



The Arch of Titus in Color: Polychromy and the Spoils of Jerusalem

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From June 5 to 7, 2012 an international team of scholars led by the Yeshiva University Center for Israel Studies in partnership with the Soprintendenza Speciale per i Beni Archeologici di Roma undertook a pilot study of the Arch of Titus in the Roman Forum, the ancient civic center of Rome, Italy (fig. 1). The focus of attention was the Menorah panel (fig. 2) and the relief showing the deification of Titus at the apex of the arch (fig. 3).¹

The arch has three major bas reliefs. One shows the deification of Titus. Two other reliefs depict the triumphal procession held in Rome in 71 CE: in one we see Roman soldiers carrying the spoils of war



Fig. 1. The Arch of Titus on the Via Sacra, Rome.

Fig. 2. The Spoils of Jerusalem, Arch of Titus, Rome.

1 This essay is dedicated in memory of Professor Louis H. Feldman, an early and consistent supporter of this work. Many thanks to all of the members of our team, and especially to Peter J. Schertz, Bernard Frischer, Heinrich Piening, Cinzia Conti and Donald H. Sanders. We especially thank the Soprintendenza Speciale per i Beni Archeologici di Roma. This project is supported by George Blumenthal of New York, David and Jemima Jeselsohn of Zurich, the International Catacomb Society, the Leon Charney Legacy Fund of the Yeshiva University Center for Israel Studies, and the Office of the Provost, Yeshiva University.

through the city, including the famous Menorah (the seven-branched candelabrum) and other treasures of the destroyed Temple. These were put on display in Rome in the Temple of Peace not far from the arch. The second panel shows Titus riding in triumph through the city (fig. 4).

High resolution three-dimensional scans of the Menorah relief was made (fig. 5), and part of the Menorah relief was examined to determine whether any traces of paint decoration were



Fig. 3. The Apotheosis of Titus, Arch of Titus, Rome.
Fig. 4. The Triumph of Titus, Arch of Titus, Rome.



Fig. 5. Three-Dimensional Scan of the Spoils of Jerusalem, Arch of Titus.

preserved [...] UV-VIS spectrometry was employed to detect color on the marble reliefs.

The pilot project was a complete success. The scan data were processed to create a 3D representation of the form of the reliefs with sub-millimeter accuracy. Traces of yellow ochre were found on the arms and base of the Menorah. This discovery is consistent with biblical, early Christian, and Talmudic writings and particularly eye-witness descriptions of the golden menorah by the first century historian Josephus. -- from the press release.²

The Arch of Titus Project,³ which I direct, reflects a major transformation in contemporary scholarship, in which the polychromy of ancient art has become a major new subject of interest. My purpose in this article is to present first a brief history of polychromy

2 "Yeshiva University Team Discovers the Arch of Titus Menorah's Original Golden Color," June 22, 2012. The entire release is mounted at: <http://yu.edu/cis/activities/arch-of-titus/> (accessed June, 2017). This essay draws on my previous publications, especially "Menorahs in Color: On the Study of Polychromy in Jewish Visual Culture of Roman Antiquity," *Images: A Journal of Jewish Art and Visual Culture* 6 (2013), 3-24 and Steven Fine, Peter J. Schertz, Donald H. Sanders, "True Colors: Digital Reconstruction Restores Original Brilliance to the Arch of Titus," *Biblical Archaeology Review* 43.3 (2017), 28-35, 60-61. Our final report will appear as "Reimagining the Arch of Titus Spolia Panel: An Experiment in Reconstruction and Polychromy," with Peter Schertz and Donald Sanders, *Images: A Journal of Jewish Art and Visual Culture* 11 (2018), forthcoming.

3 <https://www.yu.edu/cis/activities/arch-of-titus>

studies, followed by a short resume of the results of our 2012 season at the Arch. I will then turn to specific reconstructions of elements of the Arch of Titus' spoils panel, and a hypothetical reconstruction of the original polychromy of this Roman bas relief.

Truthfully, it is astonishing that the discovery of a few dots of yellow paint on the Arch of Titus menorah became international news. Any reader of the Bible, Josephus or of rabbinic literature⁴ could reasonably ask, as some innocent members of the public have, "What other color would it be?" This question is far more insightful than it appears at first glance. Polychromy presents a stark contrast to the neo-classical and modernist fascination with whiteness; with black, white and the shades in between. One modern author, David Bachelor, has even referred to this fascination with whiteness to the exclusion of color as "chromophobia," intending the sense of irrationality that the term "phobia" connotes.⁵ In her 2006 essay, "Late Antique Aesthetics, Chromophobia, and the Red Monastery, Sohag, Egypt," Elizabeth S. Bolman used the term chromophobia in relation to Classical and late antique art, writing that "Western art and architectural historians have traditionally had something of a love affair with pristine white classical sculpture and architecture, often ignoring the colored paint that embellished both."⁶ Jan Stubbe Østergaard goes further: "A powerful trinity of Western ideals of the highest order—aesthetic, philosophical, and ideological—were grafted onto the white marble surface at the turn of the eighteenth and nineteenth century. The rediscovery of the polychromy of Ancient sculpture and architecture accordingly meant—and still means—to challenge these ideals to their very core."⁷

Chromophobia has even touched our Arch of Titus Project. Soon after the announcement of our discovery in the *New York Times*,⁸ an author in *The New Republic* responded to our

4 See Steven Fine, *The Menorah: From the Bible to Modern Israel* (Cambridge MA: Harvard University Press, 2016), and the bibliography there.

5 David Bachelor, *Chromophobia* (London: Reaktion, 2000). This term has been applied to late antiquity by Elizabeth S. Bolman, "Late Antique Aesthetics, Chromophobia, and the Red Monastery, Sohag, Egypt," *Early Christian Art* 3 (2006), 1-24.

6 Elizabeth S. Bolman, "Late Antique Aesthetics, Chromophobia, and the Red Monastery, Sohag, Egypt," *Early Christian Art* 3 (2006), 1 (1-24).

7 Jan Stubbe Østergaard "The Polychromy of Ancient Sculpture: A Challenge to Western Ideals?," *Circumlitio: The Polychromy of Antique and Mediaeval Sculpture*, eds. V. Brinkmann, O. Primavesi, M. Hollein (Frankfurt am Main: Liebieghaus Skulpturensammlung, 2008), 82 [78-105].

8 Elisabetta Povoledo, "Technology Identifies Lost Color at Roman Forum," *The New York Times*, June 24, 2012, <http://www.nytimes.com/2012/06/25/arts/design/menorah-on-arch-of-titus-in->

enthusiasm for this work, and to the discoveries themselves. Rochelle Gurstein expressed disdain for any work that changes the image of the ancient Rome preserved in the writings of Edward Gibbon (d. 1794),⁹ or in the engravings of Giovanni Battista Piranesi (d. 1778, fig. 6).¹⁰



Fig. 6. Giovanni Battista Piranesi, *Vedute di Roma* (Views of Rome), ca. 1760.

Gurstein wrote: “I was struck by the international reach—Bavaria, New York, Virginia, Rome—of this project to get the colors of ancient Rome right; and how the image of a brightly colored ancient Rome felt as disorienting to me as the image of a medieval Rome with ancient monuments turned into fortresses. But I also could not help thinking that this international project was another sign of the predominance these days of science and technique over humane learning....”¹¹ Gurstein was correct in one respect. The

roman-forum-was-rich-yellow.html (accessed January 25, 2013).

9 Edward Gibbon, *The History of the Decline and Fall of the Roman Empire* (London: Printed for W. Strahan; and T. Cadell, in the Strand, 1781).

10 Giovanni Battista Piranesi, *Opere varie di architettura, prospettive, grotteschi, antichità: sul gusto degli antichi romani* (Rome: Si vendono presso l'Autore, 1750).

11 Rochelle Gurstein, “In Praise of Ruins: What the Fallen Grandeur of Ancient Rome Teaches Us,” *The New Republic*, July 3, 2012, posted at: <http://www.tnr.com/article/books-and-arts/104636/hed?page=0,0>.

reimagining of ancient art as exuberantly colorful shifts our frame of reference in ways that are profound and even jarring. Scholars have correctly tied the modern preference for white sculpture to Western racial theories, some relating the “ideal” whiteness of northern Europeans to the imagined whiteness of their classical “aryan” ancestors. One recent case resulted in death threats against an Iowa art historian.¹²

During the 1980's, scholars-- mainly museum curators-- began to focus their attention on pigment remains on Greek and Roman artifacts. Researchers in Copenhagen and Munich in particular focused upon the discovery and reconstruction of the original polychromy of ancient artifacts, mounting exhibitions—some of them called *Gods in Color*, in Munich, Istanbul, Cambridge, Mass, Berlin, Malibu and in other cultural centers.¹³ The next generation of scholars, Europeans and Americans, scoured classical sources for mention of ancient polychromy and studied additional artifacts, more recently broadening their studies to include Assyrian and other near eastern artifacts.¹⁴ The ancient world that they have discovered is a true “carousel of color,” as Walt Disney called it in the theme song of his long running television program, “the world is a carousel of color, wonderful, wonderful color.”¹⁵ “Baby boomers,” those of us brought up in the United States transition from black and white television to color (which hit its stride in the mid-1960's, and in Israel around 1980), might well remember celebratory messages

12 Sarah E. Bond, “Why We Need to Start Seeing the Classical World in Color,” *Hyperallergic*, 6 May 2017, posted at <https://hyperallergic.com/383776/why-we-need-to-start-seeing-the-classical-world-in-color/>; “Classicalist Receives Death Threats from Alt-Right over Art Historical Essay,” *Art Forum*, 15 June 2017, posted at <https://www.artforum.com/news/id=68963>.

13 Vinzenz Brinkmann, Raimund Wünsche, *Bunte Götter: Die Farbigkeit antiker Skulptur* (Munich: Stiftung Archäologie and the Staatliche Antikensammlungen und Glyptothek, 2004); *idem*, *Gods in Color: Painted Sculpture of Classical Antiquity: Arthur M. Sackler Museum, Sept. 22, 2007–Jan. 20, 2008* (Cambridge: Harvard University Art Museums, 2007); For late antiquity, see Bolman, “Late Antique Aesthetics, Chromophobia, and the Red Monastery, Sohag, Egypt.” For an extensive bibliography of polychromy research, see the website of the Ny Carlsberg Glyptotek, Copenhagen, <http://www.trackingcolour.com/>.

14 Giovanni Verri, Paul Collins, Janet Ambers, Tracey Sweek and St John Simpson, “Assyrian Colours: Pigments on a Neo-Assyrian Relief of a Parade Horse,” *The British Museum: Technical Research Bulletin*, 3 (2009), 57–62; Mark Bradley, *Colour and Meaning in Ancient Rome* (Cambridge: Cambridge University Press, 2009).

15 Referring to the theme song of classic television series, which premiered in 1961, “Walt Disney’s Wonderful World of Color.” See: J. P. Telotte, *The Mouse Machine: Disney and Technology* (Urbana and Chicago: University of Illinois Press, 2008), 53–5.

declaring that “the following program is brought to you in living color”¹⁶ For those still watching black and white televisions, the lesson was clear.

The Arch of Titus Project grew out of an earlier experiment conducted as the Digital Sculpture Project, a partnership of the Virginia Museum of Fine Arts, Richmond and the University of Virginia. The Richmond team, which I joined late in their process, examined a white marble sculpture of the emperor Gaius, known as Caligula (ruled 37–41 C.E.).¹⁷ Traces of pink madder lake and Egyptian blue mixed with gypsum, used to



Fig. 7. Emperor Caligula, Virginia Museum of Fine Arts.



Fig. 8. Caligula in Polychrome.

16 This is the NBC logo. For television logos vaunting the transition on all three major networks, see: <http://www.ev1.pair.com/colorTV/colorTVlogos.html>.

17 Preliminary versions of the papers delivered at *Caligula 3-D: Man, Myth, Emperor*, a symposium organized by the Virginia Museum of Fine Arts on December 4, 2011, may be found at www.digitalsculpture.org/papers/index_papers.html. See Peter Schertz and Bernard Frischer, eds., *Man, Myth, and Emperor* (Leiden and Boston: Brill, forthcoming).

create purple pigment had been discovered in a vertical fold of the tunic on the upper right part of the chest. Based upon that small amount of evidence, the Richmond team suggested reconstructions of the original polychromy of the entire sculpture (figs. 7, 8). Building on this work, John Pollini, a member of the team, has focused on refining the reconstructions based upon literary and visual sources, to bring forward something of the painterly side of Roman sculpture.¹⁸

Numerous sources, Pollini notes, describe the act of painting marble, often by master artists.¹⁹ A fourth century BCE Apulian krater, a large vase from Southern Italy now at the Metropolitan Museum of Art illustrates this process (fig. 9). There we see a scene of an artist applying pigments to a statue of Hercules.²⁰ Jennifer M. S. Stager rightly suggests that “Colored materials bring about a kind of animation that the un-particularized body lacks. As distant beholders we have grown accustomed to looking at generalities, which spare us the uncanny experience of witnessing an image in all of its colorful particulars.”²¹



Fig. 9. Column-Krater, Terracotta, Attributed to the Group of Boston, South Italian, Apulian, ca. 360–350 B.C.E., Metropolitan Museum of Art

18 John Pollini, "Some Observations on the Use of Color on Ancient Sculpture, Contemporary Scientific Exploration, and Exhibition Displays," in *Interdisciplinary Studies on Ancient Stone: Asmosia X. Proceedings of the Tenth International Conference of ASMOSIA II (Rome 2015)* 901-910.

19 E.g. Pliny the Elder, *Historia Naturalis* (35.130-131), cited by Pollini, "Some Observations on the Use of Color on Ancient Sculpture, Contemporary Scientific Exploration, and Exhibition Displays," 904; Jennifer M. S. Stager, "The Materiality of Color in Ancient Mediterranean Art," in *Essays in Global Color History*, ed. Rachel B. Goldman (Piscataway, NJ: Gorgias Press, 2016), 99.

20 Accession Number: 50.11.4. See Pollini, "Some Observations on the Use of Color on Ancient Sculpture, Contemporary Scientific Exploration, and Exhibition Displays," 904; Stager, "The Materiality of Color," 98-99.

21 Stager, "The Materiality of Color," 99.

■ Polychromy and the Reconstruction of the Spoils Panel

Our team began work at the Arch on June 5, 2012, for a three day trial test (figs. 10-12). Unocad, a scanning firm from Milan, created a full 3D scan of the entire spoils panel using a Breuckmann GmbH 3D scanner for data capture.²² The Unocad team had hoped to conduct its work during the day. It became clear, however, that complete darkness was necessary, and permission was secured to continue through the night (fig. 13). The scan shows every scratch in amazing detail: not just the horrible damage suffered by the panel, but also the astonishing level of preservation. Previous scholars went to great effort to document the panel, beginning with Adriaan Reelant's *De Spolis templi Hierosolymitani in arcu Titiano conspicuis* (Utrecht, 1716). Reelant



Fig. 10. Eastern facade of the Arch of Titus.

hired an English artist to observe, measure and draw the menorah as it existed in his day (fig. 14). During the 1970's Leon Yarden used the most sophisticated photographic tools then available to photograph the Spoils panel, and in the 1980's Michael Pfanner

²² Team members In this first phase of our work included: Steven Fine, Director, Yeshiva University Center for Israel Studies, Project Director; Bernard Frischer, Co-Director, Senior Scientist of PublicVR and Director of the *Rome Reborn* project, Indiana University; Peter J. Schertz, Jack and Mary Ann Frible Curator of Ancient Art at the Virginia Museum of Fine Arts; Cinzia Conti, Archaeologist, Soprintendenza Speciale per i Beni Archeologici di Roma; Paolo Liverani, Professor of Archaeology, University of Florence; Heinrich Piening, Senior Conservator, State of Bavaria Department for the Conservation of Castles, Gardens, and Lakes. The firm of Unocad was represented by engineers Giovanni Nardotto and Ivano Ambrosini.



Fig. 11. Western Facade of the Arch of Titus.

Fig. 12. The Unocad team preparing the scan the Spoils panel.



Fig.13. The Unocad team scanning the Spoils panel at night.



Fig. 14. Reconstruction Drawing of the Arch of Titus menorah, prepared for Hadrian Relandi's *Spoliis Templi Hierosolymitani in Arcu Titiano conspiciis* (Utrecht, 1716).

photographed, analysed and considered every aspect of the arch in exquisite detail and with considerable acumen.²³ In many ways, the Arch is among the most studied of Roman artifacts. Our scan of the spoils panel adds depth to the work of Yarden and Pfanner, owing to the precision of the three dimensional scan. We could see the entire procession at a level unseen by previous scholars, and the details—from berries in the wreaths of the Roman victors carrying the menorah and the Biblical table of showbread to mostly forgotten elements of the clothing, dolphins atop one of the signs that narrate the parade and the triumphal arch through which the holy vessels of Jerusalem entered Rome—came into even greater focus.

Scanning the spoils panel for signs of color was carried out by Heinrich Piening, A Senior Conservator with the State of Bavaria, and his wife Rose (figs. 15-16). The Pienings marked out specific deep carvings in the surface of the menorah for scanning, in the hope

23 Leon Yarden, *The Spoils of Jerusalem on the Arch of Titus: A Re-Investigation* (Stockholm: Svenska Institutet i Rom, 1991); Michael Pfanner, *Der Titusbogen* (Mainz am Rhein: P. v. Zabern, 1983).



Fig. 15. Heinrich Piening scanning the Arch of Titus menorah for pigment.

Fig. 16. Heinrich Piening discovers yellow ochre pigment on the Arch of Titus menorah.

that the numerous campaigns to clean the reliefs over the centuries had missed residue of color (fig. 17). Sections of the Arch of Titus Spoils of Jerusalem relief were subjected to UV-VIS spectrometry in search of colorants, both pigments and dye-stuffs. In his initial examination report, Heinrich Piening described the work as follows:²⁴

UV-VIS spectrometry is a non-destructive technique used to identify colorants. The surface to be examined is briefly illuminated by white light. From the reflected light this produces, the portion of white light that has been absorbed by the surface is calculated. The absorbed spectra are then compared with those in a special data library comprising about six thousand spectra of different art objects. Analysis of this data, and the characteristics of the spectra, show that the yellow pigment must have been cleaned and

prepared thoroughly before use, and that it was applied as a first coat. Together this suggests that the menorah was originally painted yellow.

Because of the considerable distance between the scaffolding and the relief (approximately 1.5 m) a different procedure was chosen for the menorah relief. Beyond basic sweeping (fig.18), cleaning the surface was not possible. As a first step a video microscope was fixed to a long metal rod (fig. 15). The surface was then examined as closely as possible and photos were taken. These photos helped localize small areas with



Fig. 17. Locations of the Menorah where pigment was discovered by Piening.

24 Heinrich Piening, "Examination Report: The Polychromy of the Arch of Titus Menorah Relief," in the same issue, 26-29.

possible colorant remains (pigments on the stone), which were mapped (figs. 17). In a second step these areas were examined further via UV-VIS spectrometry using two glass fiber cables (for light and measuring) fixed to the metal rod. Scans of the areas with possible paint remains were taken. The scan spot was not optimal for the reasons mentioned above. Despite the difficulties of focusing and non-homogeneous light conditions, however, a number of spectra could



Fig. 18. Images of pigment in six locations on the Arch of Titus Menorah.

be taken, both single scans and time scans, i.e., scanning of larger surface areas for up to twenty seconds taking scan by scan. Many of these spectra were precise enough to be interpreted, mostly those which were taken on a menorah arm and on the front of the base. The interpretation includes mathematical processing of the scans while comparing each scan with the large data library.

The results of the UV-VIS-spectrometry of the menorah show yellow ochre as a paint layer directly on the stone surface of a menorah arm and on the front of the base. The fact that the pigment was found on some more details of the menorah and applied directly to the stone leads to the conclusion that it must be part of the first paint. In this case, the menorah was painted yellow (fig. 19).

Since the lampstand was yellow, what colors might the rest of the panel be? When it became clear that return to the Arch would be delayed, Peter Schertz and I set out on a preliminary experiment to imagine and reconstruct the program of polychromy of the Spoils panel. Though by that time many Classical artifacts had been studied and



Fig. 19. Conservators preparing the Triumph of Titus panel for examination.

their polychrome programs reconstructed, none of this larger cultural significance had been successfully undertaken. An experiment to determine that very question had been previously carried out at the Ara Pacis (one of the highlights of Augustan Rome and a monument that had deep influence upon Flavian architecture [fig. 20]).²⁵ Unfortunately, the decisions of the Ara Pacis team were not documented, lessening the value this

25 Orietta Rossini, *Ara Pacis* (Milan: Electa, 2007).



Fig. 20. A reconstruction of the polychromy of the Ara Pacis.

project for our work. With that, the attempt to imagine the final painterly phase by this team points in important directions. We began tentatively, in the hopes of creating a conjectural reconstruction of the original polychromy of the spoils panel. Whatever we came up with, we thought, would be better than its “white” coloring, which, we had just confirmed, was plain wrong. Could we imagine such deep colors at the arch as well?

Donald H. Sanders of the Institute for the Visualization of History joined the team in 2015 to help us with this technical side, and we began looking for archaeological parallels for the various elements of the panel. The intensity of the pigments as reconstructed is based upon the color value of the yellow ochre of the menorah, with none of the nuance that would have come with final finishing and the fading that comes with exposure to the sun (fig. 21). We colored the sky blue following the most common color for such things in wall paintings from Pompeii and Herculaneum. Since military tunics could be wool or linen, and are shown that way on the wall paintings, we decided on a shade of off-white- except for the overgarments, which we made a shade of reddish-purple worn

by people of high status—the royal purple known from Biblical literature.²⁶ The wreaths worn by the celebrants, symbols of victory, are green, the color of the laurel leaves that compose them, while the laurel berries are purplish.

We colored the skin and hair in Mediterranean shades, and the leather and wood in shades of brown. Pillows are shown that support the heavy menorah and the table. These can barely be seen with the naked eye in the white stone. We colored them a slightly darker shade to contrast with the linen. The signs, *tabulae ansatae*, literally "horned tablets," are set in frames, which we colored bronze in contrast with the gold of the sacred vessels. Drawing from Josephus' terminology in *Jewish War* 7.148-152 (translated into Latin, the language of Rome and of the Roman military), we added texts to the signs. The first reads *Sacra Iudaeorum* ("Holy Objects of the Jews"). The second reads *Candelarum Iudaeorum* ("Lampstand of the Jews") and the third *Leges Iudaeorum* ("Law of the Jews"—meaning a scroll of the Torah). The Torah scroll that Josephus describes as following the lampstand in the procession carried is not illustrated. All of these labels are



Fig. 21. A conjectural reconstruction of the polychromy of the Arch of Titus Spoils panel.

26 Isaac Herzog "Hebrew Porphyrology," ed. Moshe Eon, published in Ehud Spanier, ed., *The Royal Purple and the Biblical Blue (Argaman and Tekhelet): The Study of Chief Rabbi Dr. Isaac Herzog on the Dye Industries in Ancient Israel and Recent Scientific Contribution* (Jerusalem: Keter, 1987), 17–145 and the more recent contributions in this volume. See now: Zvi C. Koren, "Chromatographic Investigations of Purple Archaeological Bio-Material Used as Biblical Dyes, *MRS Proceedings, Cultural Heritage and Archaeological Issues in Materials Science*, 1374 (2012), 29–48.

conjectural, and the script is derived from the dedicatory inscription that appears on the façade of the arch. They give a sense of what might have been written on these impressive signs, but no more.

The trumpets resting on the table are colored grey, to approximate Josephus' description of two silver horns conceived by Moses for the desert tabernacle.²⁷ Josephus reminds his readers that this sort of horn is "called an *asosra* in the Hebrew tongue," derived from the Hebrew *hatsotsra* of Numbers 10:1. Finally, the arch through which the victors march—to the far right—is colored according to the palette used on the nearby Temple of Apollo on the Palatine Hill, one of the few Roman buildings whose remains have been studied for traces of color.²⁸ All of this was quite tentative and intended to create no more than a sense of the original colors on the extant parts of the relief. We made no attempt to be "painterly" in our polychrome reconstruction, as was certainly the case in antiquity.²⁹ That step, we decided, veered into the aesthetic, a task that we deferred to a later phase of the work.

With time, it became clear to us that our three-dimensional scan of the panel revealed far more information than we had thought. We began reconstructing selected elements of the arch. Once we brought in the 3D scan data of the panel, we could manipulate it, zoom in, and see it from angles that you can't even see when close up on the scaffolding. That allowed us to inspect the nuances of the carving very closely, so that when we attempted reconstructions we could be sure it all matched the extant evidence. We quickly realized that we could reconstruct the missing body parts-- legs, arms and heads, by "borrowing" extant body parts from one figure to another. The one extant head in the round (just before the menorah) was the basis for all of the other head modeling. We avoided facial expressions and individualization of the clones, however, as this too seemed beyond our mandate and the limits of our evidence. Most spectacularly, Sanders and his team found sufficient evidence of the showbread table to attempt a reconstruction. We provided them with no historical contexts, but only the scan itself. Happily, the table they created was anticipated in Pfanner's work, tables illustrated in Roman wall paintings and bears some great resemblance to a showbread table illustrated on a rare coin of the Bar

27 *Antiquities* 3.291–292.

28 Stephan Zink with Heinrich Piening, "Haec Aurea Templa: The Palatine Temple of Apollo and its Polychromy," *Journal of Roman Archaeology* 22 (2009): 109–122

29 For a step in this direction, Pollini, "Some Observations on the Use of Color on Ancient Sculpture, Contemporary Scientific Exploration, and Exhibition Displays."

Kokhba Revolt, nearly 70 years later! This square table, described by Josephus as being “many talents in weight”³⁰ and which elsewhere he compares with a “Delphic table,” is standard Roman furniture and resembles the table in a Roman fresco showing a scene of polytheistic sacrifice.³¹ It is shown with two cups atop it, of a sort known in Roman art. These are likely for frankincense, as mentioned in m. Menaḥot 11:5 (and parallels) as the “two frankincense cups of the showbread,” שני בויכי לבונה של לחם הפנים.³² Only one of the cups is really visible to the naked eye, and the second is fragmentary. The excellent condition of the menorah required little reconstruction, except for the holders for oil lamps, which we modeled on Roman bronze lampstands and some sharpening of detail on the arms and stem. The fact that the base and the upper parts of the lampstand were colored in the same yellow ochre, suggests that they may have integral to one another, adding further evidence for the long-standing debate whether the base was original to this menorah, or is a Roman carrying appliance, a *ferculum*. We now have a reasonable sense of the original colors of the entire panel. In later phases we hope to reconstruct the entire panel and hypothesize the full polychrome program. We are also hope to pursue the “painterly” element as imagined by the Ara Pacis team and by Pollini, and to what degree it might be imagined on the spoils panel.

Viewing the colored Arch of Titus spoils panel, one may begin to imagine the vibrancy of the triumphal parade that took place a decade before the arch was built. You can almost feel the soldiers marching forward, as the procession recedes into Imperial Rome. This effect is enhanced by the strobing sunlight that crosses over the deep carving of the polychrome relief (fig. 22), particularly in the early morning and late afternoon.

The sunlight streaking across this deeply carved, colorful surface must have shimmered with light and shadow. While for Romans, this parade celebrated the renewed empire, it must have been almost unbearable for Jews, as they saw the holy vessels of “the house of the Lord, our God,” carried into captivity. This memory has been reinforced and repeated,

30 *Jewish War* 7.148. On this interpretation of the Bar Kokhba coins, see Dan Barag, “The Showbread Table and the Facade of the Temple on Coins of the Bar-Kokhba Revolt,” in Hillel Geva, ed., *Ancient Jerusalem Revealed* (Jerusalem: Israel Exploration Society, 1994), pp. 272–276; Fine, *The Menorah*, 44. See also Steven Fine, Peter J. Schertz and Donald H. Sanders, “The Table of Showbread on the Arch of Titus: A Reconstruction and its Implications,” forthcoming.

31 *Antiquities* 3.108; Etienne Nodet, “Table delphique au Temple,” *Revue Biblique* 96.4 (1989), 533–544; for the fresco, Irene Bragatini and Valeria Sampaoloeds. *Pittura Pompeiana* (Milan: Electa, 2010), 229–30.

32 Fine, Schertz and Sanders, “The Table of Showbread,” forthcoming.

again and again, through the refracting lens of the Arch of Titus - which still resonates today as few other Roman monuments do. Through technology, we may begin to imagine the original colors of the arch, the Temple vessels and of the Jewish War itself-- before they faded away into the grays and shadows of historical memory.



Fig. 22. Morning shadows on the Arch of Titus Spoils Panel.

Sources of Illustrations

Fig. 1-5, 7, 10-19, 22. Courtesy of the Arch of Titus Project.

Fig. 6, 9. courtesy of the Metropolitan Museum of Art.

Fig. 8. courtesy of Bernard Frischer.

Fig. 20. courtesy of Orietta Rossini.

Fig. 21. courtesy of the Arch of Titus Project and the Institute for the Visualization of History, Inc.