A NEW LOOK AT TIE-DYE AND THE DOT-IN-A-SQUARE MOTIF IN THE PREHISPANIC SOUTHWEST

Laurie D. Webster
Kelley A. Hays-Gilpin
And Polly Schaafsma

ABSTRACT

Tie-dyed fabrics patterned with a dot-in-a-square motif appear in the archaeological textile record of the U.S. Southwest by the late twelfth or early thirteenth century. Mural images from Arizona and New Mexico suggest that tie-dye was one of the primary means of decorating ritual clothing by Pueblo IV. Using evidence from textiles, ceramics, rock art, linguistics, and other media from the U.S. Southwest, Mesoamerica, and Peru, we explore the historical roots of tie-dye in the Americas and the multiple metaphorical meanings of one of its associated motifs, the dot-in-a-square. We conclude that the use of the motif on tie-dye cloth, pottery, and other artifacts was part of a widespread dynamic symbolic system relating clouds, rain, maize agriculture, lightning, serpents, and fertility.

RESUMEN

Las telas teñidas al estilo atar y teñir con el diseño de un punto en un cuadro aparecen en el expediente arqueológico de textil del suroeste de los EE.UU. a los finales del siglo doce o temprano en el siglo trece. Imágenes de murales de Arizona y de Nuevo México sugieren que este modo de teñir fuera uno de los medios principales de adornar la ropa ritual utilizado por Pueblo IV. Al usar evidencia de los textiles, la cerámica, el arte en piedra, la lingüística, y otros medios del suroeste de los EE.UU., Mesoamérica, y Perú, exploramos las raíces históricas de atar y teñir en las Américas y los significados metafóricos múltiples de uno de los diseños asociados, el de un punto en un cuadro. Concluimos que el uso este diseño en las telas teñidas, la cerámica, y otros artefactos eran parte de un extenso sistema simbólico y dinámico que relacionaba las nubes, la lluvia, la agricultura del maíz, los relámpagos, las serpientes, y la fertilidad.

Tie-dye first appears in the archaeological textile record of the southwestern United States in the late A.D. 1100s or 1200s. Fifteenth-century mural paintings from Arizona and New Mexico and ceramic depictions from...
northern Mexico implicate tie-dye as one of the principal means of decorating ritual cloth prior to Spanish contact. An applied form of decoration unconstrained by the weave of the cloth, tie-dye was exceptionally well suited for executing some of the prevailing iconographies of the times, relating concepts of maize agriculture, moisture, serpents, and fertility.

One of the primary motifs produced by the tie-dye technique, the dot-in-a-square, has a much earlier and wider distribution in the Southwest than the textile evidence itself. It occurs by the tenth and eleventh centuries on Hohokam, Chaco, and Reserve pottery, and later on Ramos Polychrome ceramics and Kayenta and Little Colorado wares. The motif also appears in Pueblo III-IV rock art from the Little Colorado and Hopi regions and the Middle Rio Grande. It is an important component of Pueblo IV mural painting and a prominent element of historic Pueblo painting traditions, where its most common interpretation is corn.

A precedent for the Southwestern tie-dye technique and its associated dot-in-a-square motif is found far to the south in the Andes and Mesoamerica, where the motif was an important element of ancient symbolic systems. There, tie-dyed textiles were used to clothe the gods and high-ranking political leaders. Using evidence from textiles, ceramics, kiva murals, rock art, and linguistics, in this article we explore the historical development of the dot-in-a-square motif and the tie-dye technique. We link the motif to an ancient, pervasive Middle American ideology based on reptiles, water, corn, and fertility, and interpret the technique as a vehicle for expressing this ritual iconography on cloth. We also examine the multiple meanings of the motif in the Southwest, tracing its evolution from a metaphorical referent to the horned serpent, rain, and fertility, to its more literal and contemporary Pueblo identification with corn.

**THE TIE-DYE TECHNIQUE**

Tie-dye, also known as *plangi* in Indonesia, *atado* in Spanish (Mexico), and *tlalpilli* in Nahuatl, is a resist-dye technique that involves wrapping sections of a woven fabric before immersing the cloth in dye (Anawalt 1990, 2000; Buhler 1954; Kent 1983). The process produces a negative design where the dye is unable to penetrate. To produce a design, the dyer first gathers small sections of the cloth and wraps them tightly with string or another form of wrapping. After all elements of the design are gathered and wrapped, the cloth is immersed in a dyebath. When the cloth is dry, the wrapping material is removed, leaving the previously wrapped areas as a negative pattern of light-colored elements on a darker-colored background (Figure 1). Often the tip of each section where the dyer grips the cloth is left unwrapped, producing a small dot at the center (Figure 1a). The simplest and most common motifs produced by this technique are the circle and diamond. Because woven fabrics tend to stretch along the bias (diagonal) when
FIGURE 1. Archaeological tie-dyed fabrics from the U. S. Southwest. a) detail of dot-in-a-square motif from the Lake Canyon blanket; b) Lake Canyon, southern Utah, ca. A.D. 1200; c) White House, Canyon de Chelly, ca. A.D. 1200s; d) Honanki Pueblo, Verde Valley, ca. A.D. 1150-1300; e) Casa Grande, southern Arizona, ca. A.D. 1200s. (See photo credits on page 347.)
pulled, tie-dye is poorly suited to producing a true square with sides parallel to the warp and weft (Anawalt 1990:298). Rather, the technique typically produces an obliquely arranged square, or diamond, with the corners aligned to the warp and weft (Figure 1a).

**TIE-DYE AND THE DOT-IN-A-SQUARE IN THE ANDES AND MESOAMERICA**

Intricately patterned tie-dyed textiles, and depictions of tie-dyed garments and the dot-in-a-square on ceramics, codices, and other media, identify tie-dye as an important means of decorating cloth in the Andes, the lowland Maya region, and highland Mexico. Numerous tie-dyed fabrics of camelid and cotton fiber have been recovered from the southern and central coasts of Peru (e.g., Crawford 1916:153–154, Figs. 28 and 29; D’Harcourt 1987:68–69, Pls. 49, 52; King 1965:132–135, Fig. 30; O’Neale and Kroeber 1930:Pl. 27). Although some examples may predate Tiahuanaco (e.g., O’Neale and Kroeber 1930:final table, Early Cañete), most early tie-dye fabrics are associated with the Wari empire and the period of Wari expansion (ca. A.D. 600–1000). Cook (1996) interprets certain styles of Wari tie-dyed tunics as emblems of provincial power worn by persons of high rank, including the sovereign Wari ruler. The most elaborate of these tiedyed fabrics were woven in such a way that they could be dyed, taken apart, and reassembled to produce a complex patchwork of designs (Cook 1996:Figs. 2 and 3; Stone-Miller 1992:Pl. 21a, b) (Figure 2a).

The two most common motifs found on Andean tie-dyed fabrics are the circle, which may have had calendrical significance (Cook 1996:101, Fn. 5), and a concentric diamond with a prominent diamond at its center. Cook (1996:95–98) views this latter “diamond in a square” motif as a powerful symbol among the Wari, one applied not only to tunics, but also headgear and human facial decoration, and restricted to elite use. Following the decline of the Wari empire, the motif is found on high-status Chancay and Inca garments, suggesting the perpetuation of this ancient prestige symbol by later political groups.

Tie-dye and the dot-in-a-square were also important decorative devices in Mesoamerica. Classic and Late Classic depictions on lowland Maya ceramics, painted murals, and carved stone suggest the use of tie-dye to decorate robes, kilts, hipcloths, and loincloths in the Maya region by the A.D. 700s (Coe and Kerr 1998:Fig. 44, Pl. 34; A. Miller 1986:Fig. 42; M. Miller 1986:60, 155, Pls. 4, 7). An eighth-century Altar de Sacrificios vase depicts the “old way” spirit, Buchte Kan, wearing a kilt with a dot-in-a-diamond design and dancing with a boa constrictor, suggesting a relationship between serpents, tie-dye, and this motif (Coe and Kerr 1997:Fig. 44; Davis 2002:52; Schele and Mathews 1998:83, Fig. 2.24) (Figure 2e). Several figures in the murals from the Classic site of Bonampak wear hipcloths and loincloths with designs suggestive of resist-dye techniques, including
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Tie-dye (M. Miller 1986:60, 155, Pls. 4, 7). Although no archaeological examples of tie-dye have been found at Maya sites, an example of batik is known (Johnson 1954:143–144, Pl. 37, Fig. 9).

The dot-in-a-square or diamond motif has ancient roots in Mesoamerica, extending back at least as far as the Pre-Classic period (pre-A.D. 250). The earliest example we know of is an Olmec bowl with four rounded triangles filled with dot-in-diamonds, perhaps representing ears of corn (Taube, in press; Lara Silva and Guevara Muñoz 2002). In Maya art, grid-like arrangements of dot-in-a-square or dot-in-a-diamond motifs were commonly used to depict the scaly skin of ancient reptilian figures central to the Maya cosmology, including crocodiles, alligators, turtles, and serpents. These motifs were also used to depict clothing associated with the Maize God and the Feathered Serpent. A Maya image from the Codex Dresden uses the dot-in-a-square to represent the reticulated skin of a crocodile (Anawalt 1990:302–303, Fig. 13; Deckert and Anders 1975:74). At Palenque, the ruler Pakal wore a pectoral depicting the Maize God's rebirth from the Cosmic Turtle, its shell rendered in dot-in-a-diamond motifs (Schele and Mathews 1998:37, 117, Fig. 3.24) (Figure 2b). The North Temple of Chichén Itzá depicts the sacrificed Maize God clad in a full-length garment covered with a dot-in-a-circle or dot-in-a-square design (Schele and Mathews 1998:Fig. 6.51). Above him, the principal lord wears the jade shirt of the Maize God, also decorated with this motif (Schele and Mathews 1998:252–253). Two jade mosaic vessels from Tikal depict rulers Ah Cacau and Yaxkin clad in such shirts; each mosaic square bears a tiny incised dot at its center (A. Miller 1986:61, Fig. 31). The same motif appears on an elaborate reptilian headdress worn by Yaxkin at Tikal (A. Miller 1986:Fig. 42). The North Temple at Chichén Itzá also depicts a figure associated with the Feather Serpent and Maize God who wears a belt, mantle, and headdress decorated with the dot-in-a-square (Schele and Mathews 1998:251–252, Fig. 6.50).

The dot-in-a-square and dot-in-a-diamond were also widely used in highland Mexico to represent the skins of serpents and alligators. The body and serpent head of the enormous Aztec stone statue Coatlicue, whose name translates as “serpent skirt,” is covered with dot-in-a-square motifs (Pasztory 1998:Fig. 63). In the late prehispanic Codex Borgia, the dot-in-a-diamond is used to depict the reptilian head and body of Tonacatecuhtli, the supreme male deity and earth monster, whose day sign is Alligator (Diaz and Rodgers 1993:xvii, xxi, Pls. 18, 21, 27, 39–40, 71) (Figure 2c). This same manuscript represents the skin of the feathered serpent with the dot-in-a-square (Diaz and Rodgers 1993:Pl. 11) (Figure 2d).

The Aztec codices are replete with images of deities and deity impersonators wearing skirts, tunics, or cloaks decorated with what appear to be tie-dyed designs. In the Codex Borbonicus, an impersonator of the Aztec god Tezcatlipoca wears a shirt decorated with dot-in-a-square and dot-in-a-diamond motifs (Nowotny and de Durand-Forest 1974:26; Anawalt 1990:Figure 5). The Florentine
FIGURE 2. The dot-in-a-square motif in Peru and Mesoamerica. 
a) detail of Wari-related tie-dyed patchwork camelid-fiber tunic, ca. A.D. 500-800, Nasca area, South Coast, Peru; 
b) turtle pectoral worn by ruler Pakal at Palenque, Mexico, depicting the Maize God’s rebirth from the Cosmic Turtle; 
c) alligator deity Tonacatecuhtli, his body a field of corn, late prehispanic Codex Borgia, Mexico; 
d) feathered serpent, Codex Borgia, Mexico. (See photo credits on page 347.)
Codex illustrates the Aztec merchant god Yacatecuhtli clad in a blue-green cape decorated with a dot-in-a-square design (Anderson and Dibble 1950–1982, Part II, Pl. 41; Anawalt 1990:298). Fray Bernardino de Sahagún provided a critical clue to the technique used to produce this garment by recording the Nahuatl name for the design, *xiuhtalpilli* (Anderson and Dibble 1950–1982, Part IX:24). Anawalt (1990:298; 2000:220) translates this as *xihuitl*, precious turquoise stone (the color blue-green, referring to indigo dye), and *tlalpilli*, something tied or knotted, confirming the technique as tie-dye.

The Nahuatl goddess of weavers and spinners, Xochiquetzal, whose name translates as “precious flower” or “Flower Quetzal-feather”, has a particularly close connection with the dot-in-a-diamond motif. She is a water-related, earth-mother fertility deity through whom women are venerated as creators of life and weavers of cloth (Byland 1993:xix; Davis 2002; Nicholson 1971: 421; Quiñones Keber 1995:187). In the sixteenth-century Codex Telleriano-Remensis, she wears a skirt decorated with a red dot-in-a-diamond design and kneels on a snake, a creature with which she is often associated (Quiñones Keber 1995:187–188, Folio 22v) (Figure 2f). Virginia Davis (2002:52) associates the tie-dye pattern on her skirt with the patterning of snakeskin. Other Nahuatl female deities associated with this motif include Chantico, whose face is decorated with a red
dot-in-a-square design and who shares affinities with Xochiquetzal (Nicholson 1971:Fg. 11); Tonacachuiltl, the supreme female figure, whose skirt bears a red dot-in-diamond design reminiscent of Xochiquetzal's costume; Huixtocihuitl, the water-related fertility goddess of salt, who wears a blue-and-white skirt with diamond-in-a-square motifs, a style frequently associated with rain deities (Quiñones Keber 1995:139, 162, 186, Folios 1r, 8r, 21v); and Chicomecoatl ("Seven Serpent"), the maize goddess, whose skirt bears a dot-in-a-square design that Sahagún identifies as "water flowers" (Anderson and Dibble 1950–1982, Part 2:13, Pl. 29, right).

Textiles with dot-in-a-square or diamond designs were also worn by the elite, including a succession of Aztec emperors. De Sahagún associated the blue tie-dyed cape, or xiuhtalpilli, with the Toltecs (Anawalt 1990:298). Anawalt (1990:291, 298, Figs. 6, 7; 2000) interprets this garment as a heraldic, genealogical emblem worn by Aztec rulers to convey their descent from the royal Toltec line. She also links the stepped-fret design on one of these capes to Quetzalcoatl.

Based on her analysis of Aztec tribute tallies in the Codex Mendoza, Anawalt (1990) argues that virtually all tribute textiles decorated with the dot-in-a-square motif were acquired from provinces formerly part of the Toltec empire, in the modern-day states of Hidalgo, Querétaro, and southeastern Guanajuato. In particular, tie-dye and other resist-dye techniques seem to be closely associated with the Otomi (Davis 2002:51). The Uamantla Codex, an Otomi manuscript, depicts the opening of the cave from whence the Otomi people began their migration with a dot-in-a-diamond motif. The same motif decorates the tunic of Xochiquetzal, shown inside the cave (Carrasco Pizana 1979:Fig. 18). The Otomi codex of Huichapan also illustrates a high-status figure wearing what appears to be a tie-dyed cloak with this pattern (Guinchard 1976:117). The prehispanic Codex Xolotl, also from north central Mexico, depicts both the Cave of Xolotl and the Hill of Cuauhyacac with the dot-in-a-diamond design (Davies 1980:108, 111).

Archaeological evidence of the motif and the technique also extends to the south and east of this region. The only Mexican archaeological example of tie-dyed cloth comes from Don Bonfilio Cave in the Tehuacán Valley of Puebla, which produced an indigo-dyed cotton fabric decorated with small white circles with center dots (Mastache de Escobar 1974). The motif also appears at the early fifteenth-century site of Ocotolulco in Tlaxcala on a mural painting of an altar dedicated to Quetzalcoatl (Contreras 1991; Davis 2002:52). In Oaxaca, the motif occurs on the cloak of a female deity from Monte Albán (Bernal 1958:Pl. IX; Davis 2002:52) and on an elite style of Postclassic/early Colonial pottery, Pilitas Polychrome (Lind 1994:81, Fig. 18c). Historic Mexican examples of tie-dye are known from Tehuantepec, Veracruz, Hidalgo, Querétaro, and Zacatecas (Buhler 1954:3741; Davis 1996, 2002:Tables I–III; Kent 1957:Fn. 130).

In summary, dot-in-a-square and dot-in-a-diamond motifs were widespread in the iconography of the Andes and central and southern Mexico. Their
related textile technique, tie-dye, appears to be present by the seventh century A. D. among the highland Wari of Peru and by the eighth century in the Maya region, if not earlier. King (1979:267–268, 274; see also Kent 1957:569) contends that the Mesoamerican textile industry was strongly influenced by the fabric traditions of the Andes at various points in time; likely tie-dye was one of these transplanted techniques. By the twelfth century, both the motif and its associated tie-dye technique had achieved prominence at least as far north as the Toltec empire, where the motif may have been associated with Quetzalcoatl. At the time of the Spanish conquest, both the motif and the technique were closely tied to the ritual costuming of certain Aztec deities and the elite, perpetuating a tradition with a time depth of at least 700 years.

Although the metaphorical meaning of the motif in the Andes is still unclear to us, the dot-in-a-square and dot-in-a-diamond were widely used in Mesoamerica to depict the skin of crocodiles, alligators, serpents, and other reptiles, figures central to the Mesoamerican cosmology and the creation of the world. These creatures traveled freely between the levels of the world and were metaphorically linked to water and fertility, rain and maize. At Chichén Itzá (A.D. 800–948), the dot-in-a-square was used to designate jade, the attire of the Maize God and that of the ascendent Itza ruler as he took on an identity with the Maize God as the Feathered Serpent rose before him (Schele and Mathews 1998:252, Fig. 6.51). The Maya ruler’s attire, in turn, is seemingly comparable to the sixteenth-century Aztec emperor’s xiutlalpilli cloak, the patterning of which also communicated reptilian associations with divine authority (Anawalt 1990:302–303). The scene is an endorsement of Anawalt’s observation (1990:306) that the cloak embodied prestige symbols handed down from earlier civilizations. Regardless of whether jade, maize, or reptilian patterns were at stake, rulers sought to achieve supernatural sanction and legitimacy by wrapping themselves in these powerful symbols through the use of cloth bearing the tie-dye textile pattern.

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IN THE U.S. SOUTHWEST AND NORTHERN MEXICO

TIE-DYED FABRICS IN THE NORTHERN SOUTHWEST

Although a number of resist-dye techniques are known worldwide, only one, tie-dye, is presently documented for the U.S. Southwest. Fourteen archaeological examples of tie-dye are known from the Southwest, all worked on loom-woven cotton cloth (Table 1, Figure 1). The archaeological distribution points to the Kayenta and Sinagua regions as important centers of production. Only one example is known from a Salado or Late Mogollon site, and only one from the Hohokam region. No definite examples of tie-dye are reported from Eastern Anasazi sites on the Colorado Plateau. Pepper (1920:138) alluded to one possible example from
<table>
<thead>
<tr>
<th>Site</th>
<th>Catalog No.</th>
<th>Region</th>
<th>Background color</th>
<th>Motif</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canyon Creek</td>
<td>ASM GP16984</td>
<td>Salado/Late Mogollon (Upper Salt River)</td>
<td>Brown</td>
<td>Oblique, rounded square with central dot</td>
<td>Haury 1934: 99-100, Pl. LXlb; Kent 1957:569, Chart 9a</td>
</tr>
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<td>Casa Grande</td>
<td>NMNH A-170137</td>
<td>Hohokam (Salt-Gila)</td>
<td>Blue (possibly indigo?)</td>
<td>Circle with large central dot?</td>
<td>None; see Figure 1e, this article</td>
</tr>
<tr>
<td>Gourd Cave</td>
<td>ASM 2984</td>
<td>Kayenta (Tsegi Canyon)</td>
<td>Blue-gray</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a; 1983:Pl. 16</td>
</tr>
<tr>
<td>Honanki</td>
<td>CNF NA1255.R18-B.7</td>
<td>Southern Sinagua (Verde Valley)</td>
<td>Blue-gray</td>
<td>Oblique square with central dot</td>
<td>Webster and Raney 2004; see Figure 1d, this article</td>
</tr>
<tr>
<td>Kiet Siel</td>
<td>MNA 695/NA 2519.M295</td>
<td>Kayenta (Tsegi Canyon)</td>
<td>Blue-gray</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a</td>
</tr>
<tr>
<td>Lake Canyon</td>
<td>UM 29.43.183</td>
<td>Kayenta (N of San Juan River)</td>
<td>Brown</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a; 1983:Figs. 120-121; see Figure 1a and b, this article</td>
</tr>
<tr>
<td>Poncho House</td>
<td>PM A5614?</td>
<td>Kayenta (Chinle Wash)</td>
<td>Brown</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a; 1983:Fig. 122 (lower)</td>
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<tr>
<td>Waterfall Ruin</td>
<td>PM A1709?</td>
<td>Kayenta (Chinle Wash)</td>
<td>Brown</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a</td>
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<td>White House</td>
<td>AMNH 29.1/7541a</td>
<td>Kayenta (Canyon de Chelly)</td>
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<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a; 1983:Fig. 133a; see Figure 1c, this article</td>
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<tr>
<td>Wupatki</td>
<td>MNA77/NA405.M232</td>
<td>Northern Sinagua (Flagstaff area)</td>
<td>Black. Fewkes also reported a red example</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, 708, Fig 83, Chart 9a; Kent, n.d.; Stanislawski 1963:459; Fewkes 1911</td>
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<tr>
<td>Unknown</td>
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<td>Northern Arizona?</td>
<td>Black</td>
<td>Oblique square with central dot</td>
<td>Kent 1957:569, Chart 9a</td>
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</table>

Key: AMNH = American Museum of Natural History; ASM = Arizona State Museum; CNF = Coconino National Forest; MNA = Museum of Northern Arizona; NMNH = National Museum of Natural History (Smithsonian); PM = Peabody Museum of Archaeology and Ethnology, Harvard University.
Pueblo Bonito, but this artifact has yet to be located and could easily represent a different technique. All but one example appears to date to the A.D. 1200s, or perhaps slightly earlier for the Sinagua pieces. The latest example, from Canyon Creek, is fourteenth century in age (Kent 1957:569, Appendix C, Chart 9a).

The scarcity of tie-dyed cloth from Hohokam assemblages may be more apparent than real, given the paucity of unburned Hohokam textiles from large platform-mound sites. Although most of the perishable artifacts from Casa Grande were burned, a fragment of blue-and-white cotton resist-dyed cloth miraculously survived in an unburned condition (Figure 1e). The motif on this small fragment is not a small dot-in-a-square, but what appears to be a concentric circle, suggesting the use of a resist technique other than tie-dye. In contrast to the other blue tie-dye fragments shown in Table 1, which are blue-gray in color, the blue in this fragment is more of a true blue and might be indigo, the use of which was confined to sites south of the Mogollon Rim (Kent 1983:39–43) (none of these dyes have been tested). Thus, rather than an import from the Sinagua or Kayenta region, this textile easily could have originated in the southern Southwest. Given that the Hohokam are considered to have been the conduit for several other Mexican textile techniques to the Sinagua and Kayenta regions (Kent 1983; Teague 1998), this culture is also a likely source of the tie-dye technique to the northern Southwest (Webster 2003:194–195).

The only complete example of a tie-dyed textile is the blanket from Lake Canyon, north of the San Juan River. In this blanket, the dot-in-a-diamond motifs are evenly distributed into five horizontal and vertical rows (Figure 1b). This is a much more static approach to design than the oblique and four-fold designs depicted in Pueblo IV kiva murals (e.g., Hibben 1975:Figs. 2, 45, 47, 74, 75, 86; Smith 1952:Figs. 24b–f, 82b, 88c) (Figure 3a–d). Fragments of tie-dyed cloth from the Kayenta and Sinagua regions, including one from White House with a hook-like motif (Figure 1c), and examples from Gourd Cave, Poncho House, Wupatki, and Honanki (Figure 1d) with oblique arrangements of diamonds, bear a much closer relationship to this dynamic Pueblo IV mural tradition (e.g., Kent 1983:Figs. 122, 133a, Pl. 16).

Other coloring techniques such as negative painting and probably other resist techniques were also used to produce negative designs on plain-weave cloth in the prehistoric Southwest (Kent 1983:195–198). Like tie-dye, evidence of these techniques is largely confined to the Western Pueblo region until ca. A.D. 1400, when depictions of tie-dyed and other negative-patterned fabrics appear in the Eastern Pueblo murals of Pottery Mound. The closest antecedent to the black, negative-patterned garments in Pueblo IV kiva murals is a dark brown shirt from the Kayenta site of Poncho House, decorated with white grid designs and two prominent white circles, dated to about A.D. 1250 (Guernsey 1931:52, 102–103, Pl. 63; Kent 1983:197, Fig. 122; cf. Hibben 1975:Figs. 30, 74, 94; Smith 1952:Fig. 80b). A few fragments of tie-dyed cloth were found in the same context.
as the shirt. Although Kent interpreted the shirt as negative painted, the use of another resist technique is possible. Textile artist and scholar Virginia Davis, who, together with Pam Scheinman, worked with Anawalt (1990; 2000) to replicate a tie-dye cloak depicted in the Aztec codices, believes that at least some of the fabrics identified by Kent as negative painted might have been produced by a resist process instead, perhaps one akin to the West African mud-cloth technique of Bokolanfini (personal communication with Laurie Webster).

Tie-dye, negative painting, and other resist techniques were particularly well suited to expressing the prevailing iconographies of Pueblo IV, a dynamic and sometimes asymmetrical design system inspired by lightning, meteorological events, serpents, clouds, rainfall, and fertility. Because tie-dyed and painted motifs can be positioned anywhere on a piece of cloth, these techniques were ideal for rendering oblique hooks and frets and finite designs in four-fold rotational symmetry, the predominant designs and symmetries of the times (Teague 1998:149–150, Fig. 6.10).

The Awat’ovi, Kawayka’a, Pottery Mound, and Kuaua murals all depict negative-patterned costumes with black-on-white designs that appear to be decorated by tie-dye, negative painting, or another resist-dye technique (e.g., Dutton 1963: Figs. 35a, 56, 68; Hibben 1975:Figs. 2, 14, 16, 30, 45, 47, 60, 74, 75, 86, 91–94, 99, 100; Smith 1952:Figs. 24b, c, f, h, 80b, 81a, b, 82b, 88c). Such designs are particularly common at Pottery Mound, where nearly forty percent of the kilts were decorated in negative patterning (Webster 2005). Pueblo IV muralists used two different stylistic conventions to render these designs. In the first, the white elements were rendered as small circles or diamonds with a black dot at the center, then joined to produce grid-like or oblique designs (e.g., Dutton 1963:Fig. 68; Hibben 1975:Figs. 99, 100; Smith 1952:17m, p, 24b, c, f, h, 88c) (Figure 3a). In the second, they were figured as small diamonds, circles, lines, or bars lacking the center dot, and combined to produce oblique designs or used as isolated motifs (Dutton 1963:Figs. 35a, 56; Hibben 1975:Figs. 2, 14, 16, 45, 47, 60, 75, 86, 91–93; Smith 1952:Figs. 78a, 80a, 81a, b) (e.g., the circles and bars in Figure 3d). The first is more common at the Jeddito sites and on Sikyatki pottery, the second at Pottery Mound and Kuaua. Both artistic conventions, however, occur in the east and west, and were sometimes combined within a single garment (Hibben 1975: Figs. 30, 74, 94, 99, 100; Smith 1952:Figs. 24b, c) (Figure 3a, c, d). This latter practice was especially common at Pottery Mound. Given the fact that imitation tie-dye textiles are known to have been produced in the Southwest (Kent 1983: Fig. 133b illustrates a cotton textile with a dot-in-a-square motif produced by negative painting, rather than tie-dye), and no examples of tie-dyed or negative-painted fabrics have been identified from any Pueblo IV sites, probably due to poor preservation, it is impossible to know for sure which techniques the painters were attempting to depict.

Although nearly all known Southwestern examples of tie-dyed fabrics come from Kayenta and Sinagua sites, their potential importance at Hohokam
FIGURE 3. Tie-dyed clothing and the dot-in-a-square motif in Pueblo IV kiva murals. a) Awat’ovi, Room 529, ca. A.D. 1400-1500; b) Awat’ovi, Rm 788, ca. A.D. 1500-1629; c) Pottery Mound, Kiva 7, ca. A.D. 1350-1500; d) Pottery Mound, Kiva 16, ca. A.D. 1350-1500; e) figure wearing snakeskin belt decorated with a dot-in-diamond design; Pottery Mound, Kiva 2, ca. A.D. 1350-1500; f) Awat’ovi corn motif, Test 14, Room 3, ca. A.D. 1400-1500. (See photo credits on page 348.)
and Classic Mimbres sites and at Paquimé should not be dismissed, given that unburned textile remains are rare at these sites. At present, there is no textile evidence to suggest that tie-dye was an important decorative medium in Classic Mimbres society. There are indications, however, that people in the Salt-Gila and Paquimé regions used resist-dye techniques to decorate cloth. As noted, the sole Hohokam example, a resist-dyed (tie-dyed?) cotton textile fragment from Casa Grande (Figure 1e), appears to be decorated with a bullseye-like, large negative circle with a smaller circle at the center, rather than the dot-in-a-square motif common farther north. No examples of tie-dyed cloth were identified in the poorly preserved textile assemblage from Paquimé, but Ramos Polychrome and other Chihuahua Polychrome vessels depict human figures wearing shirts, kilts, or skirts decorated with prominent circles with a central dot or with gridded dot-in-a-square designs, suggesting the practice of tie-dye or other resist-dye techniques (King 1974:84, 108, Figs. 79–8.1, 81–8.4; Moulard 1984:Pl. 81; Townsend 2005:Pl. 55a). Although the large circle motif is not the focus of this article, this, too, was an important iconographical element in the U.S. Southwest and northern Mexico, one that appears to have a similar historical trajectory as the dot-in-a-square and may have served as a referent for the horned serpent or Tlaloc. The two motifs commonly co-occur in the iconography of central and northern Mexico (e.g., Figure 5d; Contreras 1991).

In summary, a plausible scenario is that the tie-dye technique spread from Peru into Mexico and from there into the U.S. Southwest, perhaps entering Hohokam societies with a suite of other Mexican influences. From there, it probably spread into the Sinagua and Kayenta regions, becoming widespread by the A.D. 1200s. Although the technique may have reached Paquimé via the Hohokam, it also might have entered the region via the eastern slope of the Sierra Madre (see Kent 1957:569; King 1974:108). Tie-dye or other resist-dye techniques appear to have reached the Keresan and southern Tiwa villages by the fourteenth or fifteenth century, either through interactions with people in the Little Colorado or Hopi regions, with other influences from Paquimé, including the horned serpent imagery, or both. The fact that resist-dye techniques other than tie-dye also appear to be depicted in the Pottery Mound murals suggests Paquimé as a possible source for these techniques. Although textile evidence is lacking to test these hypotheses, ceramics and other media provide valuable clues to the spread of the tie-dye technique and its related dot-in-a-square iconography.

**THE DOT-IN-A-SQUARE IN SOUTHWESTERN CERAMICS**

In the Hohokam region, an early use of the dot-in-a-square occurs at the site of Snaketown on Snaketown (A.D. 350–550), Gila Butte (A.D. 500–700), and Santa Cruz Red-on-buff (A.D. 700–900) pottery (Gladwin et al. 1965:Pls. CLIXd, CLXX-Vlllb Haury 1976:Fig. 12.99, no. 104). The checkerboard without the dot, how-
ever, is far more common in these earlier pottery types (Gladwin et al. 1965:Fig. 111; Haury 1976:Fig. 12.99, no. 105). During the Sacaton phase (A.D. 900–1100), the dot-in-a-square became a popular element of Sacaton Red-on-buff ceramics, appearing on bowls as an allover checkerboard design and on oversized jars as repeating elements organized into large blanket-like designs (Gladwin et al. 1965: Pls. CXLIXh, CLg) (Figure 4a, b). These latter designs bear a much closer resemblance to tie-dye (Figure 4a; see also Haury 1976:Fig. 12.00, no. 96). During the Gila Butte through Sacaton phases, circles with dots are even more common than the dot-in-a-square (Haury 1976:Fig. 12.99, nos. 5–7, 9–11). Gridded designs without the dot are also found on carved stone effigies and palettes, with square grids used to depict the shells of turtles (Snaketown phase, A.D. 300–500) and diamond grids the scales of horned toads (Santa Cruz phase) and serpents (Sacaton and Santa Cruz phases) (Gladwin et al. 1965: Pls. LXVa, b, LXXIVb, CIlb).

In Classic Mimbres Black-on-white pottery (A.D. 1000–1130), the use of the dot-in-a-square motif is infrequent and highly varied. Dotted squares appear on the bodies and tails of birds and animals (Bradfield 1931:Plate 77, 78; Brody 1977:Fig. 164, 169; Davis 1995:131, 132; Fewkes 1923:Fig. 99), on a turtle shell (Fewkes 1923:Fig. 29), and as headgear on humans (Moulard 1984:Pls. 7 and 16). In one case, a human-like female (?) figure has a double band of dotted squares across the face (Brody 1977:Fig. 175). Horned serpents also wear dot-in-a-square facial decoration (Fewkes 1914:Fig. 28) and a necklace (Brody 2004:Fig. 175), the latter resembling serpent depictions on later Ramos Polychromes (e.g., Figure 5b). In a scene reminiscent of the Maya Maize God’s rebirth from the Cosmic Turtle shell (Figure 2b), another Mimbres bowl shows an embryonic (?) human emerging from an elliptical form covered in dot-in-a-square motifs (Brody 2004:Fig. 212) (Figure 4c). In Mimbres pottery, the dot-in-a-square pattern might therefore represent snakeskin, beads, mosaics, animal fur, bird feathers, turtle shell, teeth, or all of these.

Toward the end of the same time period, between about A.D. 1090 and 1150, the dot-in-a-square motif appears frequently in Cibola White Ware pottery in the Puerco-Chaco series. The pattern is most frequent on Chaco-McElmo Black-on-white and sometimes on late Puerco Black-on-white (Windes 1984, 1985; Thomas Windes, personal communication). At Pueblo Bonito, the pattern appears on a cylinder jar (Figure 4d) and two mugs (Judd 1954:Plate 6; Lekson 2001:219; Brody 1984:13; American Museum of Natural History catalog numbers 3260, 3529). It also appears a bowl with a textile-like offset quartered layout (Brody 2001:151), a ladle (Judd 1959:Plate 27d), and assorted potsherds from Chaco Canyon (e.g., Judd 1954:Pl. 49, 1959:Pl. 21; Windes 1984:Fig. 6.9). The elongated shape of the cylinder jar could reference an ear of corn, a basketry cylinder encrusted with turquoise mosaic (Brody 1984:13), a serpent, or none or all of these. At Chaco, then, the dot-in-a-square pattern could reference beads, mosaics, textiles, snakeskin, corn, or a combination.
Contemporaneous Puerco, Gallup, and Early Reserve black-on-white pottery bears the dot-in-a-square motif as a panel filler or as medallions surrounded by hatched motifs (Paul Martin collections, Field Museum of Natural History; Hays-Gilpin and Van Hartesveldt 1998:Fig. 18). The motif appears on later Tulalarosa and Pinedale black-on-whites as well, dated to the late A.D. 1100s–1200s. The motif may begin here in the late A.D. 1000s or early 1100s. Earlier examples tend to have larger, bolder grids than later examples.

By the 1200s, the dot-in-a-square appears fairly frequently on pottery from northern Arizona, particularly Tusayan and Kayenta black-on-whites, and infrequently on late 1100s types, such as Flagstaff Black-on-white. In examining thousands of Black Mesa Black-on-white sherds and other Pueblo II period (ca. A.D. 950–1150) types in the Kayenta ceramic tradition, Hays-Gilpin has never seen the dot-in-square motif except as lines of bold, dotted diamonds between solid triangles, never as an all-over, textile-like pattern. In examples that probably post-
date A.D. 1200, patterns are usually complicated, with dotted squares arranged in patterns with solid half-terrace figures, in "negative painted" textile-like patterns (Figure 4e).

Thus, in the U. S. Southwest, a version of the motif, the dotted checkerboard, appears to be earliest in the Hohokam region, appearing perhaps as early as A.D. 500 and gaining in popularity between A.D. 900–1100. Sometime between A.D. 1000–1130, it appears in Classic Mimbres pottery. By the early 1100s, it is fairly frequent in Cibola White Ware ceramics, especially Chaco-McElmo Black-on-white and Reserve Black-on-white. Between about A.D. 1200 and 1300, designs bearing this motif increased in frequency and complexity, becoming widespread on virtually all Ancestral Western Pueblo black-on-white pottery, including Little Colorado White Wares, Kayenta and Tusayan ceramics, and Tularosa and Pine- dale style Cibola White Ware. Perhaps significantly, contemporaneous redware pottery (White Mountain Red Ware, Tsegi Orange Ware, and Puerco Valley Red...
Anasazi black-on-white pottery frequently bears textile designs in the 1100s and later. Its color and patterns may have invoked cotton textiles, clouds, and water, whereas redware may have had other referents (Hays-Gilpin, in preparation).

The motif is less frequent in the A.D. 1300s, but by this time is often associated with life forms. An anthropomorphic figure on a Roosevelt or Pinedale Black-on-white bowl (no provenience, Ferg 1982) has the dot-in-a-square pattern on its body (Figure 4f). The face of the figure is katsina-like, with a toothed mouth, elongated eyes, and black chin. In scale, posture, and facial markings, it is similar to a figure on a Fourmile Polychrome vessel from Homol'ovi I (Hays 1989:Fig. 2d; Martin and Willis 1940:Pl. 1). The Fourmile figure has female genitals, a textile-like design on the body that includes isolated dotted squares in a band across the face, and small black dots on her white chin. The dark chin on one and the dotted chin on the other figure suggest ethnographic Pueblo ritual personages whose dark painted chins reference the dark, moisture-laden undersides of rain clouds. Another Fourmile Polychrome bowl has a katsina-like figure with a double row of dotted squares on its lower body or perhaps on a kilt (Fewkes 1904:Fig. 90). These figures might represent corn maidens or mothers, katsinas (rain clouds), or a bit of both. The motif is also used to depict a serpent on an Antelope Black-on-straw bowl (Figure 5a) and tie-dyed clothing on figurative Sikyatki Polychrome vessels (Smith 1952:Fig. 17m, n, p) from Awat'ovi.

Mask-like faces on several Pueblo IV pottery wares often have dotted squares as eyes (Hays 1989:Figs. 4f, 5a,b,c). The Hopi word for "seed, the propagating part of a plant," poosi, sounds the same as the word for "eye, organ of sight" (Hopi Dictionary Project 1998:426, 818, 845). Though the two words have different histories, they have fallen together in Hopi and some other Uto-Aztecan languages, allowing verbal puns that conflate corn seeds with eyes (Kenneth Hill, personal communication).
communication). The dotted-square eyes on pottery suggest that ancient (Uto-Aztecan speaking?) painters may have made visual puns with seeds.

In northern Chihuahua, the dot-in-a-square motif is a common element of Ramos Polychrome, where it often appears in open or checkerboard bands and grids. It is also found on Escondida Polychrome, but much more rarely on other related Chihuahuan polychromes (Di Peso et al. 1974:168–316). In a review of 125 Chihuahuan polychrome vessels at the Museum of Indian Arts and Culture/Laboratory of Anthropology by Polly and Curtis Schaafsma, the motif was found to occur on slightly fewer than half of the decorated effigy vessels. The dot-in-a-square is also relatively common in conjunction with other geometric designs on vessels where life forms are absent. On human effigies, the motif frequently appears as a repeated element in bands that suggest jewelry, sashes, belts, headbands and so forth—encircling the neck, head, wrist, or waist (e.g., Stuhr 2002:62), framing the human face, or in the case of some human effigies, as facial decoration. Curiously, it is rare to find the dot-in-a-square decorating blankets or skirts on the Chihuahuan Polychrome human effigies. Instead, most of the probable resist-dye designs on the effigy figures appear as negative circles or dots on skirts (King 1974:108). One notable exception is a transgendered hunchback who wears a jacket-like garment with a checkerboarded dot-in-a-square pattern (Stuhr 2002:63).

Similarly, the motif appears as bands around the necks of other effigy life-forms, including macaws, woodpeckers, turtles, badgers, fish, frogs, and snakes. The dot-in-a-square has a close association with Ramos Polychrome horned serpents and snakes, where it is often used to define wide collars and broad decorative bands (Moulard 1984:Pl. 87) (Figure 5b, c). In some instances the gridded collar, with or without the dot, is combined with large negative circles with a central dot on the body of the snake (Di Peso 1974: Fig. 290–6(26); Stuhr 2002:44–45). On one vessel (Figure 5d), a broad zigzag marked with grids and these large circles is viewed as an abstracted serpent. VanPool (2003:710–711; color photos 3, 4) convincingly argues that bands of large dotted circles are shorthand expressions of serpents. Less commonly, the motif appears with feathers in macaw representations (Stuhr 2002:64). Whether the motif represents feathers, as such, is questionable. More likely, it is simply decorative in this context.

THE DOT-IN-A-SQUARE IN SOUTHWESTERN ROCK ART

While rare, another medium in which the dot-in-square motif is represented is rock art. Most examples are Pueblo in origin, and textiles or textile designs are suggested in the majority of cases. Some of these compare well with the pre-hispanic textile examples (Table 1), with which they are contemporary, or with designs on kilts and mantas pictured in the Pueblo IV kiva murals (Hibben 1975: Figs. 74, 75, 93, 94, 99, 100). As discussed, the patterning on these items of attire
may represent a resist or painted technique that replicates the dot-in-a-square motif, rather than an actual tie-dye pattern.

The earliest (ca. A.D. 1100–1300) rock art examples that depict the dot-in-a-square motif occur among the multitudinous other textile patterns represented on rocks in the Little Colorado region (McCreery and Malotki 1994:Figs. 7.12; Schaafsma 1987:26). In one instance, however, checkerboard bands incorporating the dot-in-a-square define the body pattern of an elongate surreal creature (McCreery and Malotki 1994:Fig. 7.15). Most petroglyphs with the motif, however, clearly represent textiles. Reasons for representing textiles in rock art are not known.

Following Pueblo III, depictions of textiles are unusual in Puebloan rock art. Relevant to this discussion, however, are several petroglyphs from the Rio Grande. At LA 10,114 in the Cochiti Reservoir area, human heads are shown above a blanket-like textile (Schaafsma 1975:Figs. 49, 65) (Figure 5e). The zig-zags of dots with large circles in the remaining space are patterns also seen in kilts, mantas, and wall hangings in the Pottery Mound kiva murals, where the “dots” are seen as tiny squares or the dot-in-square motif itself. One Southern Tiwa petroglyph exhibits a similar, but unbounded, textile pattern. An additional example comes from cliffs below Awat’ovi and Kawayka’a, in which a square marked with lines of dots resembles the Rio Grande examples just cited. In the Antelope Mesa case, this small textile design is found in association with a Rio Grande-style horned serpent. A number of eastern Hopi petroglyphs may have been made by immigrants from the Rio Grande.

In the petroglyphs, where simplification is the rule-of-thumb, the dot-in-a-square is commonly indicated merely by dots, but in diagonal patterns identical to those found in murals along with associated large solid circles. Elsewhere, however, in a petroglyph at Samalayuca, Chihuahua, the rectangular body of a Tlaloc figure, marked with bold patterns similar to those found on ceramics, is bordered by well-defined rows of the dot-in-a-square motif (Schaafsma 1997: Fig. 22). This repetition of the motif in a running band is comparable to its use on Chihuahuan Polychrome vessels, with which this petroglyph is contemporary (A.D. 1200–1450). In this case, a reference to textiles is questionable. Instead the allusion may be to a pottery vessel, a symbolic relationship seen elsewhere in which the presumed rain deity is linked to water containers and the complex rain and landscape metaphors they entail (Schaafsma 1999:179; 2002).

A painted sandstone slab from the Little Colorado River area may count as a form of rock art (Hays 1989:Fig. 5e). Excavated by Fewkes around 1896, this item has a human or katsina face with a square shape, elongated eyes, and a toothed mouth, surrounded by a single row of dotted squares. The dotted squares around the face remind one of the motif’s use on Ramos Polychrome human effigy vessels. Although provenience and catalog information have apparently been lost, painted slabs somewhat like this have been recovered from mortuary
contexts that date to the fourteenth and fifteenth centuries (Fewkes 1904:Pl. XLVI; Smith 1952:Fig. 22).

THE DOT-IN-A-SQUARE AS CORN

The dot-in-a-square seems to take on the literal meaning of corn only relatively late in the sequence. In Pueblo IV murals, it is one of three conventions used to pattern ears of corn (Hays-Gilpin and Hegmon 2005; Smith 1952:Figure 18). The motif does not appear in this context at Pottery Mound, and is used only once at Kawayka'a (Smith 1952:Fig. 72a). Instead, most of the Pottery Mound and Kawayka'a murals depict corn ears with rows of dots, rather than the dot-in-a-square. At Awat'ovi, however, the dot-in-a-square is commonly used to fill in ears of corn (Figure 3f), and is prominent on Corn Mother figures on some of the latest (post A.D. 1500) murals (e.g., Smith 1952:Figs. 79b, 81).

Dance wands given to the young Hopi women initiates of the Mamrawt, or Maraw Society, depict upright ears of colored maize by filling oval shapes above the handle with a dotted grid pattern. The Hopi Dictionary identifies and illustrates this pattern as qa’öveni, corn-marking (Hopi Dictionary Project 1998:457). Fewkes and Stephen (1892:241), working on First Mesa, identified the dot-in-the-square as cő’-n ta, the “living germ in the heart of the kernel.” Linguists Kenneth Hill and Emory Sekaquaptewa identify this word and its contemporary Third Mesa Hopi spelling as “sooná’ata,” the “germ of life” (pausal form soona’ata). This term refers to the edible part of a seed, to sustenance generally, and to the black dot in the middle of each square in the qa’öveni gridded pattern painted on dance wands (Hopi Dictionary Project 1998:521).

MULTIPLE MEANINGS OF THE DOT-IN-A-SQUARE MOTIF IN THE SOUTHWEST

The tie-dye textile pattern probably originated in South America, and more proximately, Mesomerica, where the pattern referenced snakeskin and the skins of other powerful reptilian creatures. One of the most important personages in the Hopi pantheon is Paalölöqongw, the Water Serpent, who moves underground water to the sky where it falls as rain. Traditional histories of the Water Clan recount Paalölöqongw’s gift of a piece of his own skin, to be used when the people needed rain. The other pueblos have similar water serpent figures. We assume that this figure is so old and widespread in the Southwest and Mesomerica that we should expect widespread iconographic references to it. Associations between serpents, especially rattlesnakes, and corn are widespread in Mesoamerica. Taube (2000) notes several examples of Mesoamerican iconography in which rattlesnake rattles are depicted as ears of corn or maize gods have feathered serpent attributes. He
associates corn and jade, and corn and feathers, in many Mesoamerican traditions from the Formative period to the historic Aztec. For example, the Aztec maize goddess, Chicomecoatl, “Seven Serpent,” wears elaborate textiles, flowers in the form of rayed circles, and maize ears adorned with feathers. If serpent skin, maize, and jade or turquoise beads and mosaics were associated in Formative period Mesoamerica, and all could be referenced with the dot-in-a-square motif, these concepts might well be linked by this motif in the U.S. Southwest as well.

In Ramos Polychrome, the dot-in-a-square is closely associated with horned serpents and snakes. Gridded or simplified renditions of checkerboard collars on horned serpents also occur widely beyond the Casas Grandes region in the art of the Jornada Mogollon and Pueblo regions (Schaafsma 1980:Fig. 187; 1992: Fig. 118; Hibben 1975: Fig. 34) (Figure 5f). A historical connection is indicated between these supernaturals and the larger iconographic contexts in which they occur (Schaafsma 1997:26–28; 1998). The meaning of this serpent has multiple parallels with Quetzalcoatl in Mesoamerica (Schaafsma 2001). Thus, perhaps it is not surprising that the gridded collar and body decorations are also widely distributed, seemingly attributable to a rather standard repertoire of iconographic elements of the cult (e.g., Lothrop 1926:Pls. XLIV–XLVIII; Schele and Mathews 1998:Fig. 7.36). Although the meaning of the symbolism may have changed regionally or through time, the motif itself remained relatively constant. Ringle, Gallareta, and Bey (1998; Ringle 1999) argue that a widespread cult of the Feathered Serpent was responsible for “organized institutional infrastructure” in Mesoamerica and that it emanated from various cult cities (Ringle 1999). Paquimé, where the horned serpent iconography plays a major role, may have been a parochial version of such a “cult city.”

The problem is how to distinguish between a mere decorative use of the motif, a simple signification (as in beads, for example), and meaningful symbolic content. In the case of the serpent, this may be possible. The horned serpent has a key role in Hopi and Zuni rituals involving maize (Titiev 1944:123, n.83; Stevenson 1915:99). Whereas maize kernels may be implicated in the pattern on the neck of the Pueblo serpents (Schaafsma 2001:143–148), there are other possibilities as well, especially in regard to the Casas Grandes examples. In Mesoamerica, reptilian supernaturals, including powerful deities such as Quetzalcoatl, are linked to leadership roles. The large role that the horned serpent plays in the iconography of Paquimé may have a link to social institutions and leadership (Schaafsma 1998; 2000; VanPool 2003:171), thus explaining the extensive use of the dot-in-a-square patterns on human effigies, as well as the horned serpent itself. VanPool sees compatibility between patterns of shamanic ritual at Paquimé and the political structures of Mesoamerica (see also Schaafsma and Riley 1999:248). If jade, maize, and rulership backed with supernatural reptilian authority signified by the dot-in-a-square motif was persistent in Mesoamerica, it should not be surprising that this element is present with related implications among the less complex
societies in the Southwest, especially at Paquimé, as revealed on the Chihuahuan Polychromes.

When modern Hopi people see this symbol today, they identify it as qa'öveni, corn markings. Other modern Pueblo groups also associate this design with corn (Hibben 1975:121). If the dot-in-a-square pattern in earlier material culture referred to reptile skin, textiles, jade and turquoise mosaics, beads, feathers, and other forms of adornment, how did it come to mean corn to Hopi ancestors by the 1500s, and perhaps to inhabitants of the Upper Little Colorado/Silver Creek area of eastern Arizona in the late 1200s–1300s? The answer may lie in an ancient Mesoamerican connection among corn, serpents, and green stone (cf. Taube 2000), or it may lie in the metaphor of corn as a human body and the treatment of perfect ears of corn as bodies, as Corn Mothers, and as tiponis. Many Pueblo rituals require perfect ears of purely colored corn (Ford 1980). Perfect ears of corn are “dressed” to honor them, just as human bodies are dressed, particularly for ritual occasions. The literal dressing of ears of corn in cotton textiles and yarn and the metaphorical dressing of pottery vessels by painting them with textile designs might have opened a way for the qa'öveni pattern to transfer its meaning from tie-dye or painted cotton textiles to corn. Such a transfer would have been a “good fit” with Hopi language and ideology because the dots in the squares can easily be interpreted as the “germ” in the corn kernel, the soona'at.

The dot-in-a-square probably had a broad range of meanings for Hopi and other Puebloan ancestors who migrated throughout the southwestern United States and northern Mexico for more than a thousand years. Geometric dot-in-a-square patterns that represent corn in sixteenth-century murals at Awat’ovi to the present day may have, in earlier times, referenced a multitude of ideas—textiles, snakeskin, and mosaics, as well as corn. These multiple meanings might have conflated at Hopi in the Protohistoric period, when people of many different language groups aggregated in large villages and the present day ceremonial calendar began to coalesce (Bernardini 2005). Because the use of the element is so varied in the Southwest and elsewhere, we suggest that it had more symbolic than specific representational value. Whatever meanings it held for people in the U.S. Southwest, it achieved such importance that late prehispanic societies elected to incorporate this iconography into their cotton textiles and other media, embracing tie-dye as a primary means of rendering this imagery on cloth.

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NOTE

1. People on the southern Colorado Plateau probably did not use indigo to any extent until after European contact, when the dyestuff was imported into the New Mexico colony in processed, cakelike form and used primarily to dye the wool of introduced domestic sheep (Webster 1997). Indigo-dyed yarns, however, appear to have been used in limited quantities prior to contact by people living in what is now southern Arizona and New Mexico (Kent 1983:39–43; Teague 1998:132–133, Fig. 5.3). With the possible exception of the blue tie-dyed textile from the Hohokam site of Casa Grande, no indigo-dyed fabrics have been found, but blue yarns that might be indigo-dyed have been recovered from several post-A.D. 1200 sites in the southern Southwest as part of ritual caches and as supplementary weft yarns on cotton textiles. (In addition to the references mentioned by Kent 1983, see also Anderson et al. 1986, Walt 1978, and Wasley 1962). A fragment of cotton yarn from the cache described by Walt (1978), now at the Chicago Art Institute, was chemically tested and identified as indigo (Kent 1983:42). Decorative yarns on supplementary-weft fabrics from the Sierra Madre of Chihuahua are also believed to be indigo-dyed (Kent 1983:Pl. 18). Although the presence of indigo-dyed cotton yarns in the southern Southwest is strongly inferred, it remains to be established whether these yarns were dyed locally or traded into the region.

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**Laurie D. Webster**
University of Arizona
Lwebster1@mindspring.com

**Kelley A. Hays-Gilpin**
Northern Arizona University

**Polly Schaafsma**
Museum of New Mexico
SHINGO3@aol.com