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Author(s): Janusz K. Kozłowski and Marcel Otte

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THE FORMATION OF THE AURIGNACIAN IN EUROPE¹

Janusz K. Kozłowski

Institute of Archaeology, Jagellonian University, Golebia 11, 31007 Krakow, Poland

Marcel Otte

Prehistory Department, University of Liège, 7 place du XX août-bât A1,
400 Liège, Belgium

In order to understand the Aurignacian phenomenon in Europe, one must clarify definitions and then consider it both in its territorial entirety and within the complexity of its origins. Moreover, the Aurignacian appears to be a composite phenomenon, articulated in a series of phases with varying geographic limits. The “classic” sequence defined in Western Europe is from now on insufficient to support an intelligible model. We propose here to explain certain essential characteristics useful for this new idea.

A CONTRAST IS OFTEN IMPOSED in the literature between the Aurignacian—supposedly homogeneous across space—and the so-called transitional industries, dispersed throughout the European territory (see Table 1 for the most important Aurignacian sequences). These “transitional” industries contain weapon tips unknown in the Aurignacian: curved-backed points (Châtelperronian [Harrold 1983] and Uluzzian [Palma di Cesnola 1993]) and foliate points (Szeletian, Jerzmanowician, Gorodstovian, Streletskian [Kozłowski 1990]). The highly advanced morphology and technology of Aurignacian tools are seen as being in opposition to the deficiencies of transitional industries, which often had Mousterian affinities. Artistic and symbolic evidence, common in the Aurignacian, is rare in the transitional assemblages. The most natural hypothesis advanced thus proposes a local origin for the transitional industries and a non-European origin for industries of Aurignacian type (e.g., Mellars 1989).

An analogy can be made to the diffusion of the Neolithic, which, like the Aurignacian, was also earlier in the southeast, the Balkans, and the eastern Mediterranean. At both times, the Danube Basin was crossed, and, finally, these new traditions reached Atlantic Europe (Bar-Yosef 1998). A theory based on the advance of successive waves of populations can thus be developed for the Aurignacian. It corresponds to the migration of the first modern humans to Europe (Mellars 1989, 1996; Otte 1990; Kozłowski 1993).

Recent data support the chronology of these crucial phases, and the different stages of Aurignacian development are now much better established. A hypothesis

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TABLE 1
The Most Important Aurignacian Sequences of Mediterranean Europe, Central Europe, and the Balkans

Kyr	Fumane and Paina	Castelcivita	Mochi	Arbreda	Romani	Geissenklosterle	Willendorf II	Bacho Kiro	Temnata
									Gravettian
30			E					6a 29.1±0.9	3g
	D3 31.7±1.1 D6 32.3±0.5	31.9±0.8 Pta 32.9±0.7 Uz	F 32.8±0.9			33.7±1.1 Ila 36.8±1.0	(4) 31.2±0.2 32.0±0.2	7 32.2±0.8 6b 32.7±0.3	3i 31.9±1.6 3j
		33.8±1.3	G 35.1±1.4			II b	34.1±1.2	6b/8 33.3±0.8	Tephra "V" 4(A) 33.0±0.9
35	A2 (m) (Split based) A3 36.5±0.6 A4 I	28	H			III 37.3±1.8	(3)	9 (Splitted base)	
	Paina 37.1 38.6 Pta			37.3±1.0 (Split based points) 37.7±1.0 Au	36.7±0.9 37.2±0.9 37.9±1.0 Pta	37.8±0.5	37.9±0.7	I 37.6±1.4 (b-34.8±1.1)	
				BE 111 38.5±1.0 39.9±1.0	39.2±1.5	IIIa		II 38.8±1.5	4(B) 38.8±1.7 4(B) 39.1±1.8 (AMS)
40				39.4±1.4				III 38.5±1.1	
		30		BE 116	42.8±0.7 (US)	40.2±1.5 (AMS) 39.5±2.1 (TL) IIIa,b	41.7±3.7	IV >43.0	Layer 11 : Pre-Aurignacian
		42.7±0.9		44.5±2.4		44.7±5.8(TL) 43.3±4.6 (ESR) IV		11a ?	4(c I)
45								>47.0	46.0±8/45.0±7 (TL)
								13	

Abbreviations: Pta = Proto-Aurignacian, Au = Aurignacian, Uz = Uluzzian.

concerning the southeastern origins of the Aurignacian can now be reviewed from a more solid basis. From the outset, one observes marked differences between the “classic” Aurignacian and its earliest phase (“Pre-Aurignacian”), which is particularly widespread in the Balkans and the Danube Basin. The other facies subsequently developed on this technological base (Kozlowski 1999).

We use the term “Pre-Aurignacian” here to mean industries which not only precede the classic Aurignacian and have more traits in common with it than with the transitional industries, but which also especially display a technological and typological break vis-à-vis the industries of the Middle Paleolithic. This gap differentiates the Pre-Aurignacian from the transitional industries which are derived from well-defined Middle Paleolithic entities (i.e., different facies of the Mousterian and Micoquian). At the same time, the Pre-Aurignacian includes technological and typological elements which presage the classic Aurignacian. We believe that this sense of the term “Pre-Aurignacian” is much more appropriate than its former usage to describe the laminar industries of the Middle Paleolithic known in the contexts of the Acheulo-Yabrudian of the Near East or of the last interglacials in the Haula Fteah, Libya. We do not support using the term “Proto-Aurignacian” for industries which preceded the classic Aurignacian in the Balkans

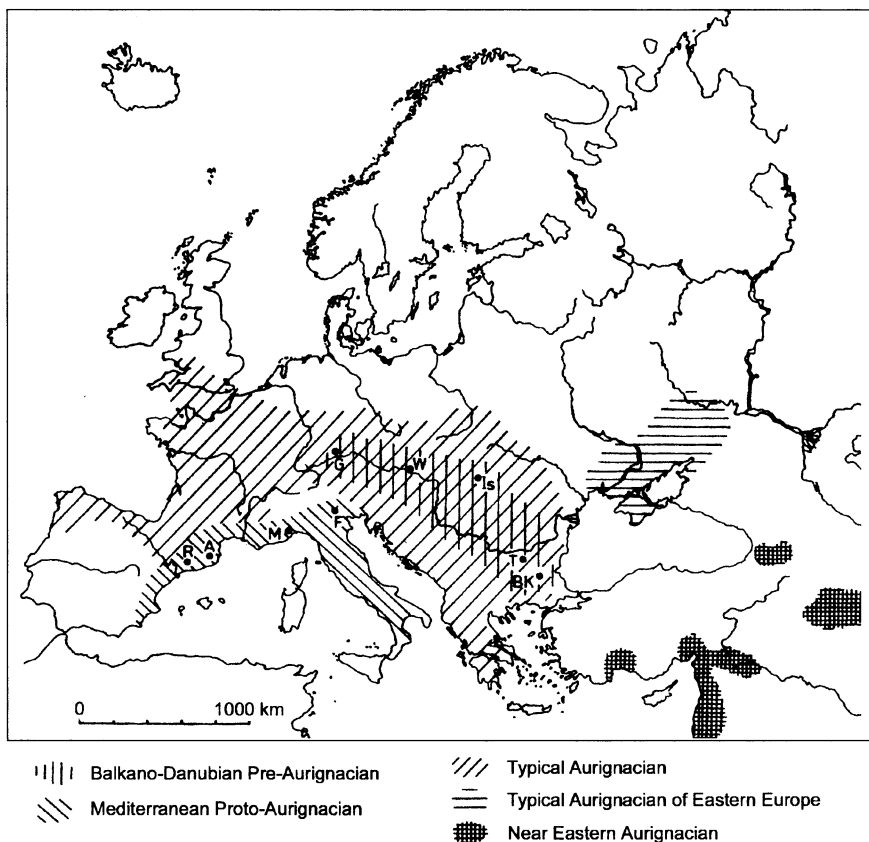


Figure 1. Distribution of the Aurignacian in Europe and the Near East

Abbreviations: R = Romaní (Spain), A = Arbreda (Spain), M = Mochi (Italy), F = Fumane (Italy), G = Geissenklösterle (Germany), W = Willendorf II (Austria), Is = Istallöskö (Hungary), T = Temnata (Bulgaria), BK = Bacho-Kiro (Bulgaria).

and Danube Basin, as had been proposed by the late J. Hahn for the base of the sequence at Geissenklösterle in southern Germany. We prefer, instead, to use this term to describe the bladelet-rich early Aurignacian industries of the Mediterranean Basin, where it is commonly used by Italian authors (Figure 1).

BACHO-KIRIAN

The Pre-Aurignacian is known in stratum 11 at the site of Bacho-Kiro (eastern Bulgaria), dated between >43,000 and 37,000 years B.P. (Kozłowski 1982), and in stratum 4 of Temnata (northern Bulgaria), dated between 45,000 and 38,000 years B.P. (Ginter et al. 1996). It is also present at Willendorf II (Austria) levels 1 and 2, dated between 41,700 and 38,000 years B.P. (Damblon, Haesaerts, and van der

Plicht 1996), and at Geissenklösterle (southwestern Germany), dated between 45,000 and 37,000 years B.P. (Hahn and Münzel 1995:table 1; Richter et al. 2000).

The Pre-Aurignacian tool kit is made on well-mastered blades and contains endscrapers (sometimes thick, nosed, or atypical), blades with marginal retouch, truncated blades, dihedral burins, and burins on break (Figure 2). Otherwise, this facies lacks typical carinated endscrapers, carinated burins, Aurignacian blades, and bladelets with fine retouch (i.e., Dufour or Krems). Bone points are also absent, although bone technology is present (as evidenced by ivory and bone manufacturing debris). Representational art is lacking, but pendants are present (made on bone, antler, ivory, and teeth).

In the Danube Basin and the Balkans, there is no evidence for contact between this Pre-Aurignacian and the so-called transitional industries. The Pre-Aurignacian contains no backed points or foliate points, and there is no evidence of use of the Levallois or Mousterian techniques (for example, there are only 2 Mousterian sidescrapers versus 650 Upper Paleolithic blade tools in Bacho-Kiro stratum 11 [Kozłowski 1982]).

All this indicates the existence of a break between the local Mousterian and the Bacho-Kirian. The patterns of raw material use reflect completely different systems: in the same region, nonlocal flint is used during the Aurignacian, while

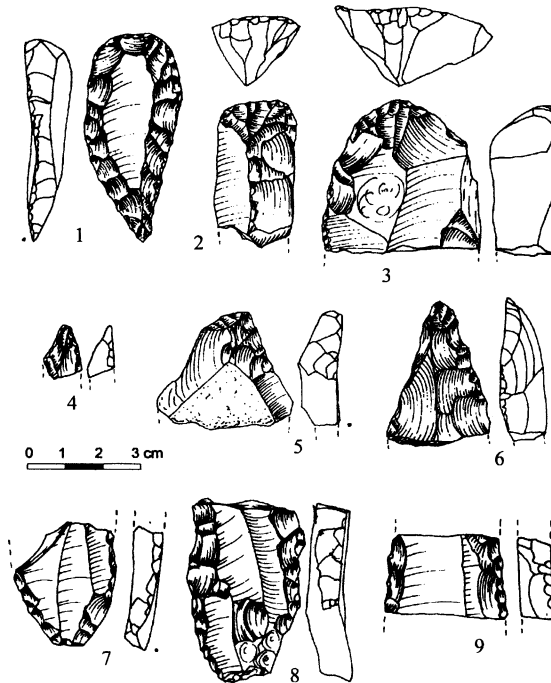


Figure 2. Pre-Aurignacian (Bacho-Kirian) Tools from Layer 11, Bacho Kiro, Bulgaria
1-6, endscrapers; 7-9, retouched blades (after Kozłowski 1982).

flint of local origin is utilized during the Mousterian. The spatial organization of sites and the distribution of activities are also distinct between the two traditions. If they are found superimposed at the same site, a chronological hiatus separates them, as is also observed, for example, between stratum 11 at Bacho-Kiro and the formation of stratum VI on the terrace of the cave site of Temnata which exhibits a Levallois-derived transitional industry.

Recently, Zilhão and d'Errico (1999) have challenged the Aurignacian character of these southern European industries. Their argument stems from a desire to prove that no Aurignacian existed in Europe before 36,500 B.P., so that the Aurignacian could not have contributed through "acculturation" to the origins of certain leptolithic characteristics of the Châtelperronian (see also d'Errico et al. 1998). They have reinforced these criticisms by suggesting that "in most transitional pre-Aurignacian Upper Paleolithic technocomplexes of Central Europe," there are carinated and nosed endscrapers (Zilhão and d'Errico 1999:39). This assertion is, in fact, based on nothing more than a few pieces in the Bohunician level at Stranska Skala (Czech Moravia), which are actually probably the result of mixture due to cryoturbation from the overlying Aurignacian deposit. In contrast, Zilhão and d'Errico (1999) criticize Hahn's finding of Aurignacian elements in levels III and IIIa of Geissenklösterle, which they consider to be intrusive (despite Hahn's well-known meticulousness and rigorous attention to the taphonomy of this site), while they uncritically accept the Stranska Skala evidence (see also Richter et al. 2000:75).

The assemblages from stratum 11 at Bacho Kiro and stratum 4 at Temnata differ from transitional industries in having elements in common with the later "Typical" Aurignacian and in lacking Mousterian or Micoquian technology. In these two Bulgarian sequences, the classic Aurignacian, with carinated endscrapers, carinated burins, bone points, etc., is superimposed above Bacho-Kirian levels older than 37,000 B.P. Continuity is apparent, however, in the increased numerical importance of Aurignacian elements, not only in the Balkan sequence, but also at Geissenklösterle (Hahn 1988). These Pre-Aurignacian industries probably thus represent a true predecessor of the classic Aurignacian, distinct from the various transitional technocomplexes which developed out of local Middle Paleolithic industries.

We can observe this increase in Aurignacian elements even among the successive living floors of stratum 4 in Temnata Cave. Because of this developmental process, Zilhão and d'Errico (1999:43) remarked that in the stratum 4 assemblages dated between 38,000 and 39,000 B.P., there are only simple endscrapers on thick blades. But in three successive habitation levels (C-A) in stratum 4 of Temnata Cave, we can observe continuity in technology and raw material use. At the same time, there is an increasing number of typical Aurignacian elements within the endscraper and retouched blade tool groups (Drobniewicz et al. 2000).

The break that exists between the Mousterian, the Micoquian, and the transitional industries, on the one hand, and the Pre-Aurignacian assemblages, on the other, supports the hypothesis of a migratory phenomenon to explain these

cultural modifications. However, the geographic origins of the movement, as well as the anatomical status of these new populations, remain unknown and subject to controversy. Indeed, the presence of modern humans and Neandertals in similar cultural contexts (i.e., the Mousterian) in the Near East demonstrates the autonomy of material cultural characteristics from anatomical traits during this crucial phase in the history of humanity. The human remains discovered at Bacho-Kiro are too fragmentary and too dispersed to support one or the other hypothesis concerning this issue (the mandible Bacho-Kiro 11.IV is dated to more than 40,000 years B.P. and the loose teeth between 37,000 and 32,000 years B.P. [Glen and Kaczanowski 1982]).

PROTO-AURIGNACIAN

Distributed especially in the Mediterranean region of Europe, the Proto-Aurignacian usually contains many bladelets with fine marginal retouch. In its early phases, it is broadly contemporary with the Balkan Pre-Aurignacian at some sites: El Castillo (Cantabrian Spain) level 18, between 38,000 and 41,000 B.P. (Cabrera and Bischoff 1989); l'Arbreda (Catalonia) level 11, between 39,000 and 41,000 B.P. (Bischoff et al. 1989); and Reclau Viver (Catalonia) level A, c. 40,000

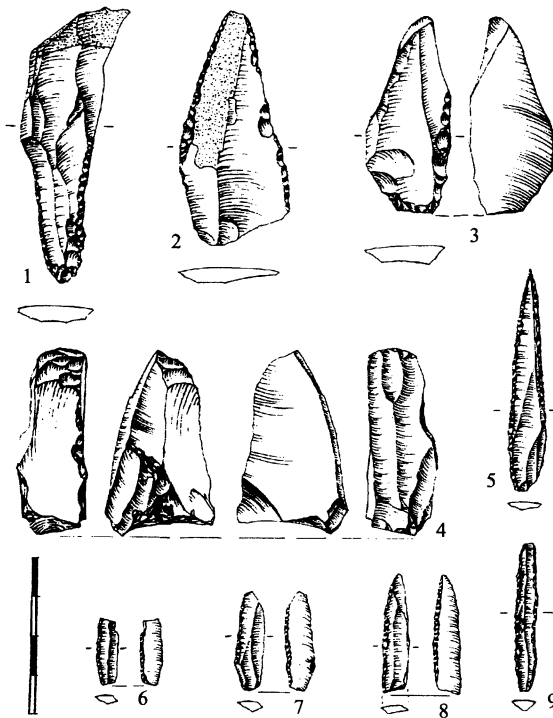


Figure 3. Proto-Aurignacian Tools from Sector Beta, Layer BE 111, Arbreda Cave, Spain
1-2, retouched blades; 3, dihedral burin on retouched blade; 4, carinated endscraper; 5, Krens point; 6-9, Dufour bladelets (after Bischoff et al. 1989).

B.P. If some doubt exists about the homogeneity of the industry within level 18 at El Castillo, the other sites seem to us to be quite secure in their stratigraphic and geochronological contexts (Figures 3 and 4). This Proto-Aurignacian facies—albeit a bit more recent in age—also appears in certain sites in northern Italy, such as Paina (37,900-38,600 B.P. [Broglia and Importa 1995]) and Fumane (32,100-36,800 B.P. [Bartolomei et al. 1994]), and in southeast France (La Laouza and Esquicho-Grapaou [Bazile 1983]), as well as in northern Spain (La Viña level XIII, dated to 36,500 B.P. [Fortea 1996], and Abric Romaní, dated to 38,000-36,000 B.P. [Bischoff et al. 1994]). It may have also survived in certain regions of southern Italy until c. 32,000 years ago, as at Castelcivita levels 6, 8, and 9, dated between 31,900 and 32,900 B.P. (Gambassini 1997).

All these industries are characterized by bladelets with fine marginal retouch of the Dufour and/or Krems micropoint types. These armatures were made in a specific way, independent of the reuse of bladelets produced in the manufacture of thick, steep-edged endscrapers (Figure 5).

The early Aurignacian of the Italian Mediterranean region occupies a position intermediate between the Uluzzian and the classic Aurignacian, as confirmed by the sequences at l'Abri Mochi, de la Cala, etc. This chronostratigraphic position

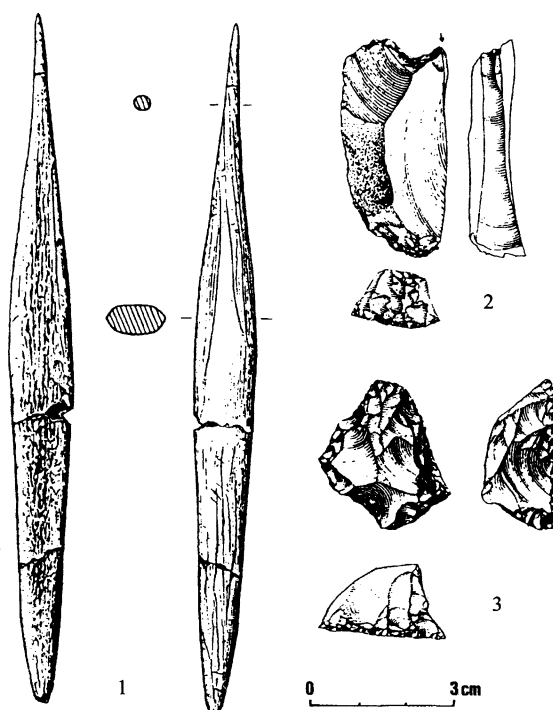


Figure 4. Typical Aurignacian Tools from Sector Alpha (5.20-5.40 m), Arbreda Cave, Spain
 1, Aurignacian bone point; 2, burin and endscraper; 3, nosed endscraper (after Soler i Masferrer 1982).

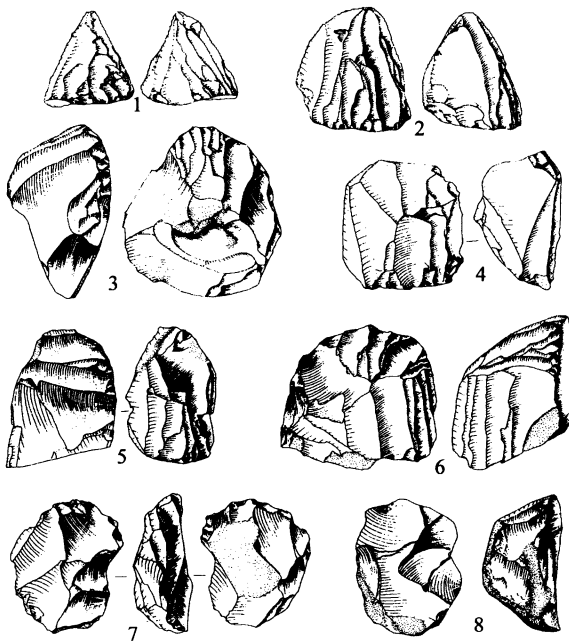


Figure 5. Proto-Aurignacian Cores from Layers A1, A3, D3, Fumane Cave, Italy
1-8, cores from bladelets (after Broglio and Peresani 1992).

had earned it the name “Proto-Aurignacian” among Italian authors. Distinct from the evolved Pre-Aurignacian and from the classic Aurignacian, this intermediate form should fill the gap en route toward western Europe, since it is partially contemporary with the transitional curved-backed point industries, taking into account the fact that the Uluzzian survived at Castelcivita until 32,400-33,200 B.P. in levels 10-14 (Gambassini 1997).

The origin of the Proto-Aurignacian is unknown, just as its relationship to the Pre-Aurignacian is unclear. The only region where these two facies are both found is in the middle Danube Basin. In lower Austria, we observe the presence of Pre-Aurignacian at Willendorf II (levels 1-2) between 40,000 and 37,000 B.P. (Damblon, Haesaerts, and van der Plicht 1996) and of Proto-Aurignacian with Krems bladelets and points at the type site of Krems-Hunsteig (35,000-36,000 B.P.). Some evidence, such as the presence of Mousterian tools in level 18 at El Castillo and the presence of tools on flakes in level G at Riparo Mochi (Kuhn and Stiner 1998), poses the question as to the possible *local* origin of the Proto-Aurignacian out of the Mousterian. Nevertheless, it is possible that, in the case of El Castillo 18, there has been mechanical mixture, as suggested by Zilhão and d’Errico (1999). (But see Cabrera et al. 2000 for a detailed discussion of the integrity of the Castillo level 18 early Aurignacian [Editor’s note].) On the other hand, in the case of Mochi G, as emphasized by Kuhn and Stiner (1998:S187), the

flakes “were reduced by very different techniques from those used in the most recent Mousterian at Riparo Mochi.” Given the lack of elements in common either with the Mousterian or with the Uluzzian, it is impossible to present a hypothesis which would explain the origin of the Proto-Aurignacian. We are perhaps justified simply to suggest an analogy between the rapid diffusion of the Cardial Neolithic along the northern margins of the Mediterranean and the spread of the Proto-Aurignacian, which was probably also allochthonous to this region. This process of westward expansion, along the northern coast of the Mediterranean Sea, is also supported by the presence of retouched microbladelets, both in Turkey (Karain B; see Figure 7, below) and in Iran (Warwasi, from the oldest layer Z; see Figure 10, below).

AURIGNACIAN

In its classic phase, the Aurignacian appears across Europe, including the Atlantic coast. Its “genetic” relationship to the Bacho-Kirian industry has no equivalent in western Europe. It can be seen only at the eponymous site Bacho-Kiro (levels 9, 7, 6B, 6A, dated between 34,000 and 28,000 years B.P.) and at Temnata (levels 3g, 3h, 3i). Technological continuity is demonstrated by the presence of laminar production, numerous burins, endscrapers and blades with marginal retouch, nosed endscrapers, retouched flakes, and splintered pieces (Figure 6). The evolutionary tendency is marked by an increase in the number of endscrapers, a reduction in numbers of retouched blades, and the appearance of carinated and Dufour pieces. Bone points are now present (level 9), as well as Mladeč points (level 8) and fusiform or spindle-shaped pieces (levels 7 and 6B). The Balkan Aurignacian is thus present in a form similar to the industries of central Europe and the Danube Basin. Differences of functional character, rather than regional or chronological variations, separate the assemblages.

Dates for the Balkan sequences give the impression that the transition from the Pre-Aurignacian (Bacho-Kirian) to the classic Aurignacian occurred at c. 34,000 years ago, thus a little later than the appearance of the classic Aurignacian in western Europe (c. 36,000 years ago). One must keep in mind, however, that we do not have dates for all the levels at Bacho Kiro; notably lacking are dates for level 9 with a split-bone point and for level 8 with a fragment of a Mladeč point (Kozłowski 1982). By extrapolation from dates at the top of level 11 and a date at the interface between levels 8 and 6b, levels 9 and 8 lie somewhere between 37,600 and 33,300 B.P. At Temnata, in contrast, erosion and then deposition of a volcanic ash around 33,000 years B.P. separate the Pre-Aurignacian levels from those of the classic Aurignacian. It is necessary to stress that in the Danube Basin, the transition between the Pre-Aurignacian and the classic Aurignacian with split-bone and Mladeč points could have taken place a little earlier, c. 37,000-36,000 B.P., as indicated by the evidence from Geissenklösterle and perhaps also at sites in Hungary (even if one does not accept the dates from the lower level at Istállóskö).

Some special technical innovations, such as bone points, could have spread independently across cultural entities by exchange or contact. This idea could be supported by the presence of bone points as single Aurignacian elements in the

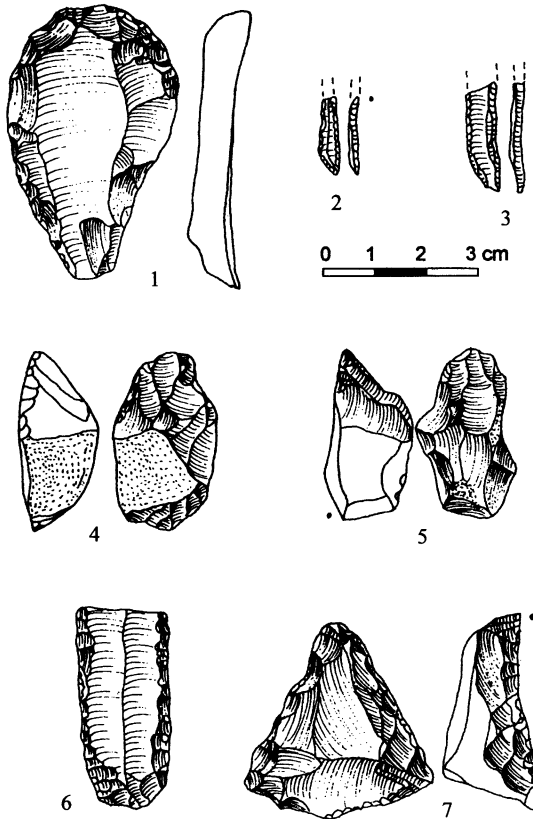


Figure 6. Typical Aurignacian Tools from Layer 6a, Bacho Kiro, Bulgaria
 1, 4-5, 7, endscrapers; 2-3, Dufour bladelets; 6, retouched blade (after Kozłowski 1982).

Danube Basin. The diffusion of fossil shells, used as ornamentation, appears to be generally wider than the area covered by the raw material procurement networks. This may reflect long-distance exchange networks independent of population movements.

THE FACIES

Three stages can thus be distinguished: (1) the Bacho-Kirian in southeastern Europe, (2) the more widespread Mediterranean Proto-Aurignacian, and (3) the classic Aurignacian, extending across much of Europe. In the Balkans and the Danube region, the Pre-Aurignacian ranged from 45,000 to 37,000 years B.P. and evolved toward the local Aurignacian. This transition seems to be contemporaneous with local transitional industries. In the western Mediterranean, the Proto-Aurignacian contains very early microlithic artifacts, around 39,000 B.P. It is contemporaneous with the Uluzzian (which persists until around 32,000 B.P.

and underlies the classic Aurignacian at Riparo Mochi and La Cala (Palma di Cesnola 1993). In the Atlantic regions, the Aurignacian is superimposed on the Châtelperronian around 36,000 B.P. The persistence of the Châtelperronian in other regions, beyond this period, demonstrates the expansion limits—varying with climate and environment—of the western Aurignacian (Delporte 1991; Djindjian 1993).

Finally, in eastern Europe, the Aurignacian appears late, from 30,000 to 28,000 years B.P. It includes Dufour bladelets and seems to have had little influence on preceding local traditions. For example, the Spitsinian of southern Russia (around 33,000 B.P.) developed as an industry with backed blades on the local substrate without evidence of transition (Kozłowski 1986; Anikovitch 1992). The Aurignacian is found in Moldavia (Otte et al. 1996), in the Crimea (Demidenko et al. 1998), and on the middle Don (Sinitsine 1993), already in a developed phase similar to the “classic” facies. It is sometimes superimposed on local transitional industries, such as the Streletskian and the Gorodstovian (Marks 1998). In the same regions, the persistence of late phases of the Mousterian and the local Micoquian can be observed, as recent excavations in the Crimea have shown (Chabai 1998).

In southeastern Europe, then, one can observe remarkable Aurignacian continuity, and this region can be interpreted as an original center from which waves of expansion would have begun, spreading to the west. The ultimate origin of this cultural current, imposed on Mousterian industries, must, however, be found outside the European continent—in the Near East, the Caucasus, or central Asia. This is because the Pre- and Proto-Aurignacian are found throughout Europe only after a technological and typological hiatus relative to the local Middle Paleolithic industries and even vis-à-vis the transitional industries. In contrast, the sequences at Temnata, Bacho Kiro, Geissenklösterle, and perhaps Willendorf II testify in favor of local development from the Pre-Aurignacian to the Typical Aurignacian in the Balkano-Danubian zone.

ASIA

In order to understand the possible origins and connections of the Aurignacian outside of Europe, it is useful to first consider its vast extension on the Asian continent. In the past, we have too often limited such a study to the Levant. It appears more and more obvious that a much wider Aurignacian distribution included the Zagros, the Caucasus, and the countries of central Asia as well. In these immense regions, diverse regional “facies” and evolutionary stages appear, whose importance and meaning we have hardly begun to understand (Table 2). Certain of these regions will be provisionally discussed here in comparison with the European continent.

The Levant

The Levant contains a series of sites, aligned from south to north (Boker Tachtit, Hayonim, Kebara, Ksar Akil) up to the Syrian desert (El Kowm). In addition to the Emirian and the Ahmarian, and parallel to the latter, we distinguish

TABLE 2
Aurignacian and Transitional Industries in the Sequences of the Near East, Trans-Caucasia, and Central Asia

Ka	Anatolia	South Levant	Syria	Iraq - Iran	Transcaucasia	Central Asia
20		Transitional industries Ein Aquev 678	Aurignacian Boker C BE I AuE			
25		VII Boker II Ahm				
30	KARAIN B AH 29/A (?) AH 22/F13 AuL Uçağızlı AH 31/32 ?	Boker A Ahm	VIII IX (?) AuL (11) Ksar Akil AuE VI E. Kebara D Hgaghir D Pabir Au Sabunim B-10	Umm el-Tell Iza Ib V-III AuL/E	Yfeh SHANIDAR C WARWASI GG LL → ? AuF	
35		Boker A Ahm	XIII (?) AuL (11) Ksar Akil AuE VI E. Kebara D Hgaghir D Pabir Au Sabunim B-10	Umm el-Tell Iza Ib V-III AuL/E	SAGVARDJULE (Upper Pal.)	
40		Boker Tachitli Ahm	XIII (?) AuL (11) Ksar Akil AuE VI E. Kebara D Hgaghir D Pabir Au Sabunim B-10	Umm el-Tell Iza Ib V-III AuL/E		
45		Boker Tachitli I Em	XIII (?) AuL (11) Ksar Akil AuE VI E. Kebara D Hgaghir D Pabir Au Sabunim B-10	Umm el-Tell Iza Ib V-III AuL/E	MOUSTERIAN	

Abbreviations: AuL = Laminar Aurignacian, AuE = Aurignacian with flakes, Ahm = Ahmarian, Em = Emirian, AH = archaeological horizon (in the cave of Karain B), L-M = Mousterian-Levalloisian.

two principal facies of the Aurignacian. The earliest is laminar: Ksar Akil, levels XIII and XII. The most recent has both flake technique and bladelet production; it also includes a “classic” bone industry (Ksar Akil, level XI). Later appears an Aurignacian with typical Levantine flakes (Newcomer 1974; Bergman, Copeland, and Newcomer 1987). In this region, the transitional industry is represented by the Ahmarian, which extends to the south of Turkey (Uçağız; Kuhn, Güleç, and Kilingç 1999; Minzoni-Déroche and Fontugne n.d.) and which is in part contemporaneous with Aurignacian development. There is thus no early phase, and the Aurignacian industries appear intrusive here, as in Europe, in contact with a local transitional industry.

Turkey

In Turkey, the Aurignacian is present at the site of Karain B, where it overlies a local Mousterian. Recent excavations indicate a late lamellar phase (AH 29) overlying a more “classic” phase with carinated endscrapers (AH 31/32) (Albrecht 1988). The limited extension of current excavations does not yet permit an

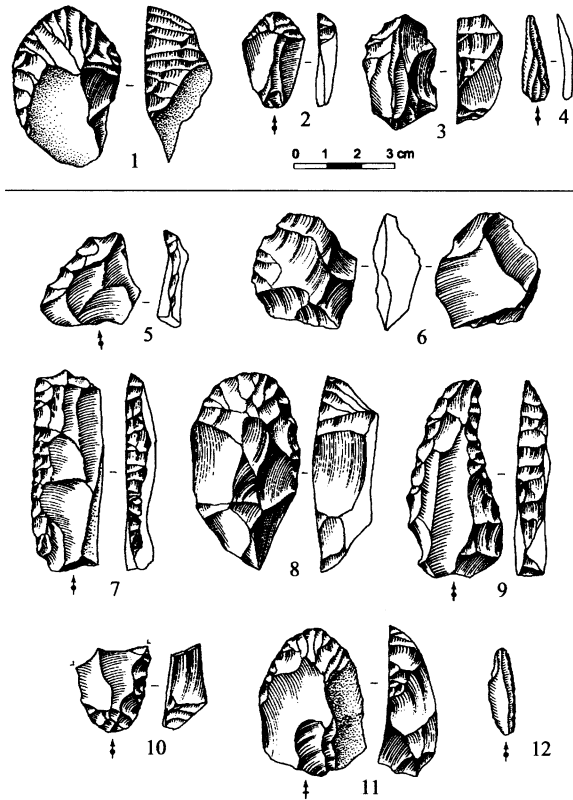


Figure 7. Aurignacian Implements from Square F12, Spits 22 (*upper*) and 23 (*lower*), Karain B Cave, Turkey

1-3, 8, 11, carinated endscrapers; 5, retouched flake; 6, centripetal core; 7, 9, retouched blades; 4, 12, microretouched bladelets (after Yalçinkaya and Otte n.d.).

interpretation of the assemblage structure, but this Anatolian Aurignacian will certainly help to establish the relationship between the Balkans and the eastern Mediterranean (Figure 7).

The Trans-Caucasus

In the Trans-Caucasus, the Paleolithic sites of Georgia show traces of Aurignacian technological traditions. At Apiancha, a classic Aurignacian assemblage was discovered in level VII, dating to 32,800 years B.P. (Tsierietelli 1998). The site of Samertskhilde Klde yielded an Aurignacian industry (Figure 8) with bladelets with fine retouch and a bone industry (Kozłowski 1969a), and a date of around 20,000 years B.P., which is probably too young. The site of Sagvardjla contains a transitional industry (Kozłowski 1969b), as in Europe, which is rooted in local Mousterian traditions. The Aurignacian appears intrusive here and is superimposed on local traditions, also in the process of transformation.

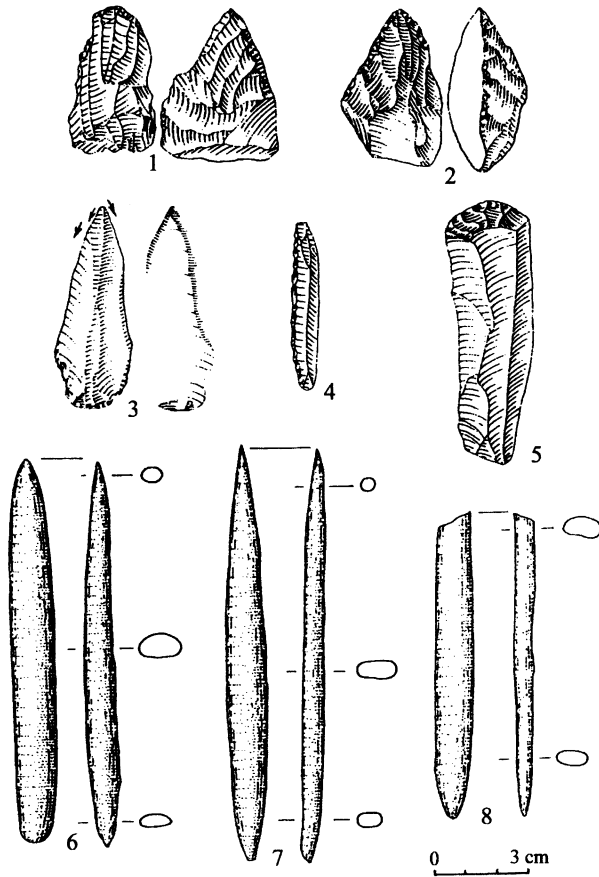


Figure 8. Aurignacian Implements from Samertskhilde Cave, Georgia

1-2, carinated endscrapers; 3, burin; 4, microretouched bladelet; 5, blade endscraper; 6-8, sagaies (after Kozlowski 1969a).

Afghanistan

In Afghanistan, the site of Kara Kamar contains a very characteristic Aurignacian assemblage provisionally dated to 25,000 years B.P. by a very early radiocarbon determination (Coon and Ralph 1955). Found north of Kabul, it orients the direction of Aurignacian expansion towards central Asia.

The Altai

The sites of the Altai in southwestern Siberia contain open-air Aurignacian assemblages near the cave site of Denisova. A long sequence is observable at the sites of Ust-Karakol (Figure 9) and Anouï. The Aurignacian proper seems to have developed after 35,000 years B.P. and overlies local, unchanging Mousterian

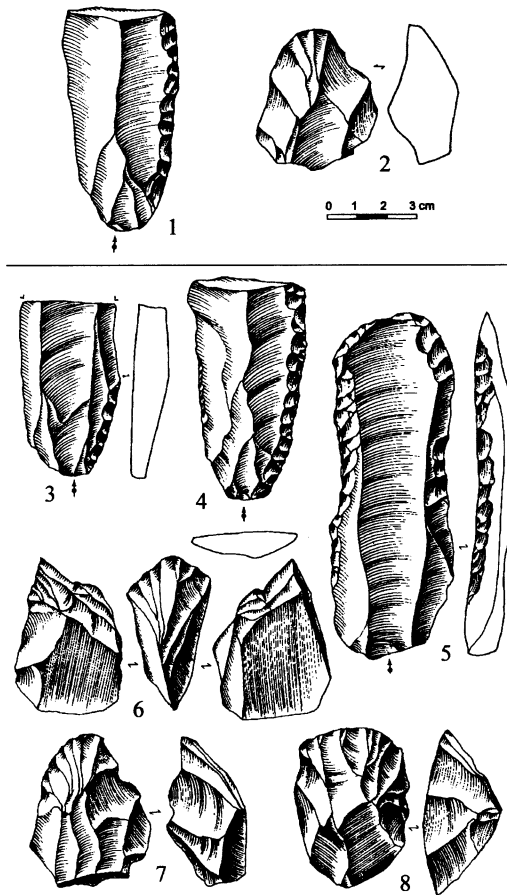


Figure 9. Aurignacian Implements from Layers 9 (*upper*) and 9a-11b (*lower*), Ust-Karakol, Siberia

2, 6-8, carinated endscrapers; 1, 3-4, retouched blades; 5, endscraper on retouched blade (after unpublished drawings by M. Otte).

industries (Derevianko et al. 1998). In contrast, an independent evolution of laminar Levallois industries toward another form of local Upper Paleolithic can be observed, for example at the site of Kara-Bom (Goebel, Derevianko, and Petrine 1993). The Aurignacian again seems to be intrusive, but in an early phase showing parallel development with laminar industries of local origin.

The Zagros Mountains

Finally, the Zagros Mountains, in northern Iraq and Iran, have yielded an industry known as the "Baradostian." Little research has as yet been devoted to this industry, but it is crucial in understanding the general origin of the Aurignacian phenomenon. At Warwasi and Shanidar, we also distinguish industries with

pointed, retouched bladelets (called Arjenah points, equivalent to Krems, Font-Yves, and El Wad points, as well as Dufour bladelets), accompanied by carinated burins (Figure 10). Other assemblages, in contrast, contain carinated endscrapers and retouched blades. Regardless of the nature of the tool kit, the Mousterian component remains present, and available dates show the great age of the industry—extending from 40,000 to 21,000 years B.P. (Olszewski and Dibble 1994). The dates for this industry range from 35,400 to 28,700 B.P. in the case of Shanidar and between >40,000 and 20,000 B.P. in that of Yfah Cave near Khorramabad. Of course, these dates should be considered with caution, since they were obtained a long time ago using the conventional ^{14}C dating method. We urgently need new dates for the Zagros sites, using new dating methods. At Warwaszi, we observe that the oldest Baradostian levels (P-Z) exhibit a component rich in blades and bladelets, which is progressively replaced in overlying levels (AA-FF) by tools on flakes. The latter dominate to the top of the sequence (GG-LL). In the morphology of the retouched tools, a substantial Mousterian technological component is observable (for example, due to the presence of

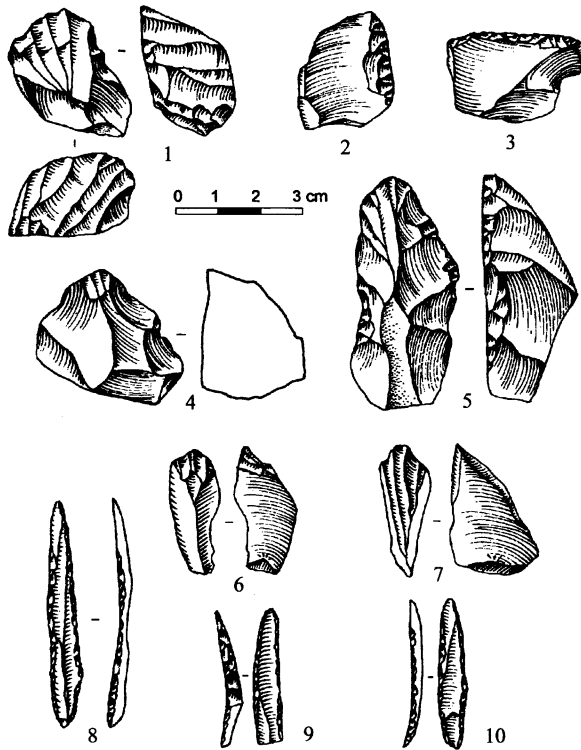


Figure 10. Baradostian Implements from Layer Z, Warwaszi Cave, Iraq

1, 4-5 carinated endscrapers; 2-3, sidescrapers on flakes; 6-7, carinated burins; 8-10, retouched bladelets of the Dufour type.

sidescrapers [up to 28 percent], notches, and denticulates). *If* this fact is not the result of mechanical mixture, this Mousterian “impregnation” could suggest, for this region, the absence of a clear break between the Mousterian and the Aurignacian.

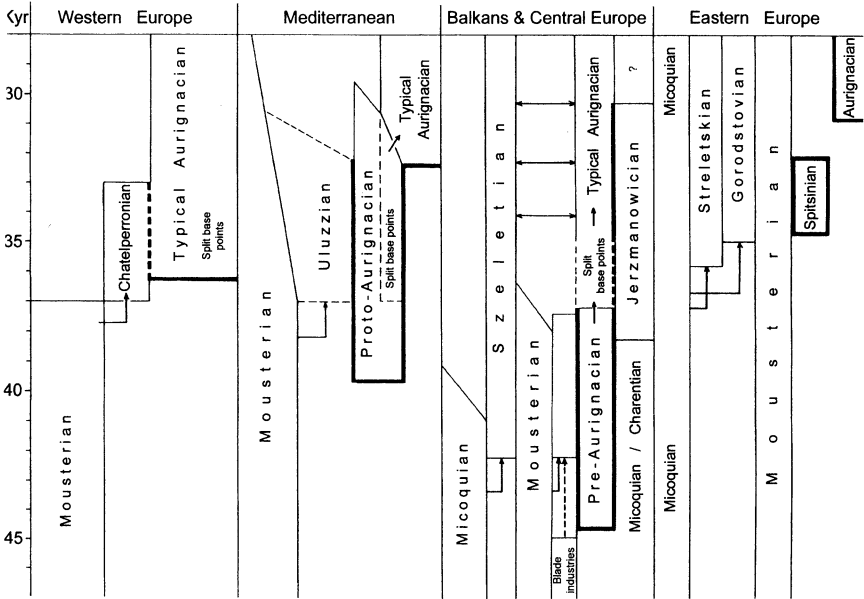
CONCLUSION

The Aurignacian may have been a phenomenon of Asian origin, more specifically, from regions northeast of the Levant. It would have been diffused through Europe by successive waves, each with its own different technological composition. It would have been transported by modern humans already largely dispersed in Asia. In western Europe, the Aurignacian is represented by a late phase, developing into a very characteristic form. In particular, this phase is marked by the development of a bone tool industry and art, resulting perhaps from contact with the local Mousterian (Otte 1999). Everywhere this Aurignacian is found, it is in relation with transitional industries developing from the local Mousterian (Table 3). This transformation of the local substrate appears, in Europe, to often result from contact with migrating populations. However, these transitional phenomena are not limited to Europe; they can also be observed in the Altai (Kara-Bom), the Levant (Ahmarian), and Georgia (Kozłowski 1969b). Only the Zagros region could be hypothesized to correspond to an original core area from which the different waves of expansion issued. This region needs to be explored more systematically in order to understand the possible origin of the groups recognized in Europe. Anatolia, as the most likely passage route between Asia and Europe, also needs to be better understood.

Whatever it may be, the Aurignacian can no longer be considered a unique, abrupt phenomenon. It consists, in contrast, of a complex of successive and distinct influences, arising from a powerful and specific eastern core area. As it was diffused toward the west, the Aurignacian was “formed” and transformed to the point of being identified with difficulty at its Atlantic extreme, where it was highly specialized and relatively late. For instance, the appearance of figurative art (statuettes and paintings) represents one of these cultural events that took place in the western part of this diffusion. In our view, the root of the phenomenon lies in the mental conflicts that may exist between indigenous groups and newcomers who needed to express their beliefs in a material way (Otte 1999). It was in contact with the different environments crossed that the Aurignacian itself developed, at the same time that it provoked various processes of acculturation, including, in our view, the Châtelperronian, the Szeletian, and the Jerzmanowician. Curiously, the Aurignacian subsequently seems to lose momentum and then to disappear completely, while local substrates continue and are imposed finally as various Gravettian forms during the middle part of the Upper Paleolithic.

The problem of relations between the Aurignacian and transitional industries remains intricate and complex. Recent criticism concerning the hypothesis of acculturation in the case of the Châtelperronian, resulting from contact with the Aurignacian (d’Errico et al. 1998; Zilhão and d’Errico 1999), undoubtedly makes

TABLE 3
Interrelations between Mousterian, Micoquian, Transitional, and Aurignacian Industries between 47,000 and 28,000 Years B.P.



This schema emphasizes the contemporaneity of the final phases of the Middle Paleolithic (Mousterian and Micoquian) and transitional industries developing out of them (western: Châtelperronian, Uluzzian, with backed pieces; eastern: Szeletian, Jerzmanowician, and Streletskian, with foliate points). The Gorodstovian possesses an important Mousterian and Micoquian substrate. Finally, the Aurignacian also appears during the same period. The Spitzinian, a phenomenon limited to the Don Valley, is a laminar industry, typically leptolithic but as yet of unknown origin.

an important contribution to the problem of the internal dynamics of the cultural evolution of transitional groups, corresponding at least in part to the last Neandertals. This dynamic confirms the ability of such groups to develop the technological and cultural achievements of the Upper Paleolithic independently of contacts with Aurignacian groups. However, this possibility does not exclude contacts between transitional groups and “Aurignacians” in both directions. (In central Europe, we observe, for example, the importation of Szeletian foliate points into Aurignacian sites in Moravia and particularly in eastern Slovakia and perhaps of Aurignacian sagaies into certain Szeletian sites in western Slovakia.) What were the effects of these contacts on biological relationships? This question remains open to discussion until the issue of possible interbreeding between modern and Neandertal populations is resolved at a paleogenetic level.

NOTE

1. Revision of this article profited from the comments and suggestions of the *JAR* Editor and four anonymous reviewers. Translation by Rebecca Miller and Lawrence G. Straus.

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