WHEELED TOYS IN MEXICO

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IT IS the purpose of this paper to bring together all of the known examples of those archaeological objects from Mexico which it seems best to refer to as wheeled toys. All but one of these have previously been described and illustrated, but I have thought it worthwhile to repeat to a certain extent in order to put all the evidence into readily available form. I shall also discuss briefly certain of the historical and general anthropological implications of the presence of wheeled toys in ancient America.

In my opinion, the evidence to be presented indicates that the Indians of Mexico had some knowledge of the principle of the wheel in pre-Conquest times. This will come as a surprise to many, because the supposed absence of any knowledge of this principle in the New World has often been stressed in discussions concerning the origin of the American Indian and his cultures. It is held that the absence of the wheel is proof that contact with the developed cultures of the Old World could not have occurred and that the higher aspects of the New World cultures must have been autochthonous developments. This argument is not necessarily nullified by the finding of wheeled toys in Mexico, but because of them it certainly cannot be used without some reservation. More important, perhaps, and interesting from a number of points of view are the implications in regard to the general problems of inventions or of theories of culture growth which the presence of wheeled toys in America involves.

A wheeled toy found at the Pavón site in the town of Panuco, Vera Cruz, was described in my report on the excavation of that site.1 Two side views of this specimen, with and without the wheels in position, are shown in Plate XXVI a, b; these, and a front view as well, were also published in the site report. The object was found at a point only several meters distant from my own stratigraphic excavation at the site shortly after I had left Mexico in June, 1942. It was found by Roberto Pavón, who had assisted me in my excavations and who reported the details of the find to me and supplied me with illustrations. He reported that the body of the figurine was found in a broken condition but that the wheels were in position as they are shown in the photograph. Since it was not preserved, it may be assumed that the axle was probably of wood or of some other perishable material. Of interest, however, are the spots of asphalt near the central holes of the wheels, indicating the probable method of attachment to the axles. I have stated elsewhere my considerable confidence in Mr. Pavón's ability to find and observe in position an object of this kind.

There can be little doubt that this wheeled toy is of pre-Conquest origin. It was, in fact, found at such a depth in the deposits of the site and in a cache with such other objects as to suggest a placement in the Period V horizon in the sequence of cultures I have tentatively outlined for the Tampico-Panuco area. Furthermore, in my investigations in the area, I found twenty-two examples of separate wheels identical to those belonging to the complete toy. Many of these were found in unquestionably undisturbed deposits in the stratigraphic trench at the Pavón site and at the site of Las Flores in the suburbs of Tampico. At this latter site we also found a pierced vessel lug identical with those on the complete toy, although it probably belonged to a somewhat larger figure.2 The indications are, therefore, that objects of this kind are far from rare in the Tampico-Panuco area and that other good examples will be found in future excavations. The distribution of the wheels at the two sites seems to indicate that objects of this kind were made from Period III to Period V of the tentative sequence established for the Tampico-Panuco area, or, in terms of central Mexico, from the early half of the Teotihuacán Period up through the Tula or Aztec I-Mazapan horizons.

Another animal figure from the same area which is obviously the body portion of a wheeled toy is illustrated with other ceramic pieces by Staub.3 Mere mention of this example must suffice, for Staub's illustration is too small to be reproduced here. The piece supposedly came from a railroad cut at Herradura, just south of Panuco. Apparently representing

1 Ekholm, 1944, p. 472
2 Ekholm, 1944, Fig. 48y.
3 Staub, 1921, Fig. 5.
a peccary or an armadillo, it has a relatively thick and obviously hollow body decorated with three deeply incised bands crossing over the body from side to side. The lugs in the position of legs are perforated in the same manner as those of the specimen from the Pavón site, but Staub unfortunately makes no mention of finding associated wheels.

Of the several known examples of wheeled toys, those found at Tres Zapotes and published by Drucker are the most finely made.4 They have been described in detail, so there is no need to do more than emphasize their probable identification as wheeled vehicles. This identification was not explicitly made by Drucker, but in the light of the specimen from Panuco and the others to be mentioned here there can be little doubt that it is the correct one. Plate XXVI d illustrates one of these specimens as it was recently shown in the Museo Nacional of Mexico with the wheels mounted on wooden axles. The same photograph, reproduced here through the courtesy of Sr. Eduardo Noguera, has also been published by José L. Cossio in Cuadernos Americanos.5 This specimen was found in a single cache with two others nearly complete and one in a fragmentary condition.

Drucker may have been wise in no more than hinting at the possibility that these objects represent wheeled toys, but the problem must be faced. Of interest in this regard is the fact that in the same cache, although apparently not in the position of wheels, were twelve perforated disks, the correct number of wheels for the three more or less complete body portions. Drucker describes these wheels as follows: "The 12 perforated clay disks, as mentioned elsewhere, are not reworked sherds, but specially manufactured objects with the perforation made while the clay was soft. Four are made of fine buff paste (these also have crosses of blue paint on one side), 7 are of a slightly gritty orange paste, and one is of quite coarse light-brown material."6 It is to be expected that if the twelve disks were made as wheels for the vehicles, the clay would be alike in groups of four, but it appears significant to me, nevertheless, that at least four of the wheels are of uniform paste and decoration. Furthermore, the situation here is precisely like that in the Tampico-Panuco area of the Huasteca in that these objects are specially made disks, unlike the perforated sherd disks common in all parts of the site and also unlike the spindle whorls of the latest Tres Zapotes horizon.

It will be noted, of course, that the Tres Zapotes toys are typologically distinct from the one from Panuco and the others to be described in having tubular axle housings. Drucker points out that the interiors of the tubes show no signs of wear, but this, it seems to me, does not necessarily argue against the objects having been manufactured as wheeled vehicles. Pottery and objects of various kinds found in caches or graves often show no signs of use.

The next wheeled toy to be considered is one of a number dug up by Charnay in 1880 at a site known as Tenenepango, located on the slopes of the volcano Popocatepetl, just southeast of Mexico City.7 Charnay’s illustration of one of these objects, described as a wheeled chariot, is copied in Plate XXVI c. Thus a good example of a wheeled toy has been in the literature for many years, but it has seldom been seriously considered, probably because of the rather extravagant and somewhat untrustworthy writing to which Charnay was given. Charnay’s illustration has also been copied by Holmes.8 There is no reason, however, for not accepting this object as contemporary with the other ceramic material Charnay reported from the site and as a perfectly acceptable example of a wheeled toy. As far as can be determined, all of the wheeled toys found by Charnay were either taken to Europe or have been lost,9 but much of the other material from the site is in the Museo Nacional of Mexico. In Vaillant’s certainly correct judgment, all of this material belongs to the Aztec I-Mazapan or Tula-Toltec horizon, Tenenepango being apparently a one-period site.10

We must depend entirely on Charnay’s illustration, but it appears to be an accurate reproduction. He gives two views, one without and the other with the wheels in position, which make it clear that the perforated lugs in the positions of the legs of an animal are like those in the example from Panuco. The body of the

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4 Drucker, 1943, p. 112; Plate 49a-c.f.  
5 Cossio, 1944, opposite p. 204.  
6 Drucker, 1943, p. 114.  
7 Charnay, 1888, pp. 170, 174.  
8 Holmes, 1919, p. 21.  
9 At my request, Sr. Noguera has most kindly made a search in the Museo Nacional, but he could not locate any of Charnay’s wheeled toys.  
10 Vaillant, 1938, p. 545.
animal appears to be solid, not hollow as in all the others, but the general form of the body is similar to that of both the Panuco specimen and of the Oaxaca toy to be considered below. A statement by Charnay indicates that the wheels on his toys, like those at Tres Zapotes and in the Huasteca, were quite different from the common spindle whorls of Central Mexico.

The last wheeled toy to be discussed is a curious one I recently discovered in the collections of The American Museum of Natural History (catalog number 30.0–3274). It was obtained by Marshall H. Saville on one of his expeditions to Oaxaca between the years 1898 and 1902. Its provenience is not given in the Museum catalog, but Saville had labeled it as from the “Valley of Oaxaca” on a plate he had prepared for publication just before his death. I would suppose that it was probably purchased by Saville, as there is nothing to indicate that he found it in any of his own excavations in that vicinity. It is a rather simplified animal figure 73 inches in overall length. The body consists of a round hollow tube which has four short lugs in the positions of the legs. The head, also hollow, has some object inside which makes it a rattle. The lugs are pierced transversely so that the holes enter the hollow of the body proper. These holes, approximately \( \frac{7}{16} \) inch in diameter, were quite clearly made before firing. The really extraordinary feature is the rider, unfortunately incomplete, seated on the animal’s back with legs clasping the sides of the animal in a manner exactly like that of a horseback rider. There are also clay fillets behind and in front of the rider which obviously represent some form of saddle. The sides and top of the body of the animal are covered with a well polished black slip, brownish where it has been rubbed thin. On the belly portion and the chest is an unpolished, rather thick white slip which is preserved only in spots. The head is unpolished and appears also to have been covered with the white slip, of which there are some slight remnants. A band of thin red paint crosses the saddle and the hips of the rider.

In one way, this is the best example we have of a wheeled toy, because the upper edges of the transverse holes which contained the axles are definitely worn smooth, showing use. This is something which has not been noted in any of the other specimens but which should be observable if the toys were actually pulled along as miniature vehicles.

The presence of a rider, seated in what is quite obviously a saddle, is certainly outside of native tradition and tends to force us to the conclusion that this toy must have been made in Spanish times in an attempt to show a horse and rider. Even so, however, it was probably in the tradition of the earlier wheeled toys of Mexico rather than in a similar Spanish tradition, if such existed. I do not know the nature of the toys of sixteenth-century Spain, but it seems to me that a European of that time making a model of a horse and rider would be less likely to put wheels on the horse than would an Indian who was acquainted with wheeled toys in the form of animals. On the other hand, the character of the clay and slip and other details of its manufacture indicate this toy is entirely a product of native workmanship. I am not intimately familiar with Oaxacan ceramics and hence cannot speak with conviction as to its place within the ceramic patterns of that area, but comparison with the fairly large collection in the American Museum of Natural History shows it to be definitely in the “Zapotec” tradition. The slip is blacker than that on most examples of the gray ware of the Monte Alban sequence, but it is not outside the range of color of that ware. It will also be observed that the body of the animal is a straight tube, as in the example from the Huasteca, and, except that it is hollow, it is like Charnay’s toy from Popocatepetl. The construction which makes the head of the animal a rattle is also a native trait of long standing.

It is likely that wheeled toys of the kind described here were more common and more widely distributed than is indicated by the few whole specimens so far recovered. Specially made perforated disks of the kind found in the Huasteca occur in various collections from Middle America but have usually been classified as spindle whorls. I have not attempted to trace their distribution, but I find, for example, that a number of disks which I feel quite certain were used as wheels were found by Vaillant in his excavations at San Francisco Mazapan and at El Corral, both in the Valley of Mexico.

The perforated clay disks identified here as wheels appear to be typologically distinct from spindle whorls. This is true at least in the Huasteca, where what have been described as wheels are uniformly crudely made, often with the perforation well off center. Those objects which are certainly identifiable as
Wheeled toys from Mexico. a, b, from Panuco, Vera Cruz, length 7 inches; c, from Tenenepango (Charnay's illustration); d, from Tres Zapotes, Vera Cruz; e, from Valley of Oaxaca.
spindle whorls are, on the other hand, always very carefully made with the perforation precisely centered. Actually, those wheels in which the holes are badly off center could hardly have been used as spindle whorls, a fact which almost certainly indicates that the type cannot be so identified at all. Even if they are not from toy vehicles, they still cannot be classed as spindle whorls.

We must also mention those perforated disks ground down from pottery fragments which are found abundantly in Middle America and elsewhere and which have been identified by some as spindle whorls. Such an identification appears doubtful in many cases, however, as the perforations may again be considerably off center. There is nothing to suggest that they could have been used as wheels either, and their function remains unknown.

The available examples of wheeled toys indicate a fairly extensive distribution of the trait both in space and in time. They are found in the Valley of Mexico and in central and northern Vera Cruz and Oaxaca, assuming that the one from Oaxaca, if made in post-Conquest time, is a survival of an earlier form in that area. Charnay's example from Tenenepango belongs certainly to the Mazapan-Toltec horizon, as does—with somewhat less certainty, perhaps—the complete specimen from Panuco. The Tres Zapotes figures can, however, be ascribed to an earlier horizon, definitely within that of the Teotihuacán Period of the Valley of Mexico. Some of the individual wheels from Panuco also are from a horizon previous to the Mazapan-Toltec. Furthermore, if we are correct in ascribing the "horse with rider" specimen from Oaxaca to the contact period, the trait persisted up to that time. It would seem fairly certain, then, that the few examples so far discovered cover a period of at least several hundred years, and possibly a much longer period of time.

The significance of the broad areal and temporal distribution of this curious trait is, of course, that it was more than just a thing that occurred once, perhaps by chance, and then was dropped. The idea of wheeled toys was definitely established in the cultures of Middle America. It was passed from one group to another and from one generation to another for a considerable period of time.

The evidence reviewed so far seems to me to indicate fairly conclusively that miniature wheeled vehicles were made, and there was therefore some knowledge of the principle of the wheel, in pre-Conquest Mexico. We must remember, however, that the evidence is somewhat scanty and largely circumstantial and that it would be well to have more of these toys with the wheels in place found in situ by trained archaeologists before it is accepted unreservedly. What evidence we do have, however, is sufficiently convincing to be accepted tentatively and to warrant examining some of the implications of that acceptance. Some attempt must be made to explain this new fact or to fit it into our total knowledge of American Indian cultures.

In the first place, it seems quite clear and certain that wheeled vehicles were not actually used as a means of transport anywhere in the New World up to the time of the first European contact. It might be profitable to examine all of the early literature with this problem in mind, but, in view of its unusual and generally recognized significance, it would seem that any reference to wheeled vehicles would have been picked out and discussed long ago. Charnay listed several references to literary sources which he thought might indicate the use of the wheel in pre-Conquest Mexico, but there is nothing conclusive in them, as far as I can discover.\(^{11}\)

It is within the realm of possibility that the toy vehicles of Mexico are the result of contact with or influence from some Old World culture, but speculation as to how or when this may have occurred is outside the limits of this paper. Although remote, this possibility cannot be entirely disregarded, because there are still many highly controversial problems in regard to New World and Old World contacts that remain unsolved.

If we agree that our miniature vehicles were not copied from actual vehicles used in transport and that they were not the result of contact with the cultures of the Old World, both of which possibilities seem to me quite unlikely, we are confronted with an interesting problem. We have toys or miniatures involving an important mechanical principle not put to practical use in the culture. Such a situation appears to be extremely uncommon in the so-called primitive cultures of the world, for I can find no case comparable to it. This is an aspect of culture which appears not to have been studied in detail by anyone, and, al-

\(^{11}\) Charnay, 1888, p. 174.
though I know I am entering upon uncertain
ground, I want at least to indicate the existence
of problems in this regard. When we consider
the various kinds of miniatures or toys found
in the primitive cultures of the world, we see a
nearly universal use of dolls, which are mini-
tures of people or animals, and of miniatures
of various manufactured objects common to
every-day life such as pottery vessels, grinding
stones, or weapons. Of rather common oc-
currence also are toys involving mechanical
principles which have no particular practical
application in the general framework of primi-
tive culture, such as tops, kites, or the buzz
disk. Seemingly uncommon, however, are toys
or models—for instance, toy bows and arrows—
involving principles which could have been
put to use in cultures where they are not so
used or in cultures not in contact with peoples
who did use them. When its full implications
are considered, the presence of wheeled toys in
the New World must be recognized as com-
pletely unexpected.

Why, then, do we find wheeled toys in
Mexico? We obviously cannot answer this
question with any degree of certainty at the
present time and must await further studies or
new information which may lead to an explana-
tion. In the meantime, however, I will hazard
the opinion that our wheeled toys are best
explained as a pure discovery or invention—the
visualization of a mechanical device and the
making of a model. Before discussing this point
further, we might mention several factors which
may have been involved in the discovery and
in its lack of adaptation to practical uses.

The several kinds of revolving objects wide-
spread among the American cultures might
have contributed to the discovery of the
principle of the wheel. These include the
spindle, the pump drill and bow drill, the top,
the buzz disk, and—possibly—the roller. Of
these, the spindle appears to me to be the most
likely candidate, since our vehicles are only
toys and the use of clay spindle whorls was
common in Mexico, at least in the later periods.
A spindle with a clay whorl is actually an axle
with a wheel on it, and it is not difficult to
imagine that a person playing with one, perhaps
placing a second whorl on the spindle, might be
able to visualize its use as an element of a
vehicle.

The idea of the wheeled vehicle might also
have arisen from a practice of using wooden
rollers for moving heavy stones, this being the
explanation commonly suggested for the in-
vention of the wheel in the Old World. An
objection to this, however, is that we have no
good evidence that rollers were used for moving
heavy stones or for any other purpose in the
New World, and I don't believe we can assume
that they were used. Given enough manpower,
the largest stones used by the American Indian
could probably have been dragged along on the
bare ground or on a skidway of poles. Further-
more, it seems more likely that the evolution
from roller to wheel would produce a full-sized
and practical vehicle, not small toys. In passing,
it might be well to mention that the only
archaeological evidence suggesting the use of
the roller in the Americas is a stone cylinder
found by Alfonso Villa on one of the great
roadways of northern Yucatan. Villa suggests
that this object may have been used for pressing
down and leveling the road surface, but this
identification is far from certain. It could just
as well have been a portion of an architectural
column, and, in any event, a roller used as a
leveling device is not the same thing as a roller
used to move heavy objects.

But whether we consider wheeled toys in
America to have originated through influences
from the Old World or to have been the result
of the outright invention of a mechanical
principle, there remains the further problem of
why this principle was never put to actual use
as a means of transport. This is, however, a
problem somewhat easier of explanation than
that of the origin of the idea. The wheeled toy
appears to me to be a prime example of an
invention or idea the practical value of which
was not realized, or, if it were realized, was not
useful because of the nature of the existing
culture. There were probably many factors
responsible for the failure to apply the principle
of the wheel to practical uses, even if its value
were appreciated, and it is impossible for us to
analyze them fully or correctly. We might
mention a few of the most obvious factors, all
of which may have been operative. In Mexico
there were no domesticated animals which
could have been used for draft purposes, and
the lack of such animals would probably be a
prime deterrent to an application of the wheel
to transport. The generally rugged nature of
the Mexican terrain and the thick forests of the

12 Villa, 1934, p. 199.
coastal lowlands would also stand in the way of use of the wheel for transport and the construction of suitable roads. It would not, however, prevent certain local adaptations of the wheel for such activities as hauling water from the local source of supply over hardened and in some cases perfectly level terrain. It is perfectly clear, too, that roads could and would have been built if really desired, as witness the remarkable roads of northern Yucatan, one of which extends for a distance of 100 kilometers between the ruins of Cobá and Yaxuna. Except for certain transverse steps and unnecessary rises at what appear to have been temple stations, these roads were constructed almost like modern highways; they were up to thirty feet or more in width, were elevated, and had smoothed masonry surfaces.13

An even more significant factor than either of these more obvious ones may have been a tendency toward conservatism in the American Indian cultures, especially in the field of material culture. Even if certain persons in Mexico did fully appreciate the potential value of the wheel, it is possible the idea would not have taken hold and been developed. The traditional and simple method of transport, that of packing everything on the human back, was a deeply ingrained habit, in some ways quite adequate. Interesting in this regard is the persistence to the present day of back-packing among many of the Indian groups of Mexico. Great packs of produce are carried along modern automobile highways on the backs of Indians who have not even arrived at the stage of using beasts of burden—a pattern to which they have been exposed for four hundred years and one which is well suited to a mountainous country.

The most interesting problem concerning our wheeled toys from Mexico is, of course, that of their origin. As I suggested before, it seems most likely that they were a pure invention—the visualization of a mechanical principle and the making of a model. This is an almost necessary conclusion if we assume that full-sized vehicles were never used in the Americas and that there was no contact with wheel-using cultures of the Old World. Certainly the Mexican toys could not have been the result of an evolutionary process beginning with the use of a roller, for that could only have produced a usable vehicle of larger size. By far the simpler and better explanation is that a spindle with its whorl gave someone the idea of the wheel as it is used on a vehicle, and that he simply made a workable model of clay in the form of an animal. Having toy vehicles, the people of Mexico were, of course, far from having a true wheeled vehicle. That would have required further inventions and a certain amount of evolutionary development, but the wheeled toys attest to their at least knowing the basic principle from which such a development could have occurred.

If this proves to be the true explanation of the wheeled toys from Mexico, a similar explanation of the invention of the wheel in the Old World becomes more plausible. Such an origin for the wheel in the Near East was in fact suggested by Eduard Hahn,14 whose views on the subject have been summarized by Lowie, as follows: "... he assumes that the cart originated as 'a model by which the votaries of the Babylonian astral faith imitated on earth the movements of their celestial deities.' This miniature conveyance, sprung from the brain of 'an idle priest,' was constructed of a spindle with whorls. In enlarged guise it was later taken beyond the temple precincts, and streets were built on 'which the gods might roll along in chariots. Very gradually, like many other things, the divine carriage was degraded to a utensil of daily life'."15

Such an hypothesis might eventually be borne out when more becomes known of Late Neolithic materials in the Near East, for miniature vehicles of clay would be well preserved where full-sized vehicles of wood may have left no trace. Whether or not evidence of this kind is ever found, however, a completely isolated and at least partial occurrence of the process in the New World lends weight to the possibility that Hahn was not too far from the truth.

It must be mentioned in this regard that miniature clay vehicles in the form of animals have been found in Mesopotamia16 and that they are remarkably similar to those from Mexico. They are approximately the same size, have crudely made wheels which might be mistaken for spindle whorls, and have hollow bodies. These toys are not, however, significant.

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13 Thompson, Pollock, and Charlot, 1932.
14 Hahn, 1909, p. 40.
16 Breasted, 1933, Fig. 181; Woolley, 1930, Fig. 11.
in regard to the origin of the wheel, for they date from the middle of the third millennium B.C., at least a thousand years after the wheel appears in Sumerian art. Neither do they have any particular bearing on the problem of the wheeled toys of Mexico, but their marked resemblance to them is highly interesting and worthy of note.

17 Childe, 1936, p. 140.

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THE ARCHAEOLOGICAL SITUATION AT SPIRO, OKLAHOMA;
A PRELIMINARY REPORT

Kenneth Gordon Orr

INTRODUCTION

SINCE its discovery and exploitation by commercial diggers in 1933, the unusually rich ceremonial complex of the Spiro Mounds, LeFlore County, Oklahoma, has engaged the interest of archaeologists. The importance of the Spiro site to Southeastern archaeology has been recognized, and the science has awaited a report of the scientific excavation undertaken by the Work Projects Administration and the University of Oklahoma for a number of years.2

2 The scientific excavations took place during the period 1936-1941 as an activity of the WPA Statewide Archaeological Project, sponsored by the University of Oklahoma and the University of Tulsa, Dr. Forrest E. Clements, director. Archaeological supervisors associated with the excavation and laboratory reconstructions included: Fred Carder, J. J. Finklestein, Carl Ball, Lynn Howard, Phil J. Newkumet, David Baerreis, Rodney Cobb, and Sarah White (Mrs. Clements). The writer was in charge of excavations at Spiro during the period January, 1938–March, 1939, and subsequently served as research archaeologist in the laboratory analysis of the Spiro material. Excavated sites of Spiro area shown in Fig. 30 (1936–40). Pb. 1, a small unit east of Cr. 1 excavated in 1941, is not covered in this report.