THE SHELL AND CORAL ASSEMBLAGE, SAN PEDRO PRESERVATION PROJECT

Arthur W. Vokes
Arizona State Museum

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Collections recovered by the Center for Desert Archaeology (now Archaeology Southwest) at sites in the Lower San Pedro River Valley included a number of shell artifacts. The sample, from 26 sites, numbered 227 pieces, which are estimated to represent 193 specimens (Table 1). This material includes not only a substantial number of finished artifacts, but also several examples of pieces that were in the process of being worked into artifacts and fragments of broken objects that were reworked into new forms. Additionally, several unmodified shells and a fragment of coral were present, which is somewhat unusual because the site at which they were found, 111 Ranch, AZ BB:6:73 (ASM), lies a considerable distance from the coast. Although this assemblage is dominated by material associated with the Classic period, elements of the collection date back to earlier occupations. A descriptive summary of the assemblage composition and characteristics is provided in the following text. All analysis records and associated documentation are available through the Center for Desert Archaeology and is archived at the Arizona State Museum (ASM).

GENERA AND SPECIES

Two general sources of shell were available to the prehistoric inhabitants of the region: marine shell from the Pacific Ocean and locally available freshwater and terrestrial mollusks. Marine shell derives from two biotic provinces that converge off the western coast of the Baja Peninsula. These are the warm waters of the Panamic Current, of which the Gulf of California is the most northerly extension, and the colder waters of the California Province that pass down along the western coast of North America, and originate in the northern Pacific. As a result of these contrasting environments, many species of mollusca occur in only one of the two zones or have a limited distribution and frequency in one zone relative to the other. While both biotic communities contributed to the shell material available to the prehistoric inhabitants of the southern Greater Southwest, the source for the material in the current collection appears to have primarily been the Gulf of California.

The shell and coral species identified in the assemblage are summarized in Table 2. Eleven marine and two freshwater or terrestrial genera were identified in the sample. The number of marine genera is essentially evenly divided between gastropods and pelecypods, although pelecypods are more frequent in absolute numbers. All of this material would have been available from the Gulf of California, although some genera, particularly *Laevicardium*, are present in both biotic communities.

A second source for shell was the freshwater rivers and streams in the immediate proximity of the sites. *Anodonta californiensis* is a moderately large, although very gracile, bivalve that was endemic to most of the permanent watercourses in Arizona prior to the development and impoundment of the rivers that occurred early in the 1900s (Bequaert and Miller 1973:220-223). The San Pedro River, flowing from the south through the valley, would have provided a convenient source of freshwater shellfish for the local inhabitants.

The presence of terrestrial gastropods in the sample is likely fortuitous. *Sonorella* is a widely distributed gastropod that inhabits much of the mountainous regions of the southwest, and is often found in stream detritus in the drainages of these areas (Bequaert and Miller 1973).

The presence of a piece of branch coral is more difficult to explain. The specimen does not appear to be mineralized, which would suggest it was not derived from fossil deposits. Thus, it may have been obtained, possibly through trade, as a curiosity associated with the distant marine source, or it may have held some social or ritual significance by virtue of that association.

ARTIFACT ASSEMBLAGE

Excluding the two terrestrial gastropods, the Center for Desert Archaeology excavations in the Lower San Pedro River Valley produced 191 items of shell and branch coral. This collection (Table 3) includes finished artifacts, specimens in the process of production along with related debris, whole shells that likely represent raw material, and both worked and unworked fragmentary pieces.

Finished Artifacts

The variety of finished artifact forms made of shell in the current collection is fairly diverse, with different styles of beads and pendants present, as well as ring-pendants and bracelets. Bracelets are the most common artifact form, which is often the case in Hohokam assemblages. Beads, particularly whole shell forms, are the secondmost common type of artifact, followed by ring-pendants and tinklers.

Beads

There are essentially two styles of beads in the collection. Natural forms include the whole shell type and the cap bead, while the other style are cut forms that use the shell as a medium but do not rely on the shape to provide the decorative element. Whole shell beads are ornaments that essentially retained their natural form and were simply perforated so they could

Table 1. Inventory of worked and unworked shell and coral, by site, feature, unit, stratum, and level, San Pedro Preservation Project.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:1:22		Nonfeature fill	2	4	3	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Room fill	3	10.02	2	Unworked fragment	*Laevicardium elatum*	1	1
BB:1:22 Total =								2	2
BB:1:32		Nonfeature fill	1	4	1	Disk bead	Unidentified marine bivalve	1	1
	3	Room floor fill	2	12	2	Whole shell bead	*Olivella dama*	1	1
BB:1:32 Total =								2	2
BB:1:55	1	Trash deposit	1	50	2	Whole shell bead	*Olivella* sp.	1	1
	1	Trash deposit	1	50	2	Worked fragment, unknown form	*Pecten vogdesi*	1	1
	1	Trash deposit	1	50	3	Whole shell bead	*Nassarius* sp.	1	1
	1	Trash deposit	1	50	3	Tinkler in process	*Conus* sp.	1	1
	1	Trash deposit	1	50	4	Whole valve	*Laevicardium elatum*	11	1
	2	Trash deposit	2	50	1	Whole valve	*Olivella dama*	5	5
	2	Trash deposit	2	50	2	Cut pendant, frog/toad	*Glycymeris* sp.	1	1
BB:1:55 Total =								21	11
BB:1:63		Nonfeature fill	1	4	2	Unworked fragment	Unidentified marine univalve	1	1
BB:1:63 Total =								1	1
BB:2:3		Nonfeature fill	4	4	1	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash mound	1	50	2	Unworked fragment	*Anodonta californiensis*	1	1
	1	Trash mound	1	50	3	Plain bracelet	*Glycymeris* sp.	1	1
	1	Trash mound	2	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	1	Trash mound	2	50	2	Plain ring-pendant	*Conus* sp.	1	1
	1	Trash mound	2	50	2	Unworked fragment	*Anodonta californiensis*	1	1
	1	Trash mound	2	50	3	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash mound	2	50	3	Plain ring-pendant	*Glycymeris* sp.	1	1
	1	Trash mound	2	50	3	Worked fragment, unknown form	*Laevicardium elatum*	1	1
	1	Trash mound	2	50	4	Whole shell bead	*Olivella dama*	1	1
	1	Trash mound	2	50	4	Plain bracelet	*Glycymeris gigantea*	1	1

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:2:3 (cont'd.)	2	Trash mound	3	50	1	Unworked fragment	*Laevicardium elatum*	2	1
	2	Trash mound	3	50	1	Unworked fragment	*Argopecten circularis*	1	1
	2	Trash mound	3	50	2	Worked fragment, unknown form	*Glycymeris* sp.	1	1
	2	Trash mound	3	80	1	Plain bracelet	*Glycymeris gigantea*	1	1
BB:2:3 Total =								16	15
BB:2:7		Nonfeature fill	6	4	1	Worked fragment, unknown form	*Laevicardium elatum*	1	1
	1	Trash deposit	1	50	1	Artifact in process, unknown form	*Laevicardium elatum*	1	1
	1	Trash deposit	1	50	2	Unworked fragment	*Anodonta californiensis*	1	1
	2	Trash deposit	2	50	1	Large block of worked debris	*Laevicardium elatum*	2	1
	2	Trash deposit	2	50	1	Worked fragment, unknown form	*Conus* sp.	1	1
	2	Trash deposit	2	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	2	Trash deposit	2	50	2	Unworked fragment	*Anodonta californiensis*	2	1
	3	Room floor fill	3	10	1	Plain bracelet	*Glycymeris gigantea*	1	1
	3	Room floor fill	3	10	1	Reworked bracelet section, unknown function	*Glycymeris* sp.	1	1
	3	Room floor fill	3	10	1	Artifact in process, unknown form	*Conus* sp.	1	1
	3	Room floor fill	3	10	1	Unworked fragment	*Argopecten circularis*	1	1
	4	Platform mound, cell fill	4	80	1	Whole shell bead	*Olivella* sp.	2	2
	4	Platform mound, cell fill	4	80	1	Worked fragment, unknown form	*Oliva* sp.	1	1
	5	Room wall/roof collapse	2	11	2	Whole shell pendant	*Argopecten circularis*	1	1
	5	Room wall/roof collapse	2	11	2	Unworked fragment	*Laevicardium elatum*	1	1
	6	Platform mound, cell fill	5	85	1	Plain bracelet	*Glycymeris gigantea*	1	1
	6	Platform mound, cell fill	5	85	1	Plain ring-pendant	*Glycymeris* sp.	1	1
	6	Platform mound, cell fill	5	85	1	Worked fragment, unknown form	*Anodonta californiensis*	1	1
BB:2:7 Total =								21	19

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:2:10		Nonfeature fill	1	4	1	Unworked fragment	*Anodonta californiensis*	1	1
		Nonfeature fill	1	4.01	1	Whole shell bead	*Glycymeris* sp.	1	1
		Nonfeature fill	1	4.01	1	Unworked fragment	*Anodonta californiensis*	2	1
BB:2:10 Total =								4	3
BB:2:12		Nonfeature fill	2	4	2	Unworked fragment	Unidentified marine, nacreous	2	1
BB:2:12 Total =								2	1
BB:2:18	1	Trash deposit	1	50	3	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash deposit	1	50	4	Plain ring-pendant	*Glycymeris* sp.	1	1
	1	Trash deposit	1	50	4	Unworked fragment	*Chione* sp.	1	1
BB:2:18 Total =								3	3
BB:2:19	1	Trash deposit	1	50	1	Large block of worked debris	*Laevicardium elatum*	1	1
	1	Trash deposit	1	50	2	Tinkler	*Conus* sp.	3	3
	1	Trash deposit	1	50	2	Worked fragment, unknown form	*Oliva* sp.	1	1
	1	Trash deposit	1	50	2	Unworked fragment	*Laevicardium elatum*	1	1
	2	Trash deposit	2	50	1	Plain bracelet	*Glycymeris* sp.	1	1
	2	Trash deposit	2	50	1	Plain ring-pendant	*Conus* sp.	1	1
	2	Trash deposit	2	50	2	Whole shell bead	*Glycymeris* sp.	1	1
	2	Trash deposit	2	50	2	Tinkler	*Conus* sp.	1	1
	2	Trash deposit	2	50	2	Unworked fragment	*Laevicardium elatum*	1	1
	2	Trash deposit	2	50	3	Plain bracelet	*Glycymeris* sp.	1	1
BB:2:19 Total =								12	12
BB:2:51		Nonfeature fill	1	4	2	Plain bracelet	*Glycymeris gigantea*	1	1
		Nonfeature fill	1	4	2	Whole valve	*Conus* sp.	1	1
		Nonfeature fill	1	4	3	Plain bracelet	*Glycymeris gigantea*	1	1
		Nonfeature fill	2	4	2	Artifact in process, unknown form	*Conus* sp.	1	1
		Nonfeature fill	2	4	2	Unworked fragment	*Laevicardium elatum*	1	1
		Nonfeature fill	2	4	3	Whole shell bead	*Olivella* sp.	1	1
		Nonfeature fill	2	4	3	Plain ring-pendant	*Glycymeris* sp.	2	2

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:2:51 (cont'd.)		Nonfeature fill	2	4	3	Reworked artifact, unknown form	*Glycymeris gigantea*	1	1
		Nonfeature fill	2	4	5	Whole shell bead	*Olivella* sp.	1	1
		Nonfeature fill	2	4	6	Unworked fragment	*Laevicardium elatum*	1	1
BB:2:51 Total =								11	11
BB:2:83		Nonfeature fill	2	4	1	Unworked fragment	*Laevicardium elatum*	2	1
		Nonfeature fill	4	4	2	Tinkler in process	*Conus* sp.	1	1
BB:2:83 Total =								3	2
BB:6:2		Site Surface	–	0	–	Tinkler	*Conus ximenes*	1	1
BB:6:2 Total =								1	1
BB:6:5	1	Trash mound	1	0	–	Plain bracelet	*Glycymeris* sp.	1	1
	1	Trash mound	1	50	1	Whole shell bead	*Glycymeris* sp.	1	1
	1	Trash mound	1	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	1	Trash mound	1	50	3	Plain bracelet	*Glycymeris gigantea*	1	1
BB:6:5 Total =								4	4
BB:6:11		Nonfeature fill	1	4	1	Tinkler	*Conus* sp.	1	1
		Nonfeature fill	1	4	1	Unworked fragment	*Anodonta californiensis*	1	1
		Nonfeature fill	1	4	2	Plain bracelet	*Glycymeris* sp.	1	1
		Nonfeature fill	1	4	2	Unworked fragment	*Laevicardium elatum*	1	1
BB:6:11 Total =								4	4
BB:6:20		Nonfeature fill	3	4	1	Plain bracelet	*Glycymeris* sp.	1	1
BB:6:20 Total =								1	1
BB:6:73	1	Trash deposit	1	50	1	Unworked fragment	Branch coral	2	1
	1	Trash deposit	1	50	2	Whole shell bead	*Olivella* sp.	1	1
	1	Trash deposit	1	50	2	Needle or crescent, pendant in process	Unidentified marine bivalve	1	1
	1	Trash deposit	1	50	3	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash deposit	1	50	3	Plain ring-pendant	*Glycymeris* sp.	1	1
	1	Trash deposit	1	50	3	Unworked fragment	*Argopecten circularis*	1	1

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:6:73 (cont'd.)	2	Trash deposit	3	50	1	Unworked fragment	*Anodonta californiensis*	2	1
	2	Trash deposit	3	50.01	1	Tinkler	*Conus* sp.	1	1
	2	Trash deposit	3	50.02	1	Cut pendant, triangular	*Anodonta californiensis*	1	1
	2	Trash deposit	3	50.02	1	Plain bracelet	*Glycymeris gigantea*	1	1
	2	Trash deposit	3	50.02	2	Unworked fragment	*Anodonta californiensis*	2	2
	2	Trash deposit	3	50.02	2	Unworked fragment	Unidentified freshwater/land snail	1	1
	2	Trash deposit	3	50.04	2	Whole shell bead	*Glycymeris* sp.	1	1
	2	Trash deposit	3	50.04	2	Utilitarian artifact, awl/punch	*Glycymeris gigantea*	1	1
	2	Trash deposit	3	50.04	3	Whole shell bead	*Glycymeris* sp.	2	2
	2	Trash deposit	3	50.05	1	Whole shell bead	*Glycymeris maculata*	2	2
	3	Trash deposit	4	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	3	Trash deposit	4	50	2	Plain ring-pendant	*Glycymeris* sp.	1	1
	3	Trash deposit	4	50	3	Needle shaped pendant	Unidentified marine bivalve	1	1
	3	Trash deposit	4	50	3	Cut pendant, triangular	*Laevicardium elatum*	1	1
	3	Trash deposit	4	50	4	Plain bracelet	*Glycymeris* sp.	1	1
	3	Trash deposit	4	50	4	Plain bracelet	*Glycymeris gigantea*	1	1
BB:6:73 Total =								27	25
BB:6:110	1	Trash deposit	1	50	1	Plain bracelet	*Glycymeris* sp.	1	1
	1	Trash deposit	1	50	1	Utilitarian, reworked bracelet	*Glycymeris gigantea*	1	1
	1	Trash deposit	1	50	2	Plain bracelet	*Glycymeris gigantea*	1	1
	2	Trash deposit	2	50	1	Plain bracelet	*Glycymeris gigantea*	1	1
BB:6:110 Total =								4	4
BB:7:5	1	Trash mound	1	50	1	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash mound	1	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	1	Trash mound	1	50	2	Plain bracelet	*Glycymeris gigantea*	2	2
	1	Trash mound	1	50	2	Plain ring-pendant	*Conus* sp.	1	1
	1	Trash mound	1	50	2	Unworked fragment	*Laevicardium elatum*	1	1
	1	Trash mound	1	50	3	Tinkler	*Conus* sp.	1	1
	1	Trash mound	1	50	3	Plain bracelet	*Glycymeris gigantea*	2	2

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:7:5 (cont'd.)	1	Trash mound	1	50	3	Unworked fragment	*Laevicardium elatum*	1	1
	1	Trash mound	1	80	2	Disk bead	Unidentified marine shell	1	1
	2	Trash mound	2	0		Unworked fragment	*Laevicardium elatum*	1	1
	2	Trash mound	2	50	2	Whole shell bead	*Olivella dama*	2	2
	2	Trash mound	2	50	2	Cap bead	Unidentified marine univalve	1	1
	2	Trash mound	2	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	2	Trash mound	2	50	2	Plain bracelet	*Glycymeris gigantea*	1	1
	2	Trash mound	2	50	2	Plain ring-pendant	*Conus* sp.	1	1
	2	Trash mound	2	50	2	Utilitarian artifact, awl/punch	*Glycymeris* sp.	1	1
	2	Trash mound	2	50	2	Unworked fragment	*Argopecten circularis*	1	1
	3	Trash deposit		0		Disk bead	Unidentified marine univalve	1	1
	3	Trash deposit	3	50	1	Whole shell bead	*Glycymeris* sp.	2	2
	3	Trash deposit	3	50	1	Plain ring-pendant	*Glycymeris* sp.	1	1
	3	Trash deposit	3	50	1	Plain ring-pendant	*Conus* sp.	1	1
	3	Trash deposit	3	50.01	1	Plain bracelet	*Glycymeris gigantea*	1	1
	4	Trash mound	4	50	2	Plain bracelet	*Glycymeris* sp.	1	1
	4	Trash mound	4	50	2	Unworked fragment	*Laevicardium elatum*	1	1
	5	Trash deposit	5	50	1	Plain bracelet	*Glycymeris* sp.	1	1
	5	Trash deposit	5	50	1	Plain ring-pendant	*Conus* sp.	1	1
	5	Trash deposit	5	50	1	Worked fragment, unknown form	*Laevicardium elatum*	1	1
BB:7:5 Total =								31	31
BB:11:2		Nonfeature fill	3	4	1	Unworked fragment	Unidentified marine bivalve	1	1
	1	Trash mound	1	50	2	Tinkler	*Conus* sp.	1	1
	2	Trash mound	2	50	4	Plain bracelet	*Glycymeris gigantea*	1	1
BB:11:2 Total =								3	3
BB:11:26		Nonfeature fill	1	4	1	Tinkler	*Conus* sp.	1	1
		Nonfeature fill	2	4.01	1	Plain bracelet	*Glycymeris gigantea*	1	1
		Nonfeature fill	4	4	1	Whole valve	*Olivella* sp.	1	1
		Nonfeature fill	8	4	5	Whole shell bead	*Olivella dama*	1	1
		Nonfeature fill	8	4	5	Whole shell bead	*Nassarius moestus*	1	1

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:11:26 (cont'd.)		Nonfeature fill	8	4	5	Plain ring-pendant	*Glycymeris* sp.	1	1
		Nonfeature fill	9	4	5	Tinkler	*Conus* sp.	1	1
		Nonfeature fill	9	4.01	1	Tinkler	*Conus tornatus*	1	1
		Nonfeature fill	9	4.01	1	Whole valve	*Conus regularis*	1	1
BB:11:26 Total =								9	9
BB:11:27	1	Courtyard	3	50	1	Whole shell bead	*Cerithidea albonodosa*	1	1
	1	Courtyard	3	50	1	Tinkler	*Conus* sp.	1	1
	2	Trash mound	2	4	1	Unworked fragment	*Anodonta californiensis*	1	1
BB:11:27 Total =								3	3
BB:11:36		Nonfeature fill	2	4	3	Whole valve	*Olivella dama*	1	1
BB:11:36 Total =								1	1
BB:11:91		Nonfeature fill	5	10	5	Unworked fragment	*Sonorella* sp.	1	1
	3	Pithouse fill	3	10	1	Cut pendant, sunburst	*Spondylus* sp.	1	1
	3	Pithouse fill	3	10	2	Plain ring-pendant	*Glycymeris* sp.	1	1
	3	Pithouse fill	3	10	7	Plain bracelet	*Glycymeris gigantea*	1	1
BB:11:91 Total =								4	4
BB:11:100		Site surface	–	0	–	Plain bracelet	*Glycymeris* sp.	1	1
		Site surface	–	0	–	Plain bracelet	*Glycymeris gigantea*	1	1
BB:11:100 Total =								2	2
BB:15:1		Nonfeature fill	1	4	1	Plain bracelet	*Glycymeris gigantea*	1	1
		Nonfeature fill	1	4	2	Unworked fragment	*Anodonta californiensis*	2	1
		Nonfeature fill	4	4	2	Unworked fragment	*Anodonta californiensis*	1	1
		Nonfeature fill	5	4	2	Pendant, needle or crescent shaped	*Glycymeris* sp.	1	1
		Nonfeature fill	5	4	2	Utilitarian artifact, awl/punch	*Glycymeris gigantea*	1	1
		Nonfeature fill	6	4	4	Unworked fragment	*Anodonta californiensis*	1	1
	1	Trash deposit	1	4	3	Unworked fragment	*Anodonta californiensis*	1	1
	1	Trash deposit	1	50	3	Unworked fragment	*Pecten vogdesi*	1	1
	1	Trash deposit	2	50	?	Plain bracelet	*Glycymeris gigantea*	1	1

Table 1. Continued.

AZ (ASM) Site Number	Feature	Context	Unit	Stratum	Level	Artifact Form	Species	Count	MNI[a]
BB:15:1 (cont'd.)	1	Trash deposit	2	50	1	Whole shell bead	*Olivella* sp.	1	1
	1	Trash deposit	2	50	2	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash deposit	2	50	3	Plain bracelet	*Glycymeris gigantea*	1	1
	1	Trash deposit	2	50	3	Unworked fragment	*Anodonta californiensis*	3	2
	1	Trash deposit	2	50	4	Plain bracelet	*Glycymeris* sp.	1	1
	2	Trash deposit	3	50	1	Unworked fragment	*Anodonta californiensis*	1	1
	2	Trash deposit	3	50	3	Unworked fragment	*Anodonta californiensis*	5	2
	3	Pithouse fill	2	10	1	Unworked fragment	*Anodonta californiensis*	12	1
BB:15:1 Total =								35	19
Grand Total =								227	193

[a]MNI = Minimum number of individual artifacts.

Table 2. Summary of shell and coral species, San Pedro Preservation Project.

Species	MNI[a]	NISP[b]	Biotic Province
Marine			
Pelecypods			
Glycymeris			
Glycymeris sp.	41	41	Panamic Community
Glycymeris gigantea	35	35	Panamic Community
Glycymeris maculata	2	2	Panamic Community
Laevicardium elatum	21	34	Panamic and Californian Communities
Pecten vogdesi	2	2	Panamic Community
Argopecten circularis	5	5	Panamic Community
Spondylus sp.	1	1	Panamic Community
Chione sp.	1	1	Panamic and Californian Communities
Unidentified	4	4	—
Gastropods			
Olivella			
Olivella sp.	8	8	Panamic Community
Olivella dama	11	11	Panamic Community
Conus			
Conus sp.	23	23	Panamic Community
Conus regularis	1	1	Panamic Community
Conus tornatus	1	1	Panamic Community
Conus ximenes	1	1	Panamic Community
Oliva sp.	2	2	Panamic Community
Nassarius			Panamic Community
Nassarius sp.	1	1	Panamic Community
Nassarius moestus	1	1	Panamic Community
Cerithidea albonodosa	1	1	Panamic Community
Unidentified	3	3	—
Unidentified nacreous	1	2	—
Unidentified shell	1	1	—
Branch coral	1	2	—
Freshwater/Terrestrial			
Pelecypods			
Anodonta californiensis	23	42	Freshwater
Gastropod			
Sonorella sp.	1	1	Terrestrial
Unidentified	1	1	Terrestrial/Freshwater
Total	193	227	

[a]MNI = Minimum number of individual artifacts (estimated).
[b]NISP = Number of identified specific pieces (counted).

be suspended. These beads rely on natural shape and coloration to provide decorative elements.

Three different approaches to the suspension of the shell are represented in the sample. Traditionally, the most common method was to grind or break away a portion of the spire of a univalve so a cord would pass along the length of the shell and exit through the natural aperture. In the current

Table 3. Summary of artifact type, by shell and coral species, San Pedro Preservation Project.

	Finished Artifacts																Manufacturing Evidence						Fragments		
	Beads			Pendants							Other Artifacts						Artifacts in Process				Raw Material				
						Cut Pendant Forms							Utilitarian												
				Naturalistic Forms		Life	Geometric																		
Genera	Whole Shell	Disk	Cap	Whole Shell	Tinkler	Frog/Toad	Sunburst	Triangular	Needle Shaped	Needle or Crescent	Plain Bracelet	Plain Ring-pendant	Awl or Punch	Remodeled Bracelet Fragment	Reworked Bracelet, Unknown	Artifact, Unknown Form	Tinkler	Needle/Crescent	Remodeling of Finished Artifact	Large Block of Worked Debris	Whole Valve	Worked, Unknown Form	Unworked	Total (MNI)[a]
Marine material																								
Mollusk																								
Pelecypods																								
Glycymeris	10	–	–	–	–	1	–	–	–	1	49	10	3	1	1	–	–	–	1	–	–	1	–	78
Laevicardium	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	–	2	1	3	13	21
Pecten	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	2
Argopecten	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	4	5
Spondylus	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Chione	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Unidentified	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1	–	–	–	–	1	4
Gastropods																								
Olivella	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	7	–	–	19
Conus	–	–	–	–	13	–	–	–	–	–	–	6	–	–	–	2	2	–	–	–	2	1	–	26
Cerithidea	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Oliva	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	2
Nassarius	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2

Table 3. Continued.

	Finished Artifacts																Manufacturing Evidence						Fragments		
	Beads			Pendants							Other Artifacts						Artifacts in Process				Raw Material				
						Cut Pendant Forms							Utilitarian												
				Naturalistic Forms		Life	Geometric																		
Genera	Whole Shell	Disk	Cap	Whole Shell	Tinkler	Frog/Toad	Sunburst	Triangular	Needle Shaped	Needle or Crescent	Plain Bracelet	Plain Ring-pendant	Awl or Punch	Remodeled Bracelet Fragment	Reworked Bracelet, Unknown	Artifact, Unknown Form	Tinkler	Needle/Crescent	Remodeling of Finished Artifact	Large Block of Worked Debris	Whole Valve	Worked, Unknown Form	Unworked	Total (MNI)[a]
Gastropods (cont'd.)																								
Unidentified	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
Unidentified nacreous	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Unidentified shell	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Branch coral	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Freshwater shell																								
Pelecypods																								
Anodonta	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1	21	23
Total	25	3	1	1	13	1	1	2	1	1	49	16	3	1	1	3	2	1	1	2	10	9	44	191

[a]MNI = Minimum number of individual artifacts.

sample, the *Olivella* shell beads represent this type of bead.

Another method of suspending gastropod shells is to grind or punch a hole through the back of the body whorl so the cord passed through the hole and directly out the natural aperture. This resulted in the bulk of the valve hanging pendant-like below the cord. In the current set, the beads made from *Nassarius* and *Cerithidea* shells are perforated in this manner.

The final method of perforating a valve involved reducing the beak of small *Glycymeris* valves by grinding them against a flat surface. Cordage could then be looped around the taxodontic plate and the bead suspended below the cord. A reconstructed example of a necklace incorporating this type of bead is illustrated by Officer (1978:113) in his report on the shell from the 1934-1935 excavations at Hodges Ruin, AZ AA:12:18 (ASM). There are 10 examples of this style of bead in the current collection.

The cap bead recovered at Artifact Hill, AZ BB:1:55 (ASM), is a example of another style of naturalistic bead. In this case, the bead consists of the spire from an unidentified univalve. The spire's apex is missing, as well as the entire body portion. Carpenter (1977) reported finding a number of these beads in a burial that was eroding out of the San Pedro River bank near High Mesa, AZ BB:7:5 (ASM). She noted that such beads can be naturally formed by beach wear (Carpenter 1977:24), and indeed, the current specimen may have been initially formed in this manner, but the outer edge appears to have been ground and polished.

Three disk beads were recovered, each from a different site. In each instance, the shell that was used to make the beads could not be identified, although one appears to have been cut from the side wall of a medium-sized univalve, such as a *Conus* or *Olivella* valve.

Pendants

As with the beads, the pendants can be divided into forms that rely on the natural color and shape of the parent shell for their decorative elements, and other forms that are extensively carved to fashion ornaments whose shape have little or nothing to do with the original shell's attributes. In the current collection, the excavations produced a total of 20 shell pendants, most of which are classed as being a relatively natural category in the form of tinklers. These were made from the body whorl of *Conus* shells.

The carved pendants included one representation of a small, abstract frog or toad, and three geometric forms. Pendants representing frogs or toads have been reported from several assemblages. While the pre-Classic forms tend to be remodeled pieces from the umbo of carved bracelets, Classic period pendants incorporate the entire *Glycymeris* shell, with the umbo representing the head and the hind legs folded along the ventral margin.

The other cut shell pendants in the collection are needle-shaped forms that, in one case, utilized the dorsal portion of a plain bracelet band with the perforated beak providing the means of suspension. One end was ground to a rounded nub, while the other end terminated with a rough break, so the ultimate shape is unknown. The other specimen may also have been fashioned from a bracelet segment, but the shaft was so extensively polished that this could not be determined with certainty. In this instance, the end of the shaft opposite the point was ground flat and thinned to facilitate the drilling of a biconical perforation through the shaft.

Bracelets

Bracelets are, by far, the most common artifact form in the assemblage, with 49 bands represented in the sample. All are plain forms, in which the bands were not embellished beyond what was necessary to achieve the basic shape of the bracelet, and all are fragmentary sections. These bands vary considerably in their widths, ranging from 2.69 mm to 15.37 mm, with a mean width of 6.03 mm and a median value of 5.12 mm. Roughly 70 percent of the bands are less than 6.00 mm wide, with 27 specimens measuring between 4.00 mm and 6.00 mm.

Ring-pendants

Two very different styles of ring-pendants are present in the collection. The more common form are small bands made from *Glycymeris* shells that resemble small bracelets. There are 10 fragments of this form in the collection. This type of ring-pendant has a long history among the Hohokam, with specimens associated with material dating as early as the late Pioneer period (Vokes 2001a). The form became increasingly popular during the late Colonial and Sedentary periods (Nelson 1991; Vokes 1984:510-515, 1988:357, 2001b), and continued into the Classic period (Vokes 1987:259, 2001b:388-389). One reason for this popularity is that these bands seem to have had multiple ornamental functions. Examples of inhumations with bands encircling the fingers of individuals have been reported in the literature (Fewkes 1896:362; Vokes 2001b:389). Di Peso (1956:92) reported several cases of multiple ring-pendants placed in the region of the neck, indicating they had been strung as beads or pendants. In other instances, these bands were also found alongside the heads of buried individuals, suggesting they were worn as earrings (Vokes 2001b:389).

The other style of ring-pendant is fashioned from the upper and mid-sections of *Conus* shells, where the entire spire is ground away. Also removed is the narrow anterior portion of the body whorl. These have sometimes been referred to as choker beads, because they have been found in burials in the area of the neck, suggesting they were part of necklaces (Di Peso 1956:95). Di Peso (1956) also reported nine bands encircling the fingers of individuals buried at San Cayetano (Paloparado). Thus, these bands also served a number of roles. In the current assemblage, there are six examples. Half these would likely have been large enough to be worn as finger rings. In each of these cases, the interior edges of the bands are beveled so there is no obstruction of the interior diameters. The other three have a shelf located along the upper edge where the shoulder of the shell was located. Thus, the incomplete reduction of the spire and the shoulder area constrained the interior opening. These may represent unfinished bands.

Utilitarian Items

Four segments of plain bracelets that had been refashioned into awls or similar artifacts were recovered. Three are well ground, with a point at one end of a well-shaped shaft that ends with a rounded butt that has some limited grinding present. The fourth specimen is a section of a bracelet that has been reworked by grinding one end into a crude point. The opposite end has some high point grinding that did not remove the rough break. Thus, is it is similar to the others, but not as well finished. None of these pieces were perforated.

Manufacturing Evidence

Evidence reflecting the efforts by local craftspeople is found in the form of ornaments that were in the process of being manufactured when they were lost or discarded. Several of these appear to represent the remodeling of fragmentary pieces of finished ornaments, including the ever ubiquitous bracelet segments. Additionally, evidence indicates some production involved the reduction of raw material to produce cut shell ornaments. Two instances of large pieces of *Laevicardium* shaped by cutting grooves into the face of the shell and then breaking the shell along these cuts were noted. One is a long section of the posterior side panel that has a groove-and-snap cut along two-thirds of the inner edge. The other is from the lower portion of the back and ventral edge that exhibits a similar groove-and-snap cut. That these cuts were not ground over or otherwise smoothed indicates the pieces were debris, or at the very least, sectioned raw material blanks.

Also present are 10 whole, unmodified shells, including a relatively large *Laevicardium* valve. The other specimens are *Olivella* ($n = 7$) and *Conus* ($n = 2$) shells, which were likely destined for use in making beads and ring-beads.

Fragmentary Material

Shell fragments that are worked but are too incomplete to be classified, or fragments that lack any evidence of having been worked, are relatively common in assemblages in southern Arizona. These remnants may derive from fragmentation of finished artifacts, local manufacturing activities, or the accidental breakage of whole unworked valves. Given the nature of the finished assemblage, much of this material is likely derived from the accidental breakage of finished artifacts. There are nine examples of worked fragments that, due to the lack of diagnostic features, cannot be attributed to a specific artifact category. These fragments generally have one or two worked facets or edges, indicating they may have originally been part of a finished object.

An estimated 44 unworked specimens of shell were identified during the analysis. This is an approximation, however, as multiple fragments represented a number of specimens, particularly with the 21 occurrences of *Anodonta*. The relatively high frequency of unworked fragments of *Anodonta californiensis* may reflect its use as a food resource. Not surprisingly, *Laevicardium* dominates the marine shell material with 13 unworked specimens. This is probably a reflection of the diverse types of artifacts that were made from this shell.

SUMMARY

The excavations by the Center for Desert Archaeology produced a collection of shell ornaments and related manufacturing material numbering 191 artifacts, in addition to two naturally deposited terrestrial snails (and a fragment of coral), that is associated with 26 sites in the Lower San Pedro River Valley. The presence of shell in some quantity, particularly given the relatively limited nature of the testing, reflects the intense nature of the occupation at these settlements during the Classic period. The collection is summarized by site and artifact in Table 4 and by site and species in Table 5. It is generally difficult to draw major conclusions at the site level because most of the sites have relatively small samples; however, some observations, in terms of the distribution of certain artifact forms, are warranted. Other comments can be made regarding the combined collection.

Table 4. Shell and coral artifacts, by type and site, San Pedro Preservation Project.

	Finished Artifact Forms															Manufacturing Evidence						Fragments		
	Beads			Pendants							Other Artifact Forms					Artifact in Process				Raw Material				
						Cut Pendant							Utilitarian											
				Naturalistic Forms		Life	Geometric																	
AZ (ASM) Site Number	Whole Shell Bead	Disk Bead	Cap Bead	Whole Shell	Tinkler	Frog/Toad	Sunburst	Triangular	Needle Shaped	Needle or Crescent	Plain Bracelet	Plain Ring-pendant	Awl or Punch	Remodeled Bracelet Segment	Reworked Bracelet, Unknown	Artifact, Unknown Form	Tinkler	Needle/Crescent Pendant	Remodeling of Finished Artifact	Large Block of Worked Debris	Whole Valve	Worked, Unknown Form	Unworked	Total (MNI)[a]
BB:1:22	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	2
BB:1:32	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
BB:1:55	2	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1	–	–	–	6	1	–	11
BB:1:63	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
BB:2:3	1	–	–	–	–	–	–	–	–	–	6	2	–	–	–	–	–	–	–	–	–	2	4	15
BB:2:7	2	–	–	1	–	–	–	–	–	–	3	1	–	–	1	2	–	–	–	1	–	4	4	19
BB:2:10	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	3
BB:2:12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
BB:2:18	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	1	3
BB:2:19	1	–	–	–	4	–	–	–	–	–	2	1	–	–	–	–	–	–	–	1	–	1	2	12
BB:2:51	2	–	–	–	–	–	–	–	–	–	2	2	–	–	–	1	–	–	1	–	1	–	2	11
BB:2:83	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1	2
BB:6:2	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
BB:6:5	1	–	–	–	–	–	–	–	–	–	3	–	–	–	–	–	–	–	–	–	–	–	–	4
BB:6:11	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	2	4
BB:6:20	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	1

Table 4. Continued.

	Finished Artifact Forms															Manufacturing Evidence						Fragments		
	Beads			Pendants							Other Artifact Forms					Artifact in Process				Raw Material				
				Naturalistic Forms		Cut Pendant					Utilitarian													
						Life	Geometric																	
AZ (ASM) Site Number	Whole Shell Bead	Disk Bead	Cap Bead	Whole Shell	Tinkler	Frog/Toad	Sunburst	Triangular	Needle Shaped	Needle or Crescent	Plain Bracelet	Plain Ring-pendant	Awl or Punch	Remodeled Bracelet Segment	Reworked Bracelet, Unknown	Artifact, Unknown Form	Tinkler	Needle/Crescent Pendant	Remodeling of Finished Artifact	Large Block of Worked Debris	Whole Valve	Worked, Unknown Form	Unworked	Total (MNI)[a]
BB:6:73	6	–	–	–	1	–	–	2	1	–	5	2	1	–	–	–	–	1	–	–	–	–	5	24
BB:6:110	–	–	–	–	–	–	–	–	–	–	3	–	–	1	–	–	–	–	–	–	–	–	–	4
BB:7:5	4	2	1	–	1	–	–	–	–	–	11	5	1	–	–	–	–	–	–	–	–	1	5	31
BB:11:2	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	1	3
BB:11:26	2	–	–	–	3	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	2	–	–	9
BB:11:27	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	3
BB:11:36	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
BB:11:91	–	–	–	–	–	–	1	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	3
BB:11:100	–	–	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	–	–	–	–	–	–	2
BB:15:1	1	–	–	–	–	–	–	–	–	1	5	–	1	–	–	–	–	–	–	–	–	–	11	19
Total	25	3	1	1	13	1	1	2	1	1	49	16	3	1	1	3	2	1	1	2	10	9	46	191[b]

[a]MNI = Minimum number of individual artifacts.

[b]Excludes two terrestrial gastropods that were probably deposited by natural processes.

Table 5. Shell and coral, by species and site, San Pedro Preservation Project.

	Marine Material																	Freshwater/ Land Mollusk			
	Shell Genera																				
	Pelecypods							Gastropods													
AZ (ASM) Site No.	*Glycymeris*	*Laevicardium*	*Pecten*	*Argopecten*	*Spondylus*	*Chione*	Unidentified	*Olivella*	*Conus*	*Cerithidea*	*Oliva*	*Nassarius*	Unidentified	Unidentified Nacreous	Unidentified	Coral		Fresh-water *Anodonta*	Land *Sonorella*	Unidentified Gastropod	Total (MNI)[a]
BB:1:22	1	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	2
BB:1:32	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–		–	–	–	2
BB:1:55	1	1	1	–	–	–	–	6	1	–	–	1	–	–	–	–		–	–	–	11
BB:1:63	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–		–	–	–	1
BB:2:3	8	2	–	1	–	–	–	1	1	–	–	–	–	–	–	–		2	–	–	15
BB:2:7	5	4	–	2	–	–	–	2	2	–	1	–	–	–	–	–		3	–	–	19
BB:2:10	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		2	–	–	3
BB:2:12	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–		–	–	–	1
BB:2:18	2	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–		–	–	–	3
BB:2:19	3	3	–	–	–	–	–	–	5	–	1	–	–	–	–	–		–	–	–	12
BB:2:51	5	2	–	–	–	–	–	2	2	–	–	–	–	–	–	–		–	–	–	11
BB:2:83	–	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–		–	–	–	2
BB:6:2	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–		–	–	–	1
BB:6:5	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	4
BB:6:11	1	1	–	–	–	–	–	–	1	–	–	–	–	–	–	–		1	–	–	4
BB:6:20	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	1
BB:6:73	13	1	–	1	–	–	2	1	1	–	–	–	–	–	–	1		4	–	1	25
BB:6:110	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	4
BB:7:5	15	5	–	1	–	–	–	2	5	–	–	–	2	–	1	–		–	–	–	31
BB:11:2	1	–	–	–	–	–	1	–	1	–	–	–	–	–	–	–		–	–	–	3
BB:11:26	2	–	–	–	–	–	–	2	4	–	–	1	–	–	–	–		–	–	–	9
BB:11:27	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–		1	–	–	3
BB:11:36	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–		–	–	–	1
BB:11:91	2	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–		–	1	–	4
BB:11:100	2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–		–	–	–	2
BB:15:1	7	–	1	–	–	–	–	1	–	–	–	–	–	–	–	–		10	–	–	19
Total	78	21	2	5	1	1	4	19	26	1	2	2	3	1	1	1		23	1	1	193

[a]MNI = Minimum number of individual artifacts.

Tres Alamos, AZ BB:15:1 (ASM), stands out in contrast with the other sites. The assemblage from this community has the highest frequency of *Anodonta*, the freshwater bivalve, and the marine material is heavily dominated by *Glycymeris* bracelets and artifacts made from remodeled bracelet fragments. It is unclear what the significance may be of the elevated frequency of freshwater shell. The pattern of marine material is more reminiscent of the pre-Classic, when bracelets often comprised 60 percent or more of the shell artifacts (Vokes 1984:530, 1986:248, 1995:598). The sample from Tres Alamos was recovered from deposits that contained considerable quantities of pre-Classic trash, as indicated by the ceramics that were also recovered from the excavated units (Clark and Lyons 2012; Lyons 2012).

Except this temporally aberrant assemblage, the shell material recovered from the project has many features that often characterize Classic period assemblages. If the sample from Tres Alamos is removed from consideration, *Glycymeris* bracelets comprise 39.6 percent of the finished artifacts. If other artifact forms that utilize remodeled band fragments are also included, bracelets represent roughly 44.0 percent of the finished forms, which is in accord with other Classic period assemblages (Vokes 1984:530, 1995:598).

Another feature of the assemblage that indicates a Classic period date is the relatively high incidence of whole shell beads made from small *Glycymeris* valves, *Conus* shell tinklers, and ring-pendants made from the upper body area of *Conus* shells. Whole shell beads made from *Nassarius* shells, while not strictly a Classic period phenomenon, have an association with the Classic period center of Paquimé in northwestern Chihuahua (Di Peso et al. 1974). Therefore, their presence at two sites along with these other forms, which suggest such an association, can also be seen as a Classic period connection.

One form of shell ornament that might be expected, but is not present, is the barrel-shaped bead cut from the upper and middle portions of *Olivella* valves. This is a common form in the Classic period assemblage recovered from the Tucson Basin (Vokes 1987:255-256, 1995:574), and from contemporary sites in the Tonto Basin (Vokes 2001b:359). Its absence in the current material may simply be a reflection of the small sample size, although they do not appear to have been present in the earlier collection from Reeve Ruin, AZ BB:11:26 (ASM) (Di Peso 1958), or in the material from the excavations at Babocomari Village, AZ EE:7:11 (ASM) (Di Peso 1951).

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