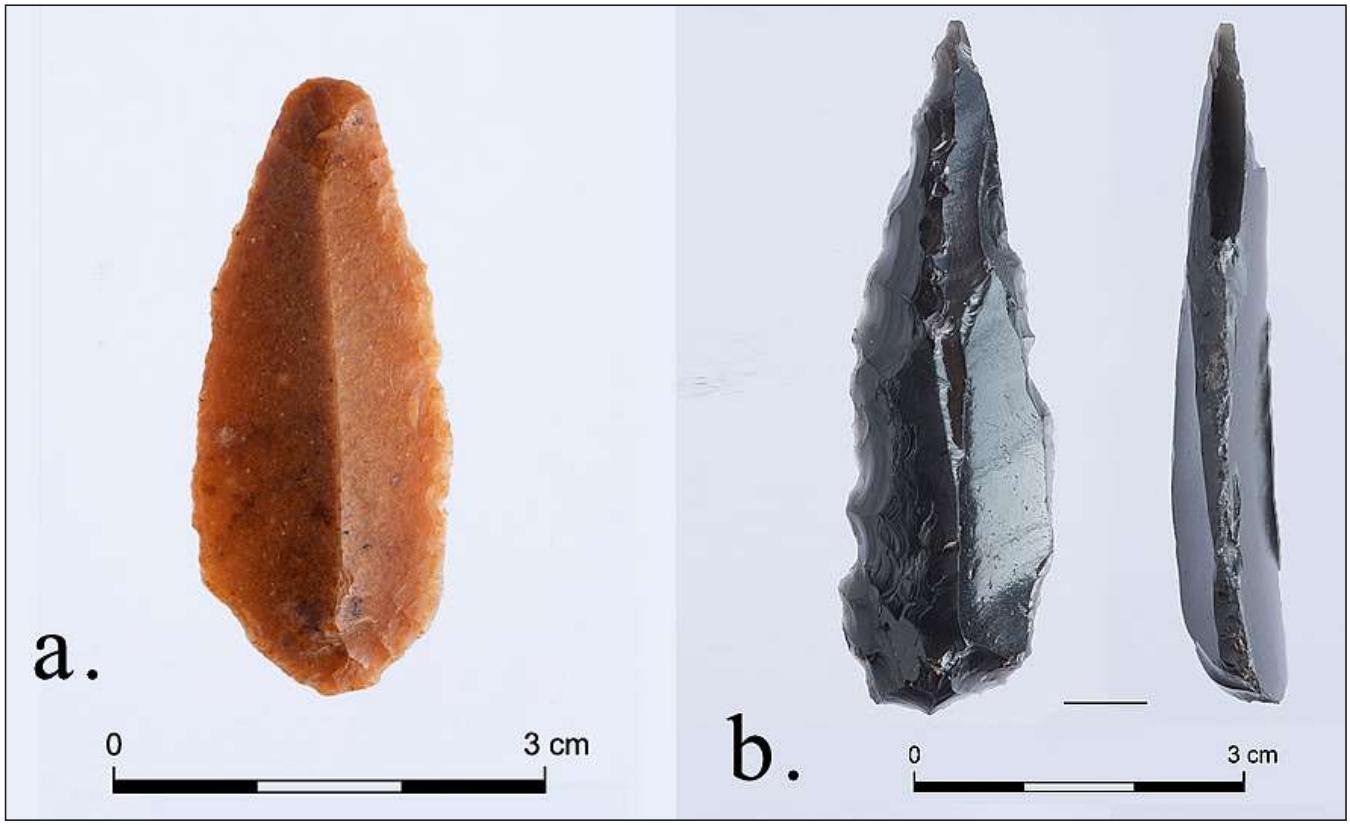

Figure 5. *(a) flint point or perforator; (b) perforator with a burin scar along the tip (31888.x13).*

retouching (19%), indirect percussion (1%), hammer and anvil (1%) or shattering (3%). The rate of pressure use is slightly lower than the TPC average (53%), probably due to the substantial presence of large tools which could not have been produced by pressure.

• Of the pressure products, blades are more common than bladelets, and many more of them were used and retouched into tools (56% of blades vs. 27% of bladelets). This preference for blades is especially accentuated on material from Nenezi Dağ, while more of the bladelets from Göllü Dağ were used.

• Tools account for 31% of the finds from the room, which is actually low compared to the TPC average (43%). Of these, 71% are *ad hoc* tools (used, retouched, notched, denticulated and truncated blades, bladelets and flakes). This is lower than the TPC average (81%), due to the concentration of elaborate formal tools in the room. The formal tools include mainly scrapers, perforators, points and wedges – a typical TPC assortment. Retouching waste is quite common (19%), almost twice as much as the TPC average (10%).

• Core trimming elements (CTE) account for 9% of the assemblage, as is the TPC average. However, the most dominant type in the room by far (56%) were core tablets (complete removals of the striking platform), which usually account for only about 8% of the CTE. Other CTE types which appear in the room such as flake overshots and a removal of the line of points of percussion – are rare in other parts of TPC, and significantly affect the observed frequencies.

To conclude, the obsidian assemblage found in the southwest room of B.150 has both unique and ordinary characteristics. The access to obsidian from the different sources is similar to the rest of TPC Area, as are the technologies used and types of tools found. There seems to have been more retouching preformed in the room than in other parts – or retouching waste was collected and

deposited in the room. Despite the general technological and typological similarities with the rest of the TPC Area, more formal tools were deposited in the room, as well as specific types of CTEs rarely found elsewhere.

The room is unique in the appearance of clusters – a mode of spatial organization of artifacts usually not found in TPC. It is also unique in the quality of tools chosen for deposition – the largest, most invested and elaborate tools found in TPC Area were deposited in the room. It is clear that the room had some kind of specific function, whether as storage or other, of practical or heirloom artifacts, and that the attitude of the inhabitants, concerning the content of the room, was different than to other parts of the building. The unique character of the finds won the room its name: 'The Curiosity Cabinet'.

Level	Building	Space	Trench	Contemporary South Area level or building	No. of obsidian items
TP R	109	482	1		26
TP Q/R	133	517	3		9
TP Q/R	133	557	3/4		7
TP Q	115	491	1		32
TP Q?	n/a	506	2		15
TP Q?	n/a	564	4		25
Total TP QR					114
TP O/P	n/a	519	2		23
TP N	110	485	1/2		37
TP N	110	486	1/2		229
TP N	152	554	4	B.44	13
TP N	152	578	4	B.44	108
TP N	152	586	4	B.44	7
TP N	n/a	585	4		15
Total TP N				**South T**	409
TP M	150	594	4	B.10	116
TP M	150	612	4	B.10	0
TP M	150	597	4	B.10	86
TP M	166	515	3	B.10	29
TP M	122	493	3		64
TP M	122	562	3		56
TP M	122	577	3		5
TP M	121	514	2		104
Total TP M				**South S**	460
Grand total					1006

Table 1. *The buildings/spaces and number of obsidian items included in each level.*

		QR		OP		N		M		Total	
		no.	%	no.	%	no.	%	no.	%	no.	%
Source	Nenezi Dağ	89	78%	17	74%	287	70%	355	77%	748	74%
	Göllu Dağ	13	52%	5	83%	73	62%	58	55%	149	59%
	Kayirli	10	40%	1	17%	42	36%	43	41%	96	38%
	Komurcu	2	8%	0	0%	3	3%	4	4%	9	4%
	Total Göllü Dağ	25	22%	6	26%	118	29%	105	23%	254	25%
	Bingöl	0	0%	0	0%	4	1%	0	0%	4	0%
	Total source	**114**	**100%**	**23**	**100%**	**409**	**100%**	**460**	**100%**	**1006**	**100%**
Production Method	Pressure blade or bladelet	54	47%	10	43%	231	57%	237	52%	532	53%
	Pressure retouching flakelet	21	18%	1	4%	42	10%	30	7%	94	9%
	Direct percussion blade or bladelet	3	3%	1	4%	18	4%	22	5%	44	4%
	Direct percussion flake	26	23%	8	35%	83	20%	122	27%	239	24%
	Direct precussion retouching flakelet	0	0%	0	0%	6	1%	0	0%	6	1%
	Indirect percussion blade	1	1%	0	0%	3	1%	6	1%	10	1%
	Organic hammer blade?	0	0%	0	0%	1	0%	0	0%	1	0%
	Hammer and anvil	2	2%	2	9%	6	1%	19	4%	29	3%
	Direct percussion core	0	0%	0	0%	1	0%	2	0%	3	0%
	Pressure core	0	0%	1	4%	0	0%	0	0%	1	0%
	Mixed core	0	0%	0	0%	1	0%	2	0%	3	0%
	Shatter	5	4%	0	0%	10	2%	6	1%	21	2%
	n/a	2	2%	0	0%	3	1%	14	3%	19	2%
	Total method	**114**	**100%**	**23**	**100%**	**405**	**100%**	**460**	**100%**	**1002**	**100%**
Debitage	Chip	2	2%	0	0%	5	1%	2	0%	9	1%
	Chunk	2	2%	0	0%	3	1%	2	0%	7	1%
	Primary Element	0	0%	0	0%	2	0%	2	0%	4	0%
	Pressure retouching flakelet	18	16%	1	4%	39	10%	33	7%	91	9%
	Pressure retouching bladelet	1	1%	0	0%	3	1%	5	1%	9	1%
	Direct precussion retouching flakelet	0	0%	0	0%	7	2%	8	2%	15	1%
	Flake Fragment	7	6%	1	4%	25	6%	27	6%	60	6%
	Flake	4	4%	1	4%	18	4%	18	4%	41	4%
	Prizmatic blade	6	5%	1	4%	45	11%	36	8%	88	9%
	Prizmatic bladelet	15	13%	0	0%	36	9%	53	12%	104	10%
	Irregular blade or bladelet	4	4%	1	4%	9	2%	7	2%	21	2%
	Core Trimming Element	13	11%	3	13%	27	7%	49	11%	92	9%
	Special Spall	1	1%	2	9%	8	2%	13	3%	24	2%
	Tool	41	36%	12	52%	174	43%	200	43%	427	43%
	Core	0	0%	1	4%	4	1%	5	1%	10	1%
	Total debitage	**114**	**100%**	**23**	**100%**	**405**	**100%**	**460**	**100%**	**1002**	**100%**

Table 2. *Combined results of all stages of standard lithic analysis according to obsidian source, production method and debitage type.*

		QR		OP		N		M		Total	
		no.	%	no.	%	no.	%	no.	%	no.	%
Typology	Used fragment	2	5%	0	0%	0	0%	3	2%	5	1%
	Used flake	1	2%	1	8%	2	1%	8	4%	12	3%
	Used blade	14	34%	6	50%	62	36%	67	34%	149	35%
	Used bladelet	7	17%	1	8%	21	12%	22	11%	51	12%
	Retouched fragment	0	0%	0	0%	2	1%	4	2%	6	1%
	Retouched flake	0	0%	0	0%	6	3%	3	2%	9	2%
	Retouched blade	4	10%	0	0%	32	18%	20	10%	56	13%
	Retouched bladelet	0	0%	0	0%	12	7%	3	2%	15	4%
	Notched blade or bladelet	1	2%	0	0%	12	7%	10	5%	23	5%
	Notched flake	0	0%	0	0%	2	1%	2	1%	4	1%
	Denticulated blade or bladelet	0	0%	0	0%	2	1%	4	2%	6	1%
	Truncated blade or bladelet	0	0%	0	0%	2	1%	0	0%	2	0%
	Backed blade	0	0%	0	0%	2	1%	6	3%	8	2%
	Scraper	0	0%	0	0%	5	3%	8	4%	13	3%
	Perforator - awl	0	0%	0	0%	1	1%	0	0%	1	0%
	Perforator - borer	2	5%	0	0%	2	1%	2	1%	6	1%
	Burin	0	0%	1	8%	0	0%	0	0%	1	0%
	Point	3	7%	0	0%	2	1%	5	3%	10	2%
	Knife covered by pressure retouch	0	0%	0	0%	0	0%	2	1%	2	0%
	Pièce esquille (wedge)	4	10%	2	17%	4	2%	22	11%	32	7%
	Multiple	0	0%	1	8%	0	0%	1	1%	2	0%
	Varia	3	7%	0	0%	3	2%	8	4%	14	3%
	Total typology	**41**	**100%**	**12**	**100%**	**174**	**100%**	**200**	**100%**	**427**	**100%**
Core Trimming Elements	Pressure core tablet	1	8%	0	0%	2	7%	4	8%	7	8%
	Platform preparation flake	7	54%	3	100%	20	74%	34	69%	64	70%
	Platform preparation overshot	0	0%	0	0%	0	0%	2	4%	2	2%
	Ridge blade	0	0%	0	0%	0	0%	0	0%	0	0%
	Ridge flake	0	0%	0	0%	0	0%	0	0%	0	0%
	Simple overshot pressure blade	0	0%	0	0%	1	4%	1	2%	2	2%
	Simple overshot flake	1	8%	0	0%	2	7%	1	2%	4	4%
	Core face preperation flake	3	23%	0	0%	0	0%	1	2%	4	4%
	Opposed striking platform removal overshot blade	0	0%	0	0%	0	0%	2	4%	2	2%
	Opposed striking platform removal overshot flake	0	0%	0	0%	0	0%	1	2%	1	1%
	Side removal of striking platform and debitage plane	0	0%	0	0%	1	4%	0	0%	1	1%
	Core base treatment	1	8%	0	0%	0	0%	1	2%	2	2%
	Other	0	0%	0	0%	1	4%	2	4%	3	3%
	Total CTE	**13**	**100%**	**3**	**100%**	**27**	**100%**	**49**	**100%**	**92**	**100%**

Table 2 (continued). *Combined results of all stages of standard lithic analysis according to typology and CTE type.*

Level by level analysis of the TPC Area chipped stone assemblages

The analysis includes over 1,000 obsidian items, divided into assemblages originating in four different Neolithic levels (Table 1). The material derives from 67 units, and was collected by hand picking, dry sieving, and heavy residue analysis.

Standard basic lithic analysis was performed on all the assemblages, recording obsidian source, production method, and debitage type for each item. When relevant, tool type (typology) and CTE type were also recorded. The full results may be found in Table 2.

The following report presents some preliminary observations concerning each level and several lines of comparison within and between the levels.

Level TP Q/R – 114 items (see Table 1 for buildings and spaces included in each level)

Source

Seventy-eight percent originate in the Nenezi Dağ source, while 22% come from Göllü Dağ.

Technology

Forty-seven percent of the assemblage is produced by pressure, including blades and bladelets, while 26% was produced by direct percussion (including mostly flakes and three blades), and the rest by other modes. Core trimming elements, attesting to the intensity and stage of on-site production, account for 11% of the assemblage, and include mainly striking platform preparation flakes (54%). Core face and base treatment flakes were also found – representing types and stages of core treatment which are not usually found in TPC Area. Cores are absent, as are primary elements and special spalls – reflecting very minor production activity on-site at this time.

Typology

Thirty-six percent of the assemblage was used or retouched into tools, and 17% represent retouching waste. That is a low rate of tools and a high rate of shaping and resharpening. Prismatic blades and bladelets were preferred as tool blanks as 55% of them were used or retouched and they account for 73% of the tools. 71% of the tools are *ad hoc*, including used, retouched, notched, denticulated and truncated flakes, blades and bladelets. Formal tools include two perforators (borers), three points, four wedges and two abraded blades. Two of the points are of the tubular type, bifacially covered by pressure retouch, and one resembles a Jericho point (Gopher 1989). Formal tools are quite common in this level (29% vs. 16% as TPC average). This may explain the high rate of retouching waste as they require heavier retouching than *ad hoc* tools.

Comparison between the use of Nenezi Dağ and Göllü Dağ material

Items produced by pressure are more common on Göllü Dağ obsidian (60%) than on Nenezi Dağ obsidian (44%). No production waste was found on Göllü Dağ material, and retouching waste (12%) appears less than on Nenezi Dağ material (20%). Göllü Dağ material is thus used but not knapped in this level. It was being shaped into tools, but not as intensively as the Nenezi Dağ material.

Comparison between spaces/buildings

As there are only few items from each building or space, internal statistical comparison is irrelevant. Qualitative analysis shows that they are very similar – single core trimming elements made only on Nenezi Dağ were found in each space/building and they each include a perforator and a

point in addition to expedient tools. Sp.506 did produce a different type of point – the Jericho point – which is not typical to Çatalhöyük.

Level TP O/P – 23 items

This level is represented by Sp.519 alone, so there are too few items for any reliable statistical analysis. Following is a description of the assemblage, though frequencies should be taken with caution.

Source

Seventy-four percent originate in the Nenezi Dağ source, while 26% come from Göllü Dağ.

Technology

Forty-three percent of the assemblage is produced by pressure, including blades and bladelets, while 39% was produced by direct percussion (including mostly flakes and one blade). A pressure core was found, in addition to core trimming elements (13%, all three are platform preparation flakes) attesting to some on-site production at this level.

Typology

Fifty-two percent of the assemblage was used or retouched into tools, yet only 4% represent retouching waste, which may have taken place off site or elsewhere at this time. Prismatic blades and bladelets were clearly preferred as tool blanks as nine out of ten were used or retouched, and they account for 75% of the tools. 67% of the tools are *ad hoc*, and the formal tools include a burin, two wedges (one on an exhausted pressure core) and a multiple tool – a drill shaped by burin blows and retouch. Special spalls (9%) were also found. These are two large bifacial thinning flakes, from initial stages of thinning a bifacial tool, or from post-retouching reshaping of the macro-shape of the biface, which are rare in TPC. This stage of shaping the bifaces probably usually took place off-site. Their presence in this level may represent the shifting roles of this space in relation to the settlement limits – it may have been outside of the living area during this level.

Level TP N – 409 items (see Table 1 for buildings and spaces included in each level)

Source

Seventy percent originate in the Nenezi Dağ source, 29% come from Göllü Dağ, and 1%, four items, come from Bingöl, an Eastern Anatolian source. These are the only Bingöl items found in the TPC Area to date. They were all found in the southeastern part of Sp.578, belonging to this level. Two of them are probably fragments of the same retouched blade yet they do not exactly refit.

Technology

Fifty-seven percent of the assemblage was produced by pressure, including blades and bladelets, while 24% was produced by direct percussion (including mostly flakes yet also blades). Others were produced by indirect percussion or hammer-and-anvil (1% each). Core trimming elements are comparatively scarce (9% of assemblage), yet include striking platform preparation flakes (74% of CTEs), complete core tablet removals (7%), overshot blades and flakes (11%) and more. Four cores were also found, all exhausted or fragmentary, two used by percussion and two by pressure.

Initial stages of core reduction usually take place off-site and CTEs from these stages are very rare in the TPC Area. There are, however, several items in this level pointing to the execution of these initial stages of core reduction on-site – two primary element, one is a pressure bladelet re-

taining the outer surface of the raw material block on about 50% of its dorsal face – which is a lot; two CTEs retaining parts of a flat striking platform – different from the advanced-stage faceted core platforms usually found in this area; a protruding arris which may have been removed as a core-face opening blade; and a few used and un-used blades which seem to be less standardized, produced from the core full standardization and control were achieved.

Typology

Forty-three percent of the assemblage was used or retouched into tools, and 12% represent retouching waste. Prismatic blades and bladelets were clearly preferred as tool blanks, as 63% of them were used or retouched and they account for 83% of the tools. 90% of the tools are *ad hoc*. Formal tools include scrapers, perforators (awls and borers), points, wedges and abraded blades – the typical TPC Area repertoire.

Special spalls are not very common (2% of the assemblage), and seem to be mainly related to tool maintenance and reshaping. They include flakes struck off tools; a bladelet struck off the side of a bifacial projectile point; another bladelet struck off the side of a pressure retouched point or knife; a flake removed off the round working edge of a scraper; a secondary burin spall struck off a retouched pressure blade; and a double ventral flak (struck off the ventral face of an item) (Parush *et al.* 2015).

One retouching flakelet retains some of the outer surface of the raw material. This points to several things – (i) preliminary stages of reduction from a block of raw material were possibly performed on site, as was noticed and mentioned above; and, (ii) the presence of this outer surface does not prevent the people from shaping such items into tools.

Comparison between the use of Nenezi Dağ and Göllü Dağ material

Statistically, the assemblages seem to be very similar, pointing to similar conceptual practices regarding the material from the different sources. This is true for the similar frequency of pressure debitage, intensity of use of available blanks, and on-site production. Nenezi Dağ cores were, however, reduced on-site from earlier stages of core reduction, stages which are usually not performed on-site, or at least are rarely found in other levels. Tools seem to appear slightly more frequently on Göllü Dağ material, complemented by slightly more retouching waste, and formal tools are significantly more frequent (20% vs. 8% on Nenezi Dağ obsidian).

Comparison between spaces/buildings

The two buildings included in this level (B.110 and B.152) have large enough samples to be compared between them, and possibly offer some insights concerning synchronous differences.

Source of material

Building 152 is unique, out of all contexts examined in the TPC Area, in the high frequency of material from Göllü Dağ found in the building. The Nenezi/Göllü Dağ ratio is almost equal, amounting to 49% and 48% respectively. It is also unique concerning the presence of material from Bingöl. This situation is therefore significantly different (X^2=44.106, df=2, P<0.001) from the source distribution in B.110, which, though extreme, is quite typical to TPC, with 80% of the material originating in Nenezi Dağ and 20% in Göllü Dağ. We may therefore suggest that the inhabitants of the buildings had differentiated access to materials.

• The distribution of technological production methods and debitage types are similar between the buildings. However, a detailed look into the debitage frequencies shows that blank prismatic bladelets are more common than blades in B.152 (11% vs. 6%), while blank prismatic blades are more common than bladelets in B.110 (13% vs. 8%). The significance of this difference is P=0.04. This difference is probably an actual matter of production rather than removal of blank for tools, as blades are preferred over bladelet in every tool category in both buildings.

• Intensity of production seems to be higher in B.152, as core trimming elements and cores amount to 11% of the assemblage, compared to 6% in b.110.

• The typological division, into *ad hoc* and formal tools, is identical with 90% vs 10% respectively in both buildings. The diversity of formal types is similar in both buildings with scrapes, perforators and abraded blades in both, points in B.152 and wedges in B.110.

• A detailed look into the frequencies of different *ad hoc* types, does however, show a significant difference between the buildings (X^2=46.405, df=4, P<0.001). The difference is expressed in the intensity and intentionality of retouching. In the analysis we identified two intensities of retouch – used items (blades, bladelets and flakes) or retouched, notched, denticulated, etc. items. The used items were only lightly retouched, or exhibit use-related edge-damage rather than systematic retouching, while the other category exhibit clear, systematic, intentional retouching, notching, denticulation etc. While used items dominate the *ad hoc* tools of B.110, intentionally retouched items dominate the *ad hoc* tools of B.152 in every category (Table 3).

Ad-hoc tool typology		Used flake	Used blade	Used bladelet	Retouched flake	Retouched blade	Retouched bladelet	Notched flake	Notched blade/let	Denticulated blade/let	Truncated blade/let	Backed blade	Total (% of assemblage)
B.152	no.	1	3	1	6	19	8	1	5	1	2	0	47
	%	*2%*	*6%*	*2%*	***13%***	***40%***	***17%***	***2%***	***11%***	***2%***	***4%***	*0%*	*90%*
B.110	no.	2	54	18	2	12	4	1	7	1	0	1	102
	%	*2%*	***53%***	***18%***	*2%*	*12%*	*4%*	*1%*	*7%*	*1%*	*0%*	*1%*	*90%*

Table 3. Ad hoc *tool types. Notice high frequency of 'used' items in B.110, compared to high frequency of 'retouched' items in B.152.*

We may thus conclude that significant differences appear between B.152 and B.110. Differences are expressed in the access to materials, as well as the technological choices of production of blades or bladelets, and in the intensity and intentionality of retouching and shaping *ad hoc* tools before their use. Alongside these differences, other conceptions or behaviors, such as choice of production method (pressure), intensity of formal tool appearance, and type diversity – are shared between the inhabitants of the two buildings.

Level TP M – 460 items (see Table 1 for buildings and spaces included in each level).

Source

Seventy-seven percent of the obsidian from this level originated in Nenezi Dağ, and 23% in Göllü Dağ.

Technology

Fifty-two percent of the assemblage was produced by pressure, including blades and bladelets, while 32% was produced by direct percussion (including mostly flakes yet also blades). Others were produced by indirect percussion (1%) or hammer-and-anvil (4%). Core trimming elements account for 11% of the assemblage and include striking platform preparation flakes (69% of CTEs), complete core tablet removals (12%), overshot blades and flakes (4%) as well as core face and base treatment flakes. Five cores were also found, two are fragments, one was used by percussion, another by pressure – reflecting changing orientations of removal, and the last started as a pressure core but was ultimately exhausted by percussion removals.

Typology

Forty-three percent of the assemblage was used or retouched into tools, and 10% represent retouching waste. Prismatic blades and bladelets were generally preferred as tool blanks, as 57% of them were used or retouched and they account for 68% of the tools. The preference for laminar blanks for tools is apparent in all levels, yet is slightly less emphasized in this earlier stage. 76% of the tools are *ad hoc*. Formal tools include the usual scrapers, perforators (borers), points, wedges and abraded blades. Also found in this level are two knifes, covered by unilateral bifacial pressure retouch. One perforator, found in a grave (31888.x13) had its tip removed by a burin blow (Fig. 5b).

Special spalls account for 3% of the assemblage, and seem to be mainly related to tool maintenance and reshaping. They include a burin spall; several double-ventral flakes struck off of tools, at least one reflecting multiple occasions of resharpening; several tool spalls removing different parts of tools; two bifacial thinning flakes, one removed off the tang of a bifacial point, the other was probably a mistake – a strong percussion strike removed a thick flake off a biface, ruining the topography of the tool.

Comparison between the use of Nenezi Dağ and Göllü Dağ material

The use of obsidian from the two sources seems to be very similar in most respects. There is a slightly heavier reliance on pressure production on the material from Nenezi Dağ (53% vs. 48%). Contrary to that, there seems to be slightly more on-site production performed on the material from Göllü Dağ (15% CTEs vs. 9%), yet the frequencies of different waste types are practically identical. The choice of blanks for tools is similar on both materials, as is the intensity of use, the ratio of *ad hoc* to formal tools, and the intensity of on-site retouching.

Comparison between spaces/buildings

Three buildings from this level may be compared statistically: B.150, B.122 and B.121. As with regard to the two sources of obsidian, there seem to be very little behavioral differences between the buildings.

- Source – All three buildings express dominance of obsidian from Nenezi Dağ over that of Göllü Dağ. B.150 shows a slight extreme with 80% vs. 20%, while B. 122 and B.121 equal the TPC average of 73-74% vs. 26-27%.

• The reliance on pressure production seems to be slightly higher in B.150 (57%) than the other two (48% and 46%). The only somewhat significant difference in production mode between the buildings (P=0.03) is expressed in the excess of shattering in B.121. This may be a matter of production failures or a simple case of poor preservation.

• The distribution of debitage types between the buildings is significantly different (X^2=28.196, df=14, P=0.01). However, it is not caused by a major difference between the assemblages, but is due to the accumulation of several small differences. Production seems to have been practiced less in B.150 as CTEs and cores are more scarce (together 7%) than in the other buildings (16% and 14%). Blank prismatic bladelets seem to be over represented in B.150 (15%) yet underrepresented in B.122 (6%). Retouching waste appears more frequently in B.150 (14% vs. 8% and 6%) and tool shaping may have been practiced there more intensively.

• No significant typological difference was found between the buildings, not in the ratio of *ad hoc* to formal tools, not in the general distribution of types, not in the intensity of shaping and use, or the choice of blank (flake, blade or bladelet). There seems to be a clear common conception of the typology used throughout this level.

Diachronic changes

There is no one aspect of the chipped stone industry of the TPC Area that shows a clear development or directional process throughout the levels. All aspects fluctuate, rise and fall, usually moderately, as time passes. The clear intensification in the use of Nenezi Dağ over Göllü Dağ obsidian, which coincided with an intensification of the use of pressure production, as was found in the South Area (Carter and Milić 2013: tables 21.2 and 21.13), is not repeated here. The inhabitants of the TPC Area lived after this major material culture change and the changes they experience are not as unified or vectored.

What does change is the internal relationship between buildings, expressed between Levels TP M and TP N. The assemblages from Level TP M reflect common or shared conceptions regarding technological and typological indiscrimination between material from different sources, or inhabitants of different houses. In Level TP N, however, this changes, and a different attitude is expressed regarding the different materials found in each building, the intensity of production, blank width choice (between the production of blades or bladelets), and investment in *ad hoc* tools. There seems to be a difference between houses, between people, their choices and behavior.

Level TP O/P is only represented by a few items. It includes some fire installations (Sp.519) without dwelling construction and may have been located outside of the built village limits at the time. This situation may be reflected in the chipped stone assemblage by the presence of large bifacial thinning flakes, a waste type rarely found inside the buildings, representing a production stage usually performed elsewhere.

In Level TP O/R, the latest Neolithic levels, there seems to be an emphasis on obsidian from Nenezi Dağ, not in quantity but in investment. All on-site production at this level is on Nenezi Dağ material, and more stages of production take place on-site than in earlier levels. There also seem to be more formal tools produced and used in this level than before. The fragmentary nature of parts of the assemblage may point to inferior preservation conditions, as expected in upper layers.

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