In the course of planning for this project, it became clear that reproducing Teotihuacan’s maps would be a central challenge. Created in different times and places by a range of archaeologists, cartographers, and designers for various ends, the maps needed to be organized and redesigned to create clear and consistent visual references. The main source map used in this redesign initiative was created by the Teotihuacan Mapping Project (TMP). Called “an accomplishment of singular importance” and the “rock star poster of mapping in archaeology,” the TMP map, often referred to as the 1973 Millon map, has been referenced and reproduced countless times. It is not only considered the authoritative representation of the city, it is the very framework that supports our understanding and conceptualization of Teotihuacan as an urban space.

In spite of its significance and pervasive (re)use, the TMP map remains the result of a distinct project with specific goals. It is also now over forty years old. Two key questions arose during our planning: How can we usefully integrate new data into this important document? And, how can we reinterpret the robust map to communicate the information necessary for this project? To answer these questions, it is helpful to begin with a close look at the TMP map to explore how and why the document was made. We can then consider the potential challenges and drawbacks of reusing maps that were made for other projects. Finally, we can identify the role that maps play within the context of this catalogue and discuss the methods of updating and redesigning the maps of Teotihuacan.

The Early Maps of Teotihuacan

As discussed earlier in this volume, Teotihuacan was never lost and then rediscovered (see Carballo and Robb, 12–19). The Aztec residents of the Basin of Mexico, their forebears, and their descendants knew of the ancient pyramids, as did the Spanish colonists. The earliest known maps of Teotihuacan appear on three similar documents that date to around 1560. The Saville Map of Teotihuacan, now at the American Museum of Natural History in New York; the Ayer Map, now in the Newberry Library in Chicago; and the Mazapan Map, known today only through a nineteenth-century copy of a lost original, were all drawn by Aztec artists, likely based on another, now lost, map. All three depict the Moon Pyramid and Sun Pyramid—shown in elevation as stepped platforms—as well as the Street of the Dead. The Mazapan Map was reprinted, translated, and analyzed by José Arreola in 1922 (see fig. 1.2). It is the most detailed of the three copies and is therefore considered to be the closest to the original.
Teotihuacan also appears on a map of regional settlements that dates to 1580, again likely drawn by a local artist (fig. 26.1). The map was included in a colonial report that was written for Philip II of Spain. The report was translated into English by Zelia Nuttall in 1936, and a copy of the map was reprinted in her publication. Unlike the other sixteenth-century examples, here Teotihuacan appears as a small detail in the upper portion of the image. The city is depicted as seven pyramids and two stepped platforms—presumably the Sun and Moon Pyramids—arranged around a central courtyard. On the 1926 copy of the map, the city is labeled “Oráculo de Montecuma.”

The next maps of Teotihuacan were made by nineteenth-century explorers, artists, and archaeologists who depicted the monumental architecture visible along the Street of the Dead. Notable examples include the maps made by Brantz Mayer, an American lawyer and author (fig. 26.2a); Désiré Charnay, a French explorer (fig. 26.2b); and Ramón Almaraz, a Mexican engineer (fig. 26.2c). The latter example was the result of a regional geographic and geological survey that was completed for the Scientific Commission of Pachuca, Mexico.

The “new era of Teotihuacan studies,” as described by George L. Cowgill, began in the early twentieth century with the anthropological and archaeological work published by Manuel Gamio. Gamio and his colleagues excavated several locations in the ceremonial center and were the first to unearth the Feathered Serpent Pyramid’s carved face. Gamio’s 1922 publication includes multiple maps and reconstructions of Teotihuacan, drafted by Ignacio Marquina (figs. 26.3–26.4). While more elaborate than previous examples, Marquina’s maps are similarly focused on the ceremonial core of Teotihuacan.

Subsequent archaeological projects produced maps of the architecture that was unearthed during their excavations. Multiple residential compounds were excavated and mapped in the 1930s by Sigvald Linné, in the 1940s by Pedro Armillas, and in the 1950s and 1960s by Laurette Séjourné. In 1960, Mexico’s Instituto Nacional de Antropología e Historia (INAH) began an extensive program of excavation and consolidation along the Street of the Dead. Maps of the excavated structures were published in 1957 by Ignacio Bernal and in 1964 by Jorge Acosta.

The Teotihuacan Mapping Project

While several twentieth-century maps show portions of the site, there is only one map that shows the entire known city of Teotihuacan and depicts it as an urban expanse (fig. 26.2). Published in 1972, this map was made by the Teotihuacan Mapping Project (TMP), under the direction of Rene Millon, an archaeologist at the University of Rochester, New York. Millon was interested in the development of early cities and recognized that in order to understand even the most basic aspects of Teotihuacan—its scale, population, area of influence, etc.—a map of the entire city was needed. Millon devised a plan with William T. Sanders of Pennsylvania State University to survey the entire Teotihuacan Valley. Sanders and his colleagues were to investigate the settlement patterns in the wider valley while Millon and his team focused on the city. The survey was designed to support the contemporaneous excavations along the Street of the Dead that were being sponsored by INAH.

In 1964, Millon received funding from the US National Science Foundation and the University of Rochester to document Teotihuacan through the use of photogrammetry and archaeological survey. Naturally, the first step of the project was to define the area of investigation. This meant that Millon and his team had to locate and identify the outer boundaries of the ancient city, which was accomplished through a season of preliminary field survey. The initial TMP team was formed of Rene Millon, his wife, Clara Millon, and fellow archaeologists James Bennyhoff and Bruce Drewitt of the University of California, Berkeley. The team decided that the city boundary would be identified by the presence of a three-hundred-meter-wide swath of land that bore no significant evidence of Teotihuacan-era remains. The team began their survey in the northwestern corner of the site and walked clockwise around the periphery until they returned to their starting point. Millon originally estimated that the area of investigation would be about twenty square kilometers, or approximately eight square miles. After completing the preliminary investigation, the team determined that the survey would in fact need to cover thirty-eight square kilometers, nearly fifteen square miles, to encompass the entire ancient city.

Once the periphery of the city was identified, the TMP hired Rochester-based Hunting Mapping Inc. to make a photogrammetric base map of the site. Photogrammetry operates on the principle that humans perceive depth from the offset of the perspective centers seen by the left and right eyes. Overlapping photographs can be taken to mimic this offset and thus reveal information about the depth of a landscape. The mapping company took aerial photographs of the survey area identified by the TMP. After being checked for accuracy against preselected ground points, the glass plate negatives were placed into a stereoplottor, which was used to trace the contours of the landscape. This yielded a “model map,” drawn in pencil on sheets of translucent drafting film called Cronaflex. Each model map sheet represented a five-hundred-square-meter area and included both ancient and modern features, such as buildings, roads, and power lines, as well as the natural features of vegetation, trees, streams, and rivers.

The TMP team then used the Cronaflex sheets to record data during an extensive archaeological survey project. From 1965 to 1966, the TMP team walked nearly all of the thirty-eight-kilometer lengths and noted every instance of Teotihuacan-era occupation that they encountered. Each instance, called a “collection tract,” was numbered and recorded on a specially designed survey form. Many structures could be identified from the visible remains of stone walls and floors. Others were noted because of the presence of such ancient building materials as casas, a cementlike volcanic rock aggregate used for foundations and wall fillers. Team members also collected the Teotihuacan-era artifacts—mostly fragments of ceramics and chipped stones—that were visible on the surface of the tracts. These field data were marked on the Cronaflex sheets which were used to create a map of the landscape as was visible at the time.

After the survey was complete, Millon began to form and elaborate the map. Rather than justifying it to the cardinal directions, he...
aligned the map to the plan of the ancient city, which is oriented about 15.25 degrees east of north. Excavation maps from other archaeological projects were incorporated, like those of Zacuala and Tetitla made by Séjourné, and the maps of structures along the Street of the Dead consolidated by the Proyecto Arqueológico Teotihuacan. Millon overlaid the map with a grid that was anchored on the geographical center of the city, as identified by the TMP survey, and divided the map into five-hundred-meter squares. He labeled the grid sectors according to their directional distances from the center of the map. The structures within each sector were identified by their collection tract numbers. For instance, the Ciudadela is situated in the first sector to the north and to the east of the zero point and so sits in sector N1E1. Zacuala is situated in the second sector to the north and to the west of the zero point and so is located in sector N2W2. It was the second tract surveyed in that sector, so is labeled 2:N2W2.

Millon also began to reconstruct the non-excavated architecture of the ancient city. He and his colleagues, chiefly Drewitt, drew the visible or hypothetical boundaries of each of the nearly five thousand structures that had been identified during the field survey. The most prevalent type of structure identified was the “room complex,” represented on the map as an open rectangle. Each of these complexes likely contained numerous rooms, access ways, and open patios, all enclosed by thick exterior walls. The hypothetical reconstructions and the field maps were finalized by J. Armando Cerda, a professional draftsman, and were assembled into a two-volume set. Part one provides a detailed project description and dozens of field photographs. Part two contains the map, rendered across 147 pages. The field maps, printed in black ink, show the visible landscape as it appeared during the 1960s survey. These maps are paired with transparent overlays that show Millon’s hypothetical reconstructions, rendered in red ink. This presentation allows readers to mediate between the two data sets and to see how the interpretations were extrapolated from the visible remains.

The paired pages are accompanied by three foldout maps that show more comprehensive views of the city. Map 1 of this set depicts the entire city of Teotihuacan as it is believed to have looked around 600 CE. Map 2 includes select field data, drawn in sepia and blue ink; architectural reconstructions, rendered in black; and excavated structures, marked in red. When contextualized within the larger volume, the combination of natural features and hypothetical architecture is not problematic. However, when Map 1 is reprinted in other publications, as it often is, the distinction between data and interpretation becomes blurred. The hypothetical structures become the central feature of the map, and the resulting tidy grid reminds us of modern, living metropolises. This familiarity gives the map more authority, as does its repeated and pervasive reuse. The map becomes the image that represents the ancient city of Teotihuacan, suggesting that we know more about its boundaries, contours, and contents than we actually do.

The Map Problem
The TMP map is a remarkably informative document and a singular achievement in the history of archaeology, but even at the time of its publication, Millon was keenly aware that it was neither an exact nor an absolute re-creation of Teotihuacan. He wrote, “I am certain that the boundaries I have drawn will prove to be incorrectly placed when tested in future excavations. . . . I would insist only that the vast majority of compounds I have drawn do in fact exist at or close to where I have drawn them, and that the dimensions I have drawn, for the most part, reasonably represent what their actual sizes would be.” Yet the TMP map still forms the foundation of much of our knowledge about the city.
The Teotihuacan Mapping Project's archaeological and topographic plan depicting the extent of Teotihuacan circa 600 CE. R. Millon, Drewitt, and Cowgill 1973: Map 1
of Teotihuacan. Its imperfections are a reflection not of the deficiencies of the project, but rather of the practice of making a map. It is not necessarily a mistake, but rather a recognition of what it represents. It must consist of a complex, experimental, three-dimensional space that is a single plane of shapes and abstractions. Monumental pyramids are transformed into tiny interconnected polygons, and thirty-eight square kilometers squeeze onto the single page of a book. A map is also the result of myriad decisions, selections, and omissions. The mapmaker chooses which details to accentuate and which to minimize in order to focus a reader’s attention on certain visual relationships. Rather than being a mimetic representation of a place, a map is a carefully crafted argument—a technique for organizing and communicating spatial information about geographically or temporarily distant places. The usefulness of a map is therefore not determined by how accurately it re-creates a place but by how successfully it communicates the information it was created to convey. Millon acknowledged the necessity to reconcile the problems that created this map. His introductory note to the map volume invites readers that the map “can be properly understood only if they are consulted and used in conjunction with the discussion of them in part one [of the larger volume].”

Millon’s foldout Map 1 was created to record the natural and built environment of Teotihuacan. It is possible, and indeed likely, that we made mistakes in interpreting the hypothetical structures, and indeed likely, that we made mistakes in the translations of them, and indeed likely, that we made mistakes in the interpretation of the hypothetical structures. We did not survey or measure any of the places shown on the maps, so inaccuracies may well be found. However, the maps in this volume are not intended to be architectural blueprints or excavation reports. Instead, they are intended to communicate the spatial relationships between places and things. They are offered as an alternative way to conceptualize the built environment of the ancient city of Teotihuacan. Redrafting the Maps of Teotihuacan

In this volume, we explore how the artworks pictured in the catalogue would have been used and experienced in their original urban contexts. Visual media such as photographs and maps are useful tools to help communicate and imagine such spatial relationships. While it is now relatively easy to take new photographs—which we did for this catalogue—it is not so simple to create new maps. It requires survey equipment, measuring tools, and a significant amount of time and expertise. The options are few, if any. It remains a re-interpretation maps made for other projects, but as previously discussed, this can make the communication of new visual information less effective. Therefore, we endeavored to compile and redraft the existing maps of Teotihuacan to serve the needs of this project. The source maps that we referred to for this project are idiosyncratic. They were made at different times by different teams and thus vary in style, format, and focus. These maps were chosen because they are the most recent, detailed, or complete representations available for the relevant sections of the site. If no singular map was suitable, multiple sources were combined using Adobe Photoshop. An example of such a combination can be seen on the map of Tlajinga (see 338–339). The reference for the overall sector was the TMP map, but sections of the area have been excised since its publication: in the 1980s by Rebecca Storey and in the 1990s by Sergio Gómez Chávez for the newly discovered Tlajinga Teotihuacan, directed by David M. Carballo, Kenneth Hirth, and Luis Barba Pingarrón. We therefore combined the more broadly focused TMP map with the newer, more detailed plans from the excavations. A slightly different example can be seen in the map of the Ciudadela (see 243). The new project was created with all of the details by using a combination of maps and reconstructions published in the 1980s by the Proyecto Arqueológico Teotihuacan. We combined these with multiple plans and reconstructions of the Ciudadela drawn by Saburo Sugiyama for the Proyecto Templo del Quetzalcóatl, as well as drawings provided by Sergio Gómez Chávez for the newly discovered tunnel under the Ciudadela. When necessary during the redrafting process, other media were consulted to clarify uncertain architectural details. We referred to old photographs and written descriptions from the excavations, as well as the high-resolution aerial photography of the site that is available on Apple Maps.

Once the source maps were identified and combined, they were transformed into vector graphics using Adobe Illustrator. Other types of digital images, including photographs and scanned documents, are known as raster graphics. Raster graphics comprise a grid of individual pixels; the resolution of the image is determined by the number of pixels in the file. The amount that these images can be altered or enhanced is limited to changing the characteristics of each pixel in the file. The images in raster graphics can become blurry when overly reduced, and muddy when overly enlarged. Vector graphics are not pixel-based but are rather made up of a series of paths and points that can be combined to form any imaginable shape. Since vector graphics are not defined by pixels, they can be scaled up or down without sacrificing the clarity of the image. It is also much easier to edit sections of a vector graphic without affecting the entire image. Redrafting the maps of Teotihuacan as vector graphics creates images that can easily be used, reused, and elaborated by current and future projects.

As this project focuses on the built environment of Teotihuacan, the maps in this volume highlight architectural spaces. They omit details about the natural environment such as topographic contour lines and they do not differentiate between reconstructed buildings and excavated structures. Architectural spaces are marked according to their form or function. The representational style was chosen to communicate depth within the architectural complexes—raised platforms are rendered in a lighter shade than sandy plazas. For the overall map of Teotihuacan (see 188–189), based on the data on the TMP map, an attempt was made to re-establish the hierarchy of data so that architectural forms could more easily be identified and understood.

The maps in the following section of this catalogue present an interpreted and idealized representation of the urban environments of Teotihuacan. It is possible, and indeed likely, that we made mistakes in our interpretations and that buildings would have looked different in ancient Teotihuacan. We did not survey or measure any of the places shown on the maps, so inaccuracies may well be found. However, the maps in this volume are not intended to be architectural blueprints or excavation reports. Instead, they are intended to communicate the spatial relationships between places and things. They are offered as an alternative way to conceptualize the built environment of the ancient city of Teotihuacan.